



## The ecosystem approach: from concept to reality



Ruth D Waters  
Natural England



## The ecosystem approach

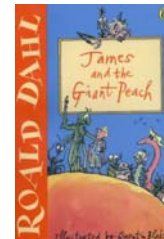
Adopted by the Convention on Biological Diversity in 1995 as the primary framework for action under the Convention

*a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way*



MILLENNIUM ECOSYSTEM ASSESSMENT

Concept of ecosystem services has been around since Virgil 29 BC  
And  
Roald Dahl in James and the Giant Peach in 1961!



## The Ecosystem Approach

- It is an integrating approach with three key aspects
- Systems: It considers the whole ecosystem
- People: Puts people and sustainability at the heart of environmental management
- Values: the environment provides us with important and valuable benefits (ecosystem goods and services)



## But how can we use it in the real world?

- Delivering Nature's Services – the upland ecosystem services pilots.
- Working in partnership to take a holistic approach to the management of places for the benefit of people and nature.
- Taking an ecosystem approach

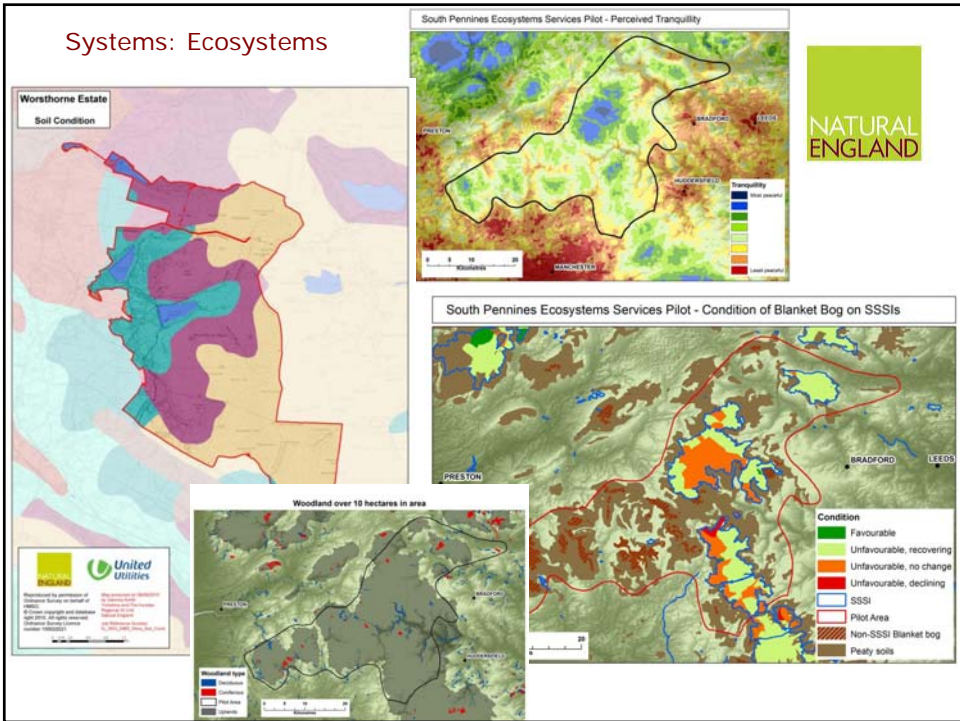
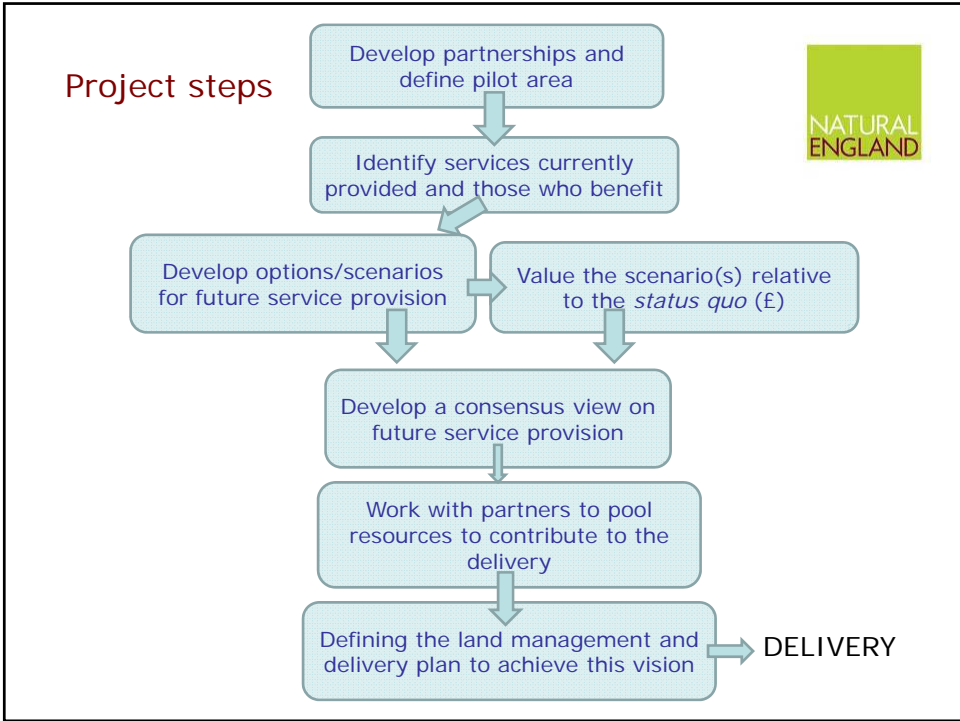
### Three pilot areas:

