

	Area model				Productivity model				Topography model			
	coefficient	std. error	p	variance	coefficient	std. error	p	variance	coefficient	std. error	p	variance
Intercept	1.276 ±	0.314	<b>&lt;.0001</b>		1.800 ±	0.395	<b>0</b>		4.239 ±	1.625	<b>0.010</b>	
Area (km2)	0.221 ±	0.061	<b>&lt;.0001</b>		0.110 ±	0.076	0.149		-0.450 ±	0.327	0.172	
Climate zone			<b>&lt;.0001 *</b>				<b>&lt;.0001 *</b>				<b>&lt;.0001 *</b>	
Cold	-	-	-	1.448	-	-	-	1.480	-	-	-	1.457
Arid	-1.067 ±	0.497	<b>0.034</b>	1.605	0.156 ±	0.066	<b>0.019</b>	1.658	-1.155 ±	0.487	<b>0.019</b>	1.570
Tropical	-0.227 ±	0.377	0.547	1.000	0.453 ±	0.056	<b>0</b>	1.000	-0.242 ±	0.382	0.528	1.000
Area x Climate zone			<b>0.032 *</b>								0.021	
Cold	-	-	-		-	-	-		-	-	-	
Arid	0.247 ±	0.098	<b>0.013</b>						0.264 ±	0.096	<b>0.007</b>	
Tropical	0.149 ±	0.074	<b>0.046</b>						0.150 ±	0.075	<b>0.046</b>	
NPP					0.000 ±	0.000	<b>0.001</b>					
Area x NPP					0.000 ±	0.000	<b>0.000</b>					
Topographic complexity									-1.097 ±	0.628	0.083	
Area x Topographic complexity									0.249 ±	0.124	<b>0.048</b>	

**Table S1.** Results from Generalized Least Squares (GLS) fitting of the relationships depicted in Fig. 1E-F. All models include Area and Climate zone, and the variance of richness among climate zones is estimated as a free parameter in the model fitting (listed under the column *variance*). Models were fitted using maximum likelihood. Full models with all interactions were fitted and then reduced to contain only significant variables. Only the best model is shown, and no other models were within 2 units of AIC from the best model. Significant p-values are shown in bold. For factor variables, the *p* value for the overall model (marked with an asterisk) is from an ANOVA table derived from the fitted model object, all other *p* values are from the GLS. Area and Topographic complexity (measured as the standard deviation of elevation values within the mountain region) were both log<sub>10</sub> transformed prior to the analyses in order to ensure normality. The analysis was done with the *gls* function of the R package *nlme*.