Contrasting trends in the bird populations of North European peatlands

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Climate change is posing a threat to biodiversity, forcing it to adapt through shifts in species' distributions and thus altering their abundances. Given the prediction of greater temperature increases at high compared to low latitudes, species with restricted range, habitat or climatic niche may face problems. As a further complication, degradation, destruction and fragmentation of natural habitats are clearly increasing the vulnerability of species worldwide. In this context, the relevance of North European (hereinafter 'ne') peatlands lies not only in the role they play in the carbon cycle, but also because they act as biodiversity reservoirs. In this work we investigate the status of ne peatland birds based on data collected in breeding bird monitoring schemes. Using geometric means of common species' population indices, we analyse the state of ne peatland bird populations at both general and regional scales. The general trend of the decline in ne peatland bird populations is mainly driven by Finland, where populations have declined for more than 50 % over three decades. Conversely, the Scandinavian populations (Sweden and Norway) remained stable during the last 20 years, whereas the Baltic ones (Estonia and Latvia) show considerable increases, providing a contrast with the Finnish populations. We relate these results with the region-specific historical management of these particular ecosystems. In addition, we further explore which habitat-related variables affect the abundance of peatland species, therefore gaining insight into the target habitats that are more conducive to biodiversity. Our findings call for more effective conservation actions in ne peatland habitats and a deep reconsideration of the current management schemes, particularly in Finland, where the studied populations show the poorest conservation status.

Wintering in a global warming context: The response of waterbird communities of the Mediterranean flyway

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Mediterranean wetlands are the major wintering areas for a large number of waterbirds of the Western Palaearctic. Birds find there optimal environmental conditions to replenish their body reserves essential for high fitness. However, climate warming affects the ecosystem functioning of Mediterranean wetlands by a change in edaphic conditions. The aim of this study was to investigate the climate change effect on wintering waterbird communities. We used the temporal trend in Community Temperature Index (CTI) to explain the shift in community structure of 103 species for a 21-year period (1991-2012) based on data from winter waterbird censuses (>8000 counting sites, ca. 250 million of individuals counted). For each species, we also calculate a contribution to the change in CTI. We measured the northward shift at the Mediterranean flyway scale and a response to the winter temperature anomalies. Our results highlight the strong response of waterbird communities to climate change with a northward shift of around 300 km in two decades. The results represent major knowledge improvements relevant for the conservation of Mediterranean wintering waterbirds, and notably species currently wintering in sub-Saharan Africa for which the Mediterranean Basin might represent an important wintering area in the future.