Assessment of the National Park network of mainland Spain by the Insecurity Index of vertebrate species

Alba Estrada & Raimundo Real

Plos One

S1 Appendix. Variables included at each step of the modelling process and final favourability models. Variables included at each step of the modelling process (i.e., pairwise correlations, spatial descriptor, FDR, and forward-backward stepwise) for each species. X: longitude; Y: latitude. Variables selected for the spatial descriptor were those selected in the trend surface approach (spatial model). The variables included in the forward-backward stepwise are those of the final favourability models. Variables are sorted according to their order of entrance in the models. β: coefficients; SE: standard errors; Sig: significance: ***<0.001, **<0.01, *<0.05, ns>0.05. Evaluation metrics of the models are also shown. Variable codes as in S1 Table. "Spatial" in final favourability models is the linear combination of selected spatial variables with their coefficients and the intercept of the spatial model (see Estrada et al. 2016 Plos One).

Chioglossa lusitanica

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected			
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP1Win	Alt	XY	HPd
DP30Spr	SE	X^2	DTn0Sum
DP30Sum	WE	X^2Y	Shrub
DTn0Win	CTI	XY^2	
DTn0Sum			
DTn20			
DTx25Spr			
TRan			
SIDAut			
AET			

Final favourability model

Variables	ß	SE	Sig		Evaluation metrics	
(Intercept)	14.104053	4.332457	**		AUC	0.9853935
Spatial	0.75198	0.196765	***		Kappa	0.4657085
Sil	4.340705	0.923729	***		Sensitivity	0.9880952
DP30Spr	0.236318	0.135775	ns		Specificity	0.9334630
DTn0Win	-0.042055	0.010895	***		CCR	0.935192
CTI	-0.906338	0.251222	***		HL	11.3658311 ns
DHi	-0.015947	0.007593	*			
DTn20	-0.435574	0.193528	*			
Clay	3.87317	1.439383	**			
Calc	2.86569	1.209104	*			
BLF	-1.552821	0.887971	ns			
Grav	4.034756	2.281961	ns			
SE	-0.016587	0.010997	ns			

Euproctus asper

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected

Climate	Topography	Spatial	Variables excluded by the FDR
DP10Spr	Alt	X	Shrub
DP10Sum	SE	XY	WE
DTn0Win	WE	X^2	Gyps
DTn0Sum	CTI	X^2Y	
DTn20		XY^2	
TRan			
AET			

Final favourability model

Variables	ß	SE	Sig
(Intercept)	-2.965059	2.667609	ns
Spatial	1.481486	0.222381	***
BLF	3.721701	0.98703	***
HPd	-0.024717	0.014962	ns
DTn20	-0.189029	0.045073	***
U500	-0.018825	0.007658	*
NIAL	-7.78196	2.232869	***
Past	-7.26826	2.898036	*
MF	2.914323	1.988447	ns
Alt	0.003819	0.001015	***
DTn0Win	-0.105248	0.028221	***
TRan	0.542185	0.189932	**
DTn0Sum	-0.625408	0.407322	ns

Evaluation metrics

AUC	0.9960155
Kappa	0.7169263
Sensitivity	1
Specificity	0.9726509
CCR	0.9736247
HL	22.6335351 **

Pleurodeles waltl

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected			
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP10Spr	Alt	Y	Shrub
DTn0Sum	DAlt	X	HPd
DTn20	SE	XY	SE
TRan	WE	X^2	BLF
TxAut	CTI	X^3	Clay
SIDSum		Y^2	
SISWin		Y^3	
AET		X^2Y	
		XY^2	

Final favourability model

Variables	ß	SE	Sig	Evaluation metrics	
(Intercept)	3.97E+00	1.45E+00	**	AUC	0.8575984
Spatial	1.06E+00	6.04E-02	***	Kappa	0.4343372
DTn0Sum	-4.15E+00	6.50E-01	***	Sensitivity	0.8536386
Alt	6.67E-04	1.59E-04	***	Specificity	0.7072215
U500	2.44E-03	7.90E-04	**	CCR	0.7409570
Gyps	-1.52E+01	1.13E+01	ns	HL	50.1243829 ***
CTI	-1.59E-01	6.07E-02	**		
Grav	6.01E-01	2.33E-01	**		
DP10Spr	-1.39E-01	4.20E-02	***		
AET	8.82E-04	4.52E-04	ns		
Sil	2.73E-01	1.31E-01	*		
SIDSum	-2.94E-01	1.53E-01	ns		

Bufo calamita

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected			
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP1	Alt	Y	DTx25Spr
DP30Aut	Slop	X	WE
DP30Sum	SE	XY	Shrub
DTn0Sum	WE	X^2	DHi
DTn20		X^3	Calc
DTx25Spr		Y^2	Gyps
TRan		Y^3	Alt
TnJul		XY^2	
AET			

Final favourability model

Variables	ß	SE	Sig	Evaluation metrics	
(Intercept)	1.12E+00	4.17E-01	**	AUC	0.6886401
Spatial	7.69E-01	7.40E-02	***	Kappa	0.2716559
U100	-4.69E-03	1.13E-03	***	Sensitivity	0.6611627
Past	-5.61E+00	9.39E-01	***	Specificity	0.6109954
HPd	8.78E-04	2.05E-04	***	CCR	0.6384702
CF	1.10E+00	2.44E-01	***	HL	40.4083661 ***
BLF	7.82E-01	2.79E-01	**		
DP30Aut	-3.18E-01	4.30E-02	***		
Sil	5.15E-01	8.99E-02	***		
U500	-3.52E-03	6.07E-04	***		
TRan	-5.64E-02	1.81E-02	**		
AET	7.33E-04	2.90E-04	*		
SE	0.0034787	0.0022651	ns		

Hyla meridionalis

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected

Climate	Topography	Spatial	Variables excluded by the FDR
DP30Win	Alt	Y	CF
DP30Sum	DAlt	XY	Gyps
DTn0Sum	SE	X^3	TRan
DTn20	WE	Y^2	Shrub
TAut	CTI	Y^3	DHi
TRan		X^2Y	
ROff		XY^2	
AET			

