



GREEN SURGE

GREEN SURGE in Edinburgh

An update on activities





GREEN SURGE

Welcome

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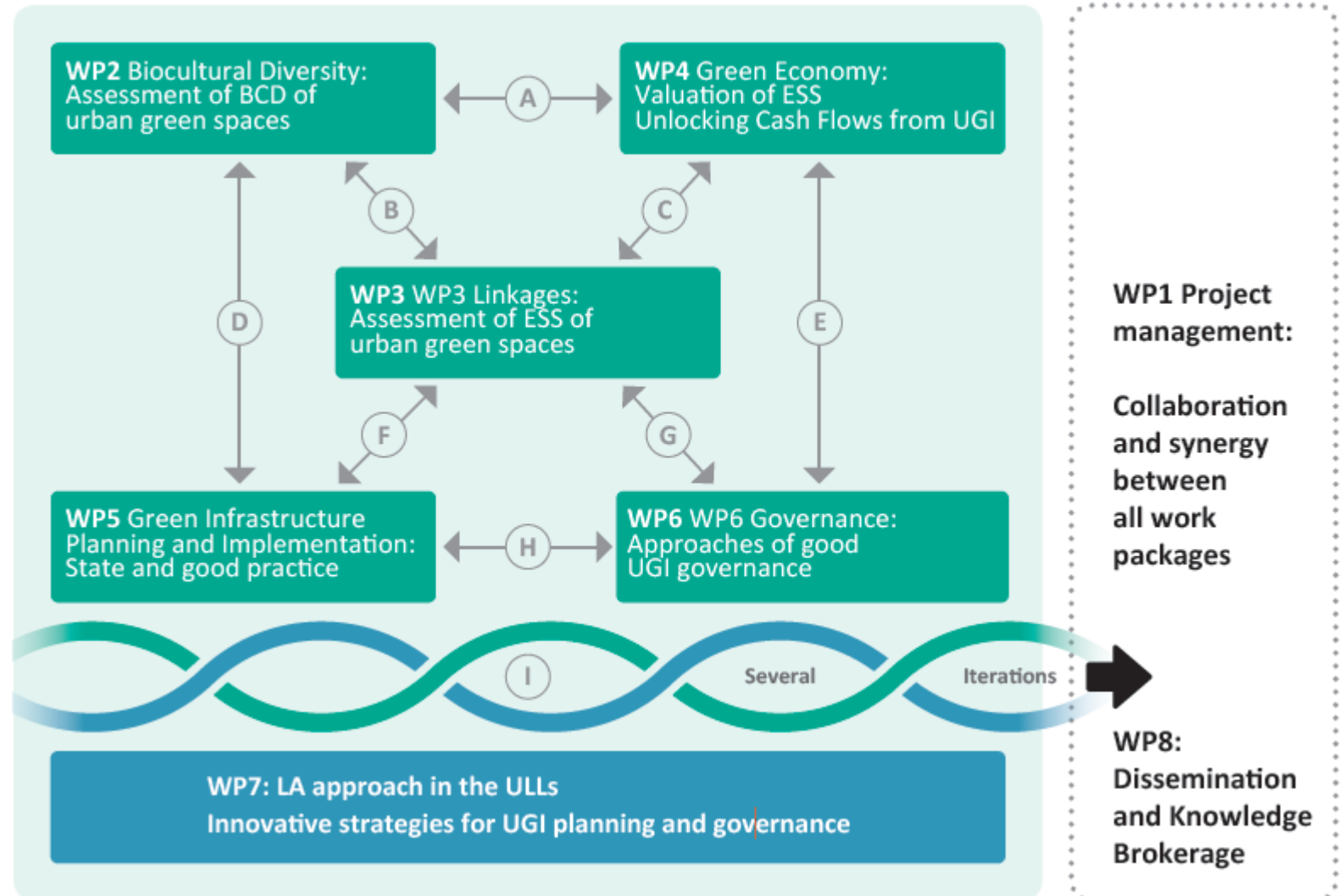
Forest Research

