Flores-Abreu et al. 2018. Tempo and mode in coevolution of *Agave sensu lato* (Agavoideae, Asparagaceae) and its bat pollinators, Glossophaginae (Phyllostomidae)

Supplementary Material

In all tables and figure legends, models are ordered in decreasing log Likelihood (logLH) value, AICc = corrected Akaike Information Criterion, n = number of tips as number of observations for AICc computation, and deltaAICc = AICc difference with lowest AICc value.

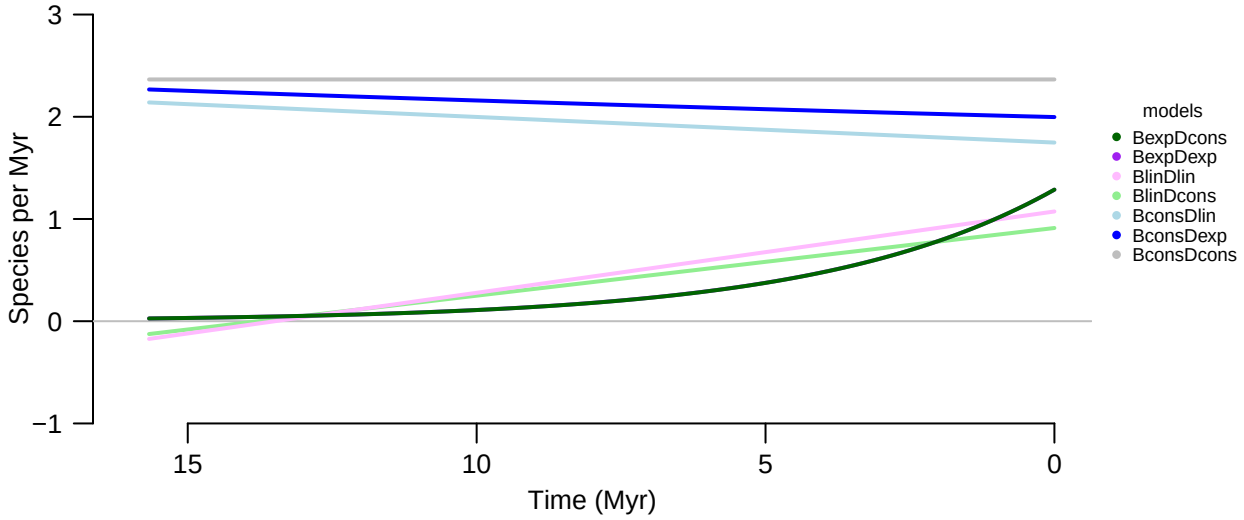
In some cases, model fitting analyses result in negative speciation and/or extinction values. The likelihood function is set up like that to allow negative diversification rates (Hélène Morlon, pers. comm.).

No shifts in diversification dynamics evaluated with RPANDA

Table S1. Agavoideae *sensu stricto* from crown age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
BexpDcons	1.2871	-0.24666	-1.319e-07	NA	-94.8778	196.2890	0.0000
BexpDexp	1.2867	-0.24620	1.828e-06	-0.480957	-94.8779	198.6649	2.3759
BlinDlin	0.9897	-0.07333	-8.380e-02	0.006223	-98.0656	205.0403	8.7513
BlinDcons	0.9015	-0.06620	-1.035e-02	NA	-98.2220	202.9773	6.6882
BconsDlin	1.1718	NA	-5.758e-01	-0.025052	-106.7074	219.9481	23.6591
BconsDexp	1.2655	NA	-7.315e-01	0.020049	-106.8737	220.2807	23.9917
BconsDcons	1.3997	NA	-9.655e-01	NA	-107.2460	218.7530	22.4639

Figure S1. Agavoideae *sensu stricto* diversification rate through time plots. Rates estimated from crown group age.