Final favourability model

Variables	ß	SE	Sig	Evaluation metrics	
(Intercept)	1.91E+00	1.99E+00	ns	AUC	0.9494523
Spatial	8.52E-01	4.14E-02	***	Kappa	0.5852454
AET	2.52E-03	5.07E-04	***	Sensitivity	0.9322251
DTn20	1.85E-02	4.88E-03	***	Specificity	0.8486522
Sil	-1.16E+00	4.46E-01	**	CCR	0.8609646
SE	1.59E-02	4.68E-03	***	HL	56.7003716 ***
Alt	-1.09E-03	2.80E-04	***		
CTI	-2.40E-01	8.81E-02	**		
HPd	3.84E-04	1.35E-04	**		
Past	5.48E+00	2.15E+00	*		
Clay	-2.06E+00	4.67E-01	***		
WE	8.26E-03	5.75E-03	ns		
BLF	1.2950793	0.6347605	*		
Grav	-1.9231928	0.5357702	***		
Calc	-1.7108759	0.4807249	***		

Rana iberica

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected			
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP10Win	Alt	Y	Alt
DP30Spr	DAlt	X	SE
DP30Sum	SE	XY	HPd
DTn0Sum	WE	X^2	
DTn20	CTI	X^3	
TRan		Y^2	
SISWin		Y^3	
PET		X^2Y	
AET		XY^2	

Final favourability model

Variables	ß	SE	Sig	Evaluation metrics	
(Intercept)	-6.66E+00	1.80E+00	***	AUC	0.9834648
Spatial	1.04E+00	1.08E-01	***	Kappa	0.6569974
DAlt	1.20E-03	3.16E-04	***	Sensitivity	0.9522822
Sil	5.92E+00	8.51E-01	***	Specificity	0.9218815
U500	-9.78E-03	1.72E-03	***	CCR	0.9246420
CF	4.13E+00	8.44E-01	***	HL	20.9191192 **
PET	-1.75E-02	2.99E-03	***		
AET	1.08E-02	2.29E-03	***		
DP30Sum	-1.33E+00	3.23E-01	***		
Calc	5.80E+00	9.66E-01	***		
Grav	6.10E+00	1.19E+00	***		
DP10Win	1.09E-01	3.31E-02	**		
Clay	3.7404198	1.0882839	***		
SISWin	4.8799604	0.983512	***		
TRan	-0.2966148	0.0723339	***		
DTn0Sum	0.5978934	0.259484	*		
MF	2.5633932	0.8419069	**		
BLF	2.1377256	0.7343627	**		
Shrub	1.2962815	0.5504615	*		

Rana pyrenaica

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected			
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP10Spr	Alt	X	WE
DP10Sum	SE	XY	Gyps
DTn0Sum	WE	X^3	BLF
DTn20	CTI	Y^2	Past
TRan		Y^3	Sil
TxAut		X^2Y	U500
AET		XY^2	

Final favourability model

Variables	ß	SE	Sig	Evaluation metrics	
(Intercept)	3.31E+02	1.09E+02	**	AUC	1
Spatial	4.05E+01	1.29E+01	**	Kappa	0.9051913
Calc	1.23E+02	3.98E+01	**	Sensitivity	1
CF	4.07E+02	1.31E+02	**	Specificity	0.9990537
Shrub	-2.49E+02	8.74E+01	**	CCR	0.9990580
Clay	3.68E+02	1.19E+02	**	HL	0.9031554 ns
DHi	-1.78E+00	6.93E-01	*		
TRan	-2.24E+01	7.59E+00	**		
MF	4.22E+01	1.84E+01	*		

Emys orbicularis

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected

Climate	Topography	Spatial	Variables excluded by the FDR
DP10Sum	Alt	Y	Grav
DP30Spr	DAlt	X	Gyps
DTn0Sum	SE	XY	U100
DTn20	WE	X^3	WE
TRan	CTI	Y^2	
TxAut		Y^3	
ROff		X^2Y	
AET		XY^2	

Final favourability model

Variables	ß	SE	Sig
(Intercept)	-3.98E-01	2.08E+00	ns
Spatial	5.16E-01	7.71E-02	***
NIAL	-6.23E-01	3.10E-01	*
DTn0Sum	-1.75E+00	6.98E-01	*
Calc	-8.82E-01	2.20E-01	***
DHi	1.49E-02	2.70E-03	***
U500	-4.85E-03	1.07E-03	***
BLF	2.61E+00	4.85E-01	***
DP10Sum	-3.56E-01	7.44E-02	***
Clay	-5.80E-01	2.44E-01	*
SE	1.22E-02	4.37E-03	**
CTI	2.44E-01	6.91E-02	***
Shrub	1.1467561	0.3312632	***
TxAut	-0.2690325	0.0569823	***
Alt	-0.0017543	0.0003831	***
TRan	0.0802111	0.033057	*
CF	1.1775007	0.5300833	*

Evaluation metrics	
AUC	0.8112590
Kappa	0.2116908
Sensitivity	0.7651007
Specificity	0.7183707
CCR	0.7223060
HL	20.8598058 **

Mauremys leprosa

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected

Climate	Topography	Spatial	Variables excluded by the FDR
DP30Sum	Alt	X	Clay
DTn0Spr	DAlt	XY	Grav
DTn0Sum	SE	X^3	U100
DTn20	WE	Y^2	
PSpr	CTI	Y^3	
TJul		X^2Y	
TRan			
AET			

Final favourability model

Variables	ß	SE	Sig		Evaluation metrics	
(Intercept)	-9.14E-01	4.15E-01	*		AUC	0.8572861
Spatial	6.38E-01	4.25E-02	***		Kappa	0.5183574
DTn0Spr	-4.82E-02	7.65E-03	***		Sensitivity	0.8115038
Sil	5.55E-01	1.23E-01	***		Specificity	0.7743855
U500	-5.59E-03	7.78E-04	***		CCR	0.7844763
DTn0Sum	-2.75E+00	6.57E-01	***		HL	41.2214238 ***
Shrub	8.07E-01	2.27E-01	***			
HPd	5.89E-04	1.40E-04	***			
CF	1.24E+00	3.52E-01	***			
PSpr	3.26E-03	9.92E-04	***			
DP30Sum	-4.32E-01	1.34E-01	**			
Past	-3.68E+00	1.77E+00	*			
DHi	0.0039865	0.001976	*			
BLF	0.8579009	0.4324115	*			
TRan	0.0558105	0.022311	*			
Gyps	-0.8969753	0.5267162	ns			
NIAL	-0.3628105	0.2004525	ns			

Testudo graeca

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

	Variables selected		
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP1	Alt	Y	Gyps
DP30Spr	SE	XY	CTI
DTn0Sum	WE	X^2	Shrub
DTn20	CTI	Y^2	CF
DTx25Aut		Y^3	Sil
PSum		X^2Y	Clay
TRan		XY^2	HPd
TxWin			U100
AET			

