

## Supplementary material

Table S1. Descriptive statistics for non-rescaled results from the mobility oriented parity (MOP) metric according to environmental regions of interest (blocks). Analyses were performed using two variables, Euclidean (E) or Mahalanobis (M) distances, raw (RV) or scaled (SV) variables, and with reference to the closest 10, 5, or 1% of environmental conditions in the calibration area. Mean and confidence intervals are presented.

MOP case	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6
E_RV_10	3.148 (2.202-5.256)	11.433 (10.367-12.621)	13.353 (9.736-16.485)	24.932 (17.532-36.576)	10.842 (8.8-13.269)	120.098 (111.017-133.686)
E_RV_5	2.219 (1.48-4.228)	8.727 (7.731-9.822)	11.677 (8.14-14.596)	21.338 (14.586-32.146)	8.943 (6.784-11.573)	114.899 (105.818-128.489)
E_RV_1	1.045 (0.605-2.86)	4.488 (3.179-5.81)	8.59 (5.708-10.834)	14.938 (9.67-22.679)	6.398 (4.253-9.23)	102.665 (93.601-116.233)
E_SV_10	0.12 (0.088-0.181)	0.461 (0.412-0.514)	0.575 (0.401-0.724)	0.846 (0.635-1.141)	0.507 (0.413-0.603)	3.553 (3.302-3.925)
E_SV_5	0.084 (0.057-0.144)	0.341 (0.292-0.389)	0.506 (0.334-0.64)	0.748 (0.542-1.031)	0.414 (0.316-0.515)	3.396 (3.144-3.768)
E_SV_1	0.039 (0.023-0.102)	0.182 (0.123-0.232)	0.377 (0.232-0.478)	0.554 (0.37-0.803)	0.296 (0.197-0.402)	3.045 (2.794-3.416)
M_RV_10	0.016 (0.009-0.032)	0.212 (0.171-0.26)	0.382 (0.182-0.566)	0.952 (0.519-1.67)	0.277 (0.179-0.406)	10.534 (8.947-13.075)
M_RV_5	0.008 (0.004-0.021)	0.119 (0.093-0.148)	0.293 (0.129-0.43)	0.735 (0.37-1.357)	0.19 (0.106-0.311)	9.661 (8.143-12.098)
M_RV_1	0.002 (0.001-0.01)	0.035 (0.018-0.05)	0.152 (0.062-0.224)	0.382 (0.154-0.8)	0.099 (0.04-0.197)	7.733 (6.389-9.91)

Table S2. Descriptive statistics for rescaled results from the mobility oriented parity (MOP) metric according to environmental regions of interest (Blocks). Analyses were performed using two variables, Euclidean (E) or Mahalanobis (M) distances, raw (RV) or scaled (SV) variables, and with reference to the closest 10, 5, or 1% of environmental conditions in the calibration area. Mean and confidence intervals are presented.

