Supplementary Data File 2

Tables 1-10

Miriam M. Ferrer, Marylin Vázquez-Cruz,Tania Hernández-Hernández, Sara V. Good.

Geographical and life-history traits associated with low and high species richness across angiosperm families

Table S1. Temporal periods according to the number of shifts + 1 according the median age for a shift in the speciation or extinction rate based on the five calibrated phylogenies: Wikström et al. (2001), Bell et al. (2010), Hernández-Hernández and Wiens (2020), Li et al. (2019), and Ramírez-Barahona et al. (2020).

Wikstrom et al. (2001)	**Bell et al. (2010)**	**Hernández-Hernández and Wiens (2020)**	**Li et al. (2019)**	**Ramírez-Barahona et al. (2020)**
0-43	0-23	0-14.4	0-24.49	0-21
44-69	24-38	14.5-60	24.49-45	21.1-40
70-92	39-59	60.1-86	45.1-60	40.1-57.7
93-120	60-77	86.1-104.2	60-200	57.8-80
121-132	78-98	104.3-117.8		80.1-103
	99-128	117.9-130		103.1-195.8
	128-136			

Table S2. Estimates for the parameters of a birth-death diversification model: λ, μ, (speciation and extinction rate), pSp (likelihood of the model), r (diversification rate) and ε (extinction fraction λ/μ) obtained using a maximum likelihood approach (Bokma, 2003) for 432 angiosperm families (All) and those that were originated during different periods in which shifts on the diversification rates occurred based on their crown ages from five calibrated phylogenies: Wikström et al. (2001), Bell et al. (2010), Hernández-Hernández and Wiens (2020), Li et al. (2019), and Ramírez-Barahona et al. (2020) and the number of species from the APG website (Stevens, 2021).

Period (MYBP)	λ	μ	pSp	r	ε	Estimate
Wikström et al. (2001)						
0-43	25.01	25.01	-655.85	0.0001	1.0000	MLE
0-43	18.63	18.62	-656.85	0.0141	0.9992	max
0-43	29.17	29.17	-656.85	0.0001	1.0000	min
44-69	14.69	14.69	-1486.40	0.0001	1.0000	MLE
44-69	13.11	13.11	-1487.40	0.0009	0.9999	max
44-69	16.31	16.31	-1487.39	0.0001	1.0000	min
70-92	6.14	6.14	-785.83	0.0001	1.0000	MLE
70-92	5.14	5.14	-786.82	0.0029	0.9994	max
70-92	7.04	7.04	-786.81	0.0001	1.0000	min
93-120	0.68	0.66	-237.49	0.0199	0.9707	MLE
92-120	0.55	0.53	-238.48	0.0197	0.9642	max
92-120	1.15	1.14	-238.48	0.0131	0.9886	min
121-132	0.76	0.76	-56.18	0.0001	0.9999	MLE
121-132	0.48	0.48	-57.14	0.0009	0.9981	max
121-132	1.23	1.23	-57.17	0.0001	0.9999	min
All	13.16	13.1599	-3324.593	0.0001	1.0000	MLE
All	12.32	12.3199	-3325.592	0.0001	1.0000	max
All	14.11	14.1099	-3325.59	0.0001	1.0000	min
Bell et al. (2010)						
0-23	42.75	42.75	-323.60	0.0001	1.0000	MLE
0-23	30.75	30.73	-324.60	0.0186	0.9994	max
0-23	53.50	53.50	-324.60	0.0001	1.0000	min
24-38	25.20	25.20	-600.21	0.0001	1.0000	MLE
24-38	18.15	18.13	-601.21	0.0157	0.9991	max
24-38	29.75	29.75	-601.20	0.0001	1.0000	min
39-59	23.13	23.13	-1058.84	0.0001	1.0000	MLE
39-59	20.22	20.22	-1059.84	0.0023	0.9999	max
39-59	26.15	26.15	-1059.82	0.0001	1.0000	min
60-77	7.35	7.35	-690.70	0.0001	1.0000	MLE

