Possible effect of climate change on demography of a long distance migratory species

Juan Manuel Grande

Estación Biológica de Doñana,CSIC, Avda. Maria Luísa s/n, 41013 Seville, Spain. jmgrande@ebd.csic.es

Climate change is thought to be one of the main threats to biodiversity. It has been shown to affect species distribution and abundance, phenology, and some demographic traits such as breeding success. In this study we have analysed the relative importance of ecological constrains in both the breeding and the wintering grounds over survival prospects in a long-distance migrant, the Egyptian vulture. In addition, we have modelled the effect of climate change in the wintering grounds over the population trend of the species. The Egyptian vulture breeds in the Iberian Peninsula and winters at the south of the Sahara desert in the Sahel. The species has suffered a steep decline mainly due to illegal poison use in predator control and habitat alterations in its breeding grounds. However, until recently no attention has been paid to the possible limitations that the species may face in its wintering grounds. Our results suggest that survival in this species is strongly affected by weather conditions in the wintering grounds so that Egyptian vultures survive better in years with higher precipitation in the Sahel and do worse in dry years. According to a population viability analysis, the reductions in rainfall in the Shelian area proposed by some models of climate change would double the extinction probability of a Spanish Egyptian vulture population. Our results highlight the possible effects of climate change on several trans-Saharan migrant species demography and the need of more information on wintering ecology of trans Saharan migratory species in order to detect the factors that may be limiting their populations in wintering grounds. If we fail to do so, it is possible that conservation measures applied in the breeding grounds will not be enough to secure the persistence in time of these species.