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**Table A 1.1.** Model selection table based on corrected Akaike Information Criterion (AICc), in which the best three models with different combinations of predictors are compared for each response variable. Selected models for each response variable are indicated in bold. AICc, delta AICc, AICc weight, log-likelihood (LL) of each model, number of estimated parameters (K) as well as marginal and conditional R<sup>2</sup> are presented.

Model Description	AICc	Delta AICc	AIC weights	LL	K	Mar. R2	Con. R2
<i>S. melanothorax</i> ~ season*area + habitat * year + Spectacled warbler + Sardinian warbler + (1 site)	1054.16	0	0.49	-498.06	27	0.728	0.889
<b><i>S. melanothorax</i> ~ season + habitat * year + Spectacled warbler + Sardinian warbler + (1 site)</b>	1054.91	0.75	0.34	-511.84	15	0.692	0.886
<i>S. melanothorax</i> ~ season + habitat * year + Spectacled warbler + Sardinian warbler + observer + (1 site)	1056.77	2.61	0.13	-511.68	16	0.692	0.887
<b><i>S. melanocephala</i> ~ season * area + habitat * year + Cyprus warbler + observer + (1 site)</b>	917.63	0	0.54	-429.79	27	0.738	0.771
<i>S. melanocephala</i> ~ season * area + habitat * year + Cyprus warbler + Spectacled warbler + observer + (1 site)	918.35	0.71	0.38	-429	28	0.736	0.772
<i>S. melanocephala</i> ~ season * area + habitat * year + Cyprus warbler + Spectacled warbler + (1 site)	921.44	3.81	0.08	-431.7	27	0.736	0.772
<i>S. conspicillata</i> ~ season + observer + (1 site)	408.72	0	0.55	-199.28	8	0.003	1
<b><i>S. conspicillata</i> ~ season + habitat + observer + (1 site)</b>	409.56	0.85	0.36	-195.55	9	0.240	1

<i>S. conspicillata</i> ~ season + habitat*year + observer + (1 site)	412.6	3.88	0.08	-191.76	14	0.240	1
<b>Males <i>S. melanothorax</i> ~ season + habitat * year + Spectacled warbler + Sardinian warbler + (1 site)</b>	945.3	0	0.44	-457.03	15	0.672	0.831
Males <i>S. melanothorax</i> ~ season * area + habitat * year + Spectacled warbler + Sardinian warbler + (1 site)	945.76	0.46	0.35	-443.86	27	0.710	0.870
Males <i>S. melanothorax</i> ~ season + habitat * year + Spectacled warbler + Sardinian warbler + Observer + (1 site)	947.26	1.96	0.17	-456.92	16	0.671	0.864
<b>Males <i>S. melanocephala</i> ~ season * area + habitat * year + Cyprus warbler + observer + (1 site)</b>	853.36	0	0.67	-397.66	27	0.707	0.738
Males <i>S. melanocephala</i> ~ season * area + habitat * year + Cyprus warbler + Spectacled warbler + observer + (1 site)	855	1.63	0.3	-397.32	28	0.705	0.739
Males <i>S. melanocephala</i> ~ season * area + habitat * year + Cyprus warbler + Spectacled warbler + (1 site)	859.69	6.33	0.03	-400.82	27	0.704	0.740
<b>Males <i>S. conspicillata</i> ~ season + habitat + observer + (1 site)</b>	364.95	0	0.77	-173.25	9	0.249	1
Males <i>S. conspicillata</i> ~ season + habitat * year + observer + (1 site)	367.77	2.82	0.19	-169.34	14	0.256	1
Males <i>S. conspicillata</i> ~ season + habitat * year + Cyprus warbler + Spectacled warbler + observer + (1 site)	371.16	6.21	0.03	-168.87	16	0.276	1

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**Table A 1.2.** The table shows relative importance proportions (lmg metrics) for the covariates of the linear models having all individuals of a) Cyprus, b) Sardinian and c) Spectacled warbler and their respective males (d, e, f) as response variables. All response variables have been square root transformed.