60-77	5.40	5.39	-691.70	0.0079	0.9985	max
60-77	8.51	8.51	-691.69	0.0001	1.0000	min
78-98	2.32	2.32	-474.21	0.0001	1.0000	MLE
78-98	1.78	1.78	-475.20	0.0047	0.9974	max
78-98	2.74	2.74	-475.18	0.0001	1.0000	min
99-128	0.06	0.05	-18.36	0.0109	0.8183	MLE
99-128	0.04	0.03	-19.31	0.0091	0.7725	max
99-128	0.24	0.24	-19.35	0.0003	0.9988	min
128-136	0.02	0.01	-4.47	0.0057	0.6200	MLE
128-136	0.01	0.00	-5.46	0.0059	-0.1800	max
128-136	0.08	0.08	-5.47	0.0001	0.9988	min
All	17.85	17.85	-3364.04	0.0001	1.0000	MLE
All	16.70	16.70	-3365.03	0.0001	1.0000	max
All	19.13	19.13	-3365.03	0.0001	1.0000	min
Hernández-Hernández and Wiens (2020)						
0-14.4	132.60	132.60	-24.03	0.0001	1.0000	MLE
0-14.4	29.90	29.60	-25.03	0.2960	0.9901	max
0-14.4	343.20	343.20	-25.03	0.0001	1.0000	min
14.5-60	16.15	16.15	-1847.35	0.0001	1.0000	MLE
14.5-60	14.57	14.57	-1848.34	0.0010	0.9999	max
14.5-60	17.66	17.66	-1848.34	0.0001	1.0000	min
60.1-86	6.98	6.98	-940.39	0.0047	0.9993	MLE
60.1-86	5.28	5.27	-941.39	0.0120	0.9977	max
60.1-86	6.98	6.97	-941.29	0.0079	0.9989	min
86.1-104.2	3.41	3.39	-245.52	0.0250	0.9927	MLE
86.1-104.2	0.50	0.45	-246.52	0.0516	0.8968	max
86.1-104.2	4.46	4.44	-246.52	0.0250	0.9944	min
104.3-117.8	4.34	4.33	-112.72	0.0060	0.9986	MLE
104.3-117.8	3.08	3.07	-113.71	0.0060	0.9981	max
104.3-117.8	8.48	8.48	-113.71	0.0010	0.9999	min
117.9-130	0.28	0.28	-45.59	0.0001	0.9996	MLE
117.9-130	0.18	0.18	-46.55	0.0007	0.9961	max
117.9-130	0.46	0.46	-46.59	0.0001	0.9998	min
All	13.75	13.75	-3290.04	0.0001	1.0000	MLE
All	12.86	12.86	-3291.04	0.0001	1.0000	max
All	14.73	14.73	-3291.04	0.0001	1.0000	min
Li et al. (2019)						
0-24.49	0.21	0.14	-4.09	0.0680	0.6762	MLE
0-24.49	0.07	0.01	-5.08	0.0600	0.1429	max
0-24.49	1.13	1.13	-5.09	0.0019	0.9983	min

