



**RWE Renewables UK Dogger Bank
South (West) Limited**

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South (East) Limited**

Dogger Bank South Offshore Wind Farms

Preliminary Environmental Information Report

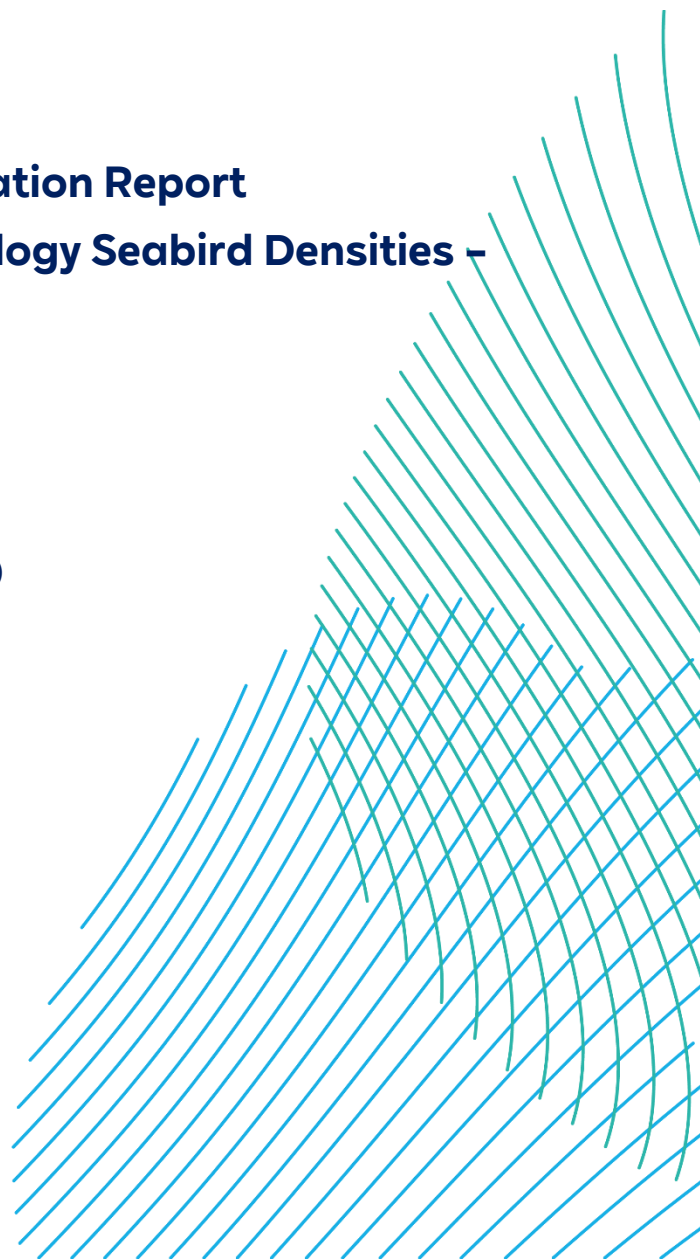
**Appendix 12-5 – Offshore Ornithology Seabird Densities –
Seasonal**

26/04/2023

Document Reference: 004300120

Revision: 04

Unrestricted





MacArthur
Green

Dogger Bank South Offshore Windfarm

Ornithology Technical Appendix 12.5 Seabird peak seasonal densities

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Document Quality Record

Version	Status	Person Responsible	Date
0.1	Draft	Dr Mark Trinder	06/01/2023
0.2	Reviewed	Dr Shirley Raveh	10/01/2023
0.3	Updated		
1	Internal Approval		

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1 INTRODUCTION

This appendix provides tables of seabird peak densities in each species-specific season, as defined in Furness (2015)¹ for each species recorded during baseline surveys for the Dogger Bank South Offshore Windfarm project (March 2021 – February 2022).

Densities were estimated using design-based methods and are summarised as central estimate (i.e. extrapolated from the number seen in the surveyed area to the whole area) and 95% confidence range, derived from 1,000 nonparametric bootstrap samples.

¹ Furness, R.W. 2015. Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (BDMPS). Natural England Commissioned Report Number 164. 389 pp.

Table 1. Dogger Bank South - East. Seasonal peak density (birds per square km) of Arctic skua recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Autumn migration	0.02 (0.02)	0-0.05	0.01 (0.01)	0-0.04	0.01 (0.01)	0-0.04
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0.02 (0.02)	0-0.05	0.01 (0.01)	0-0.04	0.01 (0.01)	0-0.04

Table 2. Dogger Bank South - East. Seasonal peak density (birds per square km) of Arctic tern recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0.04 (0.04)	0-0.11	0.03 (0.03)	0-0.08	0.02 (0.02)	0-0.06
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0

Table 3. Dogger Bank South - East. Seasonal peak density (birds per square km) of Common gull recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0.03 (0.03)	0-0.1	0.04 (0.03)	0-0.1	0.03 (0.02)	0-0.08

