

The Ecosystem Services of Warwickshire, Coventry and Solihull





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What are Ecosystem Services and why do they matter?



Ecosystem services are the benefits that nature provides to humans – "what nature does for us".

Provisioning services = stuff nature gives us e.g. Food, wood, water to drink etc.

Regulating services = functions nature does for us e.g. holding soil together, keeping the air clean etc.

Cultural services = things about nature that matters to us and the way we live our lives e.g. recreation, aesthetic beauty, special places

Important because:

1) much broader view of nature 2) policy traction and relevance.

Operationalisation of Natural Capital and Ecosystem Services

Penness

OPENNESS: Overview Operationalising Ecosystem Services

EU funded project 2013-2017



Warwickshire, Coventry and Solihull is one of 27 case studies

How does the Ecosystem services concept workin practice



Exploring tools for ES assessment



There are many different potential methods for ES assessment

In Warwickshire, Coventry and Solihull we are trialing a number of methods so that we can see what the advantages and disadvantages of the different methods are.

- 1) Habitat-based GIS methods
- 2) Analysis of photos on Flickr
- 3) Participatory ES mapping workshops



23.9.2016



HBA-based GIS method (Method 1)

The HBA data is an amazing resource!!!

It was clear that we had to make use of it.

Standard methods linking habitat to ES supply.

The 'matrix' or 'Burkhard' approach.

Needed to be customised to Warwickshire⁺ and to Phase 1



A111 Broad-leaved Wood Semi-natural
 A112 Broad-leaved Wood Plantation
 A121 Conifer Wood Semi-natural
 A122 Conifer Wood Plantation

A131 Mixed Woodland Semi-natural A132 Mixed Woodland Plantation

A31 Broadleaved Parkland (scattered tr

A21 Dense Scrub

A22 Scattered Scrub



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HBA-based GIS method Linking ES to habitats



- Mainly planners and ecologists
- Created a table linking ES supply to phase 1 habitat classes
- What do you perceive the capacity of a given habitat to deliver this ecosystem service?=
- **People are too kind...** and/or will do anything for biscuits?

0	No relevant capacity
1	Low relevant capacity
2	Some relevant capacity
3	Medium relevant capacity
4	High relevant capacity
5	Very high relevant capacity







Fresh

water provision

Livestock

Timber provision





A132 Mixed plantation





HBA-based GIS method Values for wetlands



REGULATING ES (e.g. flood/ soil regulation, pollination etc.)







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PROVISIONING ES Direct goods (e.g. crops, orchards, timber etc)







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0.40 - 0.80

0.00 - 0.40

3.90 - 4.70

2.60 - 3.90

1.00 - 1.90

0.00 - 1.00

1.90 - 2.60

Regulating

CULTURAL ES Ecosystem contribution to cultural wellbeing (e.g. recreation, local value, aesthetic beauty etc.)





Analysis of Flickr photos (Method 2)



Not relevant





(flickr) id	<u>11888249064</u>								
title	Robin Packington Lane, Coleshill.								
description									
habitat code	B21								
description	Unimproved neutral grassland								
lat/lon	52.485354/-1.701979								
map links	Google Maps / Bing Maps / HERE Maps								
relevant	True								
classified	False								
locked	False								
tags									

230,000 publically available geotagged Flickr photos in Warwickshire, Coventry and Solihull

> Excluded 'urban' habitats (but included all the green spaces within urban areas). This left 80,911 photos

> > Random sample of 5,737 were classified

1,937 were relevant

Web-based platform Classify 200/hour >Recreation >Landscape beauty >Interactions with species >(Education) 14

Cultural ecosystem services

Species focus

- Existence value
 Aesthetic value
- Aesthetic value of landscapes
- Recreation
- Intellectual
- Other

Wild animal, vertebrate

Mammal

Bird

Reptiles

Amphibians

Fish

Wild animal, invertebrate

Species features

Landscape features

Water features
Rivers and streams
Canals
Lakes and ponds
Vegetation features
Forest & woodland
Shrublands

Recreational activities Hiking or walking Biking Running Picking berries, mushrooms, etc

- Horse riding
- Swimming
- Leisure fishing











Analysis of Flickr photos (Method 2)



. Detailed inset of Flickr photos in area SW of Coventry

- Eastern Green Fasentia Postfor Coverns Are Brandon Marsh Some and Shanne **River Avon** Enclotown Cubbinator Ealthorpe Hunningha Laumington Haitings Hampton on the Hi **Earthord Semale** Grand Union Canal
- Questions:
- What factors contribute to high numbers of Photos taken?
- What limitations to the method?

