

Abstract

Climate changes associated with increasing global temperature affect bird species. As a result, breeding ranges of European bird species will probably shift in future. Although it is unclear whether these shifts will come true, we can already see patterns recent bird population trends consistent with the impact of the changing climate. The results of our first analysis based on large-scale monitoring data showed that species with more northern latitudinal distributions had more negative population trends in the Czech Republic. Climatically induced shifts of species' geographic ranges can also provide important information about the potential future assembly of ecological communities. For this purpose we calculated the potential shifts of breeding ranges of European birds and explored their relationships with ecological variables to detect which ecological groups of birds will be most likely forced to move their ranges. Breeding habitat type showed the strongest relationship with the potential range shifts. The magnitude of the shifts can be considered as a measure of the climate change pressure on species. From this perspective, it is interesting to ask how these shifts relate to current species' population trends. Therefore we related the potential shifts to the long-term population trends of birds breeding in the Czech Republic. The relationship between the magnitude of the range shift and the population trend was significant and varied according to the geographic position of species' distribution in relation to the position of the Czech Republic. The climate change is among the main drivers of recent changes in bird populations; however the habitat is also one of the most important factors. To investigate their effects at the continental level we related population trends of 268 European breeding birds to their traits reflecting the climate and habitat changes. Our results showed that the habitat related variables were more important than the variables that mirror climate change effects. Our results could be thus used for targeting conservation policy.