Table 4. Dogger Bank South - East. Seasonal peak density (birds per square km) of Fulmar recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0.02 (0.01)	0-0.06	0.01 (0.01)	0-0.04	0.03 (0.02)	0-0.07
Breeding (full)	0.12 (0.05)	0.03-0.21	0.15 (0.05)	0.06-0.24	0.13 (0.04)	0.06-0.2
Autumn migration	0.34 (0.08)	0.19-0.49	0.35 (0.08)	0.21-0.51	0.36 (0.07)	0.22-0.49
Winter	0.31 (0.07)	0.19-0.45	0.31 (0.05)	0.22-0.4	0.31 (0.05)	0.22-0.39
Non-breeding	0.34 (0.08)	0.19-0.49	0.35 (0.08)	0.21-0.51	0.36 (0.07)	0.22-0.49

Table 5. Dogger Bank South - East. Seasonal peak density (birds per square km) of Gannet recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0.02 (0.02)	0-0.06	0.02 (0.02)	0-0.07	0.03 (0.02)	0-0.06
Breeding (full)	1.44 (0.31)	0.88-2.07	1.23 (0.19)	0.88-1.64	1.08 (0.16)	0.77-1.4
Autumn migration	0.92 (0.14)	0.66-1.21	1.08 (0.13)	0.84-1.33	1.2 (0.12)	0.98-1.42
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0

Table 6. Dogger Bank South - East. Seasonal peak density (birds per square km) of Great black-backed gull recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0.19 (0.07)	0.07-0.33	0.19 (0.06)	0.08-0.31	0.24 (0.07)	0.12-0.37
Breeding (full)	0.11 (0.1)	0-0.32	0.07 (0.07)	0-0.22	0.07 (0.06)	0-0.22
Autumn migration	0.03 (0.02)	0-0.09	0.02 (0.02)	0-0.06	0.04 (0.02)	0.01-0.08
Winter	0.02 (0.02)	0-0.06	0.01 (0.01)	0-0.04	0.03 (0.02)	0-0.07
Non-breeding	0.19 (0.07)	0.07-0.33	0.19 (0.06)	0.08-0.31	0.24 (0.07)	0.12-0.37

Table 7. Dogger Bank South - East. Seasonal peak density (birds per square km) of Great skua recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0.02 (0.02)	0-0.05	0.01 (0.01)	0-0.04	0.01 (0.01)	0-0.03
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0

Table 8. Dogger Bank South - East. Seasonal peak density (birds per square km) of Guillemot recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	4.03 (0.63)	2.96-5.34	3.78 (0.38)	3.07-4.56	4.18 (0.32)	3.6-4.84
Breeding (full)	11.05 (1.39)	8.26-13.84	10.27 (0.95)	8.3-12.1	14.15 (1.75)	10.65-17.73
Autumn migration	3.43 (0.55)	2.35-4.49	5.17 (0.53)	4.24-6.18	5.79 (0.76)	4.38-7.27
Winter	14.2 (1.33)	11.57-16.76	13.47 (0.79)	11.9-15.01	13.87 (0.71)	12.47-15.31
Non-breeding	14.2 (1.33)	11.57-16.76	13.47 (0.79)	11.9-15.01	13.87 (0.71)	12.47-15.31

Table 9. Dogger Bank South - East. Seasonal peak density (birds per square km) of Guillemot (including unidentified auks apportioned using identified auk ratios) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	8.93 (1.39)	6.56-11.85	8.38 (0.84)	6.82-10.11	8.9 (0.68)	7.66-10.3
Breeding (full)	18.2 (2.3)	13.6-22.8	17.24 (1.59)	13.93-20.3	22.4 (2.76)	16.86-28.07
Autumn migration	4.8 (1.05)	2.82-6.85	6.23 (0.64)	5.11-7.44	6.86 (0.9)	5.18-8.61
Winter	19.94 (1.87)	16.25-23.53	19.99 (1.17)	17.66-22.27	20.6 (1.06)	18.52-22.73
Non-breeding	19.94 (1.87)	16.25-23.53	19.99 (1.17)	17.66-22.27	20.6 (1.06)	18.52-22.73

Table 10. Dogger Bank South - East. Seasonal peak density (birds per square km) of Guillemot (including unidentified auks apportioned using identified auk ratios and accounting for availability bias) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	11.68 (1.82)	8.59-15.49	10.97 (1.1)	8.92-13.24	11.66 (0.89)	10.03-13.49
Breeding (full)	23.31 (2.94)	17.42-29.2	22.11 (2.04)	17.87-26.03	28.92 (3.57)	21.77-36.25
Autumn migration	6.29 (1.38)	3.69-8.98	8.16 (0.84)	6.7-9.76	9 (1.18)	6.8-11.3
Winter	26.08 (2.45)	21.25-30.78	26.12 (1.52)	23.08-29.1	26.94 (1.38)	24.22-29.73
Non-breeding	26.08 (2.45)	21.25-30.78	26.12 (1.52)	23.08-29.1	26.94 (1.38)	24.22-29.73

