



Experiences of data acquisition in the design and application of EcoServ-GIS (Ecosystem Services Mapping Toolkit)

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### Why EcoServ-GIS ?

- EcoServ-GIS is a Wildlife Trust Toolkit to map Ecosystem Services (at a County scale)
- Mapping takes time, but can be automated – cost savings
- Runs on ArcGIS via ModelBuilder
- Stage I - Pilot project Jan 2012 – Dec 2012
- Stage II – April 2013 – March 2014



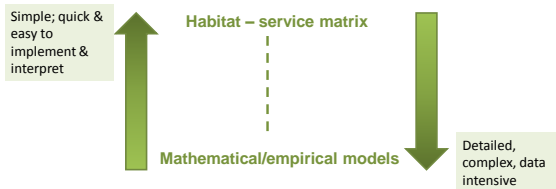
### EcoServ-GIS remit

- Transferable method
- Using generic , typically available data
- Cost-free, open license or available via PSMA
- (Note more detailed or accurate data may be available locally)
- County scale / multiple local authorities



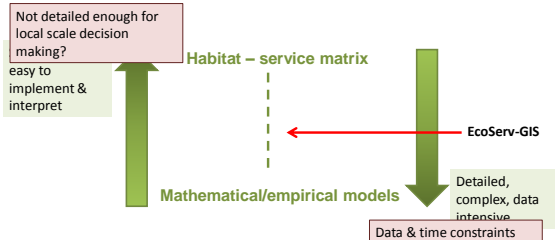
### How the toolkit works

- Many mapping methods have been tried and tested:

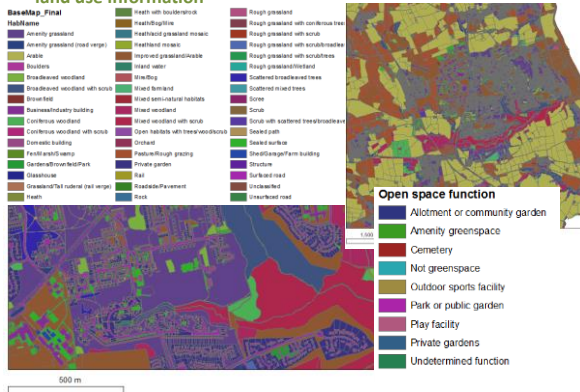


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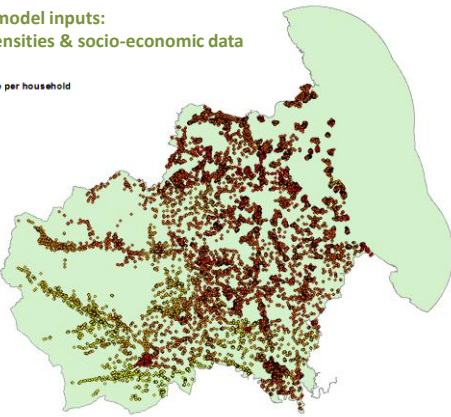


### Creating the model inputs: the BaseMap – detailed habitat and land use information



**Creating the model inputs:  
Population densities & socio-economic data**

- Estimated number of people per household
- 0.871454
  - 0.871455 - 0.936275
  - 0.936276 - 1.025641
  - 1.025642 - 1.030297
  - 1.030298 - 1.044267
  - 1.044268 - 1.249593
  - 1.249594 - 1.254737
  - 1.254738 - 1.255441
  - 1.255442 - 1.273708
  - 1.273709 - 1.914432
  - 1.914433 - 1.954861
  - 1.954862 - 1.955571
  - 1.955572 - 1.990708



**Which services?  
Stage I**



- Wildlife watching
- Accessible nature
- Education opportunities
- Carbon storage
- Local climate regulation
- Water purification
- Pollination
- Noise regulation
- Food
- Timber

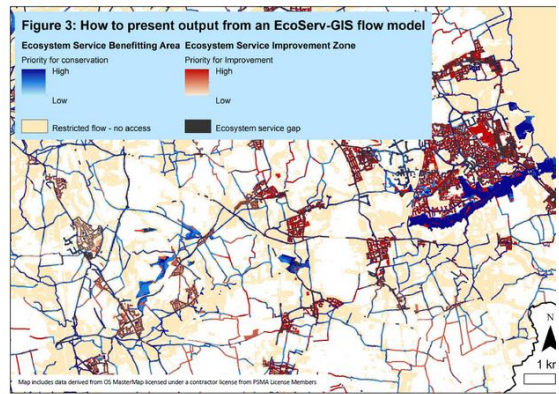


**Methods: selecting service indicators**

- 1) **Ecosystem service capacity:** The performance and capability of an ecosystem or a landscape to deliver services
- 2) **Service demand areas:** Areas where there is societal demand for a service and/or the need for ecological regulation
- 3) **Service delivery areas:** Functioning ecosystems graded according to a combination of their capacity to deliver a service and the societal and ecological demand for the service

Select indices and spatial scales based on current scientific research, and data availability and transferability.

