

TABLES

Table S1. Model selection for the detection (p) of Common Eider non-parenting adults. Number of parameters (K), Akaike Information Criterion adjusted for sample size and over-dispersion ($QAIC_c$; $\hat{c} = 1.21$), difference between model and minimum $QAIC_c$ values ($\Delta QAIC_c$), and model weight (w_i) are shown. Models with $\Delta QAIC_c < 2$ are shown, as well as the intercept only model. * = selected detection model that will be used in the parameterization of ψ .

Guild	Model	K	$QAIC_c$	$\Delta QAIC_c$	w_i
Common Eider non-parenting adult					
	* p (tidal stage + intertidal area) $\psi(\cdot)$	5	177.402	0.000	0.131
	p (intertidal area) $\psi(\cdot)$	4	177.680	0.278	0.114
	p (tidal stage ² + intertidal area) $\psi(\cdot)$	5	178.172	0.770	0.089
	p (tidal stage + tidal stage ² + intertidal area) $\psi(\cdot)$	6	179.159	1.757	0.054
	p (intertidal area + ordinal date ²) $\psi(\cdot)$	5	179.303	1.901	0.052
	$p(\cdot)$ $\psi(\cdot)$	3	181.614	4.212	0.016

Table S2. Parameter estimates for the detection (p) of Common Eider non-parenting adults. Parameter estimates, standard errors (SE), and lower and upper 85% confidence intervals (LCL and UCL, respectively) are shown. Models with $\Delta QAIC_c < 2$ are shown, as well as the intercept only model. * = selected detection model that will be used in the parameterization of ψ .

Guild	Model	85% CI			
		p parameter	Estimate	SE	LCL UCL
Common Eider (non-parenting adult)					
	* p (tidal stage + intertidal area) $\psi(\cdot)$				
	intercept	0.340	0.245	-0.013	0.693
	tidal stage	-0.373	0.216	-0.684	-0.062
	intertidal area	-0.657	0.219	-0.971	-0.342
	p (intertidal area) $\psi(\cdot)$				
	intercept	0.308	0.243	-0.042	0.657
	intertidal area	-0.624	0.217	-0.937	-0.311
	p (tidal stage + tidal stage ² + intertidal area) $\psi(\cdot)$				
	intercept	0.473	0.296	0.047	0.898
	tidal stage	-0.291	0.230	-0.623	0.040
	tidal stage ²	-0.174	0.204	-0.467	0.119
	intertidal area	-0.643	0.218	-0.956	-0.329
	p (intertidal area + ordinal date ²) $\psi(\cdot)$				
	intercept	0.162	0.289	-0.254	0.577
	intertidal area	-0.639	0.221	-0.957	-0.320
	ordinal date ²	0.179	0.212	-0.127	0.484
	$p(\cdot)$ $\psi(\cdot)$				
	intercept	0.406	0.225	0.082	0.731

Table S3. Model selection for the occupancy (ψ) of Common Eider non-parenting adults. Number of parameters (K), Akaike Information Criterion adjusted for sample size and over-dispersion ($QAIC_c$; $\hat{c} = 1.21$), difference between model and minimum $QAIC_c$ values ($\Delta QAIC_c$), and model weight (w_i) are shown. Models with $\Delta QAIC_c < 2$ are shown, as well as the intercept only model. Reference level for region = north.

Guild	K	$QAIC_c$	$\Delta QAIC_c$	w_i
Model				
Common Eider (non-parenting adult)				
$p(\text{tidal stage} + \text{intertidal area}) \psi(\text{other macroalgae} + \text{region})$	7	170.520	0.000	0.082
$p(\text{tidal stage} + \text{intertidal area}) \psi(\text{other macroalgae}^2 + \text{region})$	7	170.957	0.437	0.066
$p(\text{tidal stage} + \text{intertidal area}) \psi(\text{region})$	6	171.527	1.008	0.049
$p(\text{tidal stage} + \text{intertidal area}) \psi(\text{other macroalgae}^2 + \text{region} + \text{slope})$	8	172.418	1.898	0.032
$p(\text{tidal stage} + \text{intertidal area}) \psi(.)$	5	177.402	6.883	0.003

Table S4. Parameter estimates for the occupancy (ψ) of Common Eider non-parenting adults. Parameter estimates, standard errors (SE), and lower and upper 85% confidence intervals (LCL and UCL, respectively) are shown. Models with $\Delta QAIC_c < 2$ are shown, as well as the intercept only model. Reference level for region = north.

