

Identifying and protecting avian migration corridors – spatial modelling using radar data

Mark Desholm

Dept. of Wildlife Ecology and Biodiversity, National Environmental Research Institute, University of Aarhus, Grenåvej 14, DK-8410 Rønne, Denmark. mde@dmu.dk

Each spring and autumn millions of birds migrate through Europe between their breeding and winter quarters and they rest and refuel at suitable staging areas. During active migration birds are known to collide with tall man-made structures like light houses, towers, buildings, bridges and wind turbines. The European legislative framework for the protection of migrating birds has so far been focusing on the conservation of important staging areas only. However, the technology exists to identify and protect, on a three dimensional basis, those volumes of air housing the highest concentrations of migrants en route – the areas also known as the avian migration corridors. The National Environmental Research Institute initiated a three year radar study in 2006 to identify the most important migration hot spots over the Danish waters. The overall aim was to inform the national planning process of a strategic site selection of areas for future offshore wind farms. Generic data on the behaviour of migrating birds are collected using short range marine surveillance radar but also more powerful long-range radars (e.g. weather radars). The following questions are addressed: 1) how does weather and geography influence the spatial and temporal migration pattern, 2) how wide a water body is needed before the different groups of birds perceive it as a barrier, 3) how does the density of migrants decrease with distance from land, and 4) how does migrants distribute them selves vertically in relation to distance from land and wind? These generic data will feed into a grid-based spatial model designed to identify the most important migration hot-spots on a national or regional scale. In conclusion, this study framework could be a powerful tool for future Strategic Environmental Assessments (SEAs) aiming at tackling the protection of migrating birds en route on a broader scale.