Bassenthwaite Lake catchment, Cumbria

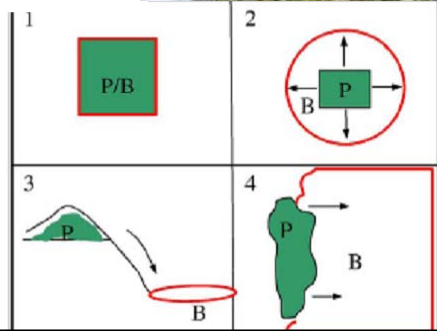
South Pennines National Character Area, Yorkshire

Dartmoor and Exmoor, South West





## Who benefits and where are they?



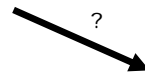
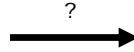
## People and partnership



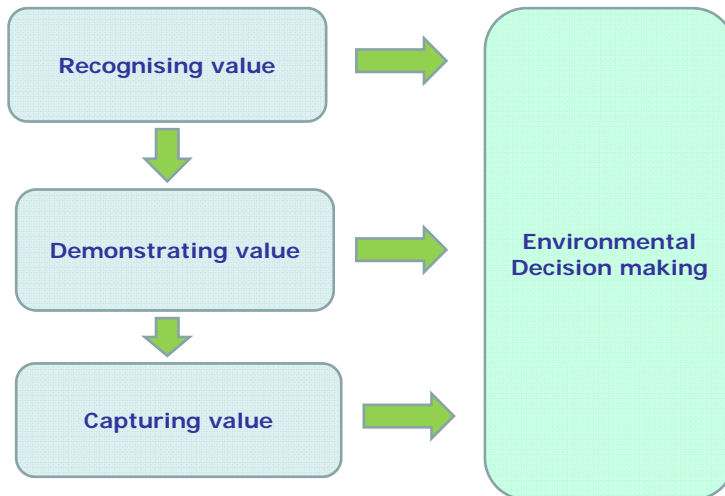
- Bassenthwaite pilot has involved over 70 people (25+ organisations)
- Broader partnerships with links to water companies, regional economic partnerships, tourism, nature conservation, local authorities, visitor payback schemes amongst others
- Range of workshops – from regional economic benefits to the aspirations of farmers
- Integration with existing work – *Catchment Sensitive Farming, Catchment Flood Management Plan, Water Framework Directive, SCaMP2, Nurture Lakeland tourism project, Carbon Landscapes project, Rights of Way Improvement Programme...*