Final favourability model

Variables	ß	SE	Sig	Evaluation metrics	
(Intercept)	5.87E+00	3.57E+00	ns	AUC	0.9981490
Spatial	1.00E+00	2.15E-01	***	Kappa	0.4687089
BLF	-1.92E+02	1.14E+02	ns	Sensitivity	1
WE	-5.91E-02	2.29E-02	**	Specificity	0.9844432
NIAL	-6.81E+00	5.18E+00	ns	CCR	0.9845516
DTn20	-2.80E-02	1.32E-02	*	HL	11.5754054 ns
SE	-4.06E-02	1.86E-02	*		
DTx25Aut	1.14E-01	5.60E-02	*		

Anguis fragilis

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected

Climate	Topography	Spatial	Variables excluded by the FDR
DP01	Alt	Y	SE
DP30Spr	SE	X	Calc
DP30Sum	WE	X^2	WE
DTn0Sum	CTI	X^3	
DTn20		Y^2	
TRan		Y^3	
TxJul		X^2Y	
PET		XY^2	
AET			

Final favourability model

Variables	ß	SE	Sig
(Intercept)	2.67E+00	1.11E+00	*
Spatial	6.08E-01	4.72E-02	***
AET	4.05E-03	6.73E-04	***
DP30Sum	5.89E-01	1.49E-01	***
DHi	-1.54E-02	3.18E-03	***
PET	-5.92E-03	1.30E-03	***
U500	-4.85E-03	1.11E-03	***
HPd	3.51E-04	1.36E-04	**
BLF	1.47E+00	3.92E-01	***
CF	1.63E+00	4.18E-01	***
Past	-1.67E+00	6.57E-01	*
TRan	-6.15E-02	2.91E-02	*
DTn20	0.0203212	0.0081187	*
U100	-0.0040251	0.0024434	ns
DTn0Sum	0.2843962	0.1636721	ns
Sil	0.4647558	0.1717781	**
Clay	0.4879699	0.2540485	ns

Evaluation metrics	
AUC	0.9391049
Kappa	0.6307209
Sensitivity	0.9068136
Specificity	0.8540603
CCR	0.8639789
HL	11.6840720 ns

Podarcis muralis

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected

Climate	Topography	Spatial	Variables excluded by the FDR
DP01Sum	Alt	Y	U500
DP30Sum	SE	X	WE
DTn0Sum	WE	XY	DHi
DTn20	CTI	X^2	HPd
PSpr		X^3	
TRan		Y^2	
TxInv		Y^3	
AET		X^2Y	
		XY^2	

Final favourability model

Variables	ß	SE	Sig	Evaluation metrics	
(Intercept)	-7.03E+00	1.63E+00	***	AUC	0.9790950
Spatial	7.69E-01	5.21E-02	***	Kappa	0.6890698
DTn20	-5.60E-02	1.77E-02	**	Sensitivity	0.9391447
CF	3.47E+00	5.57E-01	***	Specificity	0.9191489
U100	-2.85E-02	3.39E-03	***	CCR	0.921439
Alt	3.86E-03	5.44E-04	***	HL	17.4712761 *
BLF	2.74E+00	5.48E-01	***		
AET	5.97E-03	1.33E-03	***		
TxWin	2.75E-01	9.01E-02	**		
SE	-2.64E-02	6.88E-03	***		
DP30Sum	6.32E-01	1.95E-01	**		
Sil	5.14E-01	2.11E-01	*		
NIAL	-1.1542659	0.5112433	*		

Elaphe scalaris

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected			
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP30Spr	Alt	Y	WE
DP30Sum	SE	X	SE
DTn0Spr	WE	XY	Calc
DTn0Sum	CTI	X^2	NIAL
DTn20		X^3	Clay
DTx25Spr		Y^2	
DTx25Sum		Y^3	
TRan		X^2Y	
ROff		XY^2	
AET			

Final favourability model

Variables	ß	SE	Sig
(Intercept)	1.62E+00	8.56E-01	ns
Spatial	6.78E-01	6.43E-02	***
DTn0Spr	-4.97E-02	5.73E-03	***
DTn20	-1.16E-02	3.16E-03	***
CTI	-2.74E-01	4.37E-02	***
HPd	5.90E-04	1.75E-04	***
DTx25Sum	2.71E-02	5.91E-03	***
DTx25Spr	-5.48E-02	7.23E-03	***
U100	-7.62E-03	1.26E-03	***
TRan	1.47E-01	2.62E-02	***
AET	9.25E-04	2.74E-04	***
Grav	7.58E-01	1.88E-01	***
Sil	0.3484844	0.0993564	***
U500	-0.0019736	0.0006779	**
Past	-3.0309997	1.3219593	*
DTn0Sum	0.4530161	0.2208598	*
CF	0.4398373	0.2779301	ns

Evaluation metrics	
AUC	0.7409146
Kappa	0.3028314
Sensitivity	0.7317588
Specificity	0.5784814
CCR	0.6469480
HL	73.9301215 ***

Phalacrocorax aristotelis

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected

Climate	Topography	Spatial	Variables excluded by the FDR
DP30Sum	Alt	Y	Calc
DTn0Win	DAlt	X	WE
DTn0Sum	SE	XY	Shrub
DTn20Aut	WE	X^2	
DTx25Spr	CTI	X^3	
DTx25Sum		Y^2	
PAut		Y^3	
TRan		X^2Y	
AET		XY^2	

Final favourability model

Variables	ß	SE	Sig
(Intercept)	2.99E+01	5.54E+00	***
Spatial	5.01E-01	1.15E-01	***
DTn0Sum	-2.57E+01	1.55E+01	ns
CTI	-1.14E+00	2.95E-01	***
Alt	-9.30E-03	2.78E-03	***
SE	-2.11E-02	1.41E-02	ns
U100	5.73E-02	1.27E-02	***
MF	-5.01E+00	1.40E+00	***
TRan	-6.81E-01	1.62E-01	***
BLF	-5.14E+00	1.43E+00	***
DHi	-4.19E-02	1.67E-02	*

Evaluation metrics

AUC	0.9949604
Kappa	0.4715157
Sensitivity	0.9893617
Specificity	0.9624089
CCR	0.9628862
HL	13.5115766 ns

