Ecography

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Supplementary material

Appendix 1

Table A1. Model selection for the effects of predator diversity and evenness and additional covariates on assemblage longevity. n_p = number of parameters, AICc = corrected Akaike's Information Criterion (Burnham, K. P. and Anderson, D. R. 2002), ΔAICc = change in AIC.

Random structure	Correlation Structure	Nugget effect	n_p	AICc	ΔAICc
Assemblage longevity ~ … + predator diversity					
slope, intercept	Exponential	yes	10	27992.36	0.00
slope, intercept	Exponential	no	9	28059.17	66.81
slope, intercept	Spherical	yes	10	28080.36	88.00
slope, intercept	Rational Quadratic	yes	10	28182.55	190.19
slope, intercept	Gaussian	yes	10	28807.58	815.22
slope, intercept	Linear	yes	10	30978.72	2986.36
slope, intercept			8	38110.45	10118.09
intercept			6	38866.25	10873.90
Assemblage longevity ~ … + predator evenness					
slope, intercept	Exponential	yes	10	27902.66	0.00
slope, intercept	Exponential	no	9	27975.99	73.34
slope, intercept	Spherical	yes	10	27982.59	79.93
slope, intercept	Rational Quadratic	yes	10	28064.55	161.90
slope, intercept	Gaussian	yes	10	28117.06	214.41
slope, intercept	Linear	yes	10	28801.42	898.76
slope, intercept			8	38373.05	10470.39
intercept			6	39291.41	11388.75
Assemblage longevity ~ … +life history covariates + predator diversity					
slope, intercept	Exponential	yes	12	26635.15	0.00
slope, intercept	Exponential	no	11	26752.66	117.51
slope, intercept	Spherical	yes	12	26755.92	120.77
slope, intercept	Rational Quadratic	yes	12	26778.59	143.44
slope, intercept	Gaussian	yes	12	27363.51	728.36
slope, intercept	Linear	yes	12	28478.66	1843.52
slope, intercept			10	36432.19	9797.04
intercept			8	36857.17	10222.03
Assemblage longevity ~ … +life history covariates + predator evenness					
slope, intercept	Exponential	yes	12	26635.15	0.00
slope, intercept	Exponential	no	11	26752.66	117.51
slope, intercept	Spherical	yes	12	26755.92	120.77
slope, intercept	Rational Quadratic	yes	12	26778.59	143.44
slope, intercept	Gaussian	yes	12	27363.51	728.36
slope, intercept	Linear	yes	12	28478.66	1843.52
slope, intercept			10	36231.05	9595.91
intercept			8	36801.09	10165.94

Figure A1. Global maps of assemblage longevity covariates. (A) Bio-geographical region, (B) Body mass (log-transformed), (C) Clutch size, (D) Research effort and (E) Proportion of longevity estimates in the wild. Bioregions (A) were defined by the intersection of nine biomes (Olson, D. M. et al. 2001) with 11 major bio-geographic realms (Holt, B. G. et al. 2013). "Research effort" (D) was defined as the mean number of entries in the Zoological Record© database for each bird species. "Proportion of longevity estimates in the wild" (E) is the proportion of maximum longevity data recorded from individuals in the wild relative to the total number of records (wild and captive individuals). Maps are shown in (equal area) Mollweide projection at a resolution of 112.5 x 112.5 km. Colour scale (B,C,D) was defined based on quantile intervals.

