

Appendix

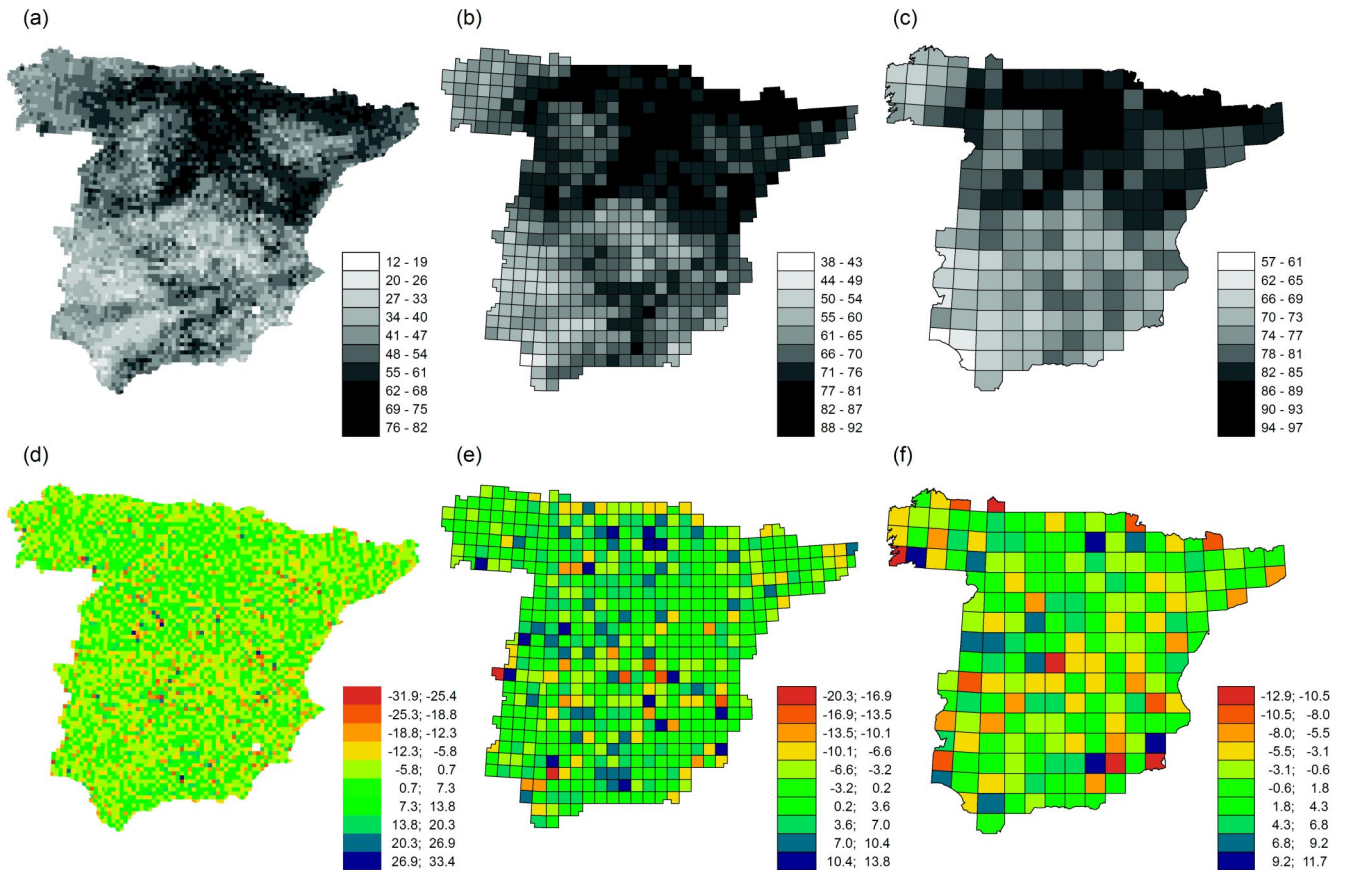


Fig. S1. Predicted species richness values and residual map. Predicted species density values (above) and residual map (below) for each scale. Predicted values correspond to the best CAR model for each scale as detailed in Table 3. Map projection: Universal Transverse Mercator, Zone 30N.

Table S1. Complete set of conditional autoregressive models used in the model selection procedure.

Abbreviations:

INDVI, cumulated sum of positive NDVI (Normalized Difference Vegetation Index) values during the breeding season (April–June);

INF, total length of linear infrastructures (roads and railways);

HD, habitat diversity;

HR, height range;

PC1, principal component 1, with positive values indicating a high coverage of croplands and a low coverage of forest and scrubland;

PC2, principal component 2, indicating the contrast between forest (positive values) and scrubland areas;

PC3, principal component 3, that was only positively correlated with the presence of urban zones;

RIV, total length of rivers;

SRBP and SRBA, stochastic, range-based model with origins set to the Pyrenean isthmus or Gibraltar strait;

SWM, spatial weights variance-covariance matrix;

T, mean temperature during the breeding season; and

TR, temperature range.