Ciconia nigra

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected			
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP10Win	Alt	Y	SE
DP30Spr	DAlt	X	CTI
DP30Sum	SE	XY	
DTn0Spr	WE	X^2	
DTn0Sum	CTI	X^3	
DTn20		X^2Y	
DTx25Spr		XY^2	
TRan			
SIDWin			
SIDSum			
AET			

Final favourability model

Variables	ß	SE	Sig		Evaluation metrics	
(Intercept)	-2.25E+00	1.73E+00	ns		AUC	0.9619832
Spatial	6.52E-01	7.58E-02	***		Kappa	0.5469590
AET	3.92E-03	6.99E-04	***		Sensitivity	0.9539749
HPd	-1.65E-02	7.89E-03	*		Specificity	0.8801242
NIAL	-2.50E+00	5.66E-01	***		CCR	0.8867747
DTn0Sum	-1.71E+00	1.06E+00	ns		HL	7.8993221 ns
DHi	1.71E-02	3.29E-03	***			
TRan	3.21E-01	6.73E-02	***			
Sil	7.39E-01	2.72E-01	**			
DP30Sum	-2.33E+00	6.52E-01	***			
CF	2.86E+00	7.61E-01	***			
Past	-3.98E+00	2.82E+00	ns			
SIDWin	-3.3990985	0.6744347	***			
U500	-0.0063829	0.0017097	***			
DTn0Spr	-0.0340839	0.0221235	ns			
BLF	1.6387195	0.6574473	*			
Alt	-0.0009056	0.0005386	ns			
Grav	-0.9810976	0.6603876	ns			

Netta rufina

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected			
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP30Sum	Alt	XY	Clay
DTn0Sum	DAlt	X^2	NIAL
DTn20	SE	X^3	HPd
TRan	WE	Y^2	TRan
SIDSpr	CTI	Y^3	Gyps
AET		X^2Y	SE
		XY^2	WE

Final favourability model

Variables	**ß**	**SE**	**Sig**
(Intercept)	-1.73E+01	2.54E+00	***
CTI	5.94E-01	1.03E-01	***
Spatial	4.89E-01	9.27E-02	***
SIDSpr	1.24E+00	5.06E-01	*
MF	-1.99E+01	1.50E+01	ns
Grav	7.86E-01	3.83E-01	*
CF	-3.69E+00	1.53E+00	*
BLF	-4.74E+00	2.71E+00	ns
Sil	-1.18E+00	4.70E-01	*
DHi	1.33E-02	5.48E-03	*
DTn20	9.35E-03	5.89E-03	ns

Evaluation metrics	
AUC	0.9130220
Kappa	0.1535811
Sensitivity	0.9113924
Specificity	0.7768932
CCR	0.7808968
HL	11.3447743 ns

Gypaetus barbatus

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected			
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP10Spr	Alt	X	Sil
DP10Sum	DAlt	X^3	WE
DTn0Win	SE	Y^2	U500
DTn0Sum	WE	Y^3	Gyps
DTn20Aut	CTI	XY^2	TRan
TRan			
AET			

Final favourability model

Variables	ß	SE	Sig	Evaluation metrics	
(Intercept)	4.09E+01	1.25E+01	**	AUC	0.9952292
Spatial	1.20E+00	1.87E-01	***	Kappa	0.5098472
DAlt	3.65E-03	7.99E-04	***	Sensitivity	1
U100	-2.45E-02	1.02E-02	*	Specificity	0.9687680
Shrub	5.17E+00	1.61E+00	**	CCR	0.9692916
CTI	-2.62E+00	7.10E-01	***	HL	9.6854071 ns
DP10Sum	-4.18E-01	1.96E-01	*		
SE	3.98E-02	1.95E-02	*		
MF	4.22E+00	1.84E+00	*		
CF	-2.00E+00	1.27E+00	ns		
DTn0Win	-3.14E-02	1.34E-02	*		

Neophron percnopterus

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

	Variables selected		
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP10Sum	Alt	XY	WE
DP30Spr	DAlt	X^2	TRan
DTn0Sum	SE	X^3	U500
DTn20	WE	Y^2	Sil
TRan	CTI	Y^3	
TxWin		X^2Y	
SISWin		XY^2	
ROff			
AET			

Final favourability model

Variables	ß	SE	Sig	Evaluation metrics	
(Intercept)	6.94E+00	1.96E+00	***	AUC	0.8543394
Spatial	1.16E+00	6.99E-02	***	Kappa	0.3870012
Shrub	2.45E+00	2.76E-01	***	Sensitivity	0.7877155
DHi	1.54E-02	2.11E-03	***	Specificity	0.7481735
BLF	1.78E+00	3.77E-01	***	CCR	0.7550867
DTn20	1.25E-02	5.42E-03	*	HL	72.8182265 ***
Calc	9.70E-01	1.44E-01	***		
U100	1.08E-02	1.70E-03	***		
MF	2.36E+00	5.70E-01	***		
SE	-1.72E-02	3.63E-03	***		
DAlt	1.30E-03	2.43E-04	***		
DP10Sum	-2.12E-01	4.63E-02	***		
Alt	-0.0021521	0.0002819	***		
TxWin	-0.2564922	0.0442536	***		
CTI	-0.2198655	0.095337	*		
DP30Spr	-0.2524642	0.0885915	**		
NIAL	-0.679976	0.271057	*		
Clay	0.429391	0.1893503	*		
AET	0.0009067	0.0004482	*		
Gyps	0.6010296	0.3554959	ns		

Aegypus monachus

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected

Climate	Topography	Spatial	Variables excluded by the FDR
DP30Spr	Alt	X	DAlt
DP30Sum	DAlt	XY	CF
DTn0Sum	SE	X^2	WE
DTn20	WE	X^3	DP30Spr
DTx25Spr	CTI	Y^2	Alt
TRan		Y^3	SE
TnJul		XY^2	
SIDWin			
SIDSum			
AET			

Final favourability model

Variables	ß	SE	Sig
(Intercept)	6.12E+00	4.42E+00	ns
Spatial	1.08E+00	1.64E-01	***
Shrub	2.55E+00	6.09E-01	***
BLF	3.47E+00	9.23E-01	***
DHi	2.12E-02	4.62E-03	***
NIAL	-2.03E+00	1.22E+00	ns
DTx25Spr	6.49E-02	2.00E-02	**
SIDSum	-2.95E+00	7.08E-01	***
U100	-1.18E-02	3.82E-03	**
Past	-1.25E+01	6.61E+00	ns
HPd	-2.20E-02	1.88E-02	ns
AET	4.00E-03	1.20E-03	***
TRan	0.373362	0.11373	**
Calc	-2.011601	0.92926	*
Grav	-2.374854	1.579367	ns
DTn20	-0.017868	0.012335	ns