Models of 1 shift in diversification dynamics evaluated with RPANDA

Table S2. 1 shift in *Agave s.l.* + *Furcraea/Beschorneria* from stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 7)							
BlinDcons	0.4818	-0.02679	1.553e-09	NA	-18.1683	50.3366	5.6480
BlinDlin	0.4795	-0.02742	1.382e-05	-4.051e-07	-18.1750	64.3501	19.6615
BexpDexp	0.5017	-0.08369	-3.659e-08	-7.019e-02	-18.2511	64.5022	19.8136
BexpDcons	0.5016	-0.08369	-9.383e-09	NA	-18.2511	50.5022	5.8136
BconsDcons	0.3224	NA	-9.124e-08	NA	-18.8443	44.6886	0.0000
BconsDlin	0.3223	NA	8.507e-08	-1.371e-09	-18.8443	51.6886	7.0000
BconsDexp	0.3221	NA	1.858e-07	-1.194e-01	-18.8443	51.6886	7.0000
B. Shift in clade (n = 42)							
BexpDcons	1.4753	-0.2473	5.756e-09	NA	-70.4482	147.5280	0.0000
BexpDexp	1.4756	-0.2474	-1.182e-06	-0.96120	-70.4482	149.9775	2.4495
BlinDcons	1.2492	-0.1113	-8.503e-02	NA	-71.5603	149.7522	2.2242
BlinDlin	-0.7016	4.9921	7.160e-01	-4.98430	-73.4213	155.9237	8.3957
BconsDlin	1.2090	NA	2.016e-01	0.08524	-75.1796	156.9908	9.4628
BconsDcons	1.7600	NA	-1.173e+00	NA	-77.8278	159.9633	12.4353
BconsDexp	0.9069	NA	-5.884e-07	-0.19541	-80.2794	167.1905	19.6625

Global model

	Backbone	Clade	logLH	AICc	deltaAICc
	BconsDcons	BexpDcons	-89.2925	189.9803	0.0000

Figure S2. 1 shift in *Agave s.l.* + *Furcraea/Beschorneria* diversification rate through time plots.