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**a) Cyprus warbler**

**lmg**

**Fixed effects:**

Season	0.157
Habitat	0.604
Year	0.040
Spectacled warbler	0.115
Sardinian warbler	0.038
Habitat × year	0.043

**b) Sardinian warbler**

**Fixed effects:**

Season	0.108
Area	0.218
Habitat	0.492
Year	0.018
Cyprus warbler	0.014
Observer	0.011
Season × area	0.092
Habitat × year	0.042

**c) Spectacled warbler**

**Fixed effects:**

Season	0.027
Habitat	0.941
Observer	0.030

**d) Cyprus warbler males**

**Fixed effects:**

Season	0.164
Habitat	0.589
Year	0.047
Spectacled warbler	0.111
Sardinian warbler	0.038
Habitat × year	0.048

### e) Sardinian warbler males

#### Fixed effects:

Season	0.119
Area	0.211
Habitat	0.490
Year	0.018
Cyprus warbler	0.018
Observer	0.015
Season × area	0.085
Habitat × year	0.040

### f) Spectacled warbler males

#### Fixed effects:

Season	0.017
Habitat	0.956
Observer	0.025

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**Table A 1.3.** Output of validation tests performed with DHARMA. The table shows results for one-sample Kolmogorov-Smirnov (KS) test, non-parametric dispersion test and bootstrapped outlier test for the models of the three *Sylvia* species.

**Cyprus Warbler:**

KS test	D = 0.042	$p = 0.453$	
Dispersion test	Disp. = 0.398	$p = 0.4$	
Outlier test	Freq. = 0.002	$p = 1$	Exp. Freq = 0.004

**Sardinian Warbler:**

KS test	D = 0.031	$p = 0.824$	
Dispersion test	Disp. = 1.024	$p = 0.776$	
Outlier test	Freq. = 0	$p = 0.6$	Exp. Freq = 0.003

**Spectacled Warbler:**

KS test	D = 0.065	$p = 0.065$	
Dispersion test	Disp. = <0.001	$p = 0.08$	
Outlier test	Freq. = 0	$p = 1$	Exp. Freq = 0.007

**Table A 1.4.** Best fit model for effect of season, area, habitat type, year and other *Sylvia* species abundance, as well as the interactions of year with habitat and season with area, on the number of adult individuals of *Sylvia melanothorax* Cyprus, across 402 surveys. Significant results are presented in bold font.

<b>Random effects:</b>	<b>Variance</b>	<b>Std. dev</b>		
Site code	0.605	0.778		
<b>Fixed effects:</b>	<b>Estimate</b>	<b>Std. Error</b>	<b>z</b>	<b>p</b>
Intercept	0.609	0.545	1.117	0.263
Breeding	-0.303	0.364	-0.835	0.403
Wintering	-0.464	0.356	-1.303	0.192
Akrotiri	0.512	0.544	0.941	0.346
Cape Greko	0.683	0.657	1.040	0.298
Kouklia	1.062	0.641	1.657	0.097
Troodos	0.683	0.650	1.052	0.292
Disturbed mixture	-1.265	0.449	-2.818	<b>0.004</b>
Garrigue	-1.369	0.450	-3.037	<b>0.002</b>
Pine Forest	-1.161	0.442	-2.626	<b>0.008</b>
Saltmarsh	-4.530	1.073	-4.220	<b>&lt;0.001</b>
Year	-0.334	0.061	-5.405	<b>&lt;0.001</b>
Sardinian warbler	-0.117	0.056	-2.076	<b>0.037</b>
Spectacled warbler	-0.344	0.147	-2.343	<b>0.019</b>
Breeding × Akrotiri	0.340	0.387	0.878	0.380
Wintering × Akrotiri	-0.791	0.419	-1.888	0.058
Breeding × Cape Greko	-0.269	0.469	-0.573	0.566
Wintering × Cape Greko	-0.951	0.536	-1.774	0.076
Breeding × Kouklia	0.169	0.420	0.404	0.686
Wintering × Kouklia	-0.474	0.440	-1.075	0.282
Breeding × Troodos	0.796	0.429	1.855	0.063
Wintering × Troodos	0.365	0.433	0.844	0.398
Disturbed mixture × year	-0.232	0.113	-2.055	0.039
Garrigue × year	0.275	0.118	2.332	<b>0.019</b>
Pine forest × year	0.168	0.108	1.544	0.122
Saltmarsh × year	0.972	0.936	1.038	0.299

**Table A 1.5.** GLMM results of the best supported models (based on lowest AICc score), for the effect of season, area, habitat type, year and other *Sylvia* species abundance, as well as the interactions of season with area, on the number of male individuals of each *Sylvia* species that breeds in Cyprus. Significant results are presented in bold font.