MOP case	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6
E_RV_10	0.00788 (0.00552-0.01316)	0.02864 (0.02596-0.03161)	0.03345 (0.02439-0.04129)	0.06244 (0.04391-0.09161)	0.02716 (0.02204-0.03323)	0.3008 (0.27806-0.33483)
E_RV_5	0.00563 (0.00376-0.01073)	0.02214 (0.01961-0.02492)	0.02963 (0.02065-0.03703)	0.05414 (0.03701-0.08156)	0.02269 (0.01721-0.02936)	0.29153 (0.26849-0.32601)
E_RV_1	0.00274 (0.00159-0.00749)	0.01175 (0.00832-0.01521)	0.02249 (0.01495-0.02837)	0.03912 (0.02532-0.05939)	0.01675 (0.01114-0.02417)	0.26884 (0.24511-0.30438)
E_SV_10	0.01053 (0.00776-0.01593)	0.04059 (0.03629-0.04526)	0.0506 (0.03528-0.0637)	0.0745 (0.0559-0.10041)	0.04467 (0.03633-0.05309)	0.31281 (0.29067-0.34557)
E_SV_5	0.00751 (0.00511-0.01286)	0.03045 (0.02601-0.03471)	0.0451 (0.02978-0.0571)	0.0667 (0.04833-0.09198)	0.03692 (0.02822-0.04593)	0.30292 (0.28047-0.33619)
E_SV_1	0.00359 (0.0021-0.00939)	0.01679 (0.01136-0.02135)	0.03473 (0.02133-0.04405)	0.05099 (0.03408-0.07396)	0.02726 (0.01815-0.03703)	0.28044 (0.25738-0.31461)
M_RV_10	0.00013 (7e-05-0.00025)	0.00168 (0.00135-0.00205)	0.00302 (0.00144-0.00447)	0.00753 (0.0041-0.01319)	0.00219 (0.00142-0.00321)	0.08324 (0.0707-0.10333)
M_RV_5	0.00007 (0.00003-0.00017)	0.00096 (0.00075-0.0012)	0.00238 (0.00104-0.00348)	0.00595 (0.003-0.01099)	0.00154 (0.00086-0.00252)	0.07828 (0.06598-0.09803)
M_RV_1	0.00002 (0.00001-0.00009)	0.0003 (0.00015-0.00043)	0.00131 (0.00054-0.00193)	0.00329 (0.00133-0.00689)	0.00085 (0.00034-0.00169)	0.06656 (0.05499-0.08531)