Guild	Model	85% CI			
		ψ parameter	Estimate	SE	LCL
Common Eider (non-parenting adult)					
	$p(\text{tidal stage} + \text{intertidal area}) \psi(\text{other macroalgae} + \text{region})$				
	intercept	0.958	0.620	0.066	1.851
	other macroalgae	1.446	1.130	-0.174	3.067
	region (south)	9.567	44.670	-54.732	73.866
	$p(\text{tidal stage} + \text{intertidal area}) \psi(\text{other macroalgae}^2 + \text{region})$				
	intercept	-0.063	0.622	-0.958	0.831
	other macroalgae ²	1.578	1.871	-1.114	4.271
	region (south)	8.737	62.508	-81.246	98.720
	$p(\text{tidal stage} + \text{intertidal area}) \psi(\text{region})$				
	intercept	0.542	0.376	0.000	1.084
	region (south)	9.675	51.258	-64.112	83.462
	$p(\text{tidal stage} + \text{intertidal area}) \psi(\text{other macroalgae}^2 + \text{region} + \text{slope})$				
	intercept	-0.199	0.782	-1.325	0.927
	other macroalgae ²	2.773	2.624	-1.004	6.551
	region (south)	1.723	1.080	0.168	3.279
	slope	-0.643	0.429	-1.262	-0.025
	$p(\text{tidal stage} + \text{intertidal area}) \psi(.)$				
	intercept	1.210	0.387	0.651	1.766

Table S5. Summed model weights ($\sum w_i$) for each covariate in detection (p) and occupancy (ψ) balanced covariate candidate model sets.

Guild	p parameter	$\sum w_i$	ψ parameter	$\sum w_i$
Common Eider (non-parenting adult)				
	tidal stage	0.396	<i>A. nodosum</i>	0.165
	tidal stage ²	0.312	<i>A. nodosum</i> ²	0.128
	intertidal area	0.849	<i>F. vesiculosus</i>	0.147
	ordinal date	0.188	<i>F. vesiculosus</i> ²	0.130
	ordinal date ²	0.225	other macroalgae	0.364
	precipitation	0.064	other macroalgae ²	0.419
	wave	0.176	macroalgal depth	0.140
			slope	0.230
			region	0.725

Table S6. Model selection for logistic regression of Common Eider brood presence. Number of parameters (K), Akaike Information Criterion adjusted for sample size (AIC_c), difference between model and minimum AIC_c values (ΔAIC_c), and model weight (w_i) are shown. Models with $\Delta AIC_c < 2$ are shown, as well as the intercept only model. Reference level for region = north.

Guild	Model	K	AIC_c	ΔAIC_c	w_i
Common Eider (brood)					
	<i>F. vesiculosus</i> + other macroalgae + region	5	66.442	0.000	0.525
	intercept only	2	110.253	43.811	<0.001

Table S7. Parameter estimates for logistic regression of Common Eider brood presence. Parameter estimates, standard errors (SE), and lower and upper 85% confidence intervals (LCL and UCL, respectively) are shown. Models with $\Delta AIC_c < 2$ are shown, as well as the intercept only model. Reference level for region = north.

Guild	Model	parameter	Estimate	SE	85% CI	
					LCL	UCL
Common Eider (brood)						
	<i>F. vesiculosus</i> + other macroalgae + region					
	intercept		-2.608	0.574	-3.541	-1.867
	<i>F. vesiculosus</i>		0.875	0.360	0.380	1.432
	other macroalgae		1.122	0.344	0.651	1.650
	region (south)		3.732	0.876	2.577	5.133
	intercept only					
	intercept		-0.901	0.233	-1.244	-0.573

Table S8. Summed model weights ($\sum w_i$) for each covariate in logistic regression balanced covariate candidate model set.