Evaluation metrics

AUC	0.9668476
Kappa	0.2833218
Sensitivity	0.9615385
Specificity	0.8765528
CCR	0.8790505
HL	8.0547909 ns

Aquila adalberti

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected			
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP30Spr	Alt	Y	Slop
DP30Sum	Slop	X	HPd
DTn0Sum	SE	XY	Alt
DTn20	WE	X^2	SE
DTx25Spr		X^3	CF
TRan		Y^2	U500
TnJul		Y^3	WE
SIDWin		X^2Y	
SIDSum		XY^2	
AET			

Final favourability model

Variables	ß	SE	Sig		Evaluation metrics	
(Intercept)	1.48E+01	5.08E+00	**		AUC	0.9509119
Spatial	1.06E+00	1.31E-01	***		Kappa	0.235036
NIAL	-3.66E+00	8.89E-01	***		Sensitivity	0.9556962
Shrub	1.49E+00	5.45E-01	**		Specificity	0.8460194
DP30Spr	-1.27E+00	2.83E-01	***		CCR	0.8492841
BLF	3.37E+00	9.13E-01	***		HL	1.9422848 ns
DHi	-7.26E-03	4.36E-03	ns			
AET	4.47E-03	1.13E-03	***			
Calc	-1.97E+00	6.75E-01	**			
Clay	-1.40E+00	5.11E-01	**			
TRan	2.50E-01	8.61E-02	**			
SIDSum	-4.73E+00	1.03E+00	***			
SIDWin	1.75943	1.003337	ns			
Past	-18.897838	11.427461	ns			
Grav	1.205273	0.555369	*			
DTx25Spr	0.041297	0.020827	*			
DTn20	-0.030661	0.014351	*			
TnJul	0.154892	0.098609	ns			

Aquila chrysaetos

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

	Variables selected		
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP01Win	Alt	Y	WE
DP30Spr	DAlt	X	Gyps
DTn0Sum	SE	XY	U500
DTn20Aut	WE	X^2	MF
TSum	CTI	X^3	SE
TRan		Y^2	
TnWin		Y^3	
AET		X^2Y	
		XY^2	

Final favourability model

Variables	**ß**	**SE**	**Sig**
(Intercept)	5.57E+00	1.72E+00	**
CTI	-5.37E-01	9.21E-02	***
TRan	3.63E-01	7.22E-02	***
Shrub	2.38E+00	2.22E-01	***
Alt	6.41E-04	2.26E-04	**
DAlt	1.55E-03	2.10E-04	***
Spatial	6.38E-01	9.12E-02	***
DP30Spr	-4.33E-01	7.61E-02	***
DHi	6.83E-03	1.74E-03	***
BLF	1.99E+00	3.38E-01	***
Past	-4.39E+00	1.22E+00	***
CF	1.27E+00	3.03E-01	***
Clay	-0.5084866	0.1495641	***
HPd	-0.0011865	0.000636	ns
AET	-0.0009261	0.0003611	*
Grav	-0.4254798	0.2645641	ns
TnWin	0.2504006	0.0678657	***
TSum	-0.1988456	0.0703953	**
DTn20Aut	-0.0401276	0.0191527	*

Evaluation metrics	
AUC	0.8345716
Kappa	0.4719186
Sensitivity	0.7692308
Specificity	0.7506717
CCR	0.7562170
HL	28.4659447 ***

Lagopus mutus

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected			
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP10Spr	Alt	Y	Past
DTn0	SE	XY	Calc
DTn0Sum	WE	X^2	WE
DTn20	CTI	X^3	MF
TSum		Y^3	
TRan		XY^2	
AET			

Final favourability model

Variables	ß	SE	Sig	Evaluation metrics	
(Intercept)	-1.09E+01	3.23E+00	***	AUC	0.9994035
Spatial	4.61E-01	1.81E-01	*	Kappa	0.7386766
DTn0	5.79E-02	1.53E-02	***	Sensitivity	1
DP10Spr	1.85E-01	1.22E-01	ns	Specificity	0.9918033
Clay	-1.15E+01	6.38E+00	ns	CCR	0.9918990
HPd	-3.77E-01	2.80E-01	ns	HL	10.9099107 ns

Tetrao urogallus

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

	Variables selected		
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP10Spr	Alt	Y	SE
DP10Sum	SE	X	Calc
DTn0Sum	WE	XY	WE
DTn20	CTI	X^2	
Tann		X^3	
TRan		Y^2	
AET		X^2Y	
		XY^2	

Final favourability model

Variables	ß	SE	Sig	Evaluation metrics	
(Intercept)	2.57E+01	9.73E+00	**	AUC	0.9952019
CTI	-2.21E+00	5.55E-01	***	Kappa	0.5690619
Spatial	7.09E-01	1.25E-01	***	Sensitivity	0.9793103
CF	1.10E+01	1.68E+00	***	Specificity	0.9616502
U500	2.57E-02	4.15E-03	***	CCR	0.9621326
TRan	3.29E-01	1.20E-01	**	HL	8.3280171 ns
AET	-1.29E-02	4.41E-03	**		
BLF	8.13E+00	1.45E+00	***		
Sil	-2.39E+00	5.62E-01	***		
MF	7.24E+00	1.61E+00	***		
Shrub	6.44E+00	1.45E+00	***		
Alt	4.13E-03	8.59E-04	***		
DTn0Sum	-0.9831937	0.3410507	**		
Past	6.9874094	3.1664896	*		
Grav	-6.5479217	4.8726068	ns		

Perdix perdix

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected			
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP10Spr	Alt	Y	SE
DP30Sum	SE	XY	WE
DTn0Sum	WE	X^2	
DTn20	CTI	X^3	
TSum		Y^2	
TRan		Y^3	
TxWin		X^2Y	
SIDSum		XY^2	
AET			

