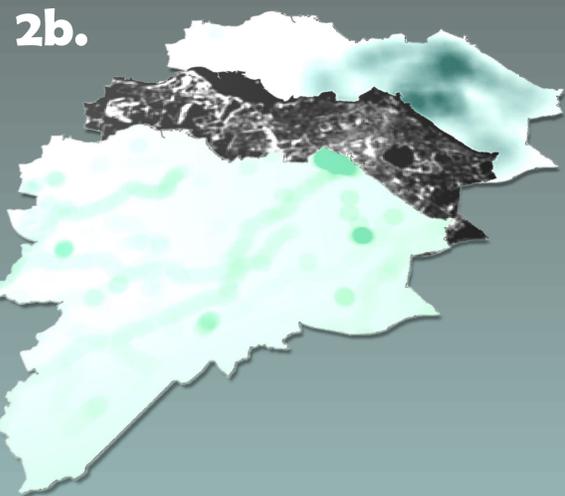
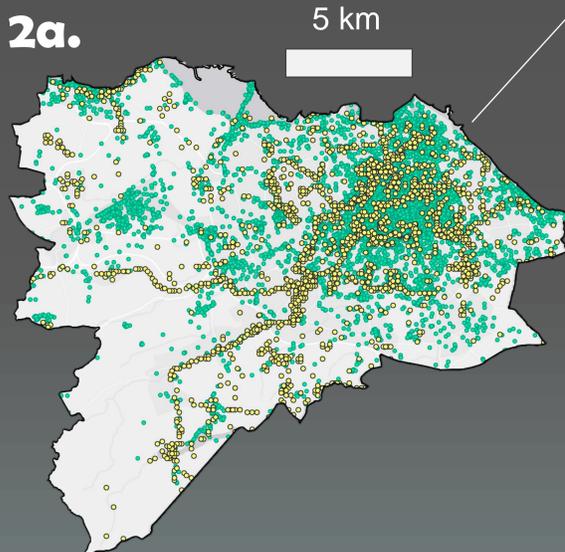
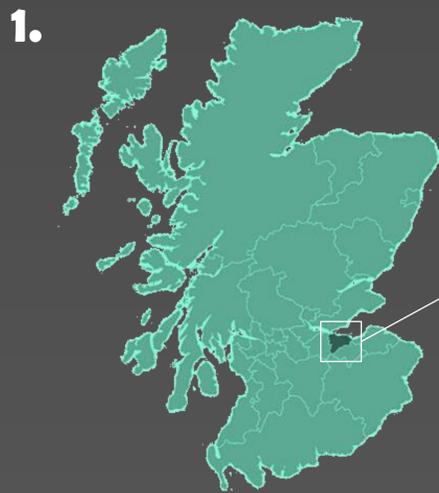


Mapping predicted supply, demand and use of urban cultural ecosystem services in support of green infrastructure planning

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THE PROBLEM Green infrastructure, such as trees, parks and waterways can help regulate urban hazards such as water surface run-off, improve the aesthetic and economic value of an area and provide opportunities to interact with nature. To ensure that they deliver these benefits in the places where they are most needed, local authorities, city planners and developers need an evidence base to target green infrastructure resources and effort.



THE SOLUTION SPADES™ (SPatial Decisions on Ecosystem Services). Here we focus on the SPADES™ cultural models.

1. STUDY AREA Edinburgh, Scotland.

2. INPUTS a) Locations where people have been:

- **Accessing nature** 3,551 selected wildlife records from Local Environmental Record Centre, TWIC.

- **Recreating** 99,268 Flickr photos.