Guild	parameter	$\sum w_i$
Common Eider (brood)		
	<i>A. nodosum</i>	0.035
	<i>A. nodosum</i> ²	0.040
	<i>F. vesiculosus</i>	0.563
	<i>F. vesiculosus</i> ²	0.040
	other macroalgae	0.949
	other macroalgae ²	0.115
	macroalgal depth	0.145
	slope	0.055
	region	0.999

Table S9. Model selection for the detection (p) of shorebirds. Number of parameters (K), Akaike Information Criterion adjusted for sample size and over-dispersion ($QAIC_c$; $\hat{c} = 1.22$), difference between model and minimum $QAIC_c$ values ($\Delta QAIC_c$ and model weight (w_i) are shown. Models with $\Delta QAIC_c < 2$ are shown, as well as the intercept only model. * = selected detection model that will be used in the parameterization of ψ .

Guild	Model	K	$QAIC_c$	$\Delta QAIC_c$	w_i
Shorebirds					
	$p(\cdot) \psi(\text{intertidal area})$	4	66.670	0.000	0.437
	* $p(\cdot) \psi(\cdot)$	3	68.375	1.705	0.186

Table S10. Parameter estimates for the detection (p) of shorebirds. Parameter estimates, standard errors (SE), and lower and upper 85% confidence intervals (LCL and UCL, respectively) are shown. Models with $\Delta QAIC_c < 2$ are shown, as well as the intercept only model. * = selected detection model that will be used in the parameterization of ψ .

Guild	Model	85% CI				
		p parameter	Estimate	SE	LCL	UCL
Shorebirds						
	$p(\cdot) \psi(\text{intertidal area})$					
	intercept		-1.690	0.379	-2.235	-1.144
	intertidal area		0.908	0.269	0.522	1.295
	* $p(\cdot) \psi(\cdot)$					
	intercept		0.127	0.503	-0.597	0.852

Table S11. Model selection for the occupancy (ψ) of shorebirds. Number of parameters (K), Akaike Information Criterion adjusted for sample size and over-dispersion ($QAIC_c$; $\hat{c} = 1.22$), difference between model and minimum $QAIC_c$ values ($\Delta QAIC_c$), and model weight (w_i) are shown. Models that outperformed the intercept only model are shown.

Guild	Model	K	$QAIC_c$	$\Delta QAIC_c$	w_i
Shorebirds					
	$p(\cdot) \psi(A. nodosum)$	4	58.525	0.000	0.639
	$p(\cdot) \psi(A. nodosum^2)$	4	59.878	1.352	0.325
	$p(\cdot) \psi(F. vesiculosus)$	4	67.404	8.879	0.008
	$p(\cdot) \psi(\text{macroalgal depth})$	4	67.416	8.891	0.008
	$p(\cdot) \psi(\text{slope})$	4	68.807	9.561	0.005
	$p(\cdot) \psi(\cdot)$	3	68.375	9.850	0.005

Table S12. Parameter estimates for the occupancy (ψ) of shorebirds. Parameter estimates, standard errors (SE), and lower and upper 85% confidence intervals (LCL and UCL, respectively) are shown. Models that outperformed the intercept only model are shown.

Guild	Model	85% CI			
	ψ parameter	Estimate	SE	LCL	UCL
Shorebirds					
	$p(\cdot) \psi(A. nodosum)$				
	intercept	-0.950	0.586	-1.793	-0.106
	$A. nodosum$	1.850	0.637	0.929	2.762
	$p(\cdot) \psi(A. nodosum^2)$				
	intercept	-2.620	0.871	-3.876	-1.368
	$A. nodosum^2$	1.840	0.688	0.851	2.833
	$p(\cdot) \psi(F. vesiculosus)$				
	intercept	-0.622	0.543	-1.403	0.160
	$F. vesiculosus$	-1.079	0.629	-1.984	-0.174
	$p(\cdot) \psi(\text{macroalgal depth})$				
	intercept	-0.580	0.494	-1.292	0.131
	macroalgal depth	0.860	0.492	0.152	1.569
	$p(\cdot) \psi(\text{slope})$				
	intercept	-0.565	0.522	-1.315	0.186
	slope	-0.990	0.661	-1.942	-0.039
	$p(\cdot) \psi(\cdot)$				
	intercept	-0.519	0.463	-1.185	0.148

Table S13. Model selection for the detection (p) of scavengers. Number of parameters (K), Akaike Information Criterion adjusted for sample size and over-dispersion ($QAIC_c$; $\hat{c} = 1.11$), difference between model and minimum $QAIC_c$ values ($\Delta QAIC_c$), and model weight (w_i) are shown. Models with $\Delta QAIC_c < 2$ are shown, as well as the intercept only model. * = selected detection model that will be used in the parameterization of ψ .