Final favourability model

Variables	ß	SE	Sig		Evaluation metrics	
(Intercept)	2.92E+01	6.72E+00	***		AUC	0.9891759
CTI	-2.01E+00	3.17E-01	***		Kappa	0.5682411
Spatial	4.77E-01	8.68E-02	***		Sensitivity	0.9686099
AET	-1.13E-02	2.56E-03	***		Specificity	0.9431662
DTn20	-1.67E-01	7.06E-02	*		CCR	0.9442351
BLF	5.62E+00	9.43E-01	***		HL	10.7791335 ns
Shrub	5.16E+00	9.32E-01	***			
Alt	4.36E-03	1.01E-03	***			
Past	5.13E+00	1.68E+00	**			
MF	3.16E+00	1.26E+00	*			
CF	2.68E+00	9.51E-01	**			
U100	-1.42E-02	5.70E-03	*			
TxWin	0.366997	0.162182	*			
DTn0Sum	0.585695	0.257855	*			
DHi	0.016267	0.007717	*			
DP30Sum	-0.618032	0.255162	*			

Otis tarda

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

	Variables selected		
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP30Spr	Alt	Y	U100
DP30Sum	Slop	X	Calc
DTn0Sum	SE	XY	DHi
DTn20Aut	WE	X^2	
TRan		X^3	
TxSpr		X^2Y	
SIDSum		XY^2	
SISWin			
ROff			
AET			

Final favourability model

Variables	ß	SE	Sig		Evaluation metrics	
(Intercept)	-7.15E+00	1.74E+00	***		AUC	0.9215608
Slop	-7.61E-01	8.38E-02	***		Kappa	0.3883926
NIAL	2.84E+00	2.19E-01	***		Sensitivity	0.8863636
SIDSum	5.07E-01	3.01E-01	ns		Specificity	0.7981172
Spatial	4.08E-01	8.14E-02	***		CCR	0.8068953
CF	-5.10E+00	1.36E+00	***		HL	5.4435670 ns
TRan	1.97E-01	5.05E-02	***			
HPd	-1.80E-03	7.60E-04	*			
Gyps	-4.07E+00	2.26E+00	ns			
AET	-1.80E-03	5.90E-04	**			
DTn20Aut	7.27E-02	2.88E-02	*			
DTn0Sum	-2.62E+00	1.27E+00	*			
U500	0.0024771	0.0010579	*			
WE	0.0079399	0.0054528	ns			

Picus viridis

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

	Variables selected		
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP1Sum	Alt	X	HPd
DP30Sum	DAlt	XY	NIAL
DTn0Sum	SE	X^2	Clay
DTn20	WE	Y^2	
PSpr	CTI	Y^3	
TAut		X^2Y	
TRan		XY^2	
AET			

Final favourability model

Variables	ß	SE	Sig		Evaluation metrics	
(Intercept)	-7.51E+00	1.87E+00	***	AUC	0.8369539
Spatial	8.82E-01	7.67E-02	***	Kappa	0.4148709
DAlt	1.87E-03	2.86E-04	***	Sensitivity	0.7716463
DTn20	-3.20E-02	4.47E-03	***	Specificity	0.7686796
DTn0Sum	-1.36E+00	2.08E-01	***	CCR	0.7711002
BLF	3.15E+00	5.14E-01	***	HL	24.7656540 **
PSpr	-2.86E-03	9.88E-04	**		
MF	3.67E+00	9.30E-01	***		
CF	1.82E+00	4.73E-01	***		
DHi	-8.08E-03	2.19E-03	***		
Shrub	1.09E+00	2.64E-01	***		
Alt	1.76E-03	3.35E-04	***		
SE	0.0097427	0.0031684	**		
U500	-0.0014572	0.0008354	ns		
Gyps	2.0835307	0.7763705	**		
TAut	0.1962981	0.0604723	**		
U100	-0.0036382	0.0015055	*		
CTI	0.1801179	0.0690682	**		
Sil	0.4071759	0.1650496	*		
Calc	0.3333775	0.1835942	ns		

Pyrrhocorax graculus

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

	Variables selected		
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DTn0Sum	Alt	Y	U500
DTn20	SE	XY	SE
PSpr	WE	X^2	Shrub
TJul	CTI	Y^2	WE
TRan		Y^3	
TxWin		X^2Y	
AET		XY^2	

Final favourability model

Variables	ß	SE	Sig	Evaluation metrics	
(Intercept)	3.38E+01	4.96E+00	***	AUC	0.9896141
Spatial	4.63E-01	8.37E-02	***	Kappa	0.5892420
CTI	-1.88E+00	2.70E-01	***	Sensitivity	0.9879518
Calc	3.42E+00	4.01E-01	***	Specificity	0.9399091
TJul	-6.38E-01	1.16E-01	***	CCR	0.9421628
DTn0Sum	9.52E-01	3.32E-01	**	HL	9.9494821 ns
CF	-3.10E+00	8.84E-01	***		
TRan	1.77E-01	7.33E-02	*		
AET	7.33E-03	3.54E-03	*		
PSpr	-3.06E-03	1.79E-03	ns		

Pyrrhocorax pyrrhocorax

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Climate	Topography	Spatial	Variables excluded by the FDR
Variables selected			
DP01Win	Alt	Y	WE
DP10Sum	DAlt	XY	Past
DTn0Sum	SE	X^2	AET
DTn20Aut	WE	X^3	TRan
PSpr	CTI	Y^2	DP01Win
TAut		X^2Y	Clay
TRan		XY^2	
AET			

Final favourability model

Variables	ß	SE	Sig
(Intercept)	1.35E+01	1.79E+00	***
Spatial	9.11E-01	4.72E-02	***
DAlt	1.61E-03	2.08E-04	***
Shrub	1.34E+00	2.34E-01	***
HPd	-9.40E-04	4.01E-04	*
SE	-1.32E-02	2.91E-03	***
PSpr	-3.90E-03	7.92E-04	***
DTn20Aut	-1.02E-01	2.00E-02	***
CTI	-6.27E-01	9.20E-02	***
CF	-1.57E+00	3.06E-01	***
U100	6.33E-03	1.49E-03	***
TAut	-1.23E-01	2.29E-02	***
DP10Sum	-0.1288606	0.0429071	**
DHi	0.005302	0.0020781	*
U500	-0.0014488	0.0007078	*
Calc	0.4651237	0.1302131	***
Grav	0.6346786	0.2509335	*

Evaluation metrics	
AUC	0.8667009
Kappa	0.5460969
Sensitivity	0.8204986
Specificity	0.7627748
CCR	0.7824039
HL	26.6660089 ***

Galemys pyrenaicus

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected			Variables excluded by the FDR
Climate	**Topography**	**Spatial**	
DP30Sum	Alt	X	SE
DTn0Sum	DAlt	XY	WE
DTn20	SE	X^2	
TRan	WE	X^3	
SIDSpr	CTI	Y^2	
PET		Y^3	
AET		X^2Y	