Table 11. Dogger Bank South - East. Seasonal peak density (birds per square km) of Herring gull recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0.28 (0.29)	0-0.84	0.2 (0.2)	0-0.59	0.16 (0.14)	0-0.46
Autumn migration	0.02 (0.02)	0-0.05	0.01 (0.01)	0-0.04	0.03 (0.02)	0-0.08
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0.02 (0.02)	0-0.05	0.01 (0.01)	0-0.04	0.03 (0.02)	0-0.08

Table 12. Dogger Bank South - East. Seasonal peak density (birds per square km) of Kittiwake recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	2.01 (0.39)	1.27-2.73	2.35 (0.3)	1.77-2.92	2.4 (0.24)	1.94-2.85
Breeding (full)	24.01 (3.14)	18.06-30.27	20.45 (2.29)	15.81-24.92	17.2 (1.82)	13.87-20.88
Autumn migration	1.65 (0.24)	1.2-2.16	2.29 (0.87)	0.9-4.25	2.38 (0.75)	1.16-3.99
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	2.01 (0.39)	1.27-2.73	2.35 (0.3)	1.77-2.92	2.4 (0.24)	1.94-2.85

Table 13. Dogger Bank South - East. Seasonal peak density (birds per square km) of Lesser black-backed gull recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0.02 (0.02)	0-0.05	0.01 (0.01)	0-0.04	0.01 (0.01)	0-0.03
Breeding (full)	0.18 (0.18)	0-0.53	0.12 (0.12)	0-0.37	0.09 (0.09)	0-0.28
Autumn migration	0 (0)	0-0	0 (0)	0-0	0.01 (0.01)	0-0.03
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0.02 (0.02)	0-0.05	0.01 (0.01)	0-0.04	0.01 (0.01)	0-0.03

Table 14. Dogger Bank South - East. Seasonal peak density (birds per square km) of Little gull recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0.35 (0.25)	0.01-0.91	0.32 (0.21)	0.04-0.79

Table 15. Dogger Bank South - East. Seasonal peak density (birds per square km) of Puffin recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0.18 (0.07)	0.05-0.32	0.14 (0.05)	0.05-0.24	0.15 (0.02)	0.1-0.19
Breeding (full)	0.11 (0.05)	0.02-0.2	0.1 (0.04)	0.04-0.17	0.18 (0.03)	0.12-0.23
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0.57 (0.14)	0.33-0.87	0.49 (0.11)	0.3-0.71	0.46 (0.07)	0.32-0.61
Non-breeding	0.57 (0.14)	0.33-0.87	0.49 (0.11)	0.3-0.71	0.46 (0.07)	0.32-0.61

Table 16. Dogger Bank South - East. Seasonal peak density (birds per square km) of Puffin (including unidentified auks apportioned using identified auk ratios) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0.18 (0.07)	0.05-0.32	0.14 (0.05)	0.05-0.24	0.15 (0.02)	0.1-0.19
Breeding (full)	0.11 (0.05)	0.02-0.2	0.1 (0.04)	0.04-0.17	0.18 (0.03)	0.12-0.23
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0.68 (0.16)	0.39-1.03	0.57 (0.12)	0.34-0.82	0.53 (0.08)	0.37-0.7
Non-breeding	0.68 (0.16)	0.39-1.03	0.57 (0.12)	0.34-0.82	0.53 (0.08)	0.37-0.7

Table 17. Dogger Bank South - East. Seasonal peak density (birds per square km) of Puffin (including unidentified auks apportioned using identified auk ratios and accounting for availability bias) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0.19 (0.07)	0.06-0.35	0.16 (0.05)	0.06-0.28	0.17 (0.02)	0.12-0.21
Breeding (full)	0.12 (0.05)	0.02-0.23	0.11 (0.04)	0.04-0.2	0.21 (0.03)	0.14-0.27
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0.78 (0.19)	0.45-1.18	0.66 (0.15)	0.4-0.96	0.61 (0.1)	0.43-0.81
Non-breeding	0.78 (0.19)	0.45-1.18	0.66 (0.15)	0.4-0.96	0.61 (0.1)	0.43-0.81

Table 18. Dogger Bank South - East. Seasonal peak density (birds per square km) of Razorbill recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	6.27 (0.95)	4.37-8.04	5.79 (0.61)	4.6-7.05	5.18 (0.51)	4.22-6.18
Breeding (full)	0.6 (0.16)	0.3-0.92	1.12 (0.38)	0.5-1.97	1.67 (0.41)	0.95-2.49
Autumn migration	0.53 (0.14)	0.28-0.8	0.52 (0.22)	0.09-0.91	0.56 (0.24)	0.16-1.08
Winter	3.62 (0.34)	2.96-4.26	3.12 (0.3)	2.56-3.74	3.01 (0.26)	2.51-3.53
Non-breeding	6.27 (0.95)	4.37-8.04	5.79 (0.61)	4.6-7.05	5.18 (0.51)	4.22-6.18

