Future BirdScenarios – Integrating citizen science data from national monitoring schemes to model impacts of global change scenarios

Context

Bird communities play an important ecological role in northern ecosystems. The economic benefits of birds are linked to dispersal of seeds in native forests, control of insect pests in agricultural systems, and provision of important game species for harvest. However, potential conflict may arise due to crop damage or impacts on fish production. The goal of this project is to understand how environmental change will affect the future distributions of birds and their ecological benefits and conflicts with human society. It will integrate information on bird numbers and distributions in northern Europe that has been collected under different national survey programs, and with opportunistic records reported to citizen science programs. New statistical models will be used to combine bird records with geographic information for predicting future distributions of birds under different scenarios of environmental change.

Main objectives

The objectives of the Future Bird Scenarios project are to:

- Examine the role of climate, food, and habitat in determining distributions of the breeding and non-breeding birds in terrestrial, freshwater, and coastal marine environments;
- Determine the effects that long-term changes in climate, land use and other environmental factors would have on the future distributions of bird species;
- Forecast the potential effects that future changes in bird distributions would have upon networks of protected areas and the ecosystem services provided by bird populations.

Main activities

To assess the plausible future changes in bird distributions in Fennoscandia and their implications, activities will include:

- Analysis of the life-history traits that make bird species more likely to respond to future ecological change. For instance, are risks greater for migratory species, large-bodied birds, or species with habitat specialization?
- Identification of the key bottlenecks in the annual cycles of migratory birds. Are limiting factors acting in the breeding or nonbreeding range, and do different factors act at different stages of the annual cycle?
- Investigation of risk factors for birds that inhabit alpine habitats at high elevations. What are the relative effects of climate change, abandonment of traditional grazing practices, fall harvest, or changes in predator numbers?
- Determination of whether current networks of protected areas will be in the future. Will new protected areas need to be established if bird distributions are changing?
- Evaluation of potential impacts on ecosystem services. Will changing avian distributions reduce benefits from seed dispersal and pest management, or increase conflicts with crop damage and depredation?

The research team will engage stakeholders involved with management of natural resources. Stakeholders for the Future Bird Scenarios project include government agencies responsible for management of public lands in national forests, local communities involved in wetland restoration, and partners in the agricultural, forestry, and fisheries sectors. Project results will be disseminated at a national level through workshops, press releases, and open access project publications. At an international level, we will work with the European Bird Census Council and Wetlands International to develop new plans and recommendations for conservation of critical habitats for birds and other wildlife species.

Eurasian Dotterel (Charadrius morinellus) are a declining species of mountain bird in Fennoscandia.

Partners of the project:

Norwegian Institute for Nature Research, Trondheim, NORWAY

Lund University, SWEDEN

Swedish University of Agricultural Sciences (SLU), Uppsala, SWEDEN

University of Helsinki, FINLAND

University of Turku, FINLAND

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