## What are the options?



## Valuation – to inform decision making

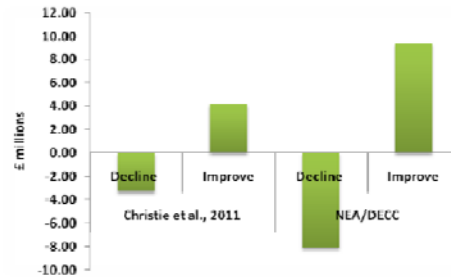
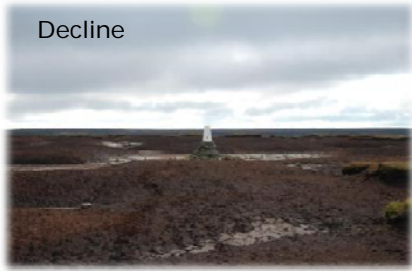


## Values Keighley scenarios valuation

Improved scenario



Decline

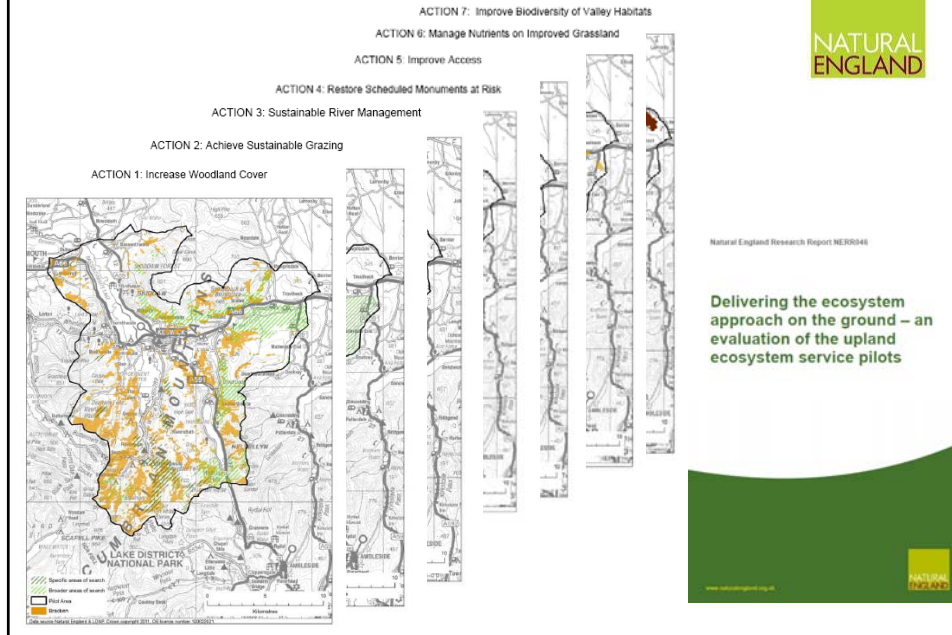


Using 2 different approaches to the valuation, benefit cost ratios range from around 1.2 to 3 and negatively to - 5.