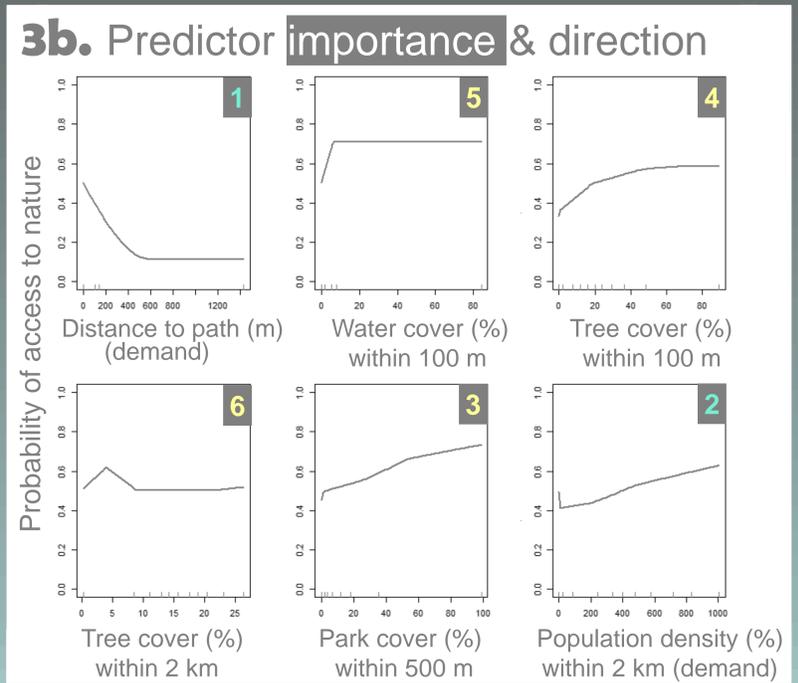
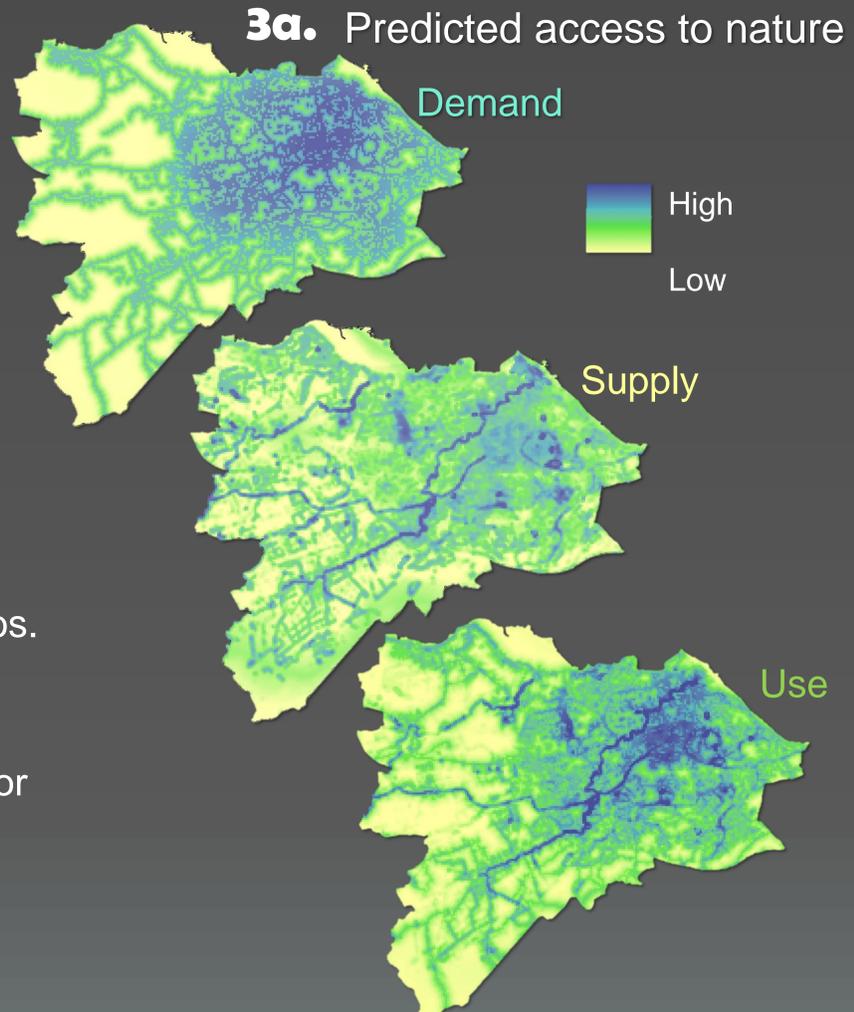
b) Predictors: detailed environmental and social data layers, partitioned into 'demand' or 'supply' categories.

MODEL MaxEnt, an approach traditionally applied to predicting species distributions.

3 OUTPUTS a) Maps of predicted service **supply**, **demand** and **use**, which highlight gaps and hotspots for targeting resources.

b) Information on the importance and direction of predictors at different scales (100 m – 2 km).

VALIDATION a) Overlay of GREEN SURGE public mapping survey (Map-Me.org) results. b) Predictions were projected to Brighton, England and tested with equivalent data. Models performed well (AUC: 0.67 – 0.89).



SUMMARY We provide a flexible framework for mapping cultural ecosystem services under existing conditions and alternative scenarios. By explicitly partitioning our predictors we were able to explore their relative weight in driving service 'use': is a site valuable because of its green infrastructure, or because it is in a busy, accessible area (or both)? We found levels of demand had the biggest impact, but features such as tree canopy cover were also important.