Models for 10 × 10 km	R ² envr	R ² total	AIC	Akaike weight
46.970 + 4.398 * HR + 0.893 * SWM	0.16	0.57	64091.4	0.00
46.892 + 2.844 * HD + 0.913 * SWM	0.10	0.56	64809.3	0.00
46.895 – 3.697 * PC1 + 0.891 * SWM	0.17	0.56	64148.4	0.00
46.764 – 0.358 * PC2 + 0.920 * SWM	0.01	0.53	64529.4	0.00
46.917 – 1.256 * PC3 + 0.917 * SWM	0.02	0.53	64465.2	0.00
46.798 + 1.233 * RIV + 0.920 * SWM	0.01	0.53	64454.6	0.00
46.805 + 0.639 * INF + 0.917 * SWM	0.01	0.53	64513.2	0.00
46.925 + 2.745 * INDVI + 0.907 * SWM	0.07	0.54	64376.8	0.00
47.051 – 6.078 * T + 0.809 * SWM	0.32	0.58	63996.4	0.00
46.800 – 1.525 * RT + 0.911 * SWM	0.04	0.53	64507.1	0.00
47.003 – 5.482 * SRBA + 0.861 * SWM	0.21	0.56	64202.5	0.00
46.988 + 5.777 * SRBP + 0.854 * SWM	0.23	0.56	64157.6	0.00
47.094 – 5.868 * T + 2.831 * HD + 0.801 * SWM	0.38	0.61	63608.5	0.00
47.037 – 4.675 * SRBA – 3.368 * PC1 + 0.834 * SWM	0.31	0.59	63847.5	0.00
47.048 – 4.697 * SRBA – 3.229 * PC1 + 1.228 * RIV + 0.837 * SWM	0.32	0.60	63763.2	0.00
47.049 + 5.405 * SRBP – 3.735 * PC1 + 0.803 * SWM	0.36	0.60	63704.7	0.00
47.065 + 5.584 * SRBP – 3.699 * PC1 + 1.427 * RIV + 0.799 * SWM	0.38	0.61	63588.2	0.99
47.082 + 5.301 * SRBP + 4.156 * HR + 0.814 * SWM	0.35	0.60	63677.0	0.00

Models for 30 × 30 km	R ² envr	R ² total	AIC	Akaike weight
68.766 + 4.239 * HR + 0.910 * SWM	0.19	0.84	5610.8	0.00
68.369 + 2.672 * HD + 0.916 * SWM	0.12	0.83	5654.9	0.00
68.666 – 3.027 * PC1 + 0.900 * SWM	0.17	0.83	5654.3	0.00
68.545 – 0.067 * PC2 + 0.919 * SWM	0.00	0.81	5715.1	0.00
68.703 – 1.323 * PC3 + 0.914 * SWM	0.05	0.81	5700.6	0.00
68.505 + 1.754 * RIV + 0.930 * SWM	0.01	0.82	5686.8	0.00
68.478 + 1.103 * INF + 0.917 * SWM	0.03	0.81	5703.7	0.00
68.632 + 1.858 * INDVI + 0.914 * SWM	0.04	0.81	5699.2	0.00
68.875 – 5.670 * T + 0.818 * SWM	0.38	0.85	5588.1	0.00
68.701 + 3.063 * RT + 0.922 * SWM	0.06	0.82	5674.9	0.00
68.678 – 3.651 * SRBA + 0.875 * SWM	0.17	0.81	5688.2	0.00
68.783 + 6.383 * SRBP + 0.812 * SWM	0.38	0.84	5600.6	0.00
68.753 + 4.036 * HR + 1.388 * RIV + 0.918 * SWM	0.20	0.84	5592.0	0.00
68.878 – 5.652 * T + 1.590 * RIV + 0.829 * SWM	0.40	0.85	5562.3	0.00
68.649 – 3.690 * SRBA + 1.726 * RIV + 0.888 * SWM	0.19	0.82	5662.4	0.00
68.836 + 5.958 * SRBP – 3.007 * PC1 + 0.758 * SWM	0.50	0.86	5525.5	0.00
68.841 + 6.092 * SRBP – 2.900 * PC1 + 1.573 * RIV + 0.751 * SWM	0.53	0.87	5497.3	0.99

Models for 50 × 50 km	R ² envr	R ² total	AIC	Akaike weight
78.002 + 3.936 * HR + 0.905 * SWM	0.20	0.92	1681.2	0.00
77.502 + 2.805 * HD + 0.913 * SWM	0.10	0.91	1698.2	0.00
77.656 - 3.000 * PC1 + 0.877 * SWM	0.18	0.91	1703.4	0.00
77.318 - 1.223 * PC2 + 0.907 * SWM	0.00	0.89	1731.8	0.00
77.492 + 1.257 * PC3 + 0.884 * SWM	0.03	0.89	1730.5	0.00
77.460 + 2.485 * RIV + 0.936 * SWM	0.00	0.90	1711.7	0.00
77.449 + 0.199 * INF + 0.881 * SWM	0.01	0.89	1738.1	0.00
77.558 + 1.987 * INDVI + 0.875 * SWM	0.07	0.89	1728.0	0.00
77.729 - 4.382 * T + 0.690 * SWM	0.39	0.91	1699.7	0.00
77.649 - 4.032 * RT + 0.927 * SWM	0.12	0.91	1687.7	0.00
77.543 - 2.700 * SRBA + 0.801 * SWM	0.20	0.89	1730.3	0.00
77.687 + 4.881 * SRBP + 0.671 * SWM	0.40	0.91	1697.6	0.00
77.766 - 4.199 * T + 2.609 * HD + 0.719 * SWM	0.49	0.92	1663.0	0.06
77.778 - 4.109 * T + 2.555 * HD + 0.919 * PC3 + 0.716 * SWM	0.51	0.93	1659.4	0.34
77.566 - 2.523 * SRBA + 2.802 * HD + 0.851 * SWM	0.29	0.91	1693.1	0.00
77.597 - 2.415 * SRBA + 2.730 * HD + 1.034 * PC3 + 0.855 * SWM	0.30	0.91	1688.7	0.00
77.748 + 4.632 * SRBP - 2.908 * PC1 + 0.692 * SWM	0.51	0.93	1658.3	0.60