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University of Linköping, SWEDEN
University of Lund, SWEDEN
Museo Nacional de Ciencias Naturales,
SPAIN

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Further information: Regan Early
(regan.early@gmail.com)

EC21C – European Conservation for the 21st Century

European biodiversity is threatened by simultaneous and drastic alterations in climate and how we use our land. Animal and plant species, which are driven out of their historic ranges due to changing conditions, may survive if they can find suitable habitats elsewhere. But the European ecosystems we are accustomed to - the systems of species and environments that are characteristically "European" - will be pulled apart as individual species go their separate ways. Society relies on biodiversity for vital services such as crop pollination, carbon storage, and groundwater management. But biodiversity change often results in a loss of vital ecosystem services.

In order to protect biodiversity, and hence our own well-being, we must predict when and where the shifts in the distributions of animal and plant species will disrupt European ecosystems and use these predictions as a basis to evaluate methods for avoiding or mitigating this disruption. One such method currently adopted by European Commission is the concept of Green Infrastructure (GI), a strategically planned network of high quality green spaces and other environmental features such as hedgerows, fish passes or biodiversity-friendly fields.

The main objectives of EC21C are:

1) Study how individual plants and animals will move through typical European landscapes as climate changes.

2) Simulate changes in species distributions throughout Europe under predicted 21st century climate and land-use changes (almost all vertebrates, 20% of plant species, and a representative sample of insects in Europe).

3) Predict when and where European ecosystems and the services they provide might change drastically.

4) Evaluate the potential and limitations of GI for biodiversity conservation and adaptation to environmental change.

At the core of this project is the union of multiple scientific approaches. Models will be used to understand the types of climate and vegetation that each species requires, and then predict where this habitat will be found in the future. The project includes field work and ecological theory to study whether species can move to future habitats, what this means for ecosystem functions, and how GI might assist conservation. Stakeholders (policy makers, farmers, business owners) will be interviewed to quantify the willingness and ability (economic, cultural, political) to implement GI. Finally, project findings and their policy implications will be disseminated to EU policy-makers.