Assessment of Anthropogenic Disturbances Due to Ecotourism on a Grey Seal (*Halichoerus grypus*) Colony in the Blasket Islands SAC, Southwest Ireland and Recommendations on Best Practices

Supplementary Appendices I & II

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Appendix I

Vigilance behaviour (proportion of seals) ~ Binomial (n_i, π_i)

$$Logit(\pi_{ij}) = Disturbance\ level_{ij} + Tidal\ state_{ij} + Wind\ speed_{ij} + Group\ size_{ij} + Scan\ sampling_i + Sampling\ day_k$$

$$Scan\ sampling_i \sim N(0, \eth_{Scan\ sampling})$$

$$Sampling\ day_k \sim N(0, \eth_{Sampling\ day}) \quad \text{(Equation 1)}$$

Flushing behaviour (proportion of seals) ~ Binomial (n_i, π_i)

$$Logit(\pi_{ij}) = Disturbance\ level_{ij} + Tidal\ state_{ij} + Wind\ speed_{ij} + Scan\ sampling_i + Sampling\ day_k$$

$$Scan\ sampling_i \sim N(0, \eth_{Scan\ sampling})$$

$$Sampling\ day_k \sim N(0, \eth_{Sampling\ day}). \quad \text{(Equation 2)}$$

Resting behaviour (proportion of seals) ~ Binomial (n_i, π_i)

$$Logit(\pi_{ij}) = Disturbance\ level_{ij} + Tidal\ state_{ij} + Group\ size_{ij} + Cloud\ cover_{ij} + Scan\ sampling_i + Sampling\ day_k$$

$$Scan\ sampling_i \sim N(0, \eth_{Scan\ sampling})$$

$$Sampling\ day_k \sim N(0, \eth_{Sampling\ day}). \quad \text{(Equation 3)}$$

Number of seals ~ Poisson (μ_{ij})

$$log(\mu_{ij}) = Disturbance\ level_{ij} + Season_{ij} + Tidal\ state_{ij} + Cloud\ cover_{ij} + Time + Wind\ speed + Wind\ direction + Scan\ sampling_i + Sampling\ day_k$$

$$Scan\ sampling_i \sim N(0, \eth^2_{Scan\ sampling})$$

$$Sampling\ day_k \sim N(0, \eth^2_{Sampling\ day}). \quad \text{(Equation 4)}$$

Appendix II

Table A. Significant results for the selected GLMM assessing the number of grey seals (*Halichoerus grypus*) hauled-out in response to time after disturbance, tidal state, cloud cover, and wind speed

Predictor variables	Est	SE	*t*	*p*
Intercept	6.91	0.82	8.45	< 0.001
Time after disturbance*				
1 hour	-1.42	0.35	-4.02	< 0.001
2 hours	-1.79	0.50	-3.60	< 0.001
3 hours	-1.43	0.45	-3.16	< 0.01
Tidal state*				
Flood	-1.26	0.33	-3.83	< 0.001
Slack high	-0.74	0.29	-2.54	< 0.05
Slack low	0.74	0.38	1.98	< 0.05
Cloud cover	-0.02	6.39e-03	-4.53	< 0.001
Wind speed	0.36	0.09	3.74	< 0.001

*Disturbance level 0 was the reference category for time after disturbance and ebb for tidal state.