Table 19. Dogger Bank South - East. Seasonal peak density (birds per square km) of Razorbill (including unidentified auks apportioned using identified auk ratios) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	10.33 (1.57)	7.2-13.25	9.7 (1.03)	7.71-11.82	8.2 (0.81)	6.69-9.79
Breeding (full)	0.94 (0.25)	0.47-1.43	1.75 (0.59)	0.78-3.06	2.68 (0.66)	1.53-3.99
Autumn migration	0.64 (0.17)	0.34-0.95	0.78 (0.32)	0.13-1.37	0.82 (0.35)	0.23-1.61
Winter	5.1 (0.48)	4.17-6.01	4.62 (0.44)	3.79-5.54	4.48 (0.39)	3.74-5.24
Non-breeding	10.33 (1.57)	7.2-13.25	9.7 (1.03)	7.71-11.82	8.2 (0.81)	6.69-9.79

Table 20. Dogger Bank South - East. Seasonal peak density (birds per square km) of Razorbill (including unidentified auks apportioned using identified auk ratios and accounting for availability bias) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	12.37 (1.87)	8.62-15.86	11.64 (1.24)	9.24-14.18	9.85 (0.97)	8.03-11.76
Breeding (full)	1.13 (0.3)	0.57-1.73	2.11 (0.71)	0.94-3.7	3.24 (0.8)	1.85-4.82
Autumn migration	0.78 (0.2)	0.41-1.17	0.94 (0.39)	0.16-1.65	0.99 (0.43)	0.28-1.93
Winter	6.18 (0.58)	5.05-7.28	5.59 (0.54)	4.58-6.7	5.42 (0.47)	4.53-6.35
Non-breeding	12.37 (1.87)	8.62-15.86	11.64 (1.24)	9.24-14.18	9.85 (0.97)	8.03-11.76

Table 21. Dogger Bank South - West. Seasonal peak density (birds per square km) of Arctic tern recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0.02 (0.02)	0-0.06	0.01 (0.01)	0-0.04	0.01 (0.01)	0-0.03
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0

Table 22. Dogger Bank South - West. Seasonal peak density (birds per square km) of Common gull recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0.01 (0.01)	0-0.04	0.01 (0.01)	0-0.03

Table 23. Dogger Bank South - West. Seasonal peak density (birds per square km) of Common tern recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0.02 (0.02)	0-0.05	0.01 (0.01)	0-0.04	0.01 (0.01)	0-0.03
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0

Table 24. Dogger Bank South - West. Seasonal peak density (birds per square km) of Fulmar recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0.03 (0.03)	0-0.1	0.02 (0.03)	0-0.1	0.02 (0.02)	0-0.06
Breeding (full)	0.36 (0.08)	0.21-0.53	0.42 (0.09)	0.26-0.6	0.38 (0.07)	0.25-0.52
Autumn migration	0.13 (0.04)	0.05-0.23	0.16 (0.05)	0.07-0.26	0.3 (0.2)	0.05-0.77
Winter	0.26 (0.07)	0.13-0.41	0.35 (0.1)	0.18-0.57	0.38 (0.08)	0.25-0.56
Non-breeding	0.13 (0.04)	0.05-0.23	0.16 (0.05)	0.07-0.26	0.17 (0.04)	0.1-0.26

Table 25. Dogger Bank South - West. Seasonal peak density (birds per square km) of Gannet recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0.02 (0.02)	0-0.05	0.02 (0.01)	0-0.04
Breeding (full)	0.98 (0.18)	0.65-1.36	0.94 (0.16)	0.64-1.26	0.9 (0.14)	0.62-1.16
Autumn migration	0.61 (0.11)	0.4-0.82	0.57 (0.09)	0.41-0.74	0.58 (0.07)	0.45-0.7
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0

Table 26. Dogger Bank South - West. Seasonal peak density (birds per square km) of Great black-backed gull recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0.08 (0.04)	0.02-0.17	0.12 (0.05)	0.04-0.23	0.14 (0.05)	0.06-0.24
Breeding (full)	0.03 (0.03)	0-0.1	0.02 (0.02)	0-0.07	0.02 (0.02)	0-0.07
Autumn migration	0.05 (0.03)	0-0.12	0.04 (0.02)	0-0.09	0.03 (0.02)	0-0.06
Winter	0.07 (0.07)	0-0.27	0.06 (0.05)	0-0.18	0.05 (0.04)	0-0.13
Non-breeding	0.08 (0.04)	0.02-0.17	0.12 (0.05)	0.04-0.23	0.14 (0.05)	0.06-0.24

Table 27. Dogger Bank South - West. Seasonal peak density (birds per square km) of Great northern diver recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0

Table 28. Dogger Bank South - West. Seasonal peak density (birds per square km) of Great skua recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Autumn migration	0.02 (0.02)	0-0.05	0.01 (0.01)	0-0.04	0.01 (0.01)	0-0.03
Winter	0.03 (0.02)	0-0.08	0.02 (0.02)	0-0.06	0.02 (0.01)	0-0.05
Non-breeding	0.03 (0.02)	0-0.08	0.02 (0.02)	0-0.06	0.02 (0.01)	0-0.05

