

Supplementary material

Table S1. Geographic and environmental characteristics of the 34 bat communities used to evaluate predictions of the SSL. General locality names are provided, but more detailed locality information is available in the associated references.

Community	Country	Latitude (°)	Longitude (°)	Habitat	Source
Iowa	USA	42.3	93.0	riparian	Kunz (1973)
California	USA	36.5	117.3	desert	Suprenant (1977)
Nevada	USA	36.2	115.2	desert	O’Farrell and Bradley (1970)
New Mexico	USA	33.9	107.4	desert	Black (1974)
Big Bend Ranch	USA	29.8	103.8	desert	Yancey (1996)
Queretaro	Mexico	21.1	99.3	montane tropical forest	Navarro and Leon-Paniagua (1995)
Manantlan	Mexico	19.3	104.0	montane tropical forest	Iniguez Davalos (1993)
Ixtapan del Oro	Mexico	19.3	100.2	montane tropical forest	Alvarez and Alvarez-Castaneda (1996)
Los Tuxtlas	Mexico	18.4	95.0	wet tropical forest	Estrada et al. (1993)
Chiapas	Mexico	16.1	91.0	wet tropical forest	Medellin (1993)
Guanacaste-1	Costa Rica	9.5	85.2	wet tropical forest	LaVal and Fitch (1977)
Guanacaste-2	Costa Rica	9.5	85.2	wet tropical forest	Fleming et al. (1972)
Puntarenas	Costa Rica	10.0	84.8	montane tropical forest	LaVal and Fitch (1977)
Heredia	Costa Rica	10.5	83.8	wet tropical forest	LaVal and Fitch (1977)
Sherman	Panama	9.3	80.0	wet tropical forest	Fleming et al. (1972)
Rodman	Panama	9.0	79.6	dry tropical forest	Fleming et al. (1972)
BCI	Panama	9.2	79.8	wet tropical forest	Handley et al. (1991)
Paracou	French Guiana	5.3	52.9	wet tropical forest	Simmons and Voss (1998)
Zabelitas	Colombia	4.0	76.5	wet tropical forest	Thomas (1972)
Marcarena	Colombia	3.3	73.9	wet tropical forest	Sanchez-Palomino et al. (1993)
Pance	Colombia	3.0	76.0	montane tropical forest	Thomas (1972)
Hormiguero	Colombia	3.0	76.0	montane tropical forest	Thomas (1972)
Manaus	Brazil	3.0	60.0	wet tropical forest	dos Reis (1984)
Edaphic Cerrado	Brazil	7.2	39.4	tropical woodland-savannah	Willig (1982)
Caatinga	Brazil	7.6	39.7	dry tropical forest	Willig (1982)
Linhares	Brazil	19.0	40.3	wet semi-tropical forest	Peracchi and Albuquerque (1993)
Panga	Brazil	19.3	48.4	wet semi-tropical forest	Pedro and Taddei (1997)
Minas Gerais	Brazil	19.8	41.8	wet semi-tropical forest	Moura de Souza Aguiar (1994)
Tapajos	Brazil	3.4	55.0	moist tropical forest	Castro-Arellano et al. (2007)
Jenaro Herrera	Peru	4.9	73.8	wet tropical forest	D. Gorchov and C. Ascorra (pers. comm.)
Iquitos	Peru	3.8	73.2	humid tropical forest	Hice et al. (2004), Willig et al. (2007), Arias (2008), Klingbeil and Willig (2009)
Manu	Peru	11.9	71.3	wet tropical forest	Ascorra et al. (1996)
Mbaracayu	Paraguay	24.1	55.5	wet semi-tropical forest	Stevens et al. (2004)
Río Verde	Paraguay	23.5	56.1	dry semi-tropical forest	Stevens et al. (2004)

Table S2. Spearman rank correlations (r_s) of body size ratio and body size of the larger member in a species pair. p is the one-tailed (left) significance. Dashes indicate combinations of guild and community for which sample sizes were too small for analysis ($S < 5$). Geographic and environmental characteristics of the communities appear in Table S1.