Guild	Model	K	$QAIC_c$	$\Delta QAIC_c$	w_i
Scavenger	* p (tidal stage + intertidal area) ψ (.)	5	207.603	0.000	0.196
	p (.) ψ (.)	3	214.185	6.582	0.007

Table S14. Parameter estimates for the detection (p) of scavengers. Parameter estimates, standard errors (SE), and lower and upper 85% confidence intervals (LCL and UCL, respectively) are shown. Models with $\Delta QAIC_c < 2$ are shown, as well as the intercept only model. * = selected detection model that will be used in the parameterization of ψ .

Guild	Model	85% CI				
		p parameter	Estimate	SE	LCL	UCL
Scavenger	* p (tidal stage + intertidal area) ψ (.)					
	intercept		0.446	0.214	0.138	0.755
	tidal stage		0.414	0.175	0.162	0.666
	intertidal area		0.420	0.175	0.169	0.672
	p (.) ψ (.)					
	intercept		0.536	0.210	0.234	0.838

Table S15. Model selection for the occupancy (ψ) of scavengers. Number of parameters (K), Akaike Information Criterion adjusted for sample size and over-dispersion ($QAIC_c$; $\hat{c} = 1.11$), difference between model and minimum $QAIC_c$ values ($\Delta QAIC_c$), and model weight (w_i) are shown. Models with $\Delta QAIC_c < 2$ are shown, as well as the intercept only model. Reference level for region = north.

Guild	Model	K	$QAIC_c$	$\Delta QAIC_c$	w_i
Scavengers	p (tidal stage + intertidal area) ψ (macroalgal depth + <i>A. nodosum</i> + <i>F. vesiculosus</i> ²)	8	191.634	0.000	0.141
	p (tidal stage + intertidal area) ψ (macroalgal depth + <i>F. vesiculosus</i> + slope)	8	191.725	0.091	0.134
	p (tidal stage + intertidal area) ψ (macroalgal depth + <i>F. vesiculosus</i> + region)	8	193.011	1.377	0.071
	p (tidal stage + intertidal area) ψ (macroalgal depth + <i>F. vesiculosus</i> ² + region)	8	193.464	1.830	0.056
	p (tidal stage + intertidal area) ψ (.)	5	207.603	15.970	<0.00

Table S16. Parameter estimates for the occupancy (ψ) of scavengers. Parameter estimates, standard errors (SE), and lower and upper 85% confidence intervals (LCL and UCL, respectively) are shown. Models with $\Delta\text{QAIC}_c < 2$ are shown, as well as the intercept only model. Reference level for region = north.

Guild	Model	85% CI			
	ψ parameter	Estimate	SE	LCL	UCL
Scavengers	$p(\text{tidal stage} + \text{intertidal area})$				
	$\psi(\text{macroalgal depth} + A. nodosum + F. vesiculosus^2)$				
	intercept	196.000	413.000	-397.939	789.947
	macroalgal depth	-97.100	206.000	-393.418	199.310
	<i>A. nodosum</i>	71.700	155.000	-150.743	294.206
	<i>F. vesiculosus</i> ²	-93.000	195.000	-374.083	188.111
	$p(\text{tidal stage} + \text{intertidal area})$				
	$\psi(\text{macroalgal depth} + F. vesiculosus + \text{slope})$				
	intercept	99.700	229.300	-230.376	429.739
	macroalgal depth	-56.100	132.100	-246.245	134.098
	<i>F. vesiculosus</i>	-103.800	243.300	-454.040	246.406
	slope	-34.800	81.900	-152.804	83.127
	$p(\text{tidal stage} + \text{intertidal area})$				
	$\psi(\text{macroalgal depth} + F. vesiculosus + \text{region})$				
	intercept	4.170	1.800	1.579	6.757
	macroalgal depth	-2.430	1.010	-3.882	-0.986
	<i>F. vesiculosus</i>	-3.000	1.310	-4.884	-1.118
	region (south)	-4.280	1.990	-7.143	-1.421
	$p(\text{tidal stage} + \text{intertidal area})$				
	$\psi(\text{macroalgal depth} + F. vesiculosus^2 + \text{region})$				
intercept	48.600	52.600	-27.162	124.388	
macroalgal depth	-14.700	15.900	-37.502	8.202	
<i>F. vesiculosus</i> ²	-20.600	21.900	-52.138	10.907	
region (south)	-19.500	23.300	-53.133	14.085	
$p(\text{tidal stage} + \text{intertidal area})\psi(.)$					
intercept	2.750	1.930	-0.035	5.531	