Harlow, Clarke, Phillips and Scott (2012) - Natural England Research Report

Key Action	Ecosystem Services and Benefits							Partner Objectives												
	Water provision	Food and fibre	Carbon storage and sequestration	Erosion Control	Water quality	Flood Regulation	Cultural landscape, historic environment	Recreation, inspiration, education and Health	Biodiversity	Biodiversity 2020 - SSSI target	Biodiversity 2020 - habitat targets	Climate Change adaptation	National Character Area	Catchment Sensitive Farming	Improved access to natural environment	SCaMP2	Catchment Flood Management	Water Framework Directive	Heritage at Risk	Lake District National Park Partnership Principles of Land
1. Increase Woodland Cover	x	x	x	x	x	x	x	x	x		x	x	x	x		x	x	x		x
2. Achieve Sustainable Grazing	x		x	x	x	x	x		x	x	x	x	x	x		x	x	x		x
3. Sustainable River Management			x	x	x	x			x	x	x	x	x			x	x			x
4. Restore Scheduled Monuments at Risk				x	x		x	x				x	x						x	x
5. Improve Access		x	x	x			x	x	x			x		x						x
6. Manage Nutrients on Improved Grassland		x	x	x			x		x	x	x	x	x				x			x
7. Improve Biodiversity of Valley Habitats			x				x	x	x	x	x	x			x					x

## Place based integrated delivery



## So what's next?

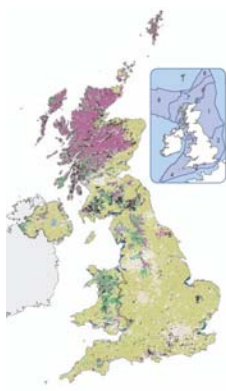
- Adaptive management and adaptive learning as we take this forward
- We don't have to wait, there is enough to be getting on with.
- But more evidence and tools will make it easier and better

### Some key questions:

- What have we got where?
- How do we manage it?
- How could we pay for it?

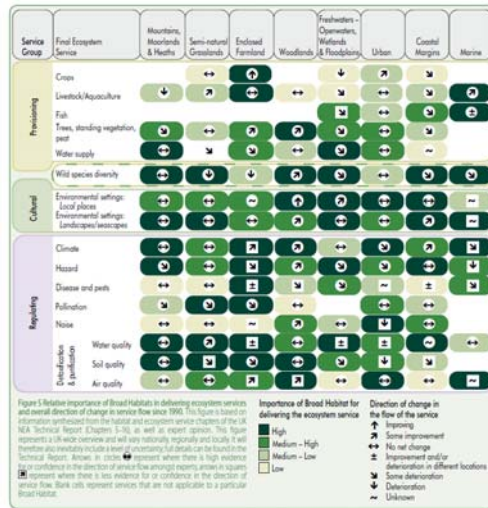


# What have we got where? Building on the UK NEA.



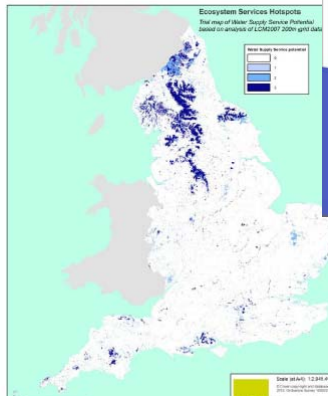
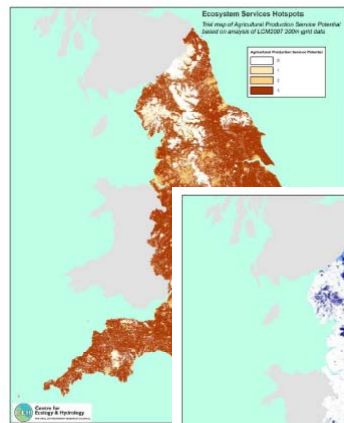
Distribution UK NEA Broad Habitats (BHs) by region per 1 km cell

- Mountains, Moorlands & Heaths
- Semi-natural Grasslands
- Enclosed Farmland
- Woodlands
- Freshwaters - Open waters, Wetlands and Floodplains
- Urban
- Coastal Margins
- Marine



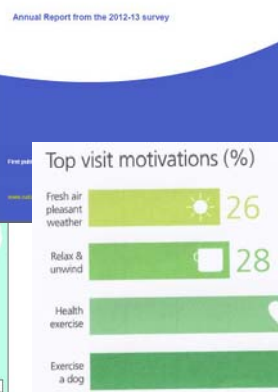
UK National Ecosystem Assessment – synthesis of key findings. 2011