Table 29. Dogger Bank South - West. Seasonal peak density (birds per square km) of Guillemot recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	2.58 (0.23)	2.15-3.07	2.57 (0.2)	2.17-2.96	3.06 (0.18)	2.71-3.41
Breeding (full)	11.37 (2.22)	7.11-15.65	13.57 (2.18)	9.55-17.93	13.31 (1.55)	10.13-16.35
Autumn migration	3.71 (0.48)	2.75-4.65	3.82 (0.34)	3.17-4.47	4.8 (0.35)	4.15-5.48
Winter	6.22 (0.58)	5.15-7.41	6.55 (0.43)	5.75-7.38	6.51 (0.37)	5.78-7.26
Non-breeding	6.22 (0.58)	5.15-7.41	6.55 (0.43)	5.75-7.38	6.51 (0.37)	5.78-7.26

Table 30. Dogger Bank South - West. Seasonal peak density (birds per square km) of Guillemot (including unidentified auks apportioned using identified auk ratios) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	5.6 (0.5)	4.66-6.65	5.27 (0.41)	4.46-6.08	6 (0.35)	5.31-6.69
Breeding (full)	17.73 (3.46)	11.08-24.4	20.64 (3.32)	14.53-27.28	20.31 (2.37)	15.46-24.95
Autumn migration	4.52 (0.59)	3.35-5.66	4.67 (0.42)	3.87-5.46	6.01 (0.43)	5.19-6.86
Winter	9.28 (0.86)	7.69-11.05	9.64 (0.63)	8.46-10.86	9.42 (0.54)	8.37-10.52
Non-breeding	9.28 (0.86)	7.69-11.05	9.64 (0.63)	8.46-10.86	9.42 (0.54)	8.37-10.52

Table 31. Dogger Bank South - West. Seasonal peak density (birds per square km) of Guillemot (including unidentified auks apportioned using identified auk ratios and accounting for availability bias) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	7.32 (0.65)	6.09-8.69	6.89 (0.54)	5.84-7.95	7.86 (0.46)	6.95-8.76
Breeding (full)	22.89 (4.47)	14.31-31.51	26.67 (4.29)	18.78-35.25	26.28 (3.07)	20-32.28
Autumn migration	5.92 (0.77)	4.39-7.42	6.12 (0.55)	5.07-7.16	7.88 (0.57)	6.81-8.99
Winter	12.1 (1.12)	10.02-14.4	12.58 (0.83)	11.04-14.18	12.3 (0.7)	10.93-13.73
Non-breeding	12.1 (1.12)	10.02-14.4	12.58 (0.83)	11.04-14.18	12.3 (0.7)	10.93-13.73

Table 32. Dogger Bank South - West. Seasonal peak density (birds per square km) of Herring gull recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0.02 (0.02)	0-0.05	0.01 (0.01)	0-0.04	0.01 (0.01)	0-0.03
Breeding (full)	0.02 (0.02)	0-0.05	0.01 (0.01)	0-0.04	0.02 (0.01)	0-0.05
Autumn migration	0 (0)	0-0	0 (0)	0-0	0.03 (0.02)	0-0.07
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0.02 (0.02)	0-0.05	0.01 (0.01)	0-0.04	0.03 (0.02)	0-0.07

Table 33. Dogger Bank South - West. Seasonal peak density (birds per square km) of Kittiwake recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	1.73 (0.31)	1.15-2.29	1.87 (0.26)	1.36-2.42	1.89 (0.2)	1.49-2.28
Breeding (full)	5.92 (1.09)	3.88-8.11	5.3 (0.81)	3.74-6.83	6.43 (0.64)	5.19-7.67
Autumn migration	1.09 (0.27)	0.59-1.61	0.99 (0.2)	0.61-1.36	0.87 (0.14)	0.57-1.14
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	1.73 (0.31)	1.15-2.29	1.87 (0.26)	1.36-2.42	1.89 (0.2)	1.49-2.28

Table 34. Dogger Bank South - West. Seasonal peak density (birds per square km) of Lesser black-backed gull recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Autumn migration	0 (0)	0-0	0.02 (0.02)	0-0.07	0.02 (0.02)	0-0.06
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0.02 (0.02)	0-0.07	0.02 (0.02)	0-0.06

Table 35. Dogger Bank South - West. Seasonal peak density (birds per square km) of Little gull recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0.05 (0.05)	0-0.15	0.04 (0.04)	0-0.11

Table 36. Dogger Bank South - West. Seasonal peak density (birds per square km) of Puffin recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0.15 (0.05)	0.05-0.23	0.18 (0.03)	0.11-0.24	0.21 (0.02)	0.16-0.25
Breeding (full)	0.34 (0.05)	0.25-0.44	0.33 (0.03)	0.27-0.4	0.28 (0.03)	0.23-0.34
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0.38 (0.09)	0.2-0.54	0.41 (0.07)	0.27-0.54	0.43 (0.05)	0.34-0.52
Non-breeding	0.38 (0.09)	0.2-0.54	0.41 (0.07)	0.27-0.54	0.43 (0.05)	0.34-0.52