Table S17. Summed model weights ($\sum w_i$) for each covariate in detection (p) and occupancy (ψ) balanced covariate candidate model sets.

Guild	p parameter	$\sum w_i$	ψ parameter	$\sum w_i$
Scavengers	tidal stage	0.746	<i>A. nodosum</i>	0.271
	tidal stage ²	0.151	<i>A. nodosum</i> ²	0.085
	intertidal area	0.765	<i>F. vesiculosus</i>	0.544
	ordinal date	0.192	<i>F. vesiculosus</i> ²	0.477
	ordinal date ²	0.304	other macroalgae	0.205
	precipitation	0.075	other macroalgae ²	0.210
	wave	0.177	macroalgal depth	0.657
			slope	0.239
			region	0.166

Table S18. Model selection for the detection (p) of divers. Number of parameters (K), Akaike Information Criterion adjusted for sample size and over-dispersion ($QAIC_c$; $\hat{c} = 1.05$), difference between model and minimum $QAIC_c$ values ($\Delta QAIC_c$), and model weight (w_i) are shown. Models with $\Delta QAIC_c < 2$ are shown, as well as the intercept only model. Reference level for precipitation = none. * = selected detection model that will be used in the parameterization of ψ .

Guild	Model	K	$QAIC_c$	$\Delta QAIC_c$	w_i
Divers	* $p(\cdot) \psi(\cdot)$	3	232.342	0.000	0.090
	$p(\text{intertidal area}) \psi(\cdot)$	4	233.298	0.956	0.056
	$p(\text{precipitation}) \psi(\cdot)$	5	233.539	1.197	0.050
	$p(\text{intertidal area} + \text{precipitation}) \psi(\cdot)$	6	234.039	1.697	0.039
	$p(\text{tidal stage}) \psi(\cdot)$	4	234.066	1.724	0.038
	$p(\text{tidal stage}^2) \psi(\cdot)$	4	234.068	1.726	0.038
	$p(\text{ordinal date}^2) \psi(\cdot)$	4	234.217	1.875	0.035

Table S19. Parameter estimates for the detection (p) of divers. Parameter estimates, standard errors (SE), and lower and upper 85% confidence intervals (LCL and UCL, respectively) are shown. Models with $\Delta\text{QAIC}_c < 2$ are shown, as well as the intercept only model. Reference level for precipitation = none. * = selected detection model that will be used in the parameterization of ψ .

Guild	Model	85% CI			
		p parameter	Estimate	SE	LCL UCL
Divers	* $p(\cdot) \psi(\cdot)$				
	intercept	0.163	0.153	-0.057	0.384
	$p(\text{intertidal area}) \psi(\cdot)$				
	intercept	0.192	0.156	-0.032	0.416
	intertidal area	-0.163	0.141	-0.366	0.041
	$p(\text{precipitation}) \psi(\cdot)$				
	intercept	0.232	0.162	-0.001	0.465
	precipitation (fog)	-1.213	0.696	-2.215	-0.211
	precipitation (rain)	0.174	0.927	-1.161	1.508
	$p(\text{intertidal area} + \text{precipitation}) \psi(\cdot)$				
	intercept	0.270	0.165	0.033	0.508
	intertidal area	-0.200	0.144	-0.406	0.007
	precipitation (fog)	-1.310	0.700	-2.319	-0.302
	precipitation (rain)	0.304	0.944	-1.055	1.664
	$p(\text{tidal stage}) \psi(\cdot)$				
	intercept	0.164	0.153	-0.057	0.385
	tidal stage	0.114	0.156	-0.111	0.338
	$p(\text{tidal stage}^2) \psi(\cdot)$				
	intercept	0.263	0.206	-0.033	0.559
	tidal stage ²	-0.102	0.140	-0.304	0.010
	$p(\text{ordinal date}^2) \psi(\cdot)$				
	intercept	0.242	0.200	-0.046	0.530
	ordinal date ²	-0.081	0.132	-0.271	0.109

