Scottish Natural Heritage

Avoidance Rates for the onshore SNH Wind Farm Collision Risk Model

September 2018 v2

1. Purpose

The potential for birds to collide with turbines is one of the main impacts to consider in the development of a wind farm. The SNH Collision Risk Model (CRM) (also known as the Band model (Band *et al.,* 2007; SNH, 2000)) provides a method based on vantage point data to estimate the number of birds likely to collide with turbines at a proposed wind farm. This allows pre-construction assessment of collision impacts on local and national populations. As birds may avoid a wind farm (for example some may be displaced from the area, while others may avoid turbines or take other evasive action to prevent a collision), the CRM accounts for this by applying an **avoidance rate**. This guidance provides recommended avoidance rates for a number of key species for use in the SNH Collision Risk Model.

This document is intended for anyone involved with collision risk modelling for birds at onshore wind farms (e.g. developers and their ecological consultants, SNH staff and those within consenting authorities). It is updated when robust new information becomes available. This document replaces previous versions (SNH, 2010, 2016) and includes an update for red kite.

2. Recommended avoidance rates

Table 1 presents the current recommended avoidance rates for key species, with links to supporting evidence for these. For species not listed in Table 1, we recommend a default value of 98%.

Table 1: Recommended avoidance rates for use with the onshore SNH Collision Risk Model for key bird species commonly identified in wind farm environmental statements for which supporting evidence is available. The recommended default avoidance rate for species not listed is 98%.

Species	Recommended avoidance rate	Rationale/supporting evidence
Red-throated diver	99.5%	Furness (2015)
Black-throated diver	99.5%	Breeding birds show similar behaviour to red-throated diver; Furness (2015)
Swans (all species)	99.5%	Increased from previous rate of 98% based on evidence presented in Whitfield & Urquhart (2015), but slightly more precautionary than report recommendation given this was based on a short run of data from one study
Geese (all species)	99.8%	SNH (2013)
Red kite	99%	Urquhart & Whitfield (2016)
Hen harrier	99%	Whitfield & Madders (2006a)
Golden eagle	99%	Whitfield (2009)
White-tailed eagle	95%	Sufficient evidence from flight behaviour and collision monitoring studies in Norway for vulnerability to collisions; see May *et al.* (2011)
Kestrel	95%	Sufficient evidence from flight behaviour (including hovering) and collision monitoring studies for vulnerability to collisions; see Whitfield & Madders (2006b)
Great skua	99.5%	Furness (2015)
Arctic skua	99.5%	Similar behaviour of breeding birds to great skua; Furness (2015)

3. Contact:

If you have any comments or queries about this guidance, please contact Dr Jessica Shaw at the SNH office at Stilligarry, South Uist, HS8 5RS, or email: jessica.shaw@nature.scot

4. References

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