

Fielding, A.H., D.P. Whitfield, and D.R.A. McLeod. 2006. Spatial association as an indicator of the potential for future interactions between wind energy developments and golden eagles *Aquila chrysaetos* in Scotland. *Biological Conservation* 13:359-369

Abstract: Despite their environmental benefits in generating electricity without emission of 'greenhouse' gases, wind farms have attracted controversy with regard to their impacts on birds, especially golden eagles *Aquila chrysaetos*. Evidence from USA studies suggest eagle fatalities through collision with turbines may be the main potential impact whereas for breeding eagles in Scotland, displacement from wind farm areas (indirect habitat loss) may be the primary impact. In this study, we examined the co-occurrence potential for golden eagles and wind farms in Scotland by documenting the spatial association between wind farm proposals and breeding eagle territories and areas potentially suitable for non-breeding eagles. Although there were records for over 500 wind farm proposals at various stages of development, relatively few coincided with eagle territories (ca. 4% of territories had a proposal within 3 km of territory centre). Similarly, only 2% of habitat predicted to be suitable for non-breeding eagles overlapped with proposed or installed wind farm areas. Moreover, estimates of the potential for electricity generation from all wind farm proposals, with respect to government targets for renewable energy supplies, suggested most proposals were unlikely to be constructed. We conclude that in comparison with other constraints on Scotland's golden eagles, notably persecution, wind farms should not represent a serious concern if best practice in planning their location and minimising their impact are maintained. Potential future regional pressures on breeding eagles from wind farms are highlighted, however, and uncertainty of impact with respect to displacement or collision fatalities requires continued scrutiny.