Table S20. Model selection for the occupancy (ψ) of divers. Number of parameters (K), Akaike Information Criterion adjusted for sample size and over-dispersion (QAIC_c ; $\hat{c} = 1.05$), difference between model and minimum QAIC_c values (ΔQAIC_c), and model weight (w_i) are shown. Models with $\Delta\text{QAIC}_c < 2$ are shown, as well as the intercept only model.

Guild	Model	K	QAIC_c	ΔQAIC_c	w_i
Divers	$p(\cdot) \psi(A. \text{nodosum} + F. \text{vesiculosus} + \text{other macroalgae})$	6	222.955	0.000	0.229
	$p(\cdot) \psi(A. \text{nodosum} + F. \text{vesiculosus})$	5	224.609	1.655	0.100
	$p(\cdot) \psi(\cdot)$	3	232.342	9.387	0.002

Table S21. Parameter estimates for the occupancy (ψ) of scavengers. Parameter estimates, standard errors (SE), and lower and upper 85% confidence intervals (LCL and UCL, respectively) are shown. Models with $\Delta\text{QAIC}_c < 2$ are shown, as well as the intercept only model.

Guild	Model	85% CI			
	ψ parameter	Estimate	SE	LCL	UCL
Divers	$p(\cdot) \psi(A. \textit{nodosum} + F. \textit{vesiculosus} + \text{other macroalgae})$				
	intercept	84.300	71.900	-19.231	187.850
	<i>A. nodosum</i>	55.000	46.100	-11.385	121.290
	<i>F. vesiculosus</i>	51.000	44.500	-12.991	115.008
	other macroalgae	-23.400	20.600	-52.971	6.268
	$p(\cdot) \psi(A. \textit{nodosum} + F. \textit{vesiculosus})$				
	intercept	74.100	62.800	-16.230	164.477
	<i>A. nodosum</i>	44.000	37.200	-9.567	97.588
	<i>F. vesiculosus</i>	37.000	32.900	-10.419	84.390
	$p(\cdot) \psi(\cdot)$				
	intercept	8.510	30.900	-36.011	53.024

Table S22. Summed model weights ($\sum w_i$) for each covariate in detection (p) and occupancy (ψ) balanced covariate candidate model sets.

Guild	p parameter	$\sum w_i$	ψ parameter	$\sum w_i$
Divers	tidal stage	0.266	<i>A. nodosum</i>	0.592
	tidal stage ²	0.256	<i>A. nodosum</i> ²	0.140
	intertidal area	0.345	<i>F. vesiculosus</i>	0.819
	ordinal date	0.196	<i>F. vesiculosus</i> ²	0.120
	ordinal date ²	0.220	other macroalgae	0.334
	precipitation	0.327	other macroalgae ²	0.136
	wave	0.198	macroalgal depth	0.192
			slope	0.246
			region	0.025