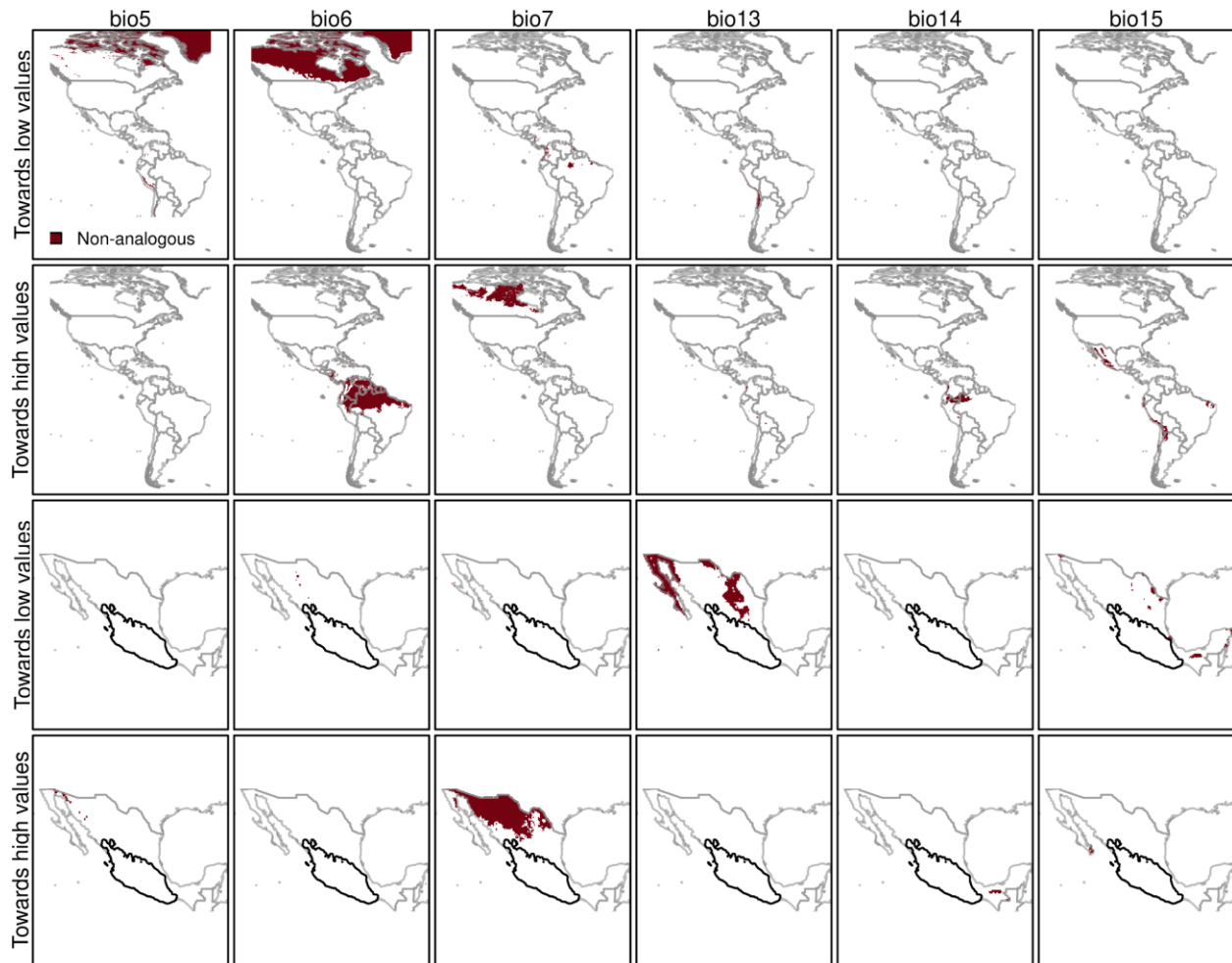


Figure S1. Extended results from the mobility oriented parity metric for individual variables in transfer areas with conditions non-analogous. The two first rows are for the example in which conditions in the Americas are compared to those in the 48 lower USA. The third and fourth rows are for conditions in Mexico compared to the calibration area of *Aphelocoma ultramarina*.

