

Electronic Supplementary Material

Table S1. Results of the initial Generalized Linear Model (GLM₁) for the SMI in relation to age, sex, region and day number in the season with interactions among all categorical explanatory variables. Immature birds were excluded

Fixed effects	Estimate	SE	<i>t</i> value	<i>p</i>
Intercept	10.679	0.170	62.95	<0.001
Age (juv)	-1.249	0.211	5.91	<0.001
Sex (male)	0.160	0.150	1.07	0.284
Region (Upper Silesia)	0.450	0.289	1.56	0.120
Region (Świnoujście)	-0.974	0.315	3.09	0.003
Region (Gulf of Gdańsk)	-1.088	0.254	4.28	<0.001
Day number	-0.013	0.002	6.87	<0.001
Age (juv) * Sex (male)	0.002	0.298	0.01	0.995
Age (juv) * Region (Upper Silesia)	-0.298	0.410	0.73	0.467
Age (juv) * Region (Świnoujście)	0.261	0.451	0.58	0.564
Age (juv) * Region (Gulf of Gdańsk)	0.141	0.385	0.37	0.715
Sex (male) * Region (Upper Silesia)	-0.639	0.351	1.82	0.069
Sex (male) * Region (Świnoujście)	-0.720	0.374	1.93	0.055
Sex (male) * Region (Gulf of Gdańsk)	-0.852	0.318	2.68	0.008
Age (juv) * Sex (male) * Region (Upper Silesia)	-0.296	0.566	0.52	0.602
Age (juv) * Sex (male) * Region (Świnoujście)	0.014	0.604	0.02	0.981
Age (juv) * Sex (male) * Region (Gulf of Gdańsk)	-0.027	0.523	0.05	0.959

Table S2. Results of the initial Generalized Linear Model (GLM₂) for the SMI in relation to age, sex, region and day number in the season with interactions among all categorical explanatory variables. Data from the Gulf of Gdańsk were excluded

Fixed effects	Estimate	SE	<i>t</i> value	<i>p</i>
Intercept	10.815	0.176	61.58	<0.001
Age (imm)	-1.008	0.270	3.73	<0.001
Age (juv)	-1.322	0.206	6.56	<0.001
Sex (male)	0.159	0.142	1.11	0.266
Region (Upper Silesia)	0.587	0.276	2.13	0.034
Region (Świnoujście)	-0.912	0.300	3.04	0.002
Day number	-0.015	0.002	7.39	<0.001
Age (imm) * Sex (male)	0.384	0.334	1.51	0.250
Age (juv) * Sex (male)	0.009	0.293	0.03	0.975
Age (imm) * Region (Upper Silesia)	0.264	0.495	0.53	0.594
Age (juv) * Region (Upper Silesia)	-0.310	0.404	0.77	0.443
Age (imm) * Region (Świnoujście)	-0.451	0.596	0.76	0.449
Age (juv) * Region (Świnoujście)	0.237	0.444	0.53	0.594
Sex (male) * Region (Upper Silesia)	-0.625	0.346	1.81	0.071
Sex (male) * Region (Świnoujście)	-0.724	0.368	1.97	0.049
Age (imm) * Sex (male) * Region (Upper Silesia)	-0.441	0.642	0.69	0.492
Age (juv) * Sex (male) * Region (Upper Silesia)	-0.292	0.557	0.53	0.600
Age (imm) * Sex (male) * Region (Świnoujście)	1.625	0.793	2.05	0.041
Age (imm) * Sex (male) * Region (Świnoujście)	0.004	0.594	0.01	0.994

Table S3. Results of the Generalized Linear Model (GLM₃) for the SMI in relation to age, sex, area (coastal and inland) and day number in the season with interactions among all categorical explanatory variables

Fixed effects	Estimate	SE	<i>t</i> value	<i>p</i>
Intercept	8.910	0.246	36.15	<0.001
Day number	-0.009	0.003	2.68	0.008
Age (imm)	-0.662	0.579	1.14	0.253
Age (juv)	-1.473	0.395	3.73	<0.001
Area (Inland)	2.545	0.330	7.72	<0.001
Day number * Age (imm)	0.016	0.009	1.69	0.092
Day number * Age (juv)	0.006	0.005	1.07	0.284
Day number * Area (Inland)	-0.013	0.004	2.83	0.005
Age (imm) * Area (Inland)	-0.796	0.716	1.11	0.267
Age (juv) * Area (Inland)	-0.593	0.559	1.06	0.289
Day number * Age (imm) * Area (Inland)	-0.006	0.011	0.51	0.611
Day number * Age (juv) * Area (Inland)	0.003	0.008	0.43	0.669

Table S4. Results of the General Linear Model testing the effect of year on SMI across all age and sex groups in Central Poland and Świnoujście

Fixed effects	Estimate	SE	<i>t</i> value	<i>p</i>
Central Poland				
Adult males				
Intercept	62.201	55.601	1.42	0.159
Year	0.044	0.028	1.60	0.113
Adult females				
Intercept	-78.882	50.971	1.22	0.224
Year	-0.026	0.025	1.02	0.308
Immature males				
Intercept	24.330	88.437	0.28	0.784
Year	-0.007	0.044	0.17	0.668
Immature females				
Intercept	44.163	127.212	0.35	0.732
Year	-0.018	0.063	0.28	0.784
Juvenile males				
Intercept	-43.785	67.497	0.65	0.521
Year	0.026	0.034	0.78	0.442
Juvenile females				
Intercept	32.956	71.277	0.46	0.646
Year	0.012	0.036	0.34	0.734
Świnoujście				
Adult males				
Intercept	73.051	52.069	1.40	0.169
Year	-0.032	0.026	1.24	0.222
Adult females				
Intercept	-68.053	95.618	0.71	0.487
Year	0.038	0.048	0.80	0.433
Juvenile males				
Intercept	29.407	269.910	0.11	0.915
Year	-0.011	0.135	0.08	0.936
Juvenile females				
Intercept	-35.321	119.613	0.30	0.772
Year	0.022	0.060	0.36	0.722