In a nutshell



- 24 partners (11 SMEs); 11 countries
- 48 months – started 1 November 2013
- Research themes: biocultural diversity, green economy, health and well-being, social cohesion, climate change adaptation & ecosystem services
- We rely on an **inter- and transdisciplinary approach** to integrate natural and social sciences and take a **participatory approach** to merge this expertise with that of practitioners

GS Structure

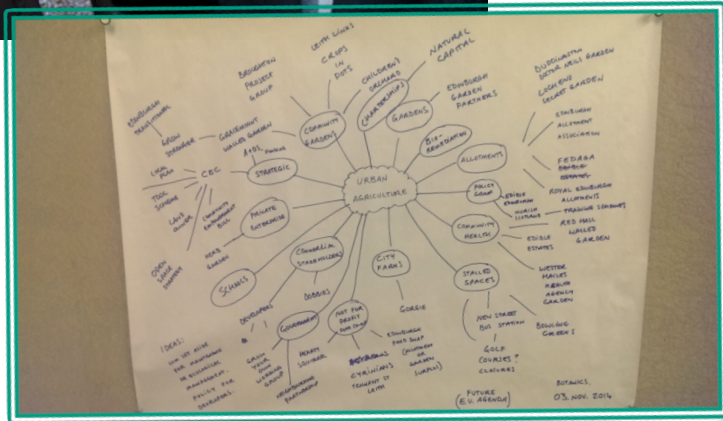


WP 6 – Governance of urban green spaces



- Relevant stakeholders have been interviewed to identify innovative arrangements involving a variety of stakeholders in governance of urban green spaces.
- The current focus is on identification and analysis of governance arrangements that are most successful in delivering: neighbourhood greenspace planning, urban agriculture, community-led management of green spaces, public-private partnerships and e-governance.
- Guidelines on effective participatory governance under different conditions will be produced

WP7 – Urban Learning Labs



- Urban Learning Labs (ULLs) are stakeholder communities that have been created in five European cities, including Edinburgh
- Response to widespread *failure of conventional research* to have significant impact on green space provision in urban centers.
- The ULLs help researchers to focus on useful project objectives, activities and outputs.
- The research consortium provides the ULLs with manuals, guidelines and tools to improve planning and governance of urban green spaces.

GS Activities in partnership with ULL and ELL



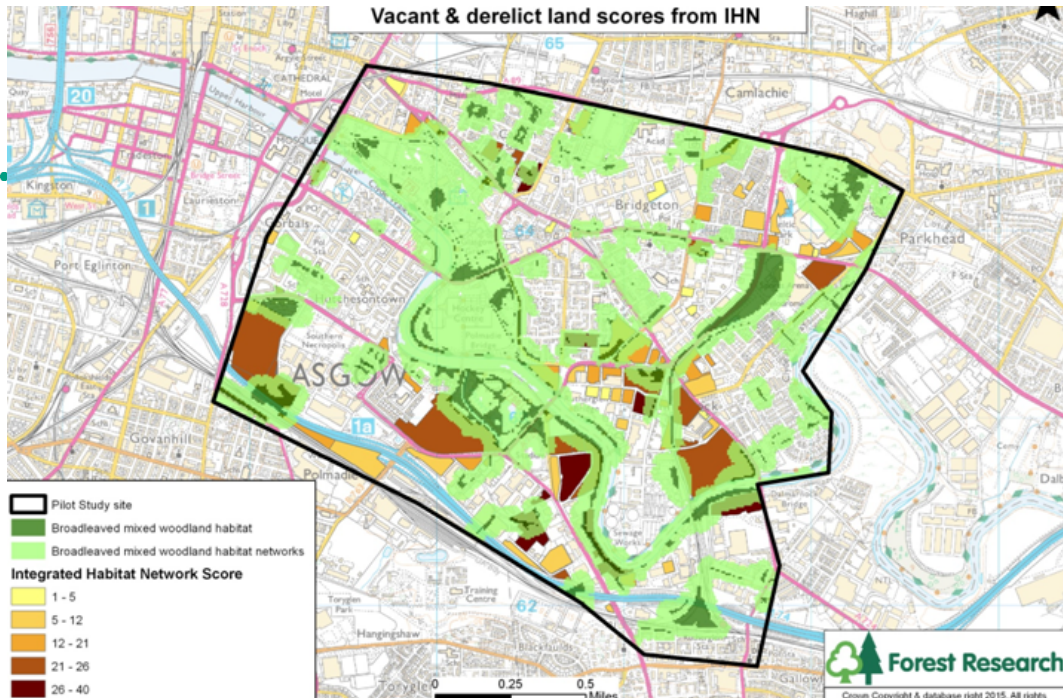
- Field studies have been performed in the five ULLs to examine how residents with different cultural and socio-economic status value and use green spaces with varying levels of biodiversity
- A methodology has been developed to map and monitor urban green space stakeholder involvement over time.
- A literature review of research on ecosystem services in urban environments has been completed.
- Biodiversity and biocultural diversity indices of different garden types in Edinburgh are being derived using pollinator data and object-based image analysis.

