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Supplementary Material

Pronounced long-term trends in year-round diet composition of the European shag *Phalacrocorax aristotelis*

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Table S1 Start month, end month and length (in months) of breeding and non-breeding periods in each study year, together with the total number of months contributing to each study year.

Year	Breeding			Non-breeding			Total Length
	Start	End	Length (months)	Start	End	Length (months)	
1985-86	May	August	4	September	March	7	11
1987-88	April	July	4	August	March	8	12
1988-89	April	July	4	September	April	8	12
1989-90	May	August	4	September	April	8	13
1990-91	June	September	4	October	May	8	12
1991-92	June	September	4	October	April	7	11
1992-93	May	August	4	September	May	9	13
1993-94	June	September	4	October	April	7	11
1994-95	May	August	4	September	March	7	12
1998-99	May	August	4	September	April	8	12
1999-00	May	August	4	September	April	8	12
2003-04	April	July	4	August	April	9	13
2004-05	May	August	4	September	April	8	12
2005-06	May	August	4	September	April	8	12
2006-07	May	August	4	September	April	8	12
2007-08	May	August	4	September	April	8	12
2008-09	May	August	4	September	April	8	12
2009-10	April	July	4	August	March	8	12
2010-11	April	July	4	August	March	8	12
2011-12	April	July	4	August	March	8	12
2012-13	April	July	4	August	March	8	12
2013-14	May	August	4	September	April	8	12
2014-15	April	July	4	August	March	8	12

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Table S2 Sample size of pellets in each month between 1985-86 and 2014-15. Bold values indicate breeding period in each year. The non-breeding period in each year starts in the month after the breeding period and ends in the month preceding the commencement of the breeding period in the following calendar year.

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Table S3 Full model selection table for Generalised Linear Mixed Models testing for effects of year, period and a year by period interaction (*) on presence of each prey type. Periods are reported as non-breeding (NB) relative to breeding. Table shows model rank compared to other models, model structure, number of parameters (k), difference in AICc between top model and top model ($\Delta AICc$) and Akaike weight relative to other models (ω_i). Top models are shown in bold.

Response	Rank	Model	k	$\Delta AICc$	ω_i
Sandeel	1	<i>i + year + period + year*period</i>	4	0	1.00
	2	<i>i + year</i>	2	15.38	<0.01
	3	<i>i + year + period</i>	3	16.76	<0.01
	4	<i>i</i>	1	25.75	<0.01
	5	<i>i + period</i>	2	27.12	<0.01
Gadidae	1	<i>i + year</i>	2	0	0.43
	2	<i>i + year + period + year*period</i>	4	0.12	0.41
	3	<i>i + year + period</i>	3	1.95	0.16
	4	<i>i</i>	1	17.44	<0.01
	5	<i>i + period</i>	2	18.9	<0.01
Gobiidae	1	<i>i + year + period + year*period</i>	4	0	0.78
	2	<i>i + year + period</i>	3	2.57	0.22
	3	<i>i + year</i>	2	12.35	<0.01
	4	<i>i + period</i>	2	12.63	<0.01
	5	<i>i</i>	1	22.66	<0.01
Pleuronectidae	1	<i>i + year + period + year*period</i>	4	0	0.98
	2	<i>i + year + period</i>	3	8.96	0.01
	3	<i>i + year</i>	2	10.34	0.01
	4	<i>i + period</i>	2	11.82	<0.01
	5	<i>i</i>	1	13.37	<0.01
Cottidae	1	<i>i + year</i>	2	0	0.64
	2	<i>i + year + period</i>	3	2	0.24
	3	<i>i + year + period + year*period</i>	4	3.3	0.12
	4	<i>i</i>	1	19.1	<0.01
	5	<i>i + period</i>	2	21.07	<0.01
Sand	1	<i>i + year + period + year*period</i>	4	0	1.00
	2	<i>i + year + period</i>	3	13.44	<0.01
	3	<i>i + period</i>	2	23.41	<0.01
	4	<i>i + year</i>	2	93.67	<0.01
	5	<i>i</i>	1	102.36	<0.01

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Table S4 Full model selection table for Generalised Linear Mixed Models testing for effects of year, period and a year by period interaction (*) on numerical abundance of sandeel (relative to all otoliths) and Gadidae (relative to all non-sandeel otoliths). Periods are reported as non-breeding (NB) relative to breeding. Table shows model rank compared to other models, model structure, number of parameters (k), difference in AICc between top model and top model ($\Delta AICc$) and Akaike weight relative to other models (ω_i). Top models are shown in bold.

Response	Rank	Model	k	$\Delta AICc$	ω_i
Sandeel	1	<i>i + year</i>	2	0	0.65
	2	<i>i + year + period</i>	3	1.89	0.25
	3	<i>i + year + period + year*period</i>	4	3.89	0.09
	4	<i>i</i>	1	25.24	<0.01
	5	<i>i + period</i>	2	26.5	<0.01
Gadidae	1	<i>i + year + period</i>	3	0	0.92
	2	<i>i + year</i>	2	5.21	0.07
	3	<i>i + year + period + year*period</i>	4	8.84	0.01
	4	<i>i</i>	1	79.63	<0.01
	5	<i>i + period</i>	2	81.67	<0.01

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Table S5 Full model selection table for Generalised Linear Mixed Models testing for effects of year, period and a year by period interaction (*) on sample-level prey richness, and linear and quadratic trends in annual prey richness. Periods are reported as non-breeding (NB) relative to breeding. Table shows model rank compared to other models, model structure, number of parameters (k), difference in AICc between top model and top model ($\Delta AICc$) and Akaike weight relative to other models (ω_i). Top models are shown in bold. Models with similar levels of support indicated with ⁺

Response	Rank	Model	k	$\Delta AICc$	ω_i
Sample prey richness	1	<i>i + year + period + year*period</i>	4	0	1
	2	<i>i + year + period</i>	3	23.84	<0.01
	3	<i>i + year</i>	2	32.04	<0.01
	4	<i>i + period</i>	2	45.01	<0.01
	5	<i>i</i>	1	54.95	<0.01
Annual prey richness	1	<i>i + year + year²</i>	3	0	0.66
	2 ⁺	<i>i + year</i>	2	1.33	0.34
	3	<i>i</i>	1	12.14	<0.01