Community	Aerial insectivores		Frugivores		Gleaning animalivores		High-flying insectivores		Nectarivores	
	r_s	p	r_s	p	r_s	p	r_s	p	r_s	p
Iowa	0.46	0.853	–	–	–	–	–	–	–	–
California	–0.25	0.295	–	–	–	–	–	–	–	–
Nevada	0.10	0.564	–	–	–	–	–	–	–	–
New Mexico	–0.18	0.277	–	–	–	–	–	–	–	–
Big Bend Ranch	–0.04	0.454	–	–	–	–	–	–	–	–
Quetaro	–0.21	0.269	0.50	0.805	–	–	–	–	–	–
Manantlan	–0.35	0.164	0.04	0.531	–	–	–	–	0.80	0.900
Ixtapan del Oro	–0.18	0.314	0.14	0.607	–	–	–	–	–	–
Los Tuxtlas	–0.14	0.380	0.16	0.721	0.20	0.627	–	–	–	–
Chiapas	0.50	0.958	0.20	0.737	–0.12	0.347	–	–	–	–
Guanacaste-1	0.35	0.851	0.30	0.688	0.24	0.715	–	–	–	–
Guanacaste-2	0.25	0.706	0.54	0.893	0.21	0.678	–	–	–	–
Puntarenas	0.36	0.808	0.32	0.759	–	–	–	–	–0.40	0.253
Heredia	0.23	0.782	0.14	0.687	0.45	0.966	–	–	0.00	0.500
Sherman	0.60	0.858	0.40	0.901	–0.21	0.323	–	–	–	–
Rodman	–	–	0.22	0.734	–0.11	0.410	–	–	–	–
BCI	0.40	0.700	0.36	0.907	0.30	0.842	–	–	–	–
Paracou	0.21	0.801	0.09	0.632	0.11	0.692	0.12	0.611	–0.80	0.100
Zabelitas	–	–	–0.01	0.492	–0.20	0.374	–	–	–0.40	0.300
Marcarena	–0.30	0.312	0.16	0.740	–0.45	0.130	–	–	–	–
Pance	–	–	–0.20	0.278	–	–	–	–	–	–
Hormiguero	–	–	0.66	0.922	–	–	–	–	–	–
Manaus	0.35	0.822	–0.08	0.402	–0.03	0.467	–	–	–0.80	0.100

Table S3. Skewness coefficients (g_1), number of species (n), and one-tailed (left) significance levels (p) for body size distributions of bat guilds within 33 communities. Body mass was log-transformed before analysis. Dashes indicate combinations of guild and community for which sample size was too small for estimation of g_1 ($S < 3$) or assessment of significance ($S < 8$). Geographic and environmental characteristics of the communities appear in Table S1.

Community	Aerial insectivores			Frugivores			Gleaning animalivores			High-flying insectivores		
	g_1	n	p	g_1	n	p	g_1	n	p	g_1	n	p
Iowa	0.84	8	0.872	–	0	–	–	0	–	–	0	–
California	–0.10	8	0.448	–	0	–	–	1	–	–	1	–
Nevada	0.47	6	–	–	0	–	–	1	–	–	1	–
New Mexico	0.33	14	0.731	–	0	–	–	1	–	–	1	–
Big Bend Ranch	0.47	11	0.778	–	0	–	–	1	–	–	2	–
Quetaro	–0.62	12	0.150	–	6	–	–	2	–	0.49	3	–
Manantlan	0.36	11	0.720	0.90	8	0.888	–	1	–	–	2	–
Ixtapan del Oro	–0.40	11	0.255	0.34	7	–	–	0	–	0.54	3	–
Los Tuxtlas	0.12	8	0.564	0.84	16	0.937	0.91	6	–	–	0	–
Chiapas	0.72	14	0.898	0.67	13	0.877	0.21	14	0.652	0.94	4	–
Guanacaste-1	0.84	12	0.914	1.07	6	–	1.30	9	0.965	0.36	4	–
Guanacaste-2	0.83	8	0.869	0.94	8	0.899	0.71	8	0.832	–	0	–
Puntarenas	0.54	9	0.784	0.63	8	0.806	–	1	–	–	0	–
Heredia	1.36	15	0.987	0.53	15	0.839	0.81	18	0.940	–	2	–
Sherman	1.04	6	–	0.94	13	0.942	0.24	8	0.631	–	1	–
Rodman	0.27	4	–	1.37	11	0.978	0.23	8	0.625	–	2	–
BCI	0.74	5	–	0.99	16	0.961	0.60	14	0.858	–	0	–
Paracou	0.88	19	0.956	0.63	17	0.889	0.61	25	0.918	–0.09	9	0.449
Zabelitas	1.17	4	–	0.59	19	0.884	–0.34	6	–	–	0	–
Marcarena	–0.15	6	–	0.65	19	0.905	–0.04	9	0.476	–	0	–
Pance	–	2	–	0.33	12	0.714	–	0	–	–	2	–
Hormiguero	–	2	–	1.07	7	–	–	2	–	–	1	–
Manaus	0.98	16	0.960	1.04	14	0.960	0.24	11	0.655	–	4	–
Edaphic Cerrado	0.20	7	–	1.13	7	–	0.38	4	–	0.37	3	–
Caatingas	0.05	5	–	0.96	7	–	0.32	10	0.995	0.22	7	–
Linhares	1.10	4	–	0.49	14	0.815	0.71	11	0.870	–	2	–
Panga	–0.45	3	–	0.94	6	–	–	2	–	–	2	–
Minas Gerias	–	3	–	0.10	9	0.560	–	2	–	–	1	–
Tapajos	0.79	11	0.894	0.63	20	0.905	0.27	16	0.705	–	2	–
Jenaro Herrera	1.38	12	0.981	0.56	23	0.893	0.10	15	0.574	–0.22	3	–
Iquitos	1.86	17	0.998	0.56	29	0.914	0.26	17	0.703	–0.06	6	–
Manu	1.40	10	0.977	0.67	23	0.927	0.07	11	0.545	–	2	–
Mbaracayu	–0.12	5	–	0.26	7	–	–	1	–	–	1	–
Yaguarete Forests	–0.08	7	–	0.08	9	0.550	1.71	3	–	–0.11	8	0.439

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