Table 37. Dogger Bank South - West. Seasonal peak density (birds per square km) of Puffin (including unidentified auks apportioned using identified auk ratios) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0.15 (0.05)	0.05-0.23	0.18 (0.03)	0.11-0.24	0.21 (0.02)	0.16-0.25
Breeding (full)	0.34 (0.05)	0.25-0.44	0.33 (0.03)	0.27-0.4	0.28 (0.03)	0.23-0.34
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0.4 (0.09)	0.21-0.57	0.43 (0.07)	0.29-0.58	0.45 (0.05)	0.36-0.54
Non-breeding	0.4 (0.09)	0.21-0.57	0.43 (0.07)	0.29-0.58	0.45 (0.05)	0.36-0.54

Table 38. Dogger Bank South - West. Seasonal peak density (birds per square km) of Puffin (including unidentified auks apportioned using identified auk ratios and accounting for availability bias) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0.17 (0.05)	0.06-0.26	0.2 (0.04)	0.13-0.27	0.24 (0.03)	0.19-0.3
Breeding (full)	0.39 (0.06)	0.28-0.5	0.38 (0.04)	0.31-0.46	0.33 (0.03)	0.27-0.39
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0.46 (0.11)	0.24-0.66	0.51 (0.09)	0.34-0.68	0.53 (0.06)	0.41-0.63
Non-breeding	0.46 (0.11)	0.24-0.66	0.51 (0.09)	0.34-0.68	0.53 (0.06)	0.41-0.63

Table 39. Dogger Bank South - West. Seasonal peak density (birds per square km) of Razorbill recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	1.25 (0.21)	0.85-1.66	1.39 (0.13)	1.14-1.64	1.68 (0.17)	1.37-2.01
Breeding (full)	2.98 (0.5)	1.99-3.91	2.77 (0.3)	2.16-3.32	2.25 (0.25)	1.76-2.71
Autumn migration	0.38 (0.1)	0.2-0.56	0.54 (0.11)	0.35-0.75	0.5 (0.1)	0.3-0.69
Winter	1.08 (0.28)	0.55-1.62	0.92 (0.19)	0.56-1.32	0.76 (0.17)	0.43-1.08
Non-breeding	1.25 (0.21)	0.85-1.66	1.39 (0.13)	1.14-1.64	1.68 (0.17)	1.37-2.01

Table 40. Dogger Bank South - West. Seasonal peak density (birds per square km) of Razorbill (including unidentified auks apportioned using identified auk ratios) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	2.32 (0.49)	1.38-3.23	2.77 (0.47)	1.83-3.69	2.95 (0.43)	2.1-3.76
Breeding (full)	5.26 (0.88)	3.53-6.91	4.79 (0.51)	3.73-5.74	3.84 (0.42)	3-4.62
Autumn migration	0.63 (0.16)	0.33-0.93	0.88 (0.17)	0.56-1.22	0.8 (0.16)	0.49-1.12
Winter	2.59 (0.68)	1.31-3.9	2.18 (0.46)	1.34-3.14	1.91 (0.42)	1.1-2.73
Non-breeding	2.59 (0.68)	1.31-3.9	2.77 (0.47)	1.83-3.69	2.95 (0.43)	2.1-3.76

Table 41. Dogger Bank South - West. Seasonal peak density (birds per square km) of Razorbill (including unidentified auks apportioned using identified auk ratios and accounting for availability bias) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	2.82 (0.59)	1.67-3.92	3.36 (0.57)	2.22-4.47	3.57 (0.52)	2.54-4.55
Breeding (full)	6.38 (1.06)	4.27-8.37	5.79 (0.62)	4.51-6.94	4.65 (0.51)	3.63-5.59
Autumn migration	0.76 (0.19)	0.4-1.12	1.06 (0.21)	0.68-1.47	0.97 (0.2)	0.59-1.35
Winter	3.13 (0.82)	1.59-4.72	2.65 (0.56)	1.62-3.81	2.32 (0.51)	1.33-3.31
Non-breeding	3.13 (0.82)	1.59-4.72	3.36 (0.57)	2.22-4.47	3.57 (0.52)	2.54-4.55

Table 42. Dogger Bank South - West. Seasonal peak density (birds per square km) of Red-throated diver recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0.02 (0.02)	0-0.05	0.01 (0.01)	0-0.04	0.01 (0.01)	0-0.03
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0

Table 43. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Arctic skua recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Autumn migration	0 (0)	0-0	0.01 (0.01)	0-0.03	0.01 (0)	0-0.02
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0.01 (0.01)	0-0.03	0.01 (0)	0-0.02

Table 44. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Arctic tern recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0 (0)	0-0	0.02 (0.01)	0-0.06	0.02 (0.01)	0-0.04
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0

Table 45. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Common gull recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0.03 (0.02)	0-0.06	0.02 (0.01)	0-0.05

Table 46. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Common tern recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0 (0)	0-0	0.01 (0.01)	0-0.02	0.01 (0)	0-0.02
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0