Participatory ES mapping (Method 3)

HABITAT + SAECIES

2 participatory workshops RURAL LAND USE STAKEHOLDERS PLANNERS & ECOLOGISTS



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Participatory ES mapping Finished maps



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RECREATION







Participatory ES mapping Results: Aesthetic beauty





Participatory ES mapping Results: Habitat for wildlife







Next Steps... for Warwickshire⁺ Case?



HBA-GIS approach:

Some final adjustments to scores e.g. set aside, wet woodlands, hedgerows..

Update results to latest Phase 1 survey

Accessibility mapping – Public rights of way

Additional information e.g. flood maps, vegetation mapping (CIR, ADVI, LiDAR), connectivity mapping

Flickr photos: Finish the analysis & write up

Participatory workshop approach: done – compare with other cases.



Next steps for... OPENNESS?



Approaches have advantages and disadvantages that need to be understood:

Assess the three methods with practitioner questionnaires (done)

Compare with other EU studies using similar methods (underway)

Develop guidance to help others determine which methods are best for the job

Develop online platform (OPPLA) as a one-stop-shop for others needing to use ES methods and to help support the community of ES practitioners.



CONCLUSIONS Take home messages



- Ecosystem services encourages a wide view of nature and it doesn't have to be about putting prices on things.
- There are a number of methods that can help assess ES and they don't have to be complex to be helpful
- There are methods to access hard to quantify ES including the cultural ones (such as aesthetics or natural heritage value)
- The HBA is a phenomenal dataset to be very proud of it greatly facilitates understandings of ES.
- Nature in Warwickshire⁺ is impressive and clearly well valued. The ES concept and tools provide a mechanism to better argue for its protection.





Thankyou very much!





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SPECIES MAPPING

The resilience of biodiversity offsetting to climate change



UKCP09 High scenario for 2050s

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Common name	Latin name	2020 Low		2020 High		2050 Low		2050 Medium		2050 High		2080 Low		2080 High	
Dominant		SCP1	SCP9	SCP1	SCP9	SCP1	SCP9	SCP1	SCP9	SCP1	SCP9	SCP1	SCP9	SCP1	SCP9
English oak	Quercus robur														
Sessile oak	Quercus petraea														
Ash	Fraxinus excelsion														
Bramble	Rubus fruticosus														
Bracken	Pteridium aquilinum														
Characteristic				10 - D	1	7			11:	1. I	1. A	()			0
Small-leaved lime	Tilia cordata														
Hazel	Corylus avellana											_			
Field maple	Acer campestre														1000
Silver-washed fritillary	Argynnis paphia														
Song thrush	Turdus philomelos														
Conservation importance	1 - 11 - 11 - 10 - 10 - 10 - 10 - 10 -														
Dormouse	Muscardinus avellanarius														
Lesser horseshoe bat	Rhinolophus hipposideros														
Marsh Tit	Poecile palustris				-	1.00	-								
Woodcock	Scolopax rusticola														



Figure 1: Availability of suitable climate space for woodland species in Warwickshire.

Common name

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Dominant
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Common reed Reed mace Purple moor-grass Reed sweet-grass

Sensitive

Yellow flag Ragged robin Marsh marigold Meadowsweet Reed Warbler Reed Bunting Sedge Warbler

Yellow wagtail

Conservation importance

Great crested newt Water vole Bearded tit Bittern Water rail Common Snipe Redshank Motacilla flava ce Triturus cristatus Arvicola terrestris Panurus biarmicus Botaurus stellariis Rahlus aquaticus Gallinago gallinago

Tringa totanus

Latin name

Typha latifolia Molinia caerulea

Glyceria maxima

Iris pseudacorus

Caltha palustris

Acrocephalus schoenobaenus

Lychnis flos-cuculi

Filipendula ulmaria

Acrocephalus scirpaceus

Emberiza schoeniclus

Phragmites australis







Figure 2: Available suitable climate space for wetland species in Warwickshire (Key as for Figure 1).

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Background/Context

Exploration of the use of ES and NC concepts in the context of biodiversity offsetting.

- The EU Biodiversity Strategy 2020 aims to halt biodiversity loss and to conserve ecosystem services
- The Commission will carry out further work with a view to proposing by 2015 an initiative to ensure there is no net loss (NNL) of ecosystems and their services (e.g. through compensation or offsetting schemes)
- UK Government is interested in biodiversity offsetting
 - Case studies were two of 6 Pilot Schemes

Penness



Aims and objectives of the case studies

To explore the use of ES and NC concepts in the context of biodiversity offsetting.

• The case studies will address three aspects of offsetting: *i) Biodiversity offsetting as an innovative mechanism for the operationalization of the concepts of natural capital and ecosystem services.*

> *ii) The potential of biodiversity offsetting to deliver biodiversity and ecosystem services and other elements of natural capital*

iii) The resilience of biodiversity offsetting to climate as a driver of change



From concepts to real-world applications www.openness-project.eu