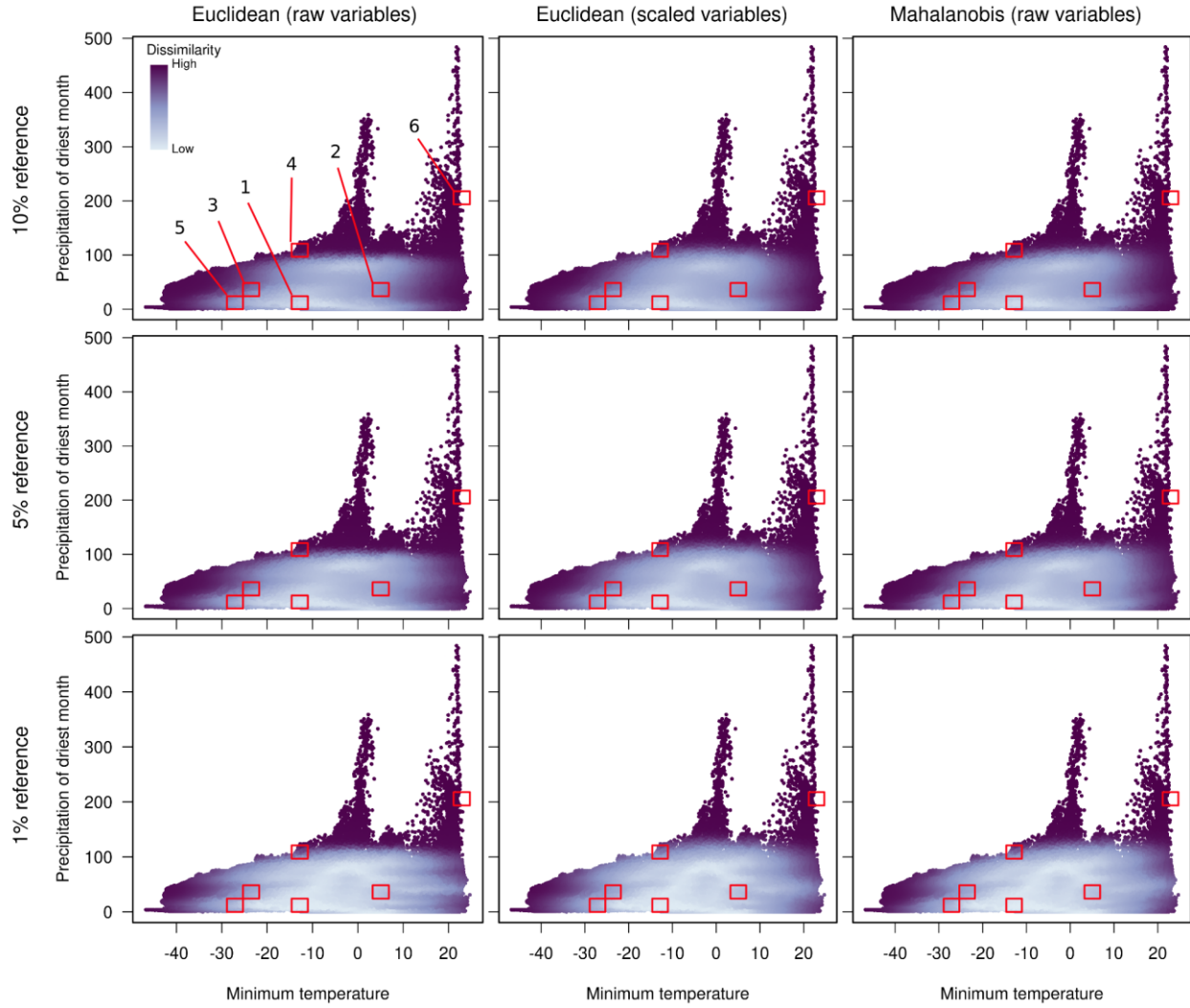


Figure S2. Dissimilarity (distance) results from the mobility oriented parity (MOP) metric for the example case comparing the United States and the Americas using two variables. MOP analyses were performed using Euclidean or Mahalanobis distances, raw or scaled variables, and with reference to the closest 10, 5, or 1% of environmental conditions in the calibration area. Environmental regions of interest (blocks) are highlighted in red. Dissimilarity values are comparable among results obtained with distinct percentages of the calibration area used as reference, not across distance-scaling treatments.

