

Ecography

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Supplementary material

Appendix 1.

Table A1. Functional trait values per bat species used to estimate the functional diversity–area relationship (FAR) for bat assemblages sampled in the Panamanian island ecosystem.

Species	log Body mass (g)	Trophic level	*Dietary specialization	Vertical stratification	Aspect ratio	Relative wing loading
<i>Artibeus jamaicensis</i>	3.879	Phytophagous	Intermediate	Opportunistic	5.98	43.81
<i>Artibeus lituratus</i>	4.257	Phytophagous	Intermediate	Canopy	6.23	30.62
<i>Carollia brevicauda</i>	2.931	Phytophagous	Intermediate	Understorey	6.13	38.68
<i>Carollia castanea</i>	2.501	Phytophagous	High	Understorey	5.89	43.28
<i>Carollia perspicillata</i>	2.890	Phytophagous	Intermediate	Understorey	6.01	44.08
<i>Centurio senex</i> •	3.027	Phytophagous	High	Opportunistic	5.90	25.61
<i>Chiroderma villosum</i>	3.135	Phytophagous	Low	Canopy	6.13	47.86
<i>Desmodus rotundus</i>	3.512	Animalivorous	High	Opportunistic	6.73	41.78
<i>Glossophaga soricina</i>	2.332	Phytophagous	Low	Understorey	6.40	37.61
<i>Lamproncycteris brachyotis</i>	2.674	Animalivorous	Low	Opportunistic	6.24	42.96
<i>Lophostoma silvicolium</i>	3.450	Animalivorous	Intermediate	Understorey	5.12	34.52
<i>Micronycteris hirsuta</i>	2.681	Animalivorous	Intermediate	Opportunistic	5.86	38.60
<i>Micronycteris microtis</i>	1.808	Animalivorous	Intermediate	Understorey	5.73	35.24
<i>Mimon crenulatum</i>	2.695	Animalivorous	Intermediate	Understorey	6.54	33.56
<i>Phylloderma stenops</i>	4.153	Phytophagous	Low	Opportunistic	6.38	37.40
<i>Plathyrrhinus helleri</i>	2.653	Phytophagous	Intermediate	Canopy	6.04	47.95
<i>Pteronotus parnellii</i>	3.100	Animalivorous	Intermediate	Understorey	6.46	37.22
<i>Tonatia saurophila</i>	3.520	Animalivorous	Low	Canopy	5.76	32.13
<i>Trachops cirrhosus</i>	3.437	Animalivorous	Low	Understorey	5.79	40.54
<i>Trinycteris nicefori</i>	2.380	Animalivorous	Intermediate	Opportunistic	6.28	36.87
<i>Uroderma bilobatum</i>	2.845	Phytophagous	Low	Opportunistic	6.18	45.60
<i>Vampyressa nymphaea</i>	2.595	Phytophagous	Low	Canopy	5.93	49.53
<i>Vampyressa pusilla</i>	2.067	Phytophagous	Low	Canopy	5.88	35.89
<i>Vampyrodes caraccioli</i>	3.605	Phytophagous	Intermediate	Canopy	6.30	72.19

•Information on wing morphology for *C. senex* was derived from the literature. Source: García-García, J. L. et al. 2014. Ecological traits of phyllostomid bats associated with sensitivity to tropical forest fragmentation in Los Chimalapas, Mexico. *Trop. Conserv. Sci.* 7: 457-474.

Table A2. Functional trait values per bat species used to estimate the functional diversity–area relationship (FAR) for bat assemblages sampled in the Amazonian countryside ecosystem.