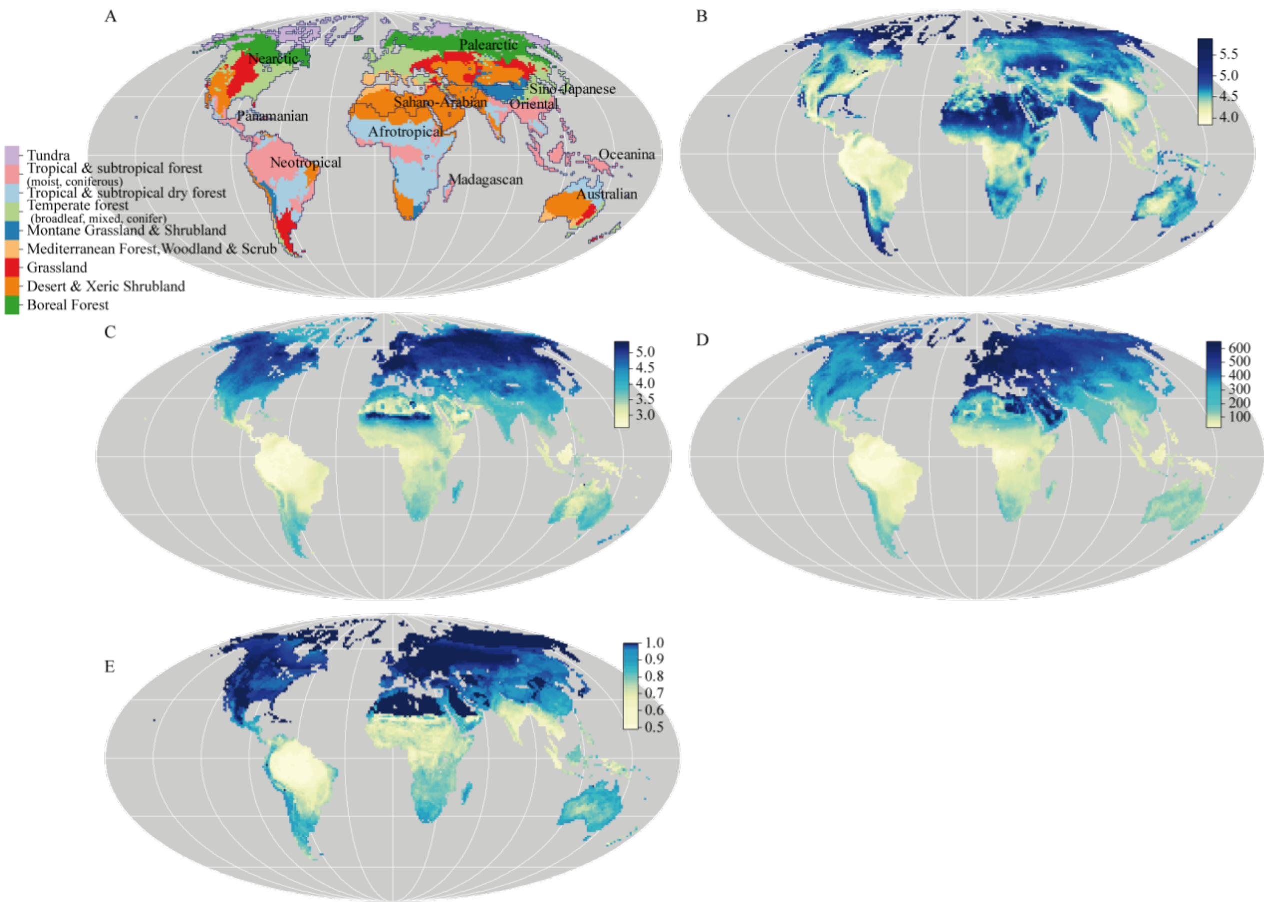


Figure A2. Properties of the predator diversity and predator evenness indices based on numerical simulations. Predator diversity and predator evenness properties were investigated using two sets of numerical simulations. In each simulation one parameter was kept constant while the other two were allowed to vary. Simulation parameters were Predator richness (number of predator species), Species richness (total number of species) and Predation probability (Bernoulli probability that predator *i* predates species *j*). In the first set of simulations (a) Species richness was kept constant (n = 400) while Predator richness varied in the (40,120) interval and Predation probability varied in the (0.01,0.3) interval. Because species richness is held constant (a) depicts both predator diversity and predator evenness. In the second set of simulations (b, c) Species richness varied in the (200,1200) interval, Predation probability varied in the (0.01,0.3) interval while predator richness was kept constant (n = 120).