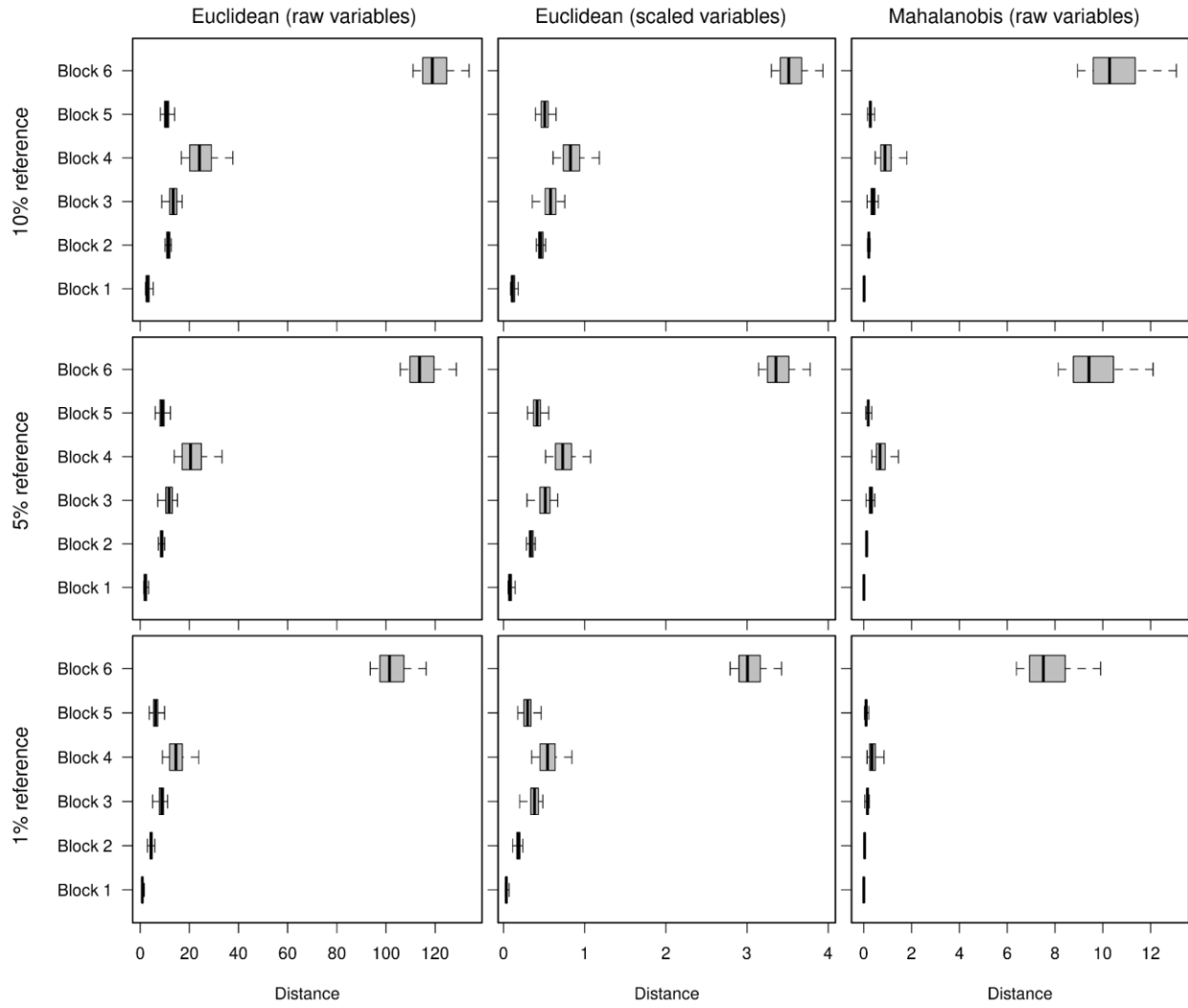


Figure S3. Dissimilarity values (distances) for regions of interest in environmental space (blocks), obtained from the mobility oriented parity metric (MOP). Analyses were performed using two variables, Euclidean or Mahalanobis distances, raw or scaled variables, and with reference to the closest 10, 5, or 1% of environmental conditions in the calibration area.

	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6
E_RV_10	3.148	11.433	13.353	24.932	10.842	120.098
E_RV_5	2.219	8.727	11.677	21.338	8.943	114.899
E_RV_1	1.045	4.488	8.59	14.938	6.398	102.665
E_SV_10	0.12	0.461	0.575	0.846	0.507	3.553
E_SV_5	0.084	0.341	0.506	0.748	0.414	3.396
E_SV_1	0.039	0.182	0.377	0.554	0.296	3.045
M_RV_10	0.016	0.212	0.382	0.952	0.277	10.534
M_RV_5	0.008	0.119	0.293	0.735	0.19	9.661
M_RV_1	0.002	0.035	0.152	0.382	0.099	7.733

Figure S4. Graphic representation of mean non-rescaled results from the mobility oriented parity (MOP) metric according to environmental regions of interest (blocks). Analyses were performed using two variables, Euclidean (E) or Mahalanobis (M) distances, raw (RV) or scaled (SV) variables, and with reference to the closest 10, 5, or 1% of environmental conditions in the calibration area.

	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6
E_RV_10	0.003	0.024	0.029	0.058	0.022	0.297
E_RV_5	0.002	0.019	0.026	0.051	0.019	0.289
E_RV_1	0.001	0.011	0.021	0.038	0.016	0.268
E_SV_10	0.004	0.034	0.044	0.068	0.038	0.308
E_SV_5	0.003	0.026	0.041	0.063	0.033	0.3
E_SV_1	0.002	0.015	0.033	0.049	0.025	0.279
M_RV_10	0	0.002	0.003	0.007	0.002	0.083
M_RV_5	0	0.001	0.002	0.006	0.002	0.078
M_RV_1	0	0	0.001	0.003	0.001	0.067

Figure S5. Graphic representation of mean rescaled results from the mobility oriented parity (MOP) metric according to environmental regions of interest (blocks). Analyses were performed using two variables, Euclidean (E) or Mahalanobis (M) distances, raw (RV) or scaled (SV) variables, and with reference to the closest 10, 5, or 1% of environmental conditions in the calibration area.