Urban ecosystem services research



- Forest Research is also involved in other urban ecosystem service research, including measuring the benefits of urban trees.
- This September we've started work on a collaborative project that's led by eCountability and funded by InnovateUK to develop an **urban ecosystem services assessment tool for businesses and local authorities**. Edinburgh is one of the four case study cities - we're looking for planned development projects to test the tool on.

Example ecosystem service maps



Multifunctionality

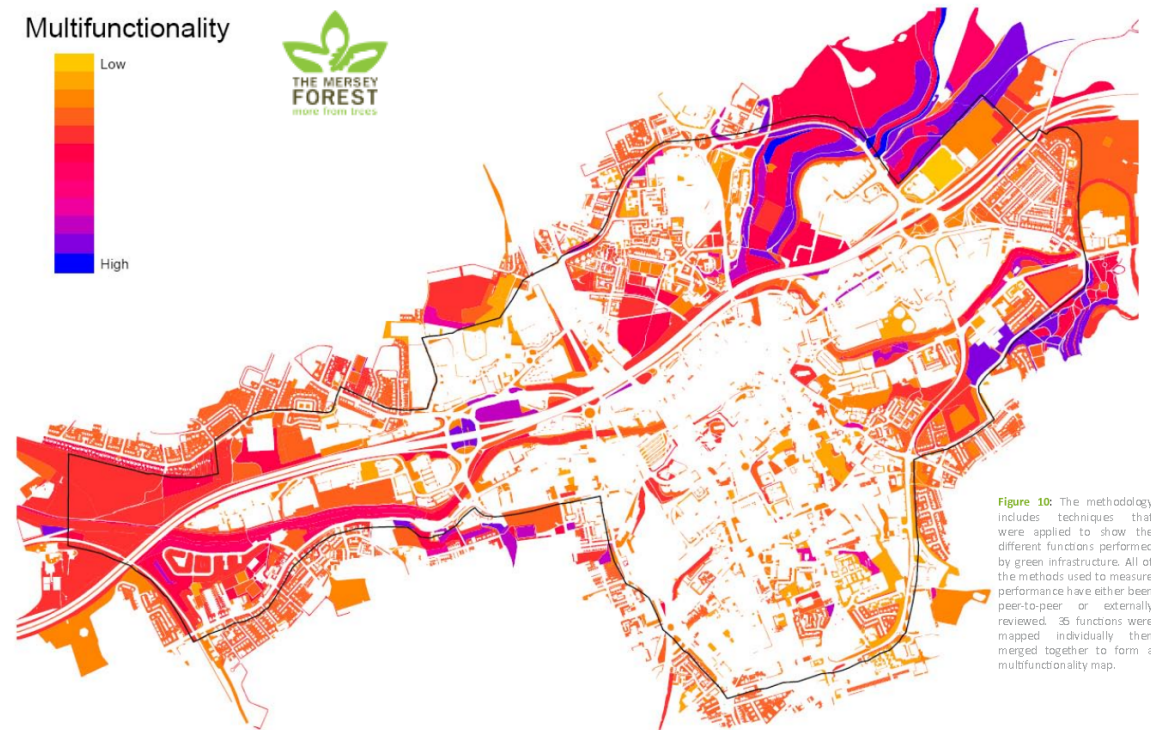
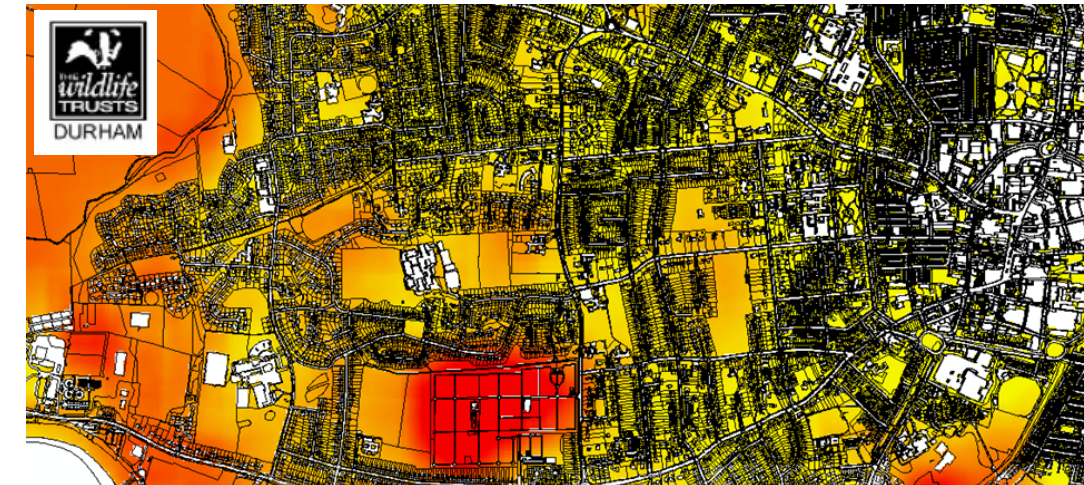
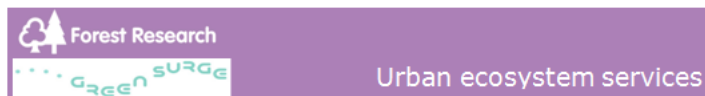