FIGURES

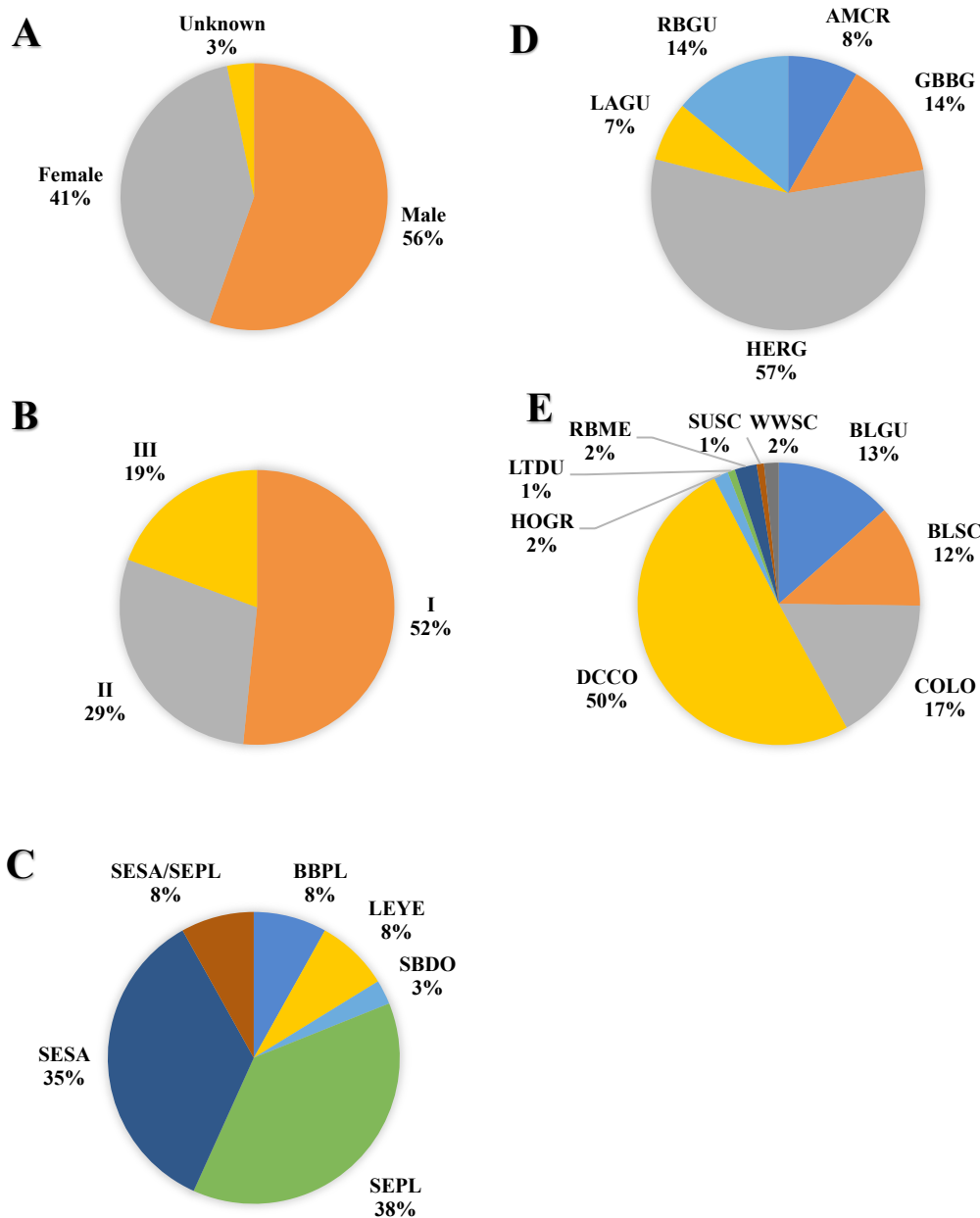


Figure S1. (A) Sex composition of Common Eider non-parenting adults; (B) age composition of Common Eider broods; and species composition of (C) shorebird, (D) scavenger, and (E) diver guilds. Percentages represent the relative contribution of each sex/age/species toward the total number of occurrences. For Common Eider broods, age class I = downy young, age class II = partly feathered young, and age class III = fully feathered young that remain in this class until capable of flight (Gallop and Marshall 1954). For guilds, the alpha codes are as follows: BBPL = Black-bellied Plover, LEYE = Lesser Yellowlegs, SBDO = Short-billed Dowitcher, SEPL = Semipalmated Plover, SESA = Semipalmated Sandpiper, AMCR = American Crow, GBBG = Great Black-backed Gull, HERG = Herring Gull, LAGU = Laughing Gull, RBGU = Ring-billed Gull, BLGU = Black Guillemot, BLSC = Black Scoter, COLO = Common Loon, DCCO = Double-crested Cormorant, HOGGR = Horned Grebe, LTDU = Long-tailed Duck, RBME = Red-breasted Merganser, SUSC = Surf Scoter, WWSC = White-winged Scoter.