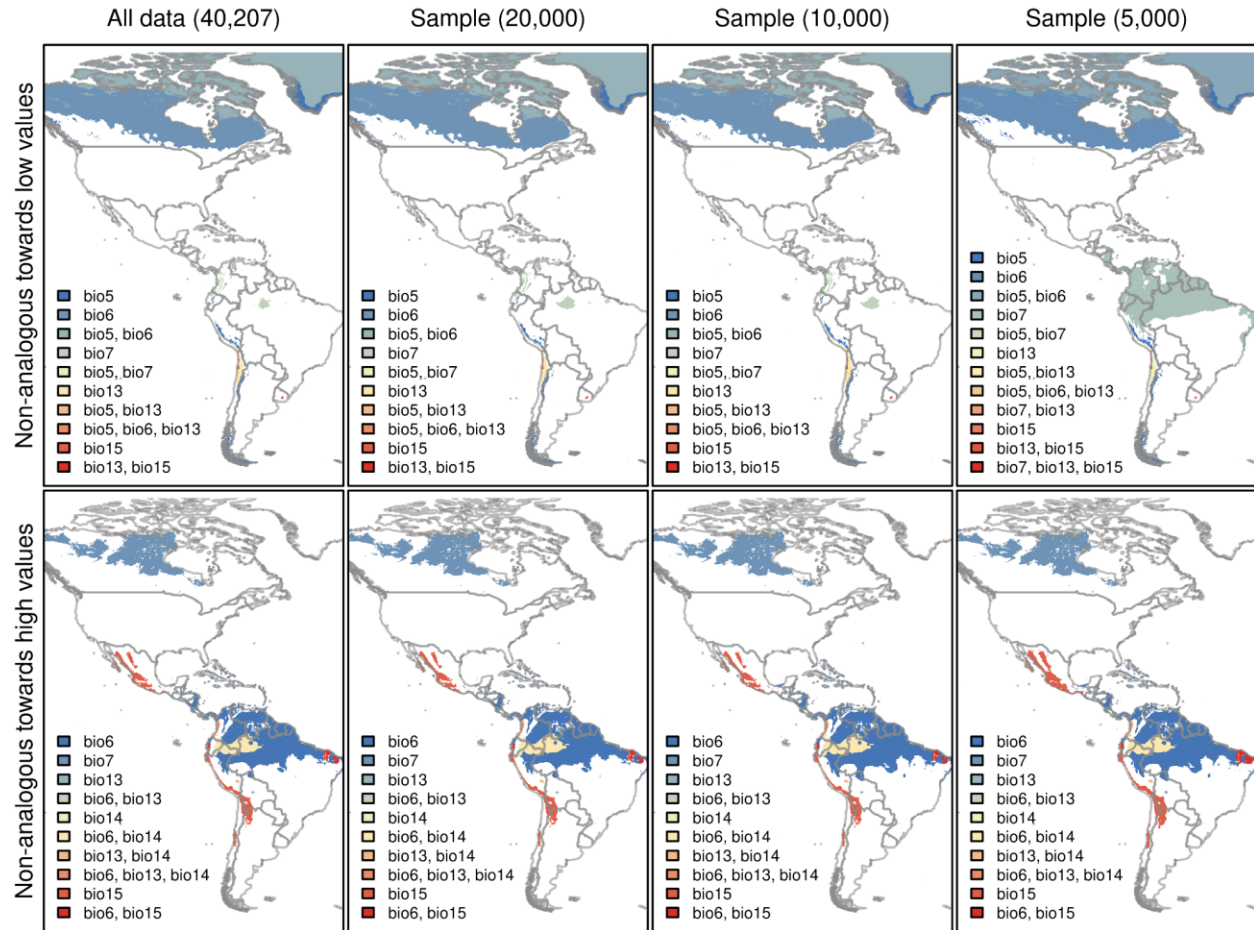


Figure S6. Results from the mobility oriented parity metric showing combinations of variables presenting novel conditions, performed with samples of the calibration areas of distinct sizes (40,207; 20,000; 10,000; and 5000). Analyses were done for the example that compares the Lower 48 United States and the Americas, using 10% of the reference conditions to get mean distances.