Figure 10: The methodology includes techniques that were applied to show the different functions performed by green infrastructure. All of the methods used to measure performance have either been peer-to-peer or externally reviewed. 35 functions were mapped individually then merged together to form a multifunctionality map.





Urban ecosystem services literature review

Summary

The benefits provided by 'blue and green spaces' in and around towns cities, otherwise known as urban ecosystem services, are critical for maintaining the health, security and well-being of the large proportion of the global population that live and work in urban areas. In this review, we identify the ecosystem services that are most commonly incorporated in studies with an urban focus. We also highlight the key issues, constraints and solutions mentioned in the literature with regards to understanding urban ecosystem services and accounting for them in decision making. We show that it is the regulating services, which ameliorate issues common to densely populated areas, and the cultural services, which are directly consumed by people and cannot be 'outsourced', that are most frequently studied urban ecosystem services. The importance of individual services does, however, vary between regions because of differences in regional problems, priorities and preferences. If we are to successfully implement a 'green orientated development' approach to planning and designing urban areas so that ecosystem services are properly accounted for, we need to: 1) engage with stakeholders to discuss the importance of ecosystem services and disservices in the area, 2) measure and account for spatial disparities between service supply and demand at a fine resolution, and 3) equip practitioners with the evidence and tools to predict the implications of development scenarios on ecosystems service delivery at local and regional scales.