Final favourability model

Variables	ß	SE	Sig		Evaluation metrics	
(Intercept)	2.55E+00	3.27E+00	ns		AUC	0.9451618
SIDSpr	-1.18E+00	3.93E-01	**		Kappa	0.4641254
PET	-1.51E-02	1.97E-03	***		Sensitivity	0.9259259
Spatial	4.74E-01	8.02E-02	***		Specificity	0.8375391
DAlt	1.93E-03	3.01E-04	***		CCR	0.8460814
U100	-1.73E-02	2.88E-03	***		HL	8.0409874 ns
Calc	2.47E+00	1.32E+00	ns			
DTn20	6.08E-02	1.61E-02	***			
NIAL	-1.42E+00	4.84E-01	**			
Clay	4.07E+00	1.32E+00	**			
DP30Sum	-3.26E-01	1.50E-01	*			
TRan	1.07E-01	4.91E-02	*			
BLF	1.1594021	0.4496624	**			
MF	1.5278942	0.5935913	*			
Shrub	0.9421291	0.4291355	*			
CTI	0.2898229	0.1644539	ns			
DHi	0.0058643	0.0034182	ns			
Sil	3.4491757	1.3114712	**			
Grav	3.4589674	1.3913402	*			

Canis lupus

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
	Variables selected		
DP30Win	Alt	Y	Shrub
DP30Sum	SE	X	CF
DTn0Sum	WE	XY	DHi
DTn20	CTI	X^2	Clay
TRan		X^3	WE
TnJul		Y^2	
SIDWin		Y^3	
ROff		X^2Y	
AET		XY^2	

Final favourability model

Variables	**ß**	**SE**	**Sig**	**Evaluation metrics**	
(Intercept)	7.81E-01	1.06E+00	ns	AUC	0.9549853
Spatial	9.86E-01	5.03E-02	***	Kappa	0.7057846
TnJul	-4.44E-01	6.54E-02	***	Sensitivity	0.9214418
HPd	-3.51E-03	1.06E-03	***	Specificity	0.8833412
Past	-1.91E+00	7.94E-01	*	CCR	0.8911078
AET	1.42E-03	6.67E-04	*	HL	64.9676153 ***
SIDWin	1.52E+00	4.82E-01	**		
ROff	5.48E-04	2.49E-04	*		
DP30Sum	2.88E-01	1.77E-01	ns		
U500	1.87E-03	1.04E-03	ns		
TRan	1.37E-01	4.17E-02	**		
Alt	-9.77E-04	3.45E-04	**		
DTn20	0.029119	0.0096646	**		
BLF	0.997867	0.4280201	*		
MF	1.1523212	0.5657367	*		

Lutra lutra

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected

Climate	Topography	Spatial	Variables excluded by the FDR
DP1Win	Alt	Y	SE
DP30Spr	DAlt	X	
DP30Sum	SE	XY	
DTn0Sum	WE	X^2	
DTn20	CTI	Y^2	
DTx25Spr		Y^3	
TRan		X^2Y	
TnSum		XY^2	
SIDWin			
AET			

Final favourability model

Variables	ß	SE	Sig		Evaluation metrics	
(Intercept)	-4.69E+00	1.50E+00	**		AUC	0.8389843
Spatial	9.38E-01	6.13E-02	***		Kappa	0.5040501
NIAL	-7.91E-01	1.73E-01	***		Sensitivity	0.7481600
U500	5.55E-03	7.58E-04	***		Specificity	0.7654604
AET	3.43E-03	3.94E-04	***		CCR	0.7552751
TRan	1.53E-01	2.92E-02	***		HL	19.0502509 *
CF	1.77E+00	3.24E-01	***			
Shrub	1.29E+00	2.45E-01	***			
Grav	9.60E-01	2.19E-01	***			
DAlt	1.43E-03	2.07E-04	***			
DP30Spr	-2.73E-01	8.14E-02	***			
Alt	-1.23E-03	2.58E-04	***			
SIDWin	-1.1192614	0.243527	***			
U100	0.0054707	0.0015113	***			
Clay	0.5139878	0.1405211	***			
HPd	-0.0003003	0.0001439	*			
BLF	1.0727376	0.3473141	**			
DP30Sum	-0.3856548	0.1161857	***			
DHi	0.005279	0.0019783	**			
DP1Win	-0.0161865	0.0106114	ns			
CTI	0.1195982	0.0709648	ns			
DTn20	0.012441	0.0048466	*			
TnSum	-0.0866395	0.0424098	*			
Gyps	0.4284977	0.2949751	ns			

Ursus arctos

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected

Climate	Topography	Spatial	Variables excluded by the FDR
DP30Spr	Alt	Y	CF
DP30Sum	SE	X	SE
DTn0Spr	WE	XY	WE
DTn0Sum	CTI	X^3	
DTn20		Y^2	
TJul		Y^3	
TRan		X^2Y	
SIDSum		XY^2	
ROff			
AET			

Final favourability model

Variables	ß	SE	Sig	Evaluation metrics	
(Intercept)	6.66E+00	5.68E+00	ns	AUC	0.9909335
Spatial	7.20E-01	8.85E-02	***	Kappa	0.5785035
HPd	-5.78E-02	3.07E-02	ns	Sensitivity	0.9805825
U500	1.41E-02	2.29E-03	***	Specificity	0.9482556
DHi	3.12E-02	6.82E-03	***	CCR	0.9495102
Past	6.75E+00	1.58E+00	***	HL	10.6984415 ns
Clay	1.45E+00	6.28E-01	*		
ROff	1.54E-03	4.67E-04	***		
DTn0Sum	-9.84E-01	3.25E-01	**		
Grav	3.26E+00	1.29E+00	*		
Shrub	3.54E+00	9.30E-01	***		
DTn0Spr	8.02E-02	1.60E-02	***		
BLF	2.2724366	0.9538473	*		
MF	3.6255715	1.2373222	**		
NIAL	3.6905897	1.2625289	**		
CTI	-0.9455483	0.3461675	**		

Felis silvestris

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected

Climate	Topography	Spatial	Variables excluded by the FDR
DP10Sum	Alt	Y	Sil
DTn0Sum	DAlt	X	U100
DTn20	SE	XY	MF
PSpr	WE	X^2	TRan
TSpr	CTI	X^3	Gyps
TRan		Y^2	U500
AET		Y^3	
		X^2Y	
		XY^2	