24.49-45	13.44	13.44	-554.35	0.0001	1.0000	MLE
24.49-45	9.10	9.08	-555.35	0.0210	0.9977	max
24.49-45	15.82	15.82	-555.34	0.0001	1.0000	min
45.1-60	9.46	9.46	-469.78	0.0010	0.9999	MLE
45.1-60	2.42	2.38	-470.78	0.0450	0.9814	max
45.1-60	11.32	11.32	-470.77	0.0010	0.9999	min
60-200	9.32	9.32	-2205.28	0.0001	1.0000	MLE
60-200	8.54	8.54	-2206.27	0.0007	0.9999	max
60-200	10.15	10.15	-2206.27	0.0001	1.0000	min
All	10.08	10.0799	-3242.63	0.0001	1.0000	MLE
All	9.44	9.4399	-3243.576	0.0001	1.0000	MAX
All	10.78	10.7799	-3243.589	0.0001	1.0000	MIN
Ramírez-Barahona et al. (2020)						
0-21	1.86	1.83	-324.89	0.0299	0.9839	MLE
0-21	1.59	1.56	-325.89	0.0293	0.9816	max
0-21	2.50	2.50	-325.89	0.0001	1.0000	min
21.1-40	4.14	4.14	-600.92	0.0001	1.0000	MLE
21.1-40	2.62	2.59	-601.91	0.0270	0.9897	max
21.1-40	4.77	4.77	-601.90	0.0001	1.0000	min
40.1-57.7	9.27	9.27	-699.28	0.0001	1.0000	MLE
40.1-57.7	5.36	5.34	-700.27	0.0190	0.9965	max
40.1-57.7	10.73	10.73	-700.27	0.0001	1.0000	min
57.8-80	19.15	19.15	-955.46	0.0001	1.0000	MLE
57.8-80	13.31	13.30	-956.46	0.0090	0.9993	max
57.8-80	21.86	21.86	-956.46	0.0001	1.0000	min
80.1-103	0.09	0.00	-196.85	0.0860	0.0444	MLE
80.1-103	0.09	0.00	-197.40	0.0840	0.0118	max
80.1-103	4.05	4.02	-197.84	0.0330	0.9919	min
103.1-195.8	18.91	18.91	-132.10	0.0001	1.0000	MLE
103.1-195.8	12.47	12.47	-133.10	0.0050	0.9996	max
103.1-195.8	27.91	27.91	-133.10	0.0001	1.0000	min
All	2.73	2.69	-2961.33	0.0400	0.9853	MLE
All	2.48	2.44	-2963.32	0.0400	0.9839	max
All	3.00	2.96	-2963.24	0.0400	0.9867	min

MLE: maximum likelihood estimate, max: maximum value of r, min: minimum value of r

Table S3. Estimates for the parameters of a birth-death diversification model: λ, μ, (speciation and extinction rate), pSp (likelihood of the model), r (diversification rate) and ε (extinction fraction λ/μ) obtained using a maximum likelihood approach (Bokma, 2003) for all angiosperm families and those that were originated during different periods in which shifts on the diversification rates occurred based on their crown ages from five calibrated phylogenies: Wikström et al. (2001), Bell et al. (2010), Hernández-Hernández and Wiens (2020), Li et al. (2019), and Ramírez-Barahona et al. (2020) and the number of species from the APG website (Stevens, 2021).

Period (MYBP)	**λ**	**μ**	**pSp**	**r**	**ε**	**Estimate**
Wikström et al. 2001						
0-43	36.90	36.90	-455.39	0.0001	1.0000	MLE
0-43	27.00	26.99	-456.39	0.0145	0.9995	max
0-43	45.08	45.08	-456.39	0.0001	1.0000	min
44-69	19.56	19.56	-1098.34	0.0001	1.0000	MLE
44-69	16.66	16.66	-1099.34	0.0019	0.9999	max
44-69	22.10	22.10	-1099.33	0.0001	1.0000	min
70-92	9.40	9.40	-496.53	0.0001	1.0000	MLE
70-92	7.44	7.44	-497.52	0.0029	0.9996	max
70-92	11.24	11.24	-497.51	0.0001	1.0000	min
93-120	0.50	0.47	-186.02	0.0280	0.9440	MLE
92-120	0.50	0.48	-186.85	0.0250	0.9500	max
92-120	0.97	0.95	-187.02	0.0190	0.9804	min
121-132	0.76	0.76	-56.18	0.0001	0.9999	MLE
121-132	0.48	0.48	-57.14	0.0009	0.9981	max
121-132	1.23	1.23	-57.17	0.0001	0.9999	min
All	18.42	18.42	-2374.21	0.0001	1.0000	MLE
All	17.00	17.00	-2375.21	0.0001	1.0000	max
All	20.04	20.04	-2375.21	0.0001	1.0000	min
Bell et al. 2010						
0-23	34.90	34.88	-277.05	0.0201	0.9994	MLE
0-23	33.76	33.74	-277.05	0.0246	0.9993	max
0-23	65.20	65.20	-277.04	0.0001	1.0000	min
24-38	30.35	30.35	-431.94	0.0001	1.0000	MLE
24-38	21.30	21.28	-432.94	0.0156	0.9993	max
24-38	36.90	36.90	-432.94	0.0001	1.0000	min
39-59	32.95	32.95	-735.73	0.0001	1.0000	MLE
39-59	26.85	26.84	-736.72	0.0060	0.9998	max
39-59	38.50	38.50	-736.72	0.0001	1.0000	min
60-77	4.20	4.20	-256.03	0.0001	1.0000	MLE