Species	log Body mass (g)	Trophic level	*Dietary specialization	Vertical stratification	Aspect ratio	Relative wing loading
<i>Anoura caudifer</i>	2.208	Phytophagous	Intermediate	Opportunistic	6.60	46.98
<i>Artibeus cinereus</i>	2.351	Phytophagous	High	Canopy	6.19	39.04
<i>Artibeus concolor</i>	3.035	Phytophagous	Intermediate	Canopy	6.57	35.87
<i>Artibeus gnomus</i>	2.389	Phytophagous	High	Canopy	6.10	37.21
<i>Artibeus lituratus</i>	4.212	Phytophagous	Intermediate	Canopy	6.25	38.80
<i>Artibeus obscurus</i>	3.694	Phytophagous	High	Opportunistic	6.59	35.76
<i>Artibeus planirostris</i>	3.932	Phytophagous	High	Opportunistic	6.33	41.18
<i>Carollia brevicauda</i>	2.557	Phytophagous	Intermediate	Understorey	6.39	39.36
<i>Carollia castanea</i>	2.557	Phytophagous	High	Understorey	6.31	49.15
<i>Carollia perspicillata</i>	2.779	Phytophagous	Intermediate	Understorey	5.86	38.81
<i>Choeroniscus minor</i>	2.163	Phytophagous	Intermediate	Opportunistic	6.47	41.90
<i>Chrotopterus auritus</i>	4.320	Animalivorous	Low	Understorey	4.67	26.64
<i>Desmodus rotundus</i>	3.350	Animalivorous	High	Understorey	7.28	39.84
<i>Glossophaga soricina</i>	1.974	Phytophagous	Low	Canopy	6.65	38.61
<i>Glyphonycteris daviesi</i>	3.049	Animalivorous	Intermediate	Understorey	6.22	27.64
<i>Glyphonycteris sylvestris</i>	2.251	Animalivorous	Intermediate	Understorey	6.50	35.10
<i>Lamproncycteris brachyotis</i>	2.485	Animalivorous	Low	Understorey	7.00	36.29
<i>Lonchophylla thomasi</i>	1.946	Phytophagous	Low	Understorey	6.48	36.36
<i>Lophostoma brasiliense</i>	2.468	Animalivorous	Intermediate	Understorey	5.24	33.65
<i>Lophostoma carrikeri</i>	2.981	Animalivorous	Intermediate	Opportunistic	6.47	36.96
<i>Lophostoma schulzi</i>	2.912	Animalivorous	Intermediate	Understorey	4.98	36.13
<i>Lophostoma silviculum</i>	3.603	Animalivorous	Intermediate	Understorey	5.46	33.54
<i>Mesophylla macconnelli</i>	2.015	Phytophagous	Intermediate	Canopy	6.05	41.67
<i>Micronycteris hirsuta</i>	2.603	Animalivorous	Intermediate	Understorey	5.92	35.91

Table A2. (Continued)

Species	log Body mass (g)	Trophic level	*Dietary specialization	Vertical stratification	Aspect ratio	Relative wing loading
<i>Micronycteris megalotis</i>	1.825	Animalivorous	Intermediate	Understorey	5.46	31.55
<i>Micronycteris microtis</i>	1.775	Animalivorous	Intermediate	Understorey	5.97	31.43
<i>Micronycteris schmidtorum</i> •	1.946	Animalivorous	Intermediate	Understorey	5.72	41.10
<i>Mimon crenulatum</i>	2.534	Animalivorous	Intermediate	Understorey	6.18	27.59
<i>Phylloderma stenops</i>	3.850	Phytophagous	Low	Understorey	6.44	32.54
<i>Phyllostomus discolor</i>	3.572	Animalivorous	Low	Canopy	7.06	40.40
<i>Phyllostomus elongatus</i>	3.622	Animalivorous	Low	Understorey	6.41	33.63
<i>Phyllostomus hastatus</i>	4.543	Animalivorous	Low	Canopy	7.43	39.89
<i>Pteronotus parnellii</i>	3.195	Animalivorous	Intermediate	Understorey	6.04	33.19
<i>Rhinophylla pumilio</i>	2.262	Phytophagous	Intermediate	Opportunistic	6.25	40.54
<i>Sturnira tildae</i>	3.186	Phytophagous	Intermediate	Opportunistic	6.05	41.88
<i>Tonatia saurophila</i>	3.288	Animalivorous	Low	Opportunistic	5.54	31.53
<i>Trachops cirrhosus</i>	3.653	Animalivorous	Low	Understorey	6.07	31.55
<i>Trinycteris nicefori</i>	2.197	Animalivorous	Intermediate	Canopy	5.94	36.71
<i>Uroderma bilobatum</i>	2.950	Phytophagous	Low	Canopy	6.32	41.20
<i>Vampyriscus bidens</i>	2.534	Phytophagous	High	Canopy	6.07	38.77
<i>Vampyriscus brocki</i>	2.303	Phytophagous	High	Understorey	5.91	47.29

