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# Appendix from E. P. White and A. H. Hurlbert, "The Combined Influence of the Local Environment and Regional Enrichment on Bird Species Richness"

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## Supplemental Methods and Results

We conducted a simple path analysis using least squares methods to explore the manner in which regional-scale climate influenced local-scale richness. For simplicity, we (1 ) analyzed only the single most important climate variable (summer NDVI; univariate correlations were equivalent for NDVI and $NDVI^2$, so we chose the linear form for direct comparison with Harrison et al. 2006), (2) used only the most important transformation of regional richness (the untransformed data), and (3) used all of the data instead of separating it into training and validation sets. The results (fig. A2) indicate that most of the contribution of regional-scale NDVI (defined as the average NDVI within a 320-km radius of the starting location of the route) on local richness was through its influence on local NDVI and local NDVI's influence on richness ($0.87 \times 0.53 = 0.46$). The influence of regional NDVI through regional richness was relatively minor ($0.31 \times 0.38 = 0.12$). This result is contrary to that of Harrison et al. (2006; see also Harrison and Cornell 2008), who show that, for serpentine plant communities in California, regional NDVI's influence occurs primarily through its influence on regional richness.

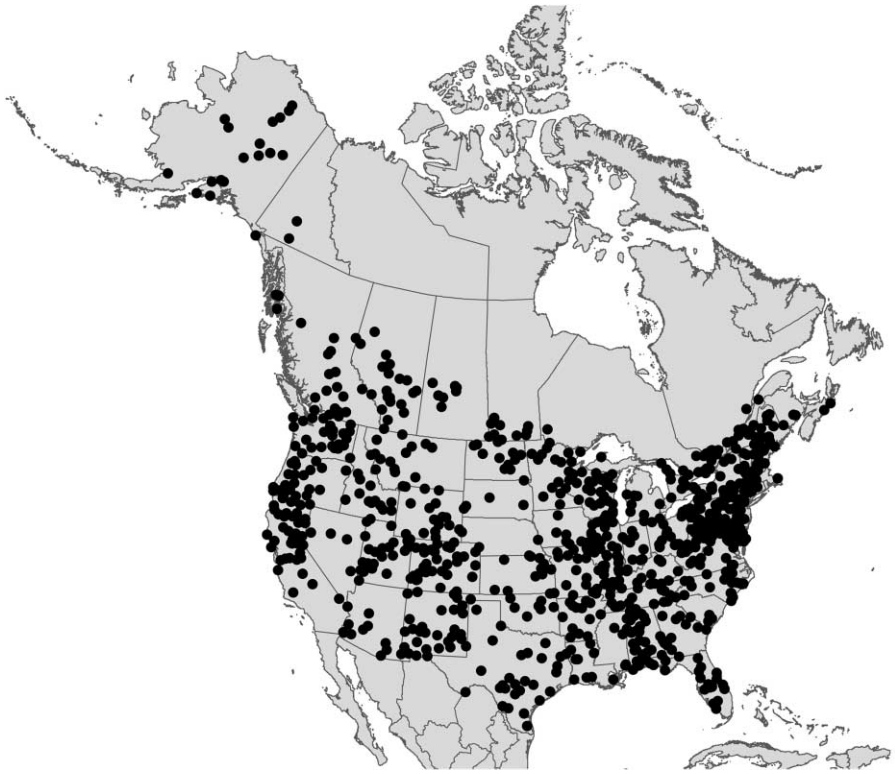

**Figure A1:** Routes from the Breeding Bird Survey of North America that were analyzed in this study.

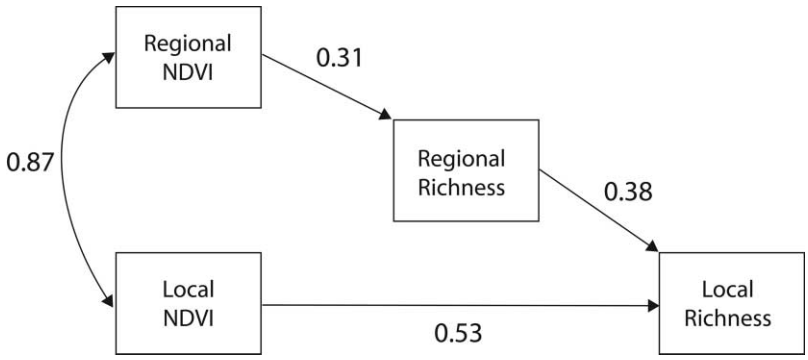


**Figure A2:** Results of the path analysis evaluating the manner in which regional-scale climate influences local-scale richness.

**Table A1**

Parameter estimates and multivariate statistical results for the three statistical models

| Model and parameter | Parameter estimate | 95% confidence interval | *P* | Model $R^2$ |
|---|---|---|---|---|
| Regional enrichment | | | | .331 |
| RegRich | 1.21 | .73, 1.69 | $<10^{-6}$ | |
| RegRich$^2$ | −.004 | −.007, −.001 | .007 | |
| Local environment | | | | .572 |
| SumTemp | 2.11 | −.03, 4.24 | .054 | |
| SumTemp$^2$ | −.05 | −.103, .005 | .078 | |
| WinTemp | −.14 | −.57, .29 | .517 | |
| WinTemp$^2$ | −.04 | −.05, −.02 | $<10^{-4}$ | |
| AnnPrecip | .003 | −.008, .014 | .568 | |
| AnnPrecip$^2$ | −4.70E−6 | −8.35E−6, −1.06E−6 | .012 | |
| SumNDVI | 15.6 | −29.5, 60.8 | .498 | |
| SumNDVI$^2$ | 55.7 | 13.4, 98.0 | .010 | |
| WinNDVI | 42.8 | 14.5, 71.2 | .003 | |
| WinNDVI$^2$ | −60.8 | −100.1, −20.8 | .003 | |
| Elev | −.008 | −.015, −.002 | .014 | |
| Elev$^2$ | 3.08E−6 | 7.60E−7, 5.40E−6 | .010 | |
| Combined model | | | | .677 |
| RegRich | .36 | −.17, .90 | .184 | |
| RegRich$^2$ | 6.02E−4 | −2.57E−3, 3.78E−3 | .710 | |
| SumTemp | −.84 | −2.96, 1.27 | .435 | |
| SumTemp$^2$ | .03 | −.02, .09 | .248 | |
| WinTemp | −.10 | −.51, .31 | .630 | |
| WinTemp$^2$ | −.02 | −.04, .002 | .085 | |
| AnnPrecip | −4.13E−4 | −.01, .01 | .938 | |
| AnnPrecip$^2$ | −1.70E−6 | −5.19E−6, 1.78E−6 | .338 | |
| SumNDVI | 77.8 | 33.1, 122.5 | .001 | |
| SumNDVI$^2$ | −29.0 | −73.5, 15.4 | .201 | |
| WinNDVI | 34.2 | 6.81, 61.5 | .015 | |
| WinNDVI$^2$ | −42.2 | −82.4, −2.00 | .040 | |
| Elev | −6.65E−3 | −1.27, −4.21E−4 | .015 | |
| Elev$^2$ | 6.58E−7 | −1.57E−6, 2.88E−6 | .563 | |