

Spotlight on the human pressures and impacts on the marine environment theme

Avoiding bird collisions with offshore wind farms ([ME5206](#))

Offshore wind farms can affect bird populations by displacing and disturbing birds during construction; creating barriers to migration and commuting between breeding and feeding areas; loss or change of habitat; and death through collisions. The main option for mitigating these effects is by reducing the risk of collisions.

This project aimed to assess measures for mitigating against bird collisions with offshore wind farms; identify species most at risk of collisions with wind farms in UK waters; and using a case study of the Greater Wash, to model different options to protect birds from collisions.

Scientists from the British Trust for Ornithology; the AEA Group; the Centre for Ornithology, University of Birmingham; and the Met Office assessed ten measures to avoid collisions. See Figure 1.

The risk to species of colliding with offshore wind turbines reflects the combination of both species' sensitivities and exposure to wind farms. For 17 seabird species, the scientists produced maps showing the species' foraging ranges from UK Special Protection Areas (SPAs) and their distributions at sea to show their exposure to offshore wind farms in UK waters. See Figure 2.

The project found that:

- Changes to lighting would be among the most effective mitigation options, though legislation limits what might be achievable.
- The use of lasers is most likely to be effective at night, while daytime use of ultra-violet paint or anti-motion-smear patterns merits further investigation.
- The use of decoy towers has shown potential, but would only be effective for species, such as seaduck, divers and auks which are themselves less prone to collisions.
- A temporary shut-down of turbines is likely to be highly effective, but financial constraints are likely to highly restrict the length of shut-down periods. Targeted shut-downs for restricted key periods would be a possible option, worth exploring on a site by species basis.

No single measure is likely to be effective at reducing collisions for all species at all times, so combinations specifically targeted to the species within each wind farm are likely to prove the most effective strategy.

Mitigation option	Feasibility	Cost	Effectiveness
Temporary shut-down	Medium	High	High
Reducing motion smear – anti-motion-smear patterns	High	Low	Medium
Reducing motion smear – rotor speed / turbine size	Medium	Medium	Medium
Increasing visibility - use of ultraviolet paint / material	High	Low	Low
Minimal use of lighting	Low	Low	Medium
Laser deterrents	Medium	Medium	Medium
Structural modifications – decoy towers	Medium	Medium	Low
Remote sensing and monitoring	Medium	Medium	High
Auditory deterrents	Medium	Low	Low

Figure 1: Assessment of mitigation measures to avoid bird collisions with wind farms

Lesser Black-backed Gull (*Larus fuscus*)

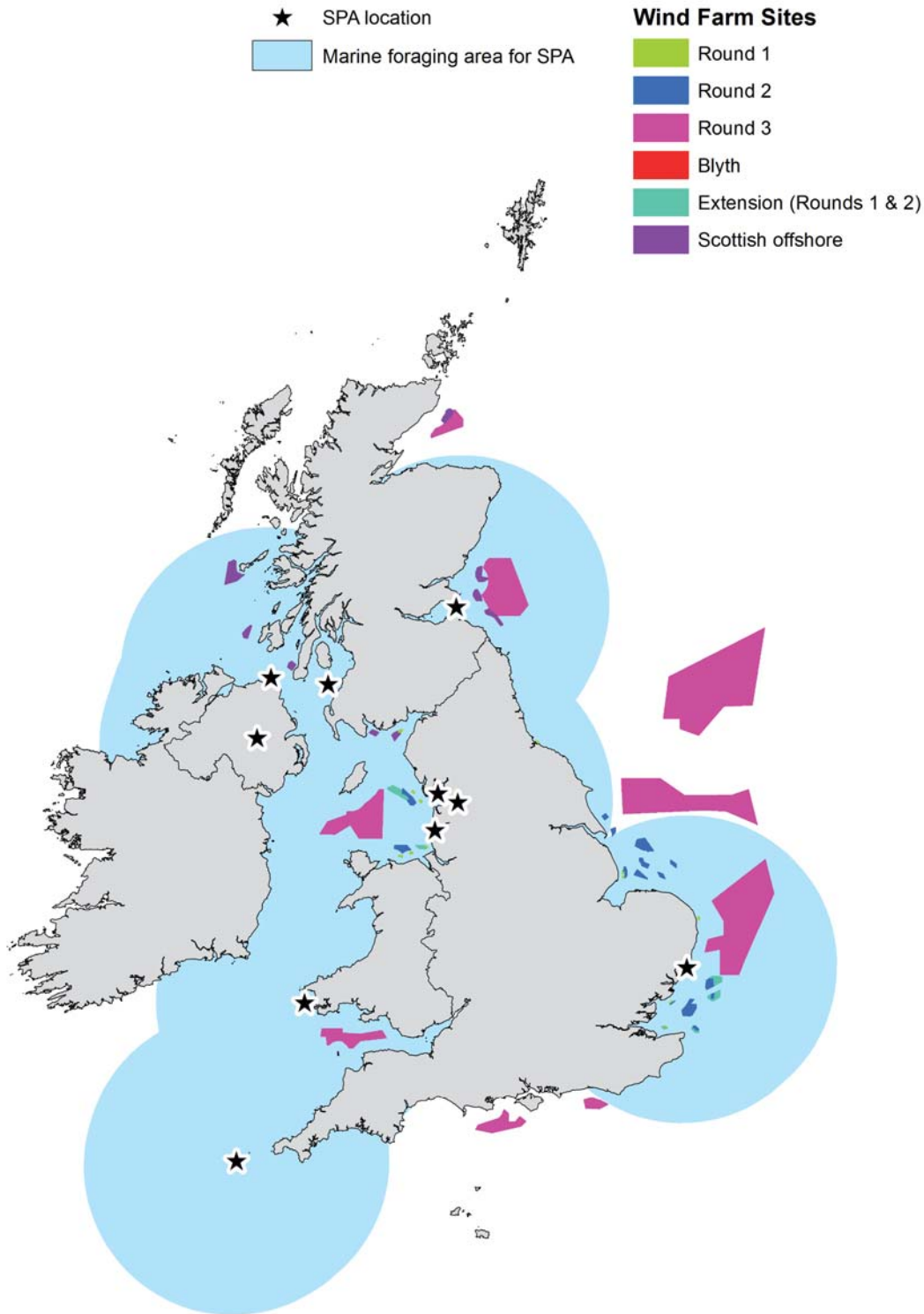


Figure 2: Average maximum foraging range of Lesser Black-backed Gull from breeding colony Special Protection Areas in relation to (constructed, consented and proposed) offshore wind farms