•Information on wing morphology for *M. schmidtorum* was derived from the literature. Source: Marinello, M. M. and Bernard, E. 2014. Wing morphology of Neotropical bats: a quantitative and qualitative analysis with implications for habitat use. *Can. J. Zool.* 92: 141-147.

***References to Dietary specialization (Tables A1 and A2)**

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Table A3. Sampling effort (mnh), patch area (PA), percent forest cover (FC) for three different spatial scales (500, 1500 and 3000 m radii), observed species richness (SR), Chao1 species richness estimates (SRE), and Chao1 functional diversity estimates (FD_{ALL}: all functional traits; FD_{DIET}: body mass, trophic level and dietary specialization; FD_{DISPERSAL}: body mass, vertical stratification and wing morphology) for each sampling site in the Panamanian island and Amazonian countryside ecosystem.

Ecosystem	Sampling sites	mnh	PA (ha)	FC500	FC1500	FC3000	SR	SRE	FD _{ALL}	FD _{DIET}	FD _{DISPERSAL}
Panamanian islands	Guacha	487	16.3	13.32	2.79	12.92	9	10.99	3.36	1.21	6.63
	Guanabano	497	7.2	9.46	2.42	8.12	6	6	2.20	0.79	2.00
	Guava	490	2.5	5.04	2.42	8.65	8	8.99	2.98	1.09	3.08
	Leon	482	50	28.19	7.78	12.76	10	10.17	3.20	1.16	2.66
	Pato Horqueta	471	11.4	11.91	8.13	5.09	10	11.5	4.21	1.44	3.16
	Trinidad	499	17.3	15.41	2.34	4.08	9	10	8.31	2.12	54.77
	Cacao	481	12.8	19.39	28.76	48.58	11	12.49	3.70	1.31	7.04
	Chicha	492	2.8	2.30	18.63	25.35	7	7	2.47	0.90	1.83
	Mona Grita	515	5.9	19.37	27.82	49.83	10	12.99	15.43	2.74	95.09
	Pina	513	4.4	39.63	16.50	43.61	10	13.96	4.23	1.44	4.47
	Tres Almendras Oeste	501	3.4	38.15	44.15	37.18	12	16.15	4.48	1.50	3.23
	Bohio	512		96.04	64.80	47.59	19	21.66	5.80	1.76	3.52
	Gigante	531		89.92	52.11	51.75	11	23.39	4.55	1.51	3.39
	Peña Blanca	509		74.61	54.75	43.48	18	20.66	5.66	1.73	5.48
Amazonian countryside	Dim1	656	1	4.55	25.38	50.60	8	17.79	10.95	2.39	3.55
	Dim2	681	10	16.89	53.49	64.01	16	24.95	7.64	2.03	3.46
	Dim3	672	100	67.04	37.93	53.90	20	35.88	9.32	2.23	4.55
	PoA1	658	1	8.71	36.77	46.82	9	9.99	2.92	1.07	2.72
	PoA2	683	10	5.50	11.48	54.37	20	24.48	5.08	1.63	4.07
	PoA3	662	100	67.16	23.01	38.76	21	56.7	9.32	2.23	8.13
	Col1	675	1	9.61	23.54	32.65	11	11.74	3.59	1.28	3.44
	Col2	676	10	9.81	15.47	37.68	20	36.56	6.92	1.93	5.30
	CaF1	666		97.48	86.11	71.83	21	41.09	10.32	2.33	10.29
	CaF2	674		94.74	96.80	85.45	19	34.82	4.27	1.45	3.63
	CaF3	666		92.05	70.82	62.99	16	18.48	4.65	1.54	3.56
	Flo1	671		77.41	62.22	68.75	19	31.11	5.23	1.66	3.58
	Flo2	676		50.45	56.45	61.15	22	35.41	5.99	1.79	4.27
	Flo3	666		98.25	80.20	72.98	21	22.38	5.50	1.70	3.67
	Km1	654		98.52	85.77	91.41	15	25.39	5.84	1.76	4.78
Km2	675		92.01	85.79	90.53	20	27.9	6.34	1.85	3.83	
Km3	656		98.41	92.37	90.19	18	22.83	4.58	1.52	3.74	