60-77	2.85	2.84	-256.97	0.0071	0.9975	max
60-77	5.34	5.34	-257.02	0.0001	1.0000	min
78-98	8.65	8.65	-449.16	0.0001	1.0000	MLE
78-98	5.45	5.44	-450.11	0.0091	0.9983	max
78-98	10.45	10.45	-450.16	0.0001	1.0000	min
99-128	0.03	0.01	-18.13	0.0209	0.3033	MLE
99-128	0.02	0.00	-19.10	0.0183	0.0850	max
99-128	0.21	0.21	-19.11	0.0007	0.9967	min
128-136	0.06	0.05	-18.36	0.0109	0.8183	MLE
128-136	0.04	0.03	-19.31	0.0091	0.7725	max
128-136	0.24	0.24	-19.35	0.0003	0.9988	min
All	25.64	25.64	-2358.64	0.0001	1.0000	MLE
All	23.64	23.64	-2359.63	0.0001	1.0000	max
All	27.88	27.88	-2359.63	0.0001	1.0000	min
Hernández-Hernández and Wiens (2020)						
0-14.4	132.60	132.60	-24.03	0.0001	1.0000	MLE
0-14.4	29.90	29.60	-25.03	0.2960	0.9901	max
0-14.4	343.20	343.20	-25.03	0.0001	1.0000	min
14.5-60	16.88	16.88	-1763.70	0.0001	1.0000	MLE
14.5-60	15.10	15.10	-1764.69	0.0021	0.9999	max
14.5-60	18.58	18.58	-1764.68	0.0001	1.0000	min
60.1-86	9.54	9.54	-824.76	0.0001	1.0000	MLE
60.1-86	6.24	6.23	-825.75	0.0111	0.9982	max
60.1-86	10.96	10.96	-825.76	0.0001	1.0000	min
86.1-104.2	3.41	3.39	-245.52	0.0250	0.9927	MLE
86.1-104.2	0.50	0.45	-246.52	0.0516	0.8968	max
86.1-104.2	4.46	4.44	-246.52	0.0250	0.9944	min
104.3-117.8	4.34	4.33	-112.72	0.0060	0.9986	MLE
104.3-117.8	3.08	3.07	-113.71	0.0060	0.9981	max
104.3-117.8	8.48	8.48	-113.71	0.0010	0.9999	min
117.9-130	0.28	0.28	-45.59	0.0001	0.9996	MLE
117.9-130	0.18	0.18	-46.55	0.0007	0.9961	max
117.9-130	0.46	0.46	-46.59	0.0001	0.9998	min
All	14.70	14.70	-3072.72	0.0001	1.0000	MLE
All	13.72	13.72	-3073.68	0.0001	1.0000	max
All	15.76	15.76	-3073.68	0.0001	1.0000	min
LI et al. 2019						
0-24.49	0.21	0.14	-4.09	0.0680	0.6762	MLE
0-24.49	0.07	0.01	-5.08	0.0600	0.1429	max
0-24.49	1.13	1.13	-5.09	0.0019	0.9983	min

