Population declines of Africa-Eurasian migratory birds: investigating the role of habitat loss and climate change in the non-breeding grounds.

Etienne Henry*[1], Inês Catry[2], and Ana Rodrigues[3]

[1]Centre d'Ecologie Fonctionnelle et Evolutive – Université de Montpellier – France
[2]Centro de Investigação em Biodiversidade e Recursos Genéticos [Vairao] – Portugal
[3]Centre d'Ecologie Fonctionnelle et Evolutive – Centre National de la Recherche Scientifique – France

Abstract

Many populations of African-Eurasian long-distance migratory birds (species that travel from sub-Saharan Africa to breed in Europe) exhibit alarming declines. Conserving these migratory populations is especially challenging because they are exposed to a diversity of threats that operate in different periods and locations throughout their life cycles. Previous studies suggest that habitat loss and climate change experienced during the non-breeding period are contributing to some of the negative population trends, but it is not clear the extent to which these patterns can be generalised.
Here, we test the hypotheses that the population trends of African-Eurasian migratory birds can be explained by either habitat degradation or by climate change in the sub-Saharan non-breeding grounds. For this purpose, we rely on an unequalled dataset comprising tracking records for 1,845 trans-Saharan migratory birds, across 44 species, belonging to 158 distinct populations (a population corresponds to a given species breeding in a specific European country). First, we use the tracking records to map the sub-Saharan non-breeding grounds of each specific population. We then test whether the corresponding demographic trend in Europe (increasing, decreasing, stable, unknown) can be explained by facets of habitat degradation (change in land cover suitability, forest degradation, increase in human footprint) or by measures of climate change (changes in annual rainfall, drought severity, vegetation greenness) in the non-breeding grounds.
Contrary to expectations, we found no strong evidence that either habitat degradation or climate change can explain trends in migratory bird populations. Only for drought severity we found a slight but significant effect on population declines.
Our results suggest that either other threats (e.g., overexploitation) and/or habitat loss and climate change occurring in other seasons (during migration or breeding season) may have more prominent roles in explaining population declines than those occurring in the non-breeding season. In conclusion, our study highlights the necessity of considering the entire life cycle of migratory birds in conjunction with the full spectrum of climatic, anthropogenic, and ecological factors to understand and address their decline.

Keywords: Bird migration, population declines, migratory bird conservation, African, Eurasian flyway

*Speaker