Table 47. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Fulmar recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0.02 (0.01)	0-0.05	0.02 (0.01)	0-0.04
Breeding (full)	0 (0)	0-0	0.25 (0.05)	0.16-0.35	0.25 (0.04)	0.17-0.33
Autumn migration	0 (0)	0-0	0.26 (0.05)	0.17-0.36	0.27 (0.04)	0.19-0.36
Winter	0 (0)	0-0	0.34 (0.05)	0.23-0.45	0.33 (0.05)	0.24-0.42
Non-breeding	0 (0)	0-0	0.26 (0.05)	0.17-0.36	0.27 (0.04)	0.19-0.36

Table 48. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Gannet recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0.01 (0.01)	0-0.04	0.01 (0.01)	0-0.03
Breeding (full)	0 (0)	0-0	0.79 (0.08)	0.63-0.95	0.72 (0.06)	0.6-0.83
Autumn migration	0 (0)	0-0	0.77 (0.08)	0.62-0.95	0.82 (0.07)	0.69-0.95
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0

Table 49. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Great black-backed gull recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0.14 (0.04)	0.08-0.21	0.17 (0.04)	0.1-0.26
Breeding (full)	0 (0)	0-0	0.05 (0.04)	0-0.14	0.04 (0.03)	0-0.12
Autumn migration	0 (0)	0-0	0.03 (0.01)	0.01-0.06	0.04 (0.01)	0.01-0.07
Winter	0 (0)	0-0	0.04 (0.03)	0-0.1	0.04 (0.02)	0.01-0.09
Non-breeding	0 (0)	0-0	0.14 (0.04)	0.08-0.21	0.17 (0.04)	0.1-0.26

Table 50. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Great northern diver recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0

Table 51. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Great skua recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0 (0)	0-0	0.01 (0.01)	0-0.02	0 (0)	0-0.01
Autumn migration	0 (0)	0-0	0.01 (0.01)	0-0.02	0.01 (0)	0-0.02
Winter	0 (0)	0-0	0.01 (0.01)	0-0.03	0.01 (0.01)	0-0.03
Non-breeding	0 (0)	0-0	0.01 (0.01)	0-0.03	0.01 (0.01)	0-0.03

Table 52. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Guillemot recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	3.16 (0.25)	2.69-3.68	3.16 (0.19)	2.79-3.52
Breeding (full)	0 (0)	0-0	11.72 (1.44)	8.87-14.54	11.36 (0.95)	9.59-13.25
Autumn migration	0 (0)	0-0	3.46 (0.38)	2.72-4.21	3.9 (0.44)	3.11-4.79
Winter	0 (0)	0-0	9.97 (0.52)	8.96-10.97	10.12 (0.43)	9.28-10.96
Non-breeding	0 (0)	0-0	9.97 (0.52)	8.96-10.97	10.12 (0.43)	9.28-10.96

Table 53. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Guillemot (including unidentified auks apportioned using identified auk ratios) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	6.71 (0.53)	5.71-7.82	6.61 (0.39)	5.84-7.37
Breeding (full)	0 (0)	0-0	18.62 (2.29)	14.1-23.1	17.86 (1.49)	15.08-20.85
Autumn migration	0 (0)	0-0	4.58 (0.5)	3.59-5.56	5.13 (0.45)	4.25-6.03
Winter	0 (0)	0-0	14.72 (0.77)	13.24-16.2	14.92 (0.64)	13.67-16.16
Non-breeding	0 (0)	0-0	14.72 (0.77)	13.24-16.2	14.92 (0.64)	13.67-16.16

Table 54. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Guillemot (including unidentified auks apportioned using identified auk ratios and accounting for availability bias) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	8.78 (0.69)	7.48-10.23	8.65 (0.52)	7.65-9.65
Breeding (full)	0 (0)	0-0	23.97 (2.95)	18.14-29.74	23.01 (1.92)	19.42-26.85
Autumn migration	0 (0)	0-0	6 (0.65)	4.71-7.3	6.72 (0.59)	5.57-7.9
Winter	0 (0)	0-0	19.23 (1)	17.28-21.16	19.5 (0.84)	17.87-21.12
Non-breeding	0 (0)	0-0	19.23 (1)	17.28-21.16	19.5 (0.84)	17.87-21.12

Table 55. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Herring gull recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0.01 (0.01)	0-0.02	0 (0)	0-0.01
Breeding (full)	0 (0)	0-0	0.11 (0.11)	0-0.32	0.1 (0.08)	0.01-0.27
Autumn migration	0 (0)	0-0	0.01 (0.01)	0-0.02	0.03 (0.02)	0.01-0.07
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0.01 (0.01)	0-0.02	0.03 (0.02)	0.01-0.07

Table 56. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Kittiwake recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	1.97 (0.21)	1.6-2.42	1.92 (0.2)	1.55-2.32
Breeding (full)	0 (0)	0-0	12.64 (1.17)	10.23-14.85	10.99 (1)	8.94-12.89
Autumn migration	0 (0)	0-0	1.66 (0.48)	0.86-2.66	1.68 (0.45)	0.97-2.63
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	1.97 (0.21)	1.6-2.42	1.92 (0.2)	1.55-2.32