24.49-45	15.44	15.44	-494.13	0.0001	1.0000	MLE
24.49-45	12.00	11.99	-495.01	0.0090	0.9993	max
24.49-45	18.36	18.36	-495.13	0.0001	1.0000	min
45.1-60	10.64	10.64	-431.73	0.0001	1.0000	MLE
45.1-60	2.12	2.07	-432.69	0.0490	0.9769	max
45.1-60	12.86	12.86	-432.73	0.0001	1.0000	min
60-200	11.82	11.82	-1766.56	0.0001	1.0000	MLE
60-200	10.68	10.68	-1767.55	0.0007	0.9999	max
60-200	12.98	12.98	-1767.53	0.0001	1.0000	min
All	12.26	12.26	-2704.21	0.0001	1.0000	MLE
All	11.36	11.36	-2705.20	0.0001	1.0000	MAX
All	13.20	13.20	-2705.20	0.0001	1.0000	MIN
Ramírez-Barahona et al. 2020						
0-21	2.08	2.05	-269.07	0.0291	0.9860	MLE
0-21	1.74	1.71	-270.01	0.0291	0.9833	max
0-21	2.60	2.59	-270.07	0.0131	0.9950	min
21.1-40	4.88	4.88	-521.83	0.0001	1.0000	MLE
21.1-40	3.72	3.71	-522.80	0.0091	0.9976	max
21.1-40	5.70	5.70	-522.81	0.0001	1.0000	min
40.1-57.7	9.98	9.98	-655.34	0.0001	1.0000	MLE
40.1-57.7	8.50	8.50	-656.34	0.0007	0.9999	max
40.1-57.7	10.73	10.73	-700.27	0.0001	1.0000	min
57.8-80	22.22	22.22	-831.60	0.0001	1.0000	MLE
57.8-80	18.60	18.60	-832.59	0.0015	0.9999	max
57.8-80	25.65	25.65	-832.60	0.0001	1.0000	min
80.1-103	0.97	0.91	-167.34	0.0560	0.9423	MLE
80.1-103	0.09	0.00	-167.83	0.0860	0.0444	max
80.1-103	14.99	14.97	-167.70	0.0151	0.9990	min
103.1-195.8	21.70	21.70	-116.53	0.0001	1.0000	MLE
103.1-195.8	14.42	14.42	-117.53	0.0017	0.9999	max
103.1-195.8	33.08	33.08	-117.53	0.0001	1.0000	min
All	5.12	5.09	-2606.94	0.0251	0.9951	MLE
All	4.78	4.75	-2607.83	0.0251	0.9947	max
All	5.68	5.65	-2608.88	0.0251	0.9956	min

MLE: maximum likelihood estimate, max: maximum value of r, min: minimum value of r

Table S4. Frequency of families with poor, predicted, high or mixed species richness based on strict consensus across five datasets and tabulated by the number of species in the family. Results are presented for 432 angiosperm families by estimating the crown age of families using the age of their sister family (upper panel) or for the 235 angiosperm families that were included in all five calibrated phylogenies included in our study (lower panel).

Species richness	**1**	**2-10**	**11-100**	**101-500**	**501-1000**	**1001-5000**	**5001-26000**	**Total**
	Families with crown ages inferred from sister clade strict consensus							
unclear			4					4
poor	32	42	1					75
predicted		64	117	75	36	49		341
high						3	9	12
Total	32	106	122	75	36	52	9	432
	Families with crown ages in common across all studies							
poor	3	15	1					19
predicted		20	56	53	31	46		206
high						1	9	10
Total	3	35	57	53	31	47	9	235

Table S5. Frequencies of the 432 angiosperm families that were originated during different periods in which shifts on the diversification rates occurred based on their crown ages from five datasets: Wikström et al. (2001), Bell et al. (2010), Hernández-Hernández and Wiens (2020), Li et al. (2019), and Ramírez-Barahona et al. (2020), grouped by the different periods in which shifts on the diversification rates occur. Statistics for a χ^2 independence test are presented, and periods in which more families were found for any of the three classes are presented in red, and those in which less families were found are in blue according to a Haberman residual analysis.