**a) Cyprus warbler males**

<b>Random effects:</b>	<b>Variance</b>	<b>Std. dev</b>		
Site code	0.675	0.821		
<b>Fixed effects:</b>	<b>Estimate</b>	<b>Std. Error</b>	<b>z</b>	<b>p</b>
Intercept	1.042	0.325	3.205	<b>0.001</b>
Breeding	-0.049	0.100	-0.491	0.623
Winter	-0.898	0.130	-6.875	<b>&lt;0.001</b>
Disturbed mixture	-1.327	0.475	-2.789	<b>0.005</b>
Garrigue	-1.480	0.480	-3.080	<b>0.002</b>
Pine Forest	-1.150	0.466	-2.466	<b>0.013</b>
Saltmarsh	-4.547	1.086	-4.186	<b>&lt;0.001</b>
Year	-0.378	0.067	-5.632	<b>&lt;0.001</b>
Spectacled warbler	-0.365	0.165	-2.207	<b>0.027</b>
Sardinian warbler	-0.171	0.059	-2.896	<b>0.003</b>
Disturbed mixture × year	-0.244	0.127	-1.915	0.055
Garrigue × year	0.298	0.130	2.296	<b>0.021</b>
Pine forest × year	0.197	0.118	1.669	0.095
Saltmarsh × year	1.032	0.941	1.097	0.272

**b) Sardinian warbler males**

<b>Random effects:</b>	<b>Variance</b>	<b>Std. dev</b>		
Site code	0.093	0.305		
<b>Fixed effects:</b>	<b>Estimate</b>	<b>Std. Error</b>	<b>z</b>	<b>p</b>
Intercept	0.913	0.271	3.358	<b>&lt;0.001</b>
Breeding	-0.801	0.300	-2.667	<b>0.007</b>
Wintering	-0.668	0.269	-2.482	<b>0.013</b>
Akrotiri	-0.731	0.285	-2.558	<b>0.010</b>
Cape Greko	-1.547	0.466	-3.319	<b>&lt;0.001</b>
Kouklia	-1.046	0.426	-2.453	<b>0.014</b>
Troodos	-2.396	0.641	-3.738	<b>&lt;0.001</b>
Disturbed mixture	0.053	0.222	0.239	0.810
Garrigue	-1.088	0.258	-4.208	<b>&lt;0.001</b>
Pine Forest	-0.815	0.242	-3.369	<b>0.001</b>
Saltmarsh	-3.946	0.905	-4.359	<b>&lt;0.001</b>



Year	-0.215	0.129	-1.662	0.096
Cyprus warbler	-0.193	0.074	-2.598	<b>0.009</b>
Observer 2	0.569	0.205	2.768	<b>0.005</b>
Breeding: Akrotiri	0.346	0.377	0.918	0.358
Wintering: Akrotiri	1.003	0.324	3.092	<b>0.001</b>
Breeding: Cape Greko	0.160	0.692	0.232	0.816
Wintering: Cape Greko	1.901	0.497	3.824	<b>&lt;0.001</b>
Breeding: Kouklia	0.898	0.521	1.721	0.085
Wintering: Kouklia	1.347	0.454	2.965	<b>0.003</b>
Breeding: Troodos	0.501	0.959	0.523	0.601
Wintering: Troodos	1.155	0.753	1.532	0.125
Disturbed mixture × year	0.197	0.127	1.551	0.120
Garrigue × year	0.325	0.174	1.867	0.061
Pine forest × year	0.433	0.161	2.684	<b>0.007</b>
Saltmarsh × year	1.068	0.846	1.263	0.206

### c) Spectacled warbler males

<b>Random effects:</b>	<b>Variance</b>	<b>Std. dev</b>		
Site code	16.57	4.071		

  

<b>Fixed effects:</b>	<b>Estimate</b>	<b>Std. Error</b>	<b>z</b>	<b>p</b>
Intercept	-7.275	2.292	-3.174	<b>0.001</b>
Breeding	0.294	0.223	1.320	0.186
Wintering	0.190	0.220	0.861	0.383
Disturbed mixture	-0.274	2.444	-0.112	0.910
Garrigue	1.200	2.401	0.500	0.617
Pine Forest	-0.595	2.495	-0.239	0.811
Saltmarsh	6.744	3.064	2.201	<b>0.027</b>
Observer 2	0.898	0.176	5.089	<b>&lt;0.001</b>

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