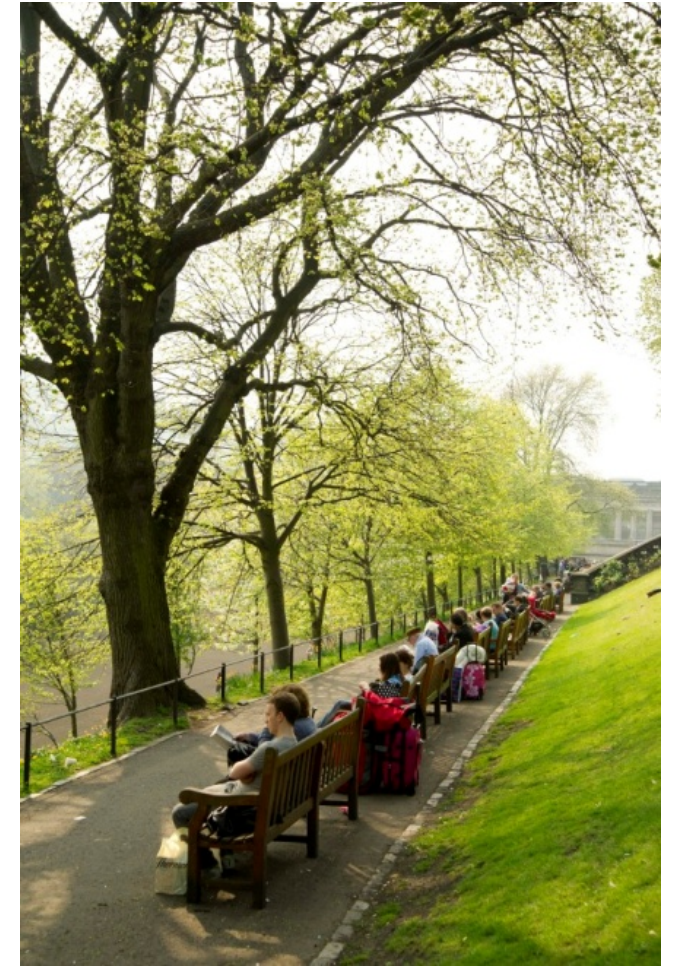
Glossary

Ecosystem services	Ecosystem services are the benefits provided by ecosystems that contribute to making human life both possible and worth living (UKNEA 2011).
Ecosystem services framework	A way of understanding how nature delivers benefits and services for human well-being (Waylen <i>et al.</i> 2014).
Ecosystems approach	A strategic and tactical framework for managing the environment in a holistic and integrated way, by taking ecosystem services into account in decision making (Fish 2011; Waylen <i>et al.</i> 2014).
Green infrastructure	Natural and semi-natural 'blue and green spaces' in and around urban areas that can be designed and managed to deliver a range of ecosystem services.
Service Providing Unit	The smallest distinct physical unit that generates a particular ecosystem service and is addressable by planning and management (Andersson <i>et al.</i> 2015a).
Urban areas	Areas where the built infrastructure covers a large proportion of the land surface or where people live at high densities (Pickett <i>et al.</i> 2001).

- To help direct our research, we want to find out what urban ecosystems are important to people that live/work in or visit Edinburgh.
- We've completed a literature review to compile information on ecosystem services in urban settings from the scientific literature – what are they & what issues should we consider?

Urban ecosystem services

The benefits provided by ‘blue and green spaces’ in and around towns and cities. These are critical for maintaining the health, security and well-being of the large proportion of the global population that live and work in urban areas.



Provisioning services

Service group	Goods & benefits	Ecosystem service classification	Greenspace type - example service providers
Plants	Food	Food supply	Crop fields, fruit trees, gardens; livestock & pasture; fishing site & fishing stock
	Fibre	Raw materials	Trees, plants
Water supply	Supply / Storage	Fresh water	Wetlands, waterways/lakes

Regulating services

Service group	Goods & benefits	Ecosystem service classification	Greenspace type - example service providers
Climate	Mitigation e.g. carbon	Carbon sequestration & storage / climate regulation	Plants, soil, bacteria
	Moderation e.g. shade	Urban temperature regulation / moderation of environmental extremes	Trees, shrubs, herbs, lawns, wetlands and water bodies
Hazard	Flood control	Water flow regulation and run-off mitigation	Trees, shrubs, permeable surfaces
	Soil protection	Erosion, maintenance of soil fertility	Trees, shrubs, vegetated surfaces
Noise	Reduction	Noise reduction	Trees, shrubs, vegetated surfaces
Purification	Water quality	Waste treatment	Wetlands, vegetated surfaces
	Air quality	Local climate / air quality regulation / air purification	Trees, shrubs, herbs, lawns, wetlands and water bodies.
Pests and disease	Predators / Competitors / non-natives	Biological (pest) control)	Control species & habitat

Cultural services

Service group	Goods & benefits	Ecosystem service classification	Greenspace type - example service providers
Health	Physical well-being	Mental & physical health	Parks, nature reserves, gardens, lakes and waterways, etc.
	Recreation, enjoyment & fun	Recreation and cognitive development	Parks, nature reserves, gardens, lakes and waterways, etc.
Nature / landscape connections	Nature connectedness, biodiversity	Habitat for species / biodiversity / animal sighting	Parks, nature reserves, gardens, lakes and waterways, trees, etc.
	Landscape improvements	Aesthetic appreciation/inspiration	Trees, parks, landscape vistas, flowering plants, birds, gardens, etc.
	Sense of place	Spiritual experience/sense of place	Parks, nature reserves, lakes and waterways, etc.
Economy	Contribution to local economy	Tourism	Nature reserves, open farms and gardens, visitor centres, green areas, etc.

