
Climate change and mediterranean wetlands: which constraints for wintering waterbirds?

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Abstract

Mediterranean wetlands are a major wintering area for a large number of waterbird species breeding all over the Western Palaearctic. These birds spend winter here to find optimal environmental conditions and replenish their body reserves essential for a high fitness. Present at different levels of the food chain, waterbirds can be a reflection of ecological process, in particular when environmental changes are occurring. Temperatures and precipitations fluctuated in the Mediterranean basin during the last decades. The aim of this study, in the framework of the Mediterranean Wetland Observatory, was to investigate the effect of these meteorological variations on the wintering range of waterbirds. We used the centroid and the standard deviations of the population distributions of 121 waterbird species, to measure range shifts and range contractions, based on a 24-year period (1990-2013) from the mid-winter waterbird census scheme (> 1500 counting sites, ca. 150 million of individuals counted). Our results highlight the strong response of waterbird communities to climate variations. Waterbirds can adapt their wintering distribution to the temperatures of their whole wintering range. The intensity of the response varies among functional groups, as for habitats used, where birds associated with inland wetlands respond more to climate variations than coastal waterbirds. We show that waterbirds can be good indicators to monitor and predict the impact of climate change on Mediterranean wetlands.

Keywords: climate change, waterbird, range shift, wintering, functional diversity

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