Period (MYBP)	high	low	predicted	Total
Wikström (χ^2 = 6.74, P = 0.5647)				
0-43	7	33	45	85
44-69	11	79	102	192
70-92	8	47	54	109
92-120	3	9	24	36
120-158	1	6	3	10
Total	30	174	228	432
Bell (χ^2 = 62.97, P < 0.0001)				
0-23	4	12	19	35
24-38	6	17	46	69
39-59	8	59	72	139
59-77	2	34	47	83
78-98	4	26	38	68
99-128	14	1	20	35
129-136	0	1	2	3
Total	38	150	244	432
Hernández-Hernández (χ^2 = 5.11, P = 0.7788)				
0-14.4	0	1	2	3
14.5-60	17	98	132	247
60.1-86	9	46	72	127
86.1-104.2	1	15	14	30
104.3-117.8	2	5	8	15
117.9-130	1	2	7	10
Total	30	167	235	432
Li (χ^2 = 4.87, P = 0.7712)				
0-22.4	0	0	2	2
22-5-45-9	6	31	41	78
46-59.9	6	21	38	65
60-200	14	116	157	287
Total	26	168	238	432

Ramírez-Barahona (χ^2 = 18.71, P = 0.0430)				
0-21	8	15	53	76
21.1-40	5	26	72	103
40.1-57.7	6	23	69	98
57.8-80	7	29	81	117
80.1-103	2	8	13	23
103.1-196	1	10	4	15
Total	29	111	292	432

Table S6. Frequencies of the angiosperm families that were originated during different periods in which shifts on the diversification rates occurred based on their crown ages from five calibrated phylogenies: Wikström et al. (2001), Bell et al. (2010), Hernández-Hernández and Wiens (2020), Li et al. (2019), and Ramírez-Barahona et al. (2020), grouped by the different periods in which shifts on the diversification rates occur. Statistics for a χ^2 independence test are presented, and periods in which more families were found for any of the three classes are presented in red, and those in which less families were found are in blue according to a Haberman residual analysis.

Period (MYBP)	high	low	predicted	Total
Wikström et al. 2001 (χ^2 = 11.1474, P = 0.1941)				
0-43	5	11	40	56
44-69	9	46	82	137
70-92	5	25	35	65
93-120	2	6	20	28
121-158	1	6	3	10
Total	22	94	180	286
Bell et al. 2010 (χ^2 = 32.46, P < 0.0012)				
0-23	4	6	18	28
24-38	6	12	41	59
39-59	4	29	60	93
60-77	9	12	38	59
78-98	2	15	19	36
99-128	7	1	8	16
129-136	0	1	1	2
Total	32	76	185	293
Hernández-Hernández and Wiens 2020 (χ^2 = 4.59, P = 0.9292)				
0-14.4	0	1	2	3
14.5-60	17	92	125	234
60.1-86	8	43	59	110
86.1-104.2	1	15	14	30
104.3-117.8	2	5	8	15
117.9-130	1	2	7	10
Total	29	158	215	402
Li et al. 2019 (χ^2 = 3.01, P = 0.8080)				
0-22.4	0	0	2	2

22-5-45-9	6	24	38	68
46-59.9	5	17	37	59
60-200	13	75	135	223
Total	24	116	212	352
Ramírez-Barahona et al. 2020 (χ^2 = 18.71, P = 0.0430)				
0-21	6	7	48	61
21.1-40	5	15	67	87
40.1-57.7	6	17	67	90
57.8-80	6	16	78	100
80.1-103	2	6	11	19
103.1-196	1	9	3	13
Total	26	70	274	370

Table S7. Frequency of 248 families with poor, predicted, or high species richness based on strict consensus tabulated by the absence or presence of fleshy fruits (Vamosi and Vamosi, 2011). Statistics for a χ^2 independence test are presented, and categories in which more families were found for any of the three classes are presented in red, and those in which less families were found are in blue according to a Haberman residual analysis.