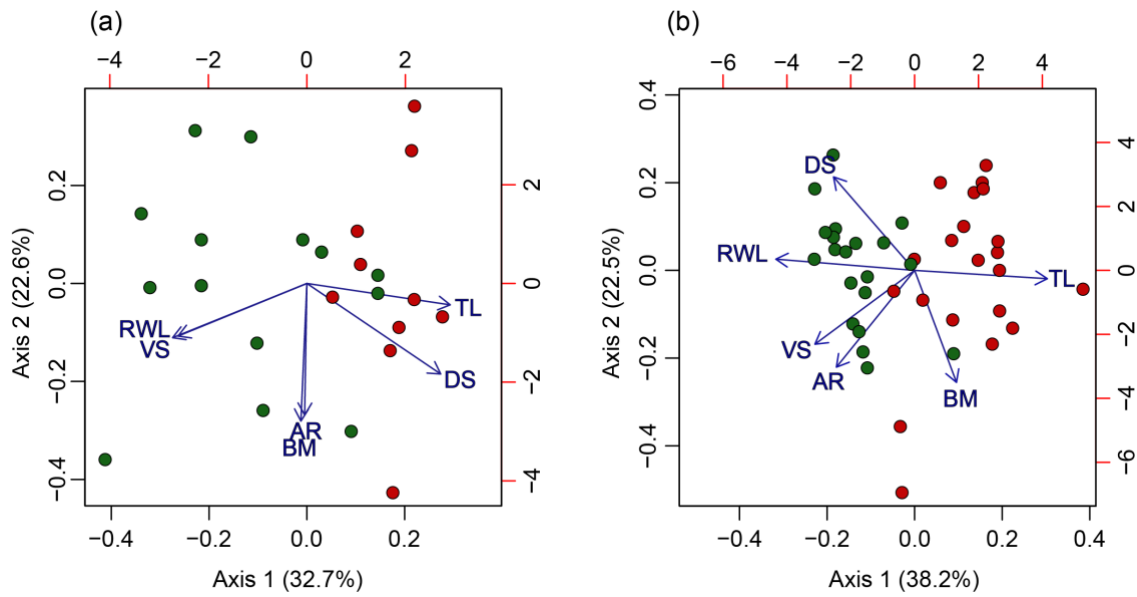


Figure A1. Biplot displaying the structure of the functional space described by the first two principal coordinate axes of bat assemblages sampled (a) on Panamanian islands and (b) in an Amazonian countryside ecosystem. The percent variation explained by each PCoA axis is given in parentheses after each axis label. Each data point represents a species classified as phytophagous (green circles) or animalivorous (red circles). The loadings of each functional trait are visualized with red labels and arrows (BM, body mass; TL, trophic level; DS, dietary specialization; VS, vertical stratification; AR, aspect ratio; RWL, relative wing loading).