GPS-tagged birds help predict collision risk accurately

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Who we are

• Europe’s largest specialist aquatic science consultancy

• Currently 150 staff in 9 sites across UK

• Offices in Germany and USA

• Extensive renewables experience from survey to hearings

• 27 years old
Aerial digital surveys over 24 months of three wind farm areas

Data from surveys underpinned Environmental Statement

Estimated collisions with operational turbines
Special Protection Area seabird colony

The outward migrations of five Lesser Black-backed Gulls in 2010 (individuals in different colours)

Outward (red) and return (yellow) migration routes were sometimes very different

Source: http://www.bto.org/science/migration/tracking-studies
Analysis of collisions on an adjacent Special Protection Area (SPA) seabird population

First we used percentage of regional population that is made up of the SPA population to estimate how many SPA birds were likely to be in proposed wind farm footprint

Collisions estimated to be 31.5% or 14 adult seabirds attributable to SPA

Estimate refined using two years of GPS-tagging data from an SPA colony of seabirds
Novel approach: minutes in wind farm

• Out of 24 tagged seabirds, 4 visited the proposed wind farm during breeding season

• The 4 seabirds averaged less than 2 minutes / week in the area

• Multiplying up this average time spent in area by colony size gave an estimate of the number of colony bird days spent in area

• Overall percentage attributable to the SPA colony was 1.5 % or 0.7 adult collisions

• Daylight hours during breeding season taken into account

• Extended breeding season gave 1.3 % or 0.8 adult collisions
Decline in seabird presence with SPA colony distance

Average time spent per day by seabirds (mins / day)

Distance of centre of wind farm footprint from SPA colony (km)

- Wind farm 1
- Wind farm 2
- Wind farm 3
Precautionary assessment

• Behaviour (sitting or flying) was not taken into account

• Estimate based on 50% nocturnal activity

• Less than 1% of total time gulls spent flying offshore in the wind farm area was at night

• Had behaviour and nocturnal activity been taken into account collision risk would have been further reduced
Summary

- Reduced predicted impact of proposed development to SPA bird population
- Better understanding of seabird behaviour
- Clear benefits for offshore wind farm developers
- Tagging data are increasingly available for many species of seabird
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