**Accessible nature - Derived output**



**What will EcoServ-GIS be used for, and by who?**

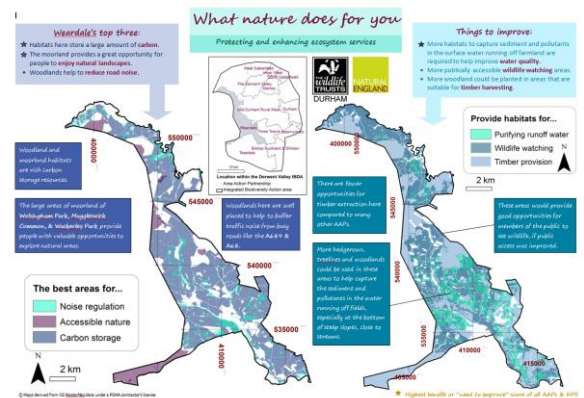
**Landscape-scale Conservation:**

- LNPs
- BAP
- HLF

**Toolkit run and used by partnerships of:**

- Wildlife Trusts
- Local authorities
- Local record centres

PSMA – allows OS data to be sourced and shared between organisations (Local authorities, Environment Agency etc)





#### Core datasets

- OS Mastermap (provides detail, interpreted habitat types, impervious surface layers)
- DTM (digital terrain model) 50m = free, 5m or 10m under license
- OS Vectormap – road type

#### Social data

- LSOA (Lower super output areas) to map social data
  - Average population / household estimates
  - Age / health risk (for local climate models)
  - IMD (index of multiple deprivation)



#### Creating a Habitat layer for Ecosystem Service modelling

In order of priority / availability

1. Digital + recent Phase 1 habitat survey – mapped to Mastermap
2. Older digital Phase 1 habitat survey merged into Mastermap polygons (inc quality control)
3. OS Mastermap converted into habitat types and updated by
  - local BAP
  - national BAP data
  - landscape character data (if mapped at sub catchment level)



#### Local Authority datasets

- Open Space survey (combine under a common typology)
- Habitat surveys (BAP habitat or Local Wildlife Sites)
- Landscape character (if mapped at sub catchment level)
- PROW network

#### Designations

- LNR – local nature reserve
- NNR – national nature reserve
- CROW – open access/ rights of way access land



#### Other datasets

- Soils - via Joint Research Centre's European Soil Data Centre
- Public Transport stops – NAPTAN data
- Woods4People – Woodland Trusts dataset on accessible woods
- Climate data – via Met Office (more useful for large counties) (5km resolution)
- Wind speed data – via DECC website



#### Data issues with a Service based approach

- We used a range of indicators to map the likely need / demand for ecosystem services or environmental capacity to deliver a service
- Examples – noise regulation, air quality regulation
  - Location, distance to and type of Roads or industry were used to be indicative of the likely level of noise or air pollution.
  - This reduce the types of data inputs needed, but has accuracy limitations
  - Local noise levels, traffic levels or air pollution data can be used to give more locally accurate results, but add complexity to the mapping process



#### Summary of data issues

- Mastermap is a key resource and is now more easily shared via the PSMA
- Some potentially useful datasets were not available due to cost e.g. Landcover map 2007, soil datasets)
- Despite many years of BAP initiatives – data on the location and condition of BAP habitat is often not well collated, updated or easily available
- There is still a need for regularly updated Phase 1 habitat surveys at a county scale / local authority scale
- Wildlife Sites habitats should be digitised and available
- Informal / permissive access routes – append to LA PROW data?



## Thank you for listening.

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EcoServ-GIS Steering Group

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### Useful web addresses for GIS data

\*Correct as of December 2012

Countrywide	<a href="http://www.crag.gov.uk/landscape-wildlife/protecting-our-landscape/gis-download...welcome/gis-boundary-downloads.aspx">http://www.crag.gov.uk/landscape-wildlife/protecting-our-landscape/gis-download...welcome/gis-boundary-downloads.aspx</a>
Council for Wales	
DECC	<a href="http://www.decc.gov.uk/en/windspeed/">http://www.decc.gov.uk/en/windspeed/</a>
Forestry Commission	<a href="http://www.forestry.gov.uk/forestry/NFD-8G5BH8">http://www.forestry.gov.uk/forestry/NFD-8G5BH8</a>
HM Government	<a href="http://data.gov.uk/datasets/">http://data.gov.uk/datasets/</a>
Joint Research Centre European	<a href="http://eusoils.jrc.ec.europa.eu/data.html">http://eusoils.jrc.ec.europa.eu/data.html</a>
Soil Portal	
Landscape Character Area data	<a href="http://webarchive.nationalarchives.gov.uk/20101111121753/http://www.landscapecharacter.org.uk/dh/index.html">http://webarchive.nationalarchives.gov.uk/20101111121753/http://www.landscapecharacter.org.uk/dh/index.html</a>
Met Office	<a href="http://www.metoffice.gov.uk/climatechange/science/monitoring/ukcp09/download/access_gd/index.html">http://www.metoffice.gov.uk/climatechange/science/monitoring/ukcp09/download/access_gd/index.html</a>
Natural England	<a href="http://www.gis.naturalengland.org.uk/pub/gis/GIS_register.asp">http://www.gis.naturalengland.org.uk/pub/gis/GIS_register.asp</a>
Office for National Statistics	<a href="http://www.ons.gov.uk/ons/guide-method/geography/products/census/spatial/index.html">http://www.ons.gov.uk/ons/guide-method/geography/products/census/spatial/index.html</a>
Ordnance Survey	<a href="http://www.ordnancesurvey.co.uk/oweb/site/products/land-form-panorama/index.html">http://www.ordnancesurvey.co.uk/oweb/site/products/land-form-panorama/index.html</a>
Scottish Natural Heritage	<a href="http://www.snh.gov.uk/publications-data-and-research/snh-information-service/naturalspaces/">http://www.snh.gov.uk/publications-data-and-research/snh-information-service/naturalspaces/</a>
Woodland Trust	<a href="http://www.woodlandtrust.org.uk">http://www.woodlandtrust.org.uk</a>