# Mapping and measuring ecosystem services



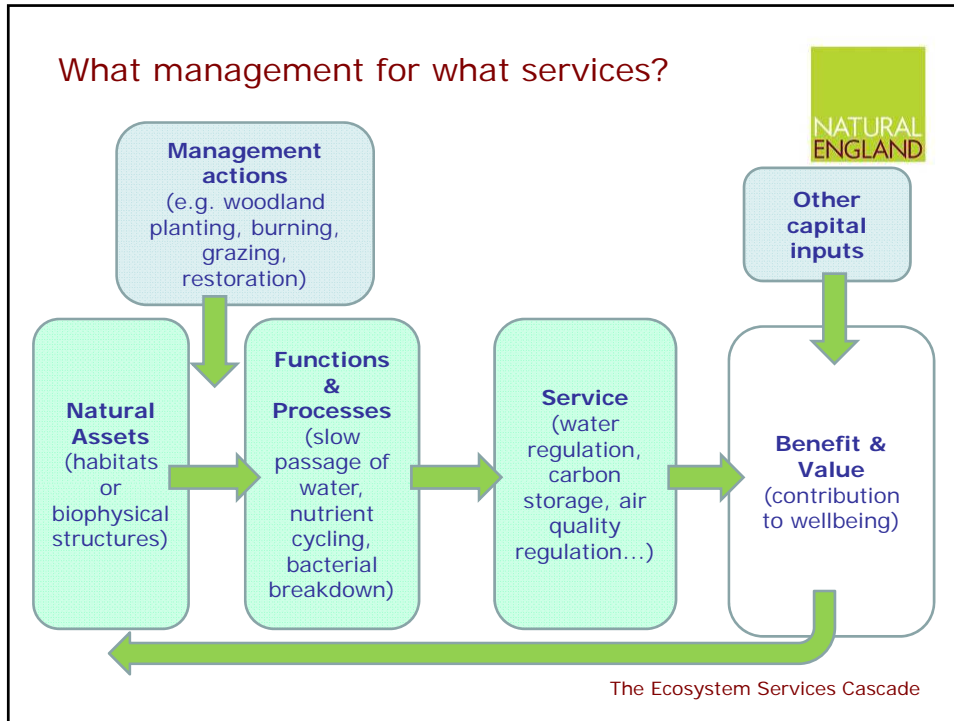
Natural England Commissioned Report NECR122

## Monitor of Engagement with the Natural Environment: The national survey on people and the natural environment





## What management for what services?



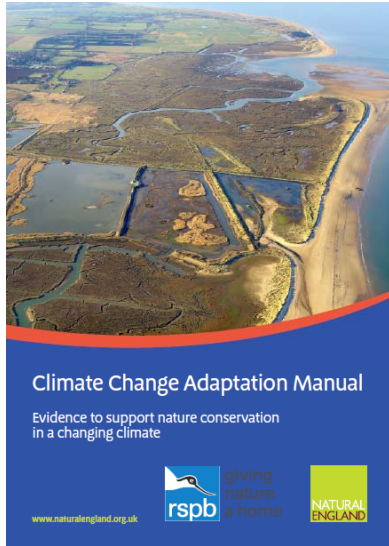
## Management intervention for ecosystem services - Ecosystem Service Transfer Tool

The image displays the Ecosystem Service Transfer Tool interface, which includes:

- A **User Guide** window titled "Ecosystem Services Transfer Toolkit" with instructions on how to use the tool.
- A **Service Catalog** window listing various ecosystem services such as Carbon Sequestration, Air Quality, and Water Regulation.
- A **Management Interventions** window showing a list of actions and their associated costs and benefits.
- A **Simulation Results** window displaying data for different scenarios, including metrics like Total Carbon Sequestration and Total Air Quality.

The interface also features the "NATURAL ENGLAND" logo and logos for "The University of Exeter" and "VESPERO".