Fleshy fruit	**poor**	**predicted**	**high**	**Total**
(χ^2 = 0.08082, P = 0.6676)				
absent	28	54	3	85
present	47	107	9	163
Total	75	161	12	248

Table S8. Frequency of 248 families with poor, predicted, or high species richness based on strict consensus tabulated by the absence or presence of different perianth symmetries (Reyes et al., 2016). Statistics for a χ^2 independence test are presented, and categories in which more families were found for any of the three classes are presented in red, and those in which less families were found are in blue according to a Haberman residual analysis.

Floral symmetry	poor	predicted	high	Total
(χ^2 = 35.91, P < 0.0047)				
Zygomorphic	6	57	9	72
Polysymmetric	56	128	9	193
Actinomorphic	2	6	1	9
Spiral	7	3	0	10
Disymmetric	2	1	1	4
Asymmetric		1		1
Perianthless	2	4		6
Monosym metric by reduction	3	1	1	5
Total	78	201	21	300

Table S9. Frequency of self-incompatibility system in 248 families with poor, predicted, or high species richness based on strict consensus tabulated by self-incompability type. Statistics for a χ^2 independence test are presented, and categories in which more families were found for any of the three classes are presented in red, and those in which fewer families were found are in blue according to a Haberman residual analysis.

Type of SI	poor	predicted	high	Total general
(χ^2 = 14.23, P = 0.0499)				
Stigmatic	2	7	4	13
Stylar	0	12	3	15
Late acting	0	14	1	15
Polymorphic	0	8	1	9
SS_unclass	5	39	0	44
Homomorphic+Het	0	12	3	15
SS_unclass+Het	0	4	0	4
Self-compatibility	8	26	0	34
Total	15	122	12	149

Stigmatic: self-incompatibility reaction occurs in stigma, Stylar: self-incompatibility reaction occurs in style, Late acting: self-incompatibility reaction occurs after pollen tube enters the ovary, POL: self-incompatibility reaction occurs in stigma, SS_unclass: self-sterility unclassified; Heterostyly present in the famili.

Table S10. Frequency of 248 families with poor, predicted, or high species richness based on strict consensus tabulated by distribution range. Statistics for a χ^2 independence test are presented, and categories in which more families were found for any of the three classes are presented in red, and those in which fewer families were found are in blue according to a Haberman residual analysis.

Distribution range	poor	predicted	high	Total
(χ^2 = 238.67, P < 0.0001)				
Highly localized	20	1	0	21
Localized	47	38	0	85
Widespread	8	119	3	130
Cosmopolitan	0	3	9	12
Total	75	161	12	248

Table S11. Frequency of 248 families with poor, predicted, or high species richness based on strict consensus tabulated by distribution pattern. Statistics for a χ^2 independence test are presented, and categories in which more families were found for any of the three classes are presented in red, and those in which less families were found are in blue according to a Haberman residual analysis.

Distibution pattern	poor	predicted	high	Total
(χ^2 = 6.47, P = 0.0393)				
Continuous	48	104	12	164
Disjunct	27	57	0	84
Total	75	161	12	248

Table S12. Frequency of 248 families with poor, predicted, or high species richness based on strict consensus tabulated by realm number. Statistics for a χ^2 independence test are presented, and categories in which more families were found for any of the three classes are presented in red, and those in which less families were found are in blue according to a Haberman residual analysis.

Realm number	poor	predicted	high	Total
(χ^2 = 234.59, P < 0.0001)				
1	39	7	0	46
2 to 4	32	41	0	73
5 to 7	4	113	6	123
8	0	0	6	6
Total	75	161	12	248

Table S13. Frequency of 248 families with poor, predicted, or high species richness based on strict consensus tabulated by realm presence. Statistics for a χ^2 independence test are presented, and categories in which more families were found for any of the three classes are presented in red, and those in which less families were found are in blue according to a Haberman residual analysis.

