Future BirdScenarios:
The impact of climate change on our bird conservation policies

31 May | Online webinar

PARTNER EVENT

Introduction

The Biodiversa+ funded Future BirdScenarios project has focused on integrating citizen science data from national monitoring schemes such as the International Waterbird Census (IWC) coordinated by Wetlands International, and the European Breeding Bird Atlas coordinated by the European Bird Census Council (EBCC) to model impacts of global change scenarios. The webinar will present the results of this project together with the projections produced under the Climate Resilient Flyway project funded by the German International Climate Initiative. The presentations will be followed-up by a discussion focusing on the implications of the observed and projected future changes in the bird conservation policy and site management in the European Union and its Member States, and how further research could inform the policy development.

Agenda (Central European Time)

14:00	**Implications of climate change for the EU bird conservation policies** LUISA SAMARELLI, Unit D.3 – Nature Conservation, DG Environment, European Commission
14:20	**Predicted changes in waterbird distribution and its impact for the flyway site network** SZABOLCS NAGY, Wetlands International Europe
14:40	**The European Breeding Bird Atlas confirms predicted changes in waterbird distribution** ALAAELDIN SOULTAN, Swedish University of Agricultural Sciences
15:00	**Climate-driven range shifts of waterbird abundances and its implications for the protected area target of the EU Biodiversity Strategy** DIEGO PAVÓN-JORDÁN, Norwegian Institute for Nature Research
15:20	**Managing protected areas to improve bird adaptation to climate change** ELIE GAGET, University of Turku
15:40	**Discussion: Implications for bird conservation in the EU** JON E. BROMMER, University of Turku
16:30	**Meeting ends**

Registration

To participate at the webinar, please register here:
https://us06web.zoom.us/webinar/register/WN_aI47ELi7QCSzBEOmkz90TQ

Abstracts

Nagy, S., Breiner, F. T., Anand, M., Butchart, S. H., Flörke, M., Fluet-Chouinard, E. Fluet-Chouinard, ... & Voltzit, O. (2021). Climate change exposure of waterbird species in the African-Eurasian flyways. *Bird Conservation International*.

Breiner, F. T., Anand, M., Butchart, S. H., Flörke, M., Fluet-Chouinard, E., Guisan, A., ... & Nagy, S. (2022). Setting priorities for climate change adaptation of Critical Sites in the Africa-Eurasian waterbird flyways. *Global Change Biology*.

The International Waterbird Census (IWC) is one of the largest and longest running citizen science monitoring scheme in Europe. The data generated by this scheme has been used in majority of the studies presented during this webinar. Species distribution models for the breeding, passage and wintering life cycle stages suggest that European waterbirds will experience substantial range shifts in all seasons by 2050, but Arctic breeding species are projected to suffer the most substantial range contraction in the breeding season. The suitability of Critical Sites (i.e. internationally important sites that support over 1% of a flyway population or important for globally threatened species) will change. Mediterranean wetlands are characterised by increasing specialisation, western European sites by high persistence and sites in the Baltic and northern Europe by increasing values.

Soultan, A., Pavón-Jordán, D., Bradter, U., Sandercock, B., Hochachka, W., Johnston, A., ... & Pärt, T. (2022). The future distribution of wetland birds breeding in Europe validated against observed changes in distribution. *Environmental Research Letters*.

Wetland bird species have been declining in population size worldwide as climate warming and land-use change affect their suitable habitats. We used species distribution models (SDMs) to predict changes in range dynamics for 64 non-passerine wetland birds breeding in Europe, including range size, position of centroid, and margins. We fitted the SDMs with data collected for the first European Breeding Bird Atlas and climate and land-use data to predict distributional changes over a century (the 1970s–2070s). The predicted annual changes were then compared to observed annual changes in range size and range centroid over a time period of 30 years using data from the second European Breeding Bird Atlas. Our models successfully predicted ca. 75% of the 64 bird species to contract their breeding range in the future, while the remaining species (mostly southerly breeding species) were predicted to expand their breeding ranges northward. The northern margins of southerly species and southern margins of northerly species, both, predicted to shift northward. Predicted changes in range size and shifts in range centroids were broadly positively associated with the observed changes, although some species deviated markedly from the predictions. The predicted average shift in core distributions was ca. 5 km yr−1 towards the north (5% northeast, 45% north, and 40% northwest), compared to a slower observed average shift of ca. 3.9 km yr−1. Predicted changes in range centroids were generally larger than observed changes, which suggests that bird distribution changes may lag behind environmental changes leading to 'climate debt'. We suggest that predictions of SDMs should be viewed as qualitative rather than quantitative outcomes, indicating that care should be taken concerning single species. Still, our results highlight the urgent need for management actions such as wetland creation and restoration to improve wetland birds' resilience to the expected environmental changes in the future.

Pavón-Jordán, D., Abdou, W., Azafzaf, H., Balaz, M., Bino, T., Borg, J.J., Bozic, L., … & Lehikoinen, A. (2020) Positive impacts of important bird and biodiversity areas on wintering waterbirds under changing temperatures throughout Europe and North Africa. *Biological Conservation.*

Pavón-Jordán, D., Clausen, P., Dagys, M., Devos, K., Encarnacao, V., Fox, A.D., Frost, T., … & Lehikoinen, A. (2019). Habitat- and species-mediated short- and long-term distributional changes in waterbird abundance linked to variation in European winter weather. *Diversity and Distributions*.

Migratory waterbirds require an effectively conserved cohesive network of wetland areas throughout their range and life-cycle. Under rapid climate change, protected area (PA) networks need to be able to accommodate climate-driven range shifts in wildlife if they are to continue to be effective in the future. Thus, we investigated geographical variation in the relationship between local temperature anomaly and the abundance of 61 waterbird species during the wintering season across Europe and North Africa during 1990–2015. We also compared the spatio-temporal effects on abundance of sites designated as PAs, Important Bird and Biodiversity Areas (IBAs), both, or neither

designation (Unlisted). Waterbird abundance was positively correlated with temperature anomaly, with this pattern being strongest towards north and east Europe. Waterbird abundance was higher inside IBAs, whether they were legally protected or not. Trends in waterbird abundance were also consistently more positive inside both protected and unprotected IBAs across the whole study region, and were positive in Unlisted wetlands in southwestern Europe and North Africa. These results suggest that IBAs are important sites for wintering waterbirds, but also that populations are shifting to unprotected wetlands (some of which are IBAs). Such IBAs may therefore represent robust candidate sites to expand the network of legally protected wetlands under climate change in north-eastern Europe. These results underscore the need for monitoring to understand how the effectiveness of site networks is changing under climate change.

Gaget, E., Johnston, A., Pavón-Jordán, D., Lehikoinen, A. S., Sandercock, B. K., Soultan, A., ... & Brommer, J. E. (2021). Protected area characteristics that help waterbirds respond to climate warming. *Conservation Biology*.

Protected area networks help species respond to climate warming but so far, we are ignorant of what actually are the conservation actions that causes protected areas to help species respond to climate change. We contrasted waterbird community adaptation to climate warming in the Natura 2000 network (3018 sites) over 25 years in 26 EU Member States, between sites' conservation targets, LIFE funded projects, designation period, and management plan status. Waterbird community composition in sites designated under the Birds Directive and with management plans adapted more quickly to climate warming than in other Natura 2000 sites. Community adaptation in sites funded under the LIFE program was very low, suggesting either worrying conservation issues or effective climate resilience mechanisms. Our findings imply that the Birds Directive is an efficient conservation policy that helps waterbird communities respond to climate warming.