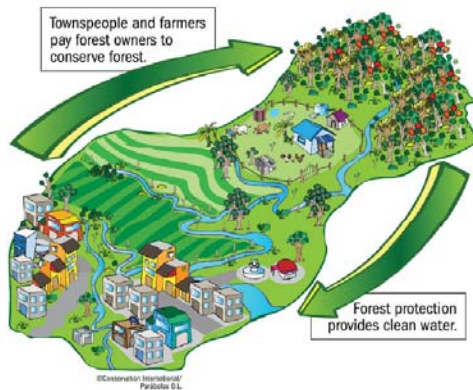
# Climate change adaptation manual



## Part 3 Ecosystem Services and climate change

Service Group	Ecosystem Service	Relevant habitats considered to be of high or medium to high importance to the provision of each ecosystem service (including marine and urban habitats)	Relevant habitat sheets
Provisioning	Crops	Enclosed farmland	Traditional orchards
	Livestock/ aquaculture	Enclosed farmland	Hedges and walls
	Fish	Freshwaters: open waters, wetlands and floodplains	Rivers and streams Standing water Lowlands fen Reedbed
		Coastal margins	Coastal saltmarsh Coastal floodplain grazing marsh
	Trees, standing vegetation, peat for timber, construction, fuel etc	Woodlands	Broadleaved mixed and pine woodlands Woodpasture and parkland
		Mountains, Moorlands and heaths	Upland heath Lowland heath Moorland habitats Bramble bog
		Enclosed farmland	Hedges Traditional orchards
		Freshwaters: open waters, wetlands and floodplains	Lowland fen Reedbed
	Water supply	Mountains, Moorlands and heaths	Upland heath Lowland heath Bramble bog Bramble, fern and heath
		Freshwaters: open waters, wetlands and floodplains	Rivers and streams Standing water Lowlands fen Reedbed
Cultural	Wild Species Diversity	Mountains, Moorlands and heaths	Upland heath Lowland heath Moorland habitats Bramble bog
	Environmental heritage and/or special natural areas and local plants	Semi-natural grasslands	Lowland dry grassland Upland and grassland Catchment grassland/wetland meadow Upland hay meadow Purple moor grass and ash pasture
		Woodlands	Broadleaved mixed and pine woodlands Woodpasture and parkland
		Freshwaters: open waters, wetlands and floodplains	Rivers and streams Standing water Lowlands fen Reedbed
		Coastal Margins	Coastal saltmarsh Coastal sand dunes Coastal upland fringe habitat Coastal floodplain grazing marsh
		Enclosed farmland	Open floodplains Hedges Traditional orchards

# How can we pay for it? Place based payment for ecosystem services





# Guidance and advice

# Ecosystem Approach Handbook

**Define the Partnership**

**Case study: Bassenthwaite Upland Ecosystem Services project**

**Fact sheet 1: Understanding the ecosystem approach**

**Table: Bassenthwaite Upland Ecosystem Services Project**

Key Issue	Baseline	Target	Current	Priority	Responsible	Timeline
Water Quality	Good	Very Good	Good	High	Environment Agency	2015-2020
Water Quantity	Good	Very Good	Good	High	Environment Agency	2015-2020
Water Chemistry	Good	Very Good	Good	High	Environment Agency	2015-2020
Water Ecology	Good	Very Good	Good	High	Environment Agency	2015-2020
Water Quality	Good	Very Good	Good	High	Environment Agency	2015-2020
Water Quantity	Good	Very Good	Good	High	Environment Agency	2015-2020
Water Chemistry	Good	Very Good	Good	High	Environment Agency	2015-2020
Water Ecology	Good	Very Good	Good	High	Environment Agency	2015-2020

**Ecosystems Knowledge Network**

<http://ecosystemsknowledge.net>



Thanks to Jane Lusardi, Patricia Rice, and Stewart Clarke, and a host of others.