Final favourability model

Variables	ß	SE	Sig	Evaluation metrics	
(Intercept)	-1.19E+00	3.54E-01	***	AUC	0.7683479
DAlt	1.25E-03	1.46E-04	***	Kappa	0.3701999
Spatial	1.04E+00	7.87E-02	***	Sensitivity	0.6823266
Shrub	1.42E+00	2.04E-01	***	Specificity	0.7107955
Alt	6.03E-04	1.24E-04	***	CCR	0.7012057
BLF	2.42E+00	3.19E-01	***	HL	8.8091032 ns
PSpr	-3.83E-03	8.33E-04	***		
AET	2.07E-03	3.25E-04	***		
CF	7.09E-01	2.80E-01	*		
Past	-1.84E+00	7.17E-01	*		
NIAL	-4.52E-01	1.88E-01	*		
DTn20	-7.30E-03	3.31E-03	*		
DP10Sum	-0.0773781	0.0327702	*		
Calc	0.2352353	0.1088029	*		
Grav	0.3993633	0.1893693	*		
HPd	-0.0002846	0.0001843	ns		
WE	-0.0055291	0.0030949	ns		

Lynx pardinus

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

	Variables selected		
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP30Spr	Alt	Y	Gyps
DP30Sum	DAlt	X	Shrub
DTn0Spr	SE	XY	Sil
DTn0Sum	WE	X^2	TRan
DTn20	CTI	X^3	Clay
DTx25Aut		Y^2	WE
TRan		Y^3	MF
SISSum		X^2Y	BLF
ROff		XY^2	AET
AET			HPd

Final favourability model

Variables	ß	SE	Sig
(Intercept)	-2.55E+02	7.29E+01	***
Spatial	3.50E-01	2.03E-01	ns
DTx25Aut	2.74E-01	7.83E-02	***
CF	6.14E+00	1.89E+00	**
NIAL	-5.51E+00	2.21E+00	*
SISSum	3.12E+01	9.45E+00	***
DP30Sum	1.44E+01	3.70E+00	***
DP30Spr	-2.28E+00	9.13E-01	*
ROff	1.02E-02	4.43E-03	*
Grav	-1.84E+00	9.69E-01	ns

Evaluation metrics	
AUC	0.9886930
Kappa	0.1567660
Sensitivity	0.9655172
Specificity	0.9465808
CCR	0.9466843
HL	9.6965038 ns

Cervus elaphus

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected			
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP10Spr	Alt	Y	Gyps
DP30Sum	DAlt	X	Calc
DTn0Sum	SE	XY	WE
DTn20Aut	WE	X^2	DP30Sum
TRan	CTI	X^3	MF
TnJan		Y^2	
TxJul		Y^3	
AET		X^2Y	

Final favourability model

Variables	ß	SE	Sig		Evaluation metrics	
(Intercept)	-9.88E+00	7.68E-01	***		AUC	0.8060400
U100	1.17E-02	1.43E-03	***		Kappa	0.4235189
Spatial	7.20E-01	7.44E-02	***		Sensitivity	0.7223899
BLF	3.40E+00	3.14E-01	***		Specificity	0.7362366
CF	2.87E+00	2.93E-01	***		CCR	0.7319141
Shrub	1.83E+00	2.09E-01	***		HL	10.2530292 ns
TxJul	1.38E-01	2.25E-02	***			
DTn0Sum	8.46E-01	1.56E-01	***			
DP10Spr	9.47E-02	2.23E-02	***			
U500	3.92E-03	7.44E-04	***			
SE	8.49E-03	2.85E-03	**			
DAlt	3.00E-04	1.41E-04	*			
Sil	-0.2496909	0.1045836	*			
AET	0.0008928	0.0003652	*			
HPd	0.0001989	0.0001129	ns			
TRan	0.0692817	0.0337668	*			
DTn20Aut	0.0304919	0.0182856	ns			

Rupicapra pyrenaica

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

	Variables selected		
Climate	**Topography**	**Spatial**	**Variables excluded by the FDR**
DP10Spr	Alt	X	Shrub
DP10Sum	SE	XY	Gyps
DTn0Sum	WE	X^2	Calc
DTn20	CTI	X^3	WE
Tann		Y^2	
TRan		Y^3	
AET		X^2Y	
		XY^2	

Final favourability model

Variables	ß	SE	Sig		Evaluation metrics	
(Intercept)	2.86E+01	6.22E+00	***		AUC	0.9952173
Spatial	4.15E-01	8.37E-02	***		Kappa	0.6543732
Alt	3.05E-03	6.14E-04	***		Sensitivity	0.9770642
CTI	-2.19E+00	3.67E-01	***		Specificity	0.9603143
U100	2.08E-02	7.21E-03	**		CCR	0.9610023
DHi	1.84E-02	9.35E-03	*		HL	5.3400624 ns
DP10Sum	2.03E-01	1.10E-01	ns			
DTn0Sum	7.48E-01	4.18E-01	ns			

Capra pyrenaica

Pairwise correlations, spatial descriptor and FDR

Human, lithology and land use variables were not correlated, thus all of them were selected in pairwise correlations.

Variables selected

Climate	Topography	Spatial	Variables excluded by the FDR
DP01Win	Alt	Y	DTx25Spr
DP30Spr	DAlt	X	MF
DP30Sum	SE	XY	SE
DTn0Sum	WE	X^2	Clay
DTn20	CTI	X^3	AET
DTx25Spr		Y^2	DP30Sum
TRan		Y^3	
TnWin		X^2Y	
SISWin		XY^2	
AET			

Final favourability model

Variables	ß	SE	Sig
(Intercept)	2.07E+00	2.72E+00	ns
Spatial	1.22E+00	5.74E-02	***
CTI	-4.28E-01	1.48E-01	**
DP30Spr	9.93E-01	1.17E-01	***
DAlt	1.87E-03	2.91E-04	***
Shrub	1.86E+00	3.35E-01	***
TRan	2.57E-01	4.02E-02	***
DHi	1.68E-02	3.29E-03	***
CF	1.10E+00	4.36E-01	*
WE	-1.24E-02	5.09E-03	*
Grav	8.07E-01	3.73E-01	*
NIAL	-9.52E-01	4.06E-01	*
DTn20	-0.0086115	0.004401	ns
Gyps	-2.2376372	1.5361969	ns
U100	-0.0037727	0.0025533	ns

Evaluation metrics

AUC	0.9376692
Kappa	0.5036426
Sensitivity	0.9088099
Specificity	0.8341558
CCR	0.843255
HL	7.4210190 ns