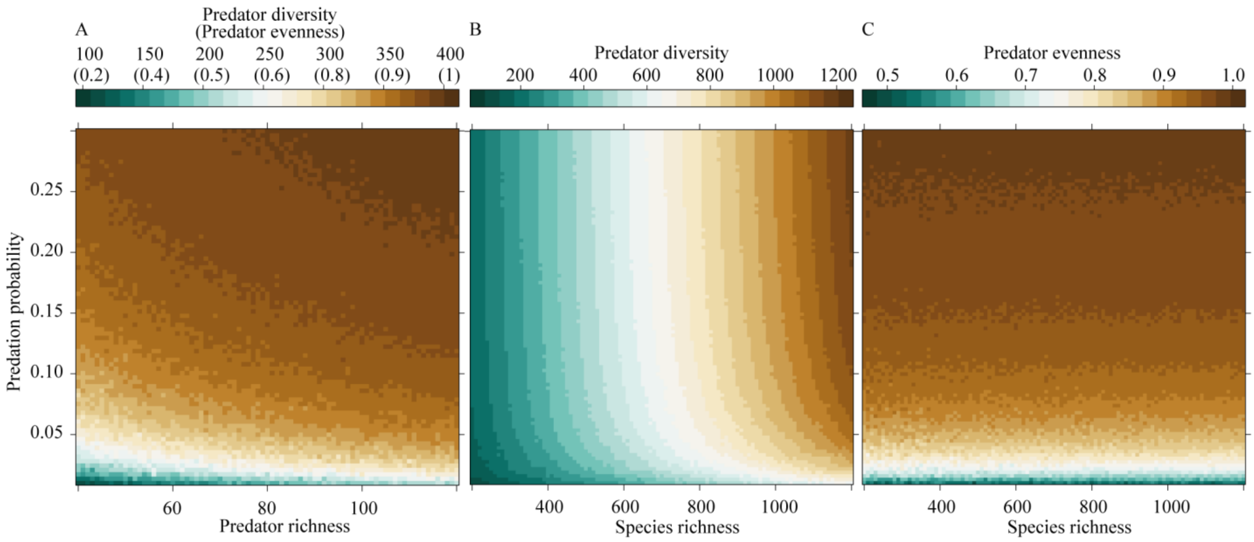
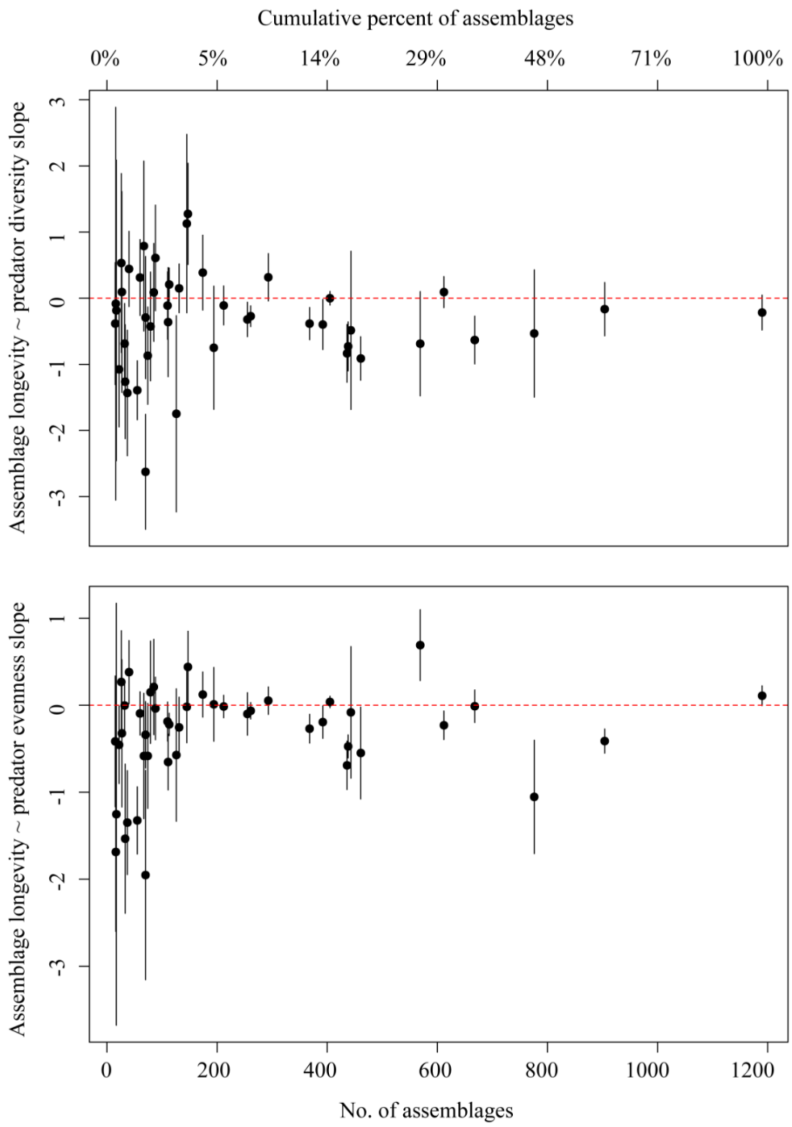


Figure A3. Within-bioregion slopes for the *gls* models between assemblage longevity and predator indices. Each dot represents a *gls* slope (Gaussian-error structure) and 95% confidence intervals, between assemblage longevity and predator diversity and evenness, respectively. Slopes (y-axis) are presented against the number of assemblage within each bioregion (lower x-axis) and their corresponding cumulative contribution to the total number of assemblages (upper x-axis). Each *gls* contains "Research effort" and "Origin" as covariates and includes an exponential spatial-autocorrelation structure. For each *gls* all predictors were mean-centred and scaled (divided by two standard deviations).



Literature cited

Burnham, K. P. and Anderson, D. R. 2002. Model selection and multi-model inference: a practical information-theoretic approach. — Springer.

Holt, B. G. et al. 2013. An Update of Wallace's Zoogeographic Regions of the World. — Science 339: 74-78.

Olson, D. M. et al. 2001. Terrestrial ecoregions of the world: a new map of life on earth. — BioScience 51: 933-938.