Realm	poor	predicted	high	Total
(χ^2 = 81.68, P < 0.0001)				
Afrotropic	24	127	12	163
Antartic	0	0	6	6
Australasia	25	121	12	158
Indomalayan	23	136	12	171
Nearctic	12	121	12	145
Neotropic	32	142	12	186
Oceania	4	81	12	97
Palearctic	20	117	12	149
Total	140	845	90	1075

Table S14. Frequency of 248 families with poor, predicted, or high species richness based on strict consensus tabulated by primary realm presence. Statistics for a χ^2 independence test are presented, and categories in which more families were found for any of the three classes are presented in red, and those in which less families were found are in blue according to a Haberman residual analysis.

Realm	poor	predicted	high	Total
(χ^2 = 53.97, P < 0.0001)				
Afrotropic	18	11	0	29
Australasia	19	5	1	25
Indomalayan	2	5	0	7

Nearctic	4	7	0	11
Neotropic	22	84	6	112
Oceania	0	1	0	1
Palearctic	10	48	5	63
Total	75	161	12	248

Table S15. Frequency poor, predicted, and high species richness based on strict consensus tabulated by biome number. Statistics for a χ^2 independence test are presented, and categories in which more families were found for any of the three classes are presented in red, and those in which less families were found are in blue according to a Haberman residual analysis.

Biome	poor	predicted	high	Total
(χ^2 = 144.88, P < 0.0001)				
1	7	1	0	8
2 to 4	43	10	0	53
5 to 7	14	16	0	30
8 to 10	9	44	0	53
11 to 13	2	50	3	55
14	0	40	9	49
Total	75	161	12	248

Table S16. Frequency poor, predicted, and high species richness based on majority consensus tabulated by biome presence. Statistics for a χ^2 independence test are presented, and categories in which more families were found for any of the three classes are presented in red, and those in which less families were found are in blue according to a Haberman residual analysis.

Biome	poor	predicted	high	Total
(χ^2 = 58.45, P = 0.0003)				
Boreal Forests/Taiga	3	66	9	78
Deserts & Xeric Shrublands	30	147	12	189
Flooded Grasslands & Savannas	12	114	12	138
Mangroves	20	140	12	172
Mediterranean Forests, Woodlands & Scrub	23	106	11	140
Montane Grasslands & Shrublands	24	152	12	188
Temperate Broadleaf & Mixed Forests	36	119	12	167
Temperate Conifer Forests	18	113	12	143
Temperate Grasslands, Savannas & Shrublands	16	93	12	121
Tropical & Subtropical Coniferous Forests	16	136	12	164
Tropical & Subtropical Dry Broadleaf Forests	27	149	12	188
Tropical & Subtropical Grasslands, Savannas & Shrublands	35	149	12	196
Tropical & Subtropical Moist Broadleaf Forests	55	161	12	228
Tundra	2	49	10	61
Total	317	1694	162	2173

Table S17. Frequency poor, predicted, and high species richness based on strict consensus tabulated by primary biome presence. Statistics for a χ^2 independence test are presented, and categories in which more families were found for any of the three classes are presented in red, and those in which less families were found are in blue according to a Haberman residual analysis.

Biome	poor	predicted	high	Total
(χ^2 = 22.03, P = 0.6058)				
Boreal Forests/Taiga	1	0	0	1
Deserts & Xeric Shrublands	7	4	0	11
Mangroves	1		0	1
Mediterranean Forests, Woodlands & Scrub	7	13	1	21
Montane Grasslands & Shrublands	2	1	0	3
Temperate Broadleaf & Mixed Forests	18	34	5	57
Temperate Conifer Forests	0	3	0	3
Temperate Grasslands, Savannas & Shrublands	1	0	0	1
Tropical & Subtropical Dry Broadleaf Forests	1	2	0	3
Tropical & Subtropical Grasslands, Savannas & Shrublands	4	4	0	8
Tropical & Subtropical Moist Broadleaf Forests	33	100	6	139
Total	75	161	12	248

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