Table 57. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Lesser black-backed gull recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0.01 (0.01)	0-0.02	0.01 (0)	0-0.02
Breeding (full)	0 (0)	0-0	0.06 (0.06)	0-0.19	0.05 (0.05)	0-0.15
Autumn migration	0 (0)	0-0	0.01 (0.01)	0-0.04	0.02 (0.01)	0-0.04
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0.01 (0.01)	0-0.04	0.02 (0.01)	0-0.04

Table 58. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Little gull recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0.18 (0.13)	0-0.47	0.17 (0.11)	0.02-0.4

Table 59. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Puffin recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0.16 (0.03)	0.12-0.21	0.17 (0.02)	0.14-0.2
Breeding (full)	0 (0)	0-0	0.22 (0.02)	0.18-0.26	0.22 (0.02)	0.18-0.26
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0.46 (0.06)	0.35-0.58	0.46 (0.06)	0.35-0.56
Non-breeding	0 (0)	0-0	0.46 (0.06)	0.35-0.58	0.46 (0.06)	0.35-0.56

Table 60. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Puffin (including unidentified auks apportioned using identified auk ratios) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0.16 (0.03)	0.12-0.21	0.18 (0.02)	0.15-0.21
Breeding (full)	0 (0)	0-0	0.22 (0.02)	0.18-0.26	0.22 (0.02)	0.18-0.26
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0.51 (0.07)	0.39-0.64	0.5 (0.06)	0.38-0.62
Non-breeding	0 (0)	0-0	0.51 (0.07)	0.39-0.64	0.5 (0.06)	0.38-0.62

Table 61. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Puffin (including unidentified auks apportioned using identified auk ratios and accounting for availability bias) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0.19 (0.03)	0.13-0.25	0.21 (0.02)	0.17-0.24
Breeding (full)	0 (0)	0-0	0.26 (0.03)	0.22-0.3	0.25 (0.02)	0.21-0.3
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0.6 (0.08)	0.45-0.74	0.58 (0.07)	0.44-0.71
Non-breeding	0 (0)	0-0	0.6 (0.08)	0.45-0.74	0.58 (0.07)	0.44-0.71

Table 62. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Razorbill recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	3.44 (0.34)	2.78-4.08	3.27 (0.26)	2.77-3.77
Breeding (full)	0 (0)	0-0	2 (0.24)	1.54-2.48	1.78 (0.27)	1.29-2.32
Autumn migration	0 (0)	0-0	0.48 (0.12)	0.26-0.72	0.52 (0.13)	0.29-0.81
Winter	0 (0)	0-0	1.75 (0.16)	1.44-2.05	1.76 (0.16)	1.48-2.11
Non-breeding	0 (0)	0-0	3.44 (0.34)	2.78-4.08	3.27 (0.26)	2.77-3.77

Table 63. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Razorbill (including unidentified auks apportioned using identified auk ratios) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	5.46 (0.53)	4.41-6.47	5.15 (0.41)	4.36-5.93
Breeding (full)	0 (0)	0-0	3.33 (0.4)	2.57-4.14	2.98 (0.44)	2.16-3.87
Autumn migration	0 (0)	0-0	0.77 (0.19)	0.42-1.16	0.83 (0.21)	0.45-1.28
Winter	0 (0)	0-0	2.58 (0.23)	2.14-3.03	2.6 (0.23)	2.18-3.11
Non-breeding	0 (0)	0-0	5.46 (0.53)	4.41-6.47	5.15 (0.41)	4.36-5.93

Table 64. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Razorbill (including unidentified auks apportioned using identified auk ratios and accounting for availability bias) recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	6.55 (0.64)	5.29-7.77	6.19 (0.49)	5.23-7.12
Breeding (full)	0 (0)	0-0	4.03 (0.48)	3.11-5	3.6 (0.54)	2.61-4.68
Autumn migration	0 (0)	0-0	0.94 (0.23)	0.51-1.41	1 (0.26)	0.55-1.54
Winter	0 (0)	0-0	3.12 (0.28)	2.58-3.67	3.14 (0.28)	2.63-3.76
Non-breeding	0 (0)	0-0	6.55 (0.64)	5.29-7.77	6.19 (0.49)	5.23-7.12

Table 65. Dogger Bank South - East & West. Seasonal peak density (birds per square km) of Red-throated diver recorded in flight and on the sea, S.D. and 95% confidence intervals, in the wind farm, wind farm and 2km buffer and wind farm and 4km buffer.

Season	Density					
	Wind farm		Wind farm & 2km buffer		Wind farm and 4km buffer	
	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.	Estimate (S.D.)	95% c.i.
Spring migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Breeding (full)	0 (0)	0-0	0.01 (0.01)	0-0.02	0.01 (0.01)	0-0.02
Autumn migration	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Winter	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0
Non-breeding	0 (0)	0-0	0 (0)	0-0	0 (0)	0-0