Supporting Information

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SI Materials and Methods

As we were unable to categorize 612 mammal species to a temporal niche, a sensitivity analysis was conducted to determine the effect that these omissions had. A random sample of 10% of the total species excluding fossorial but including species without temporal niche classification was taken 1,000 times. Following this, the species from these samples were removed from each of the four temporal niche rasters creating 1,000 sets of data associated with each. A Spearman rank correlation test was then performed, testing the difference between the pixel values in the raster used for analysis and the 1,000 sensitivity datasets. Fig. S1 shows a strong positive correlation between the actual and modified datasets in all four categories. We surmise that the omission of the unclassified species from this analysis does not have a strong effect on the spatial pattern of our data.
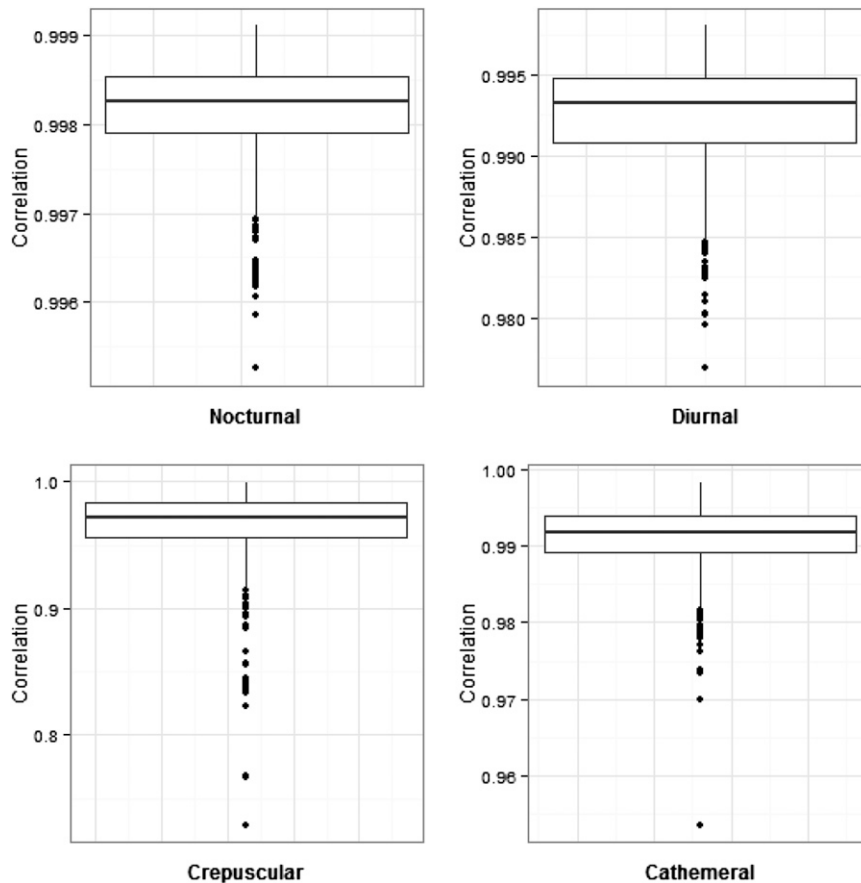

Fig. S1. Spearman rank correlations between actual and 1,000 modified sensitivity datasets for all four temporal niches.

Table S1. Empirical support for best spatial error regression model sets (including all models with ΔAIC less than 5) predicting the global distribution of species diversity in different temporal niches

Behaviour	Daylight	Twilight	Moonlight	Daylight variance	Twilight variance	Moonlight variance	Artificial light	ΔAIC	w_{AIC}
Nocturnal	●	●	○	●	○	○	○	0.000	0.185
	●	●	○	●	●	○	○	0.702	0.130
	●	●	●	●	○	○	○	1.034	0.110
	●	●	●	●	●	○	○	1.726	0.078
	●	●	○	●	○	○	●	1.756	0.077
	●	●	●	●	○	●	○	1.880	0.072
	●	●	●	●	●	●	○	2.351	0.057
	●	●	○	●	●	○	●	2.445	0.054
	●	●	●	●	○	○	●	2.785	0.046
	●	●	●	●	●	●	○	2.994	0.041
	●	●	●	●	●	●	○	3.463	0.033
	●	●	○	●	○	●	●	3.526	0.032
	●	●	●	●	○	●	●	3.644	0.030
	●	●	●	●	○	●	●	4.106	0.024
	●	●	●	●	●	○	●	4.749	0.017
Diurnal	●	●	○	●	●	○	●	0.000	0.202
	●	●	○	●	●	○	●	0.038	0.198
	●	●	●	●	●	○	●	0.396	0.165
	●	●	●	●	○	○	●	0.429	0.163
	●	●	○	●	●	●	●	1.981	0.075
	●	●	○	●	○	●	●	2.014	0.074
	●	●	●	●	●	●	●	2.283	0.064
	●	●	●	●	○	●	●	2.428	0.060
Crepuscular	●	●	●	●	●	○	●	0.000	0.281
	●	●	●	○	●	○	●	0.071	0.271
	●	●	●	○	●	●	●	1.157	0.158
	●	●	●	●	●	●	●	1.602	0.126
	●	●	●	●	○	○	●	3.097	0.060
	●	●	●	●	○	●	●	3.923	0.040
	●	●	●	○	○	○	●	4.137	0.036
	●	●	●	○	○	○	●	4.510	0.029
Cathemeral	●	●	○	○	●	●	●	0.000	0.413
	●	●	●	○	●	●	●	1.413	0.204
	●	●	○	●	●	●	●	1.947	0.156
	●	●	●	●	●	●	●	3.366	0.077
	●	●	○	○	●	○	●	3.772	0.063
	●	●	●	○	●	○	●	4.491	0.044

The filled circles indicate term is included in the model as an interaction with total species diversity, and the empty circles indicate the term is omitted. See *Materials and Methods* for full model description. ΔAIC, difference in Akaike's information criteria score between current and highest-ranked model; w_{AIC}, Akaike weights.

Other Supporting Information Files

R code file (TXT)
Table S2 (PDF)