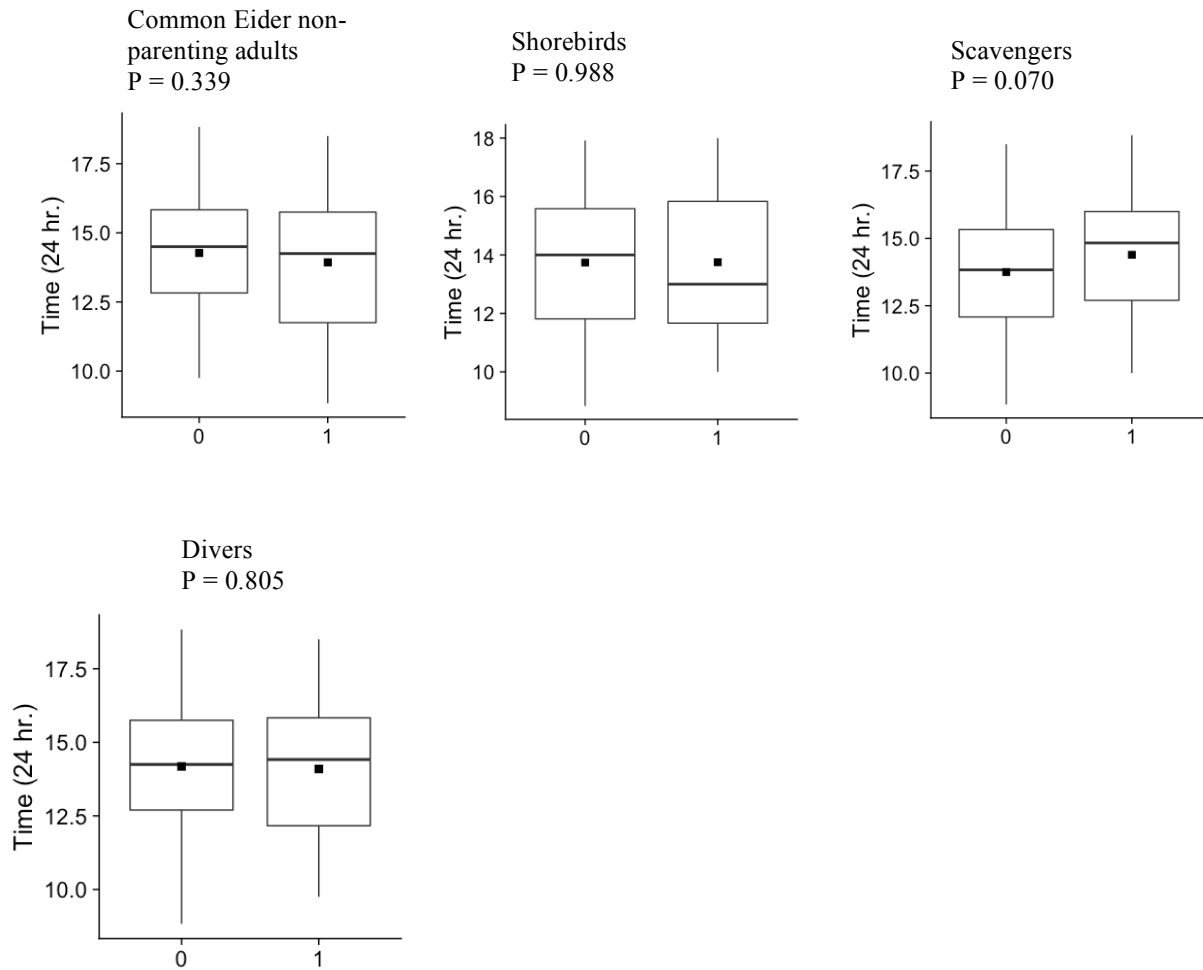


Figure S2. Boxplots showing the distribution of bird survey start times for guild absence (0) and presence (1). Horizontal bars represent the median survey time and black squares represent the mean survey time. There was no significant difference among pairwise relationships for any guild, and as a result we did not include a time-of-day covariate in analyses.