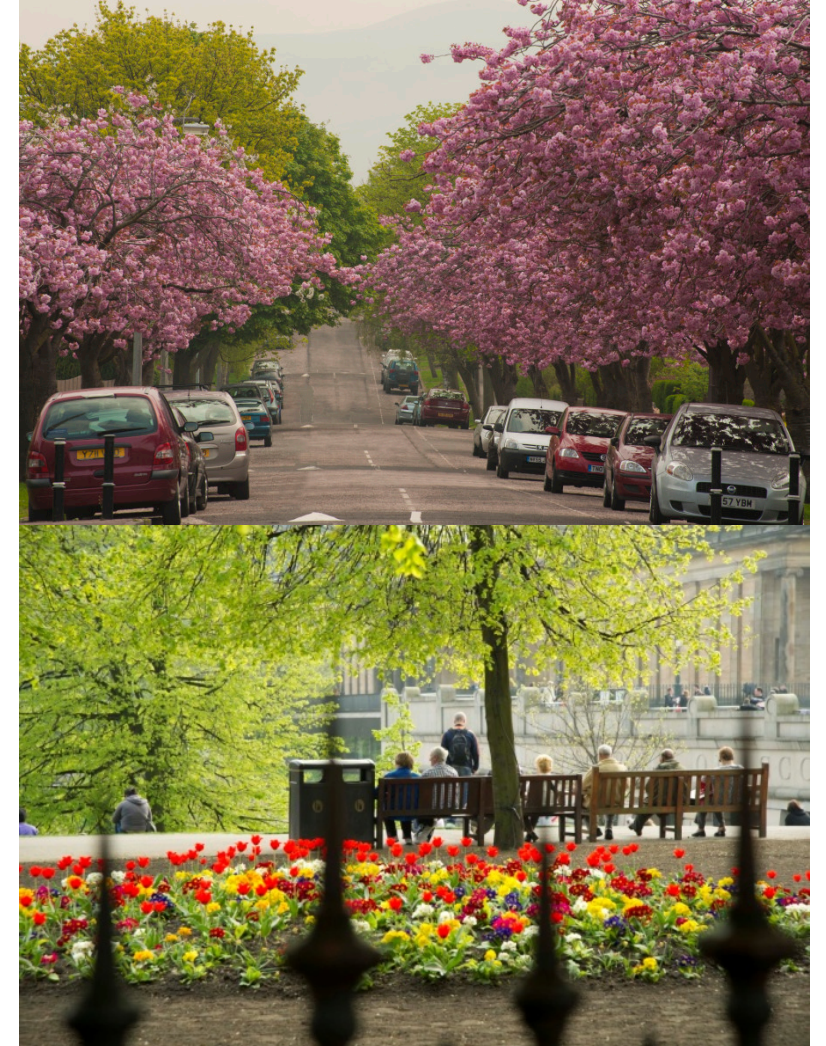
Supporting services

Service group	Goods & benefits	Ecosystem service classification	Greenspace type - example service providers
Biodiversity		Habitat for species / biodiversity / maintenance of genetic diversity	Parks, nature reserves, gardens, lakes and waterways, trees, etc.
Pollination		Pollination and seed dispersal	Pollinator & plant/crop

Group exercise & discussion

Which Ecosystem Services are important in Edinburgh to you?

- Which, if any, Ecosystem Services have been omitted?
- Which Ecosystem Services are provided well in Edinburgh and which aren't?
- Are different Ecosystem Services important at different spatial scales (e.g., neighbourhood, city or city region)?
- Do you think that your priorities for Ecosystem Services might change 20 years from now?



Thanks

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