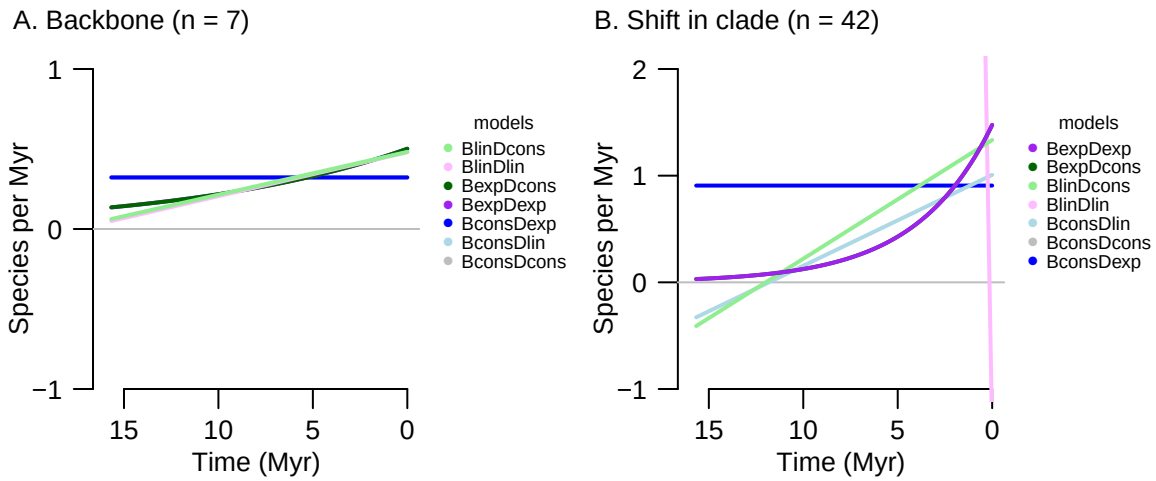


Table S3. 1 shift in *Agave s.l.* from stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 18)							
BlinDlin	0.5908	-0.04041	2.013e-06	-1.450e-06	-43.1170	97.3110	2.92534
BexpDexp	0.7094	-0.15176	3.380e-08	-4.406e-02	-43.3356	97.7481	3.36250
BexpDcons	0.7096	-0.15170	-2.517e-06	NA	-43.3357	94.3856	0.00000
BlinDcons	0.6642	-0.06317	-3.078e-08	NA	-43.3653	94.4450	0.05933
BconsDlin	0.3886	NA	5.044e-04	-2.424e-03	-47.2150	102.1442	7.75859
BconsDcons	0.3802	NA	4.854e-08	NA	-47.2251	99.2502	4.86457
BconsDexp	0.3803	NA	7.448e-07	-5.241e-02	-47.2251	102.1645	7.77886
B. Shift in clade (n = 31)							
BlinDcons	1.4778	-0.2108	-5.422e-08	NA	-46.4985	99.8860	0.0000
BexpDexp	1.7814	-0.2816	-2.695e-02	-5.1515	-46.6835	102.9054	3.0195
BexpDcons	1.7775	-0.2809	-3.088e-07	NA	-46.6837	100.2563	0.3703
BlinDlin	1.1832	0.3413	1.261e-01	-0.5463	-49.7938	109.1260	9.2400
BconsDcons	1.7611	NA	-8.210e-01	NA	-50.1074	104.6433	4.7573
BconsDexp	1.1719	NA	5.641e-06	-0.1528	-50.6971	108.2830	8.3971
BconsDlin	1.3819	NA	-6.032e-01	0.3013	-51.1047	109.0982	9.2123

Global model

	Backbone	Clade	logLH	AICc	deltaAICc
	BexpDcons	BlinDcons	-89.8342	193.6684	0.0000
	BlinDcons	BexpDcons	-89.8638	193.7276	0.0592
	BexpDcons	BlinDcons	-90.0194	194.0388	0.3704
	BlinDcons	BexpDcons	-90.0490	194.0980	0.4296

Figure S3. 1 shift in *Agave s.l.* diversification rate through time plots.

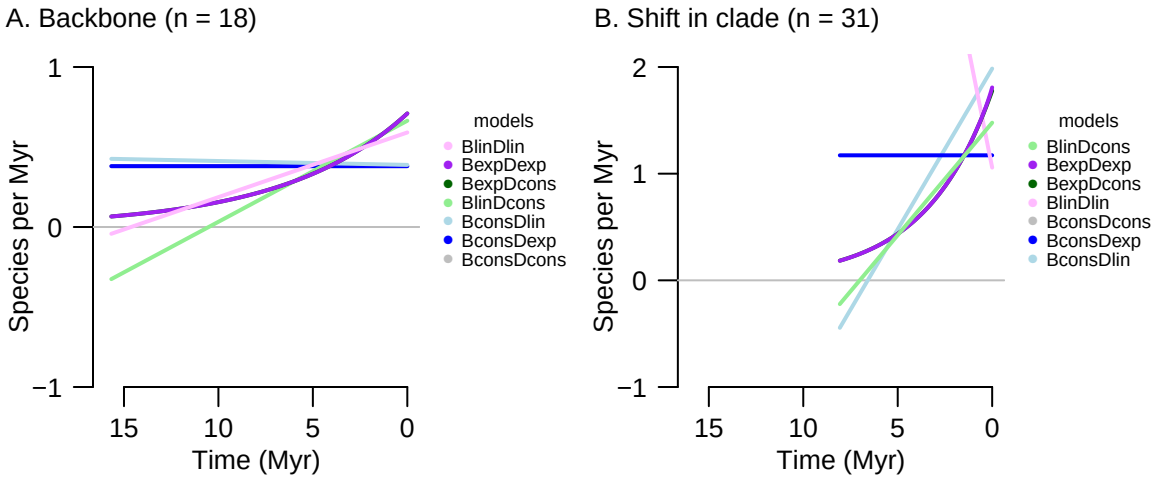


Table S4. 1 shift in *Furcraea/Beschorneria* from stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 38)							
BexpDcons	1.4230	-0.26855	6.894e-08	NA	-74.5281	155.7620	0.0000
BexpDexp	1.4258	-0.26893	7.584e-07	-1.405309	-74.5281	158.2684	2.5064
BlinDcons	0.9794	-0.07313	8.833e-08	NA	-78.1876	163.0812	7.3191
BlinDlin	3.1866	-0.16605	-3.206e+00	0.214562	-82.8785	174.9691	19.2070
BconsDlin	1.7475	NA	-1.305e+00	-0.010291	-85.0669	176.8397	21.0776
BconsDexp	1.7803	NA	-1.355e+00	0.005716	-85.0840	176.8739	21.1118
BconsDcons	1.8878	NA	-1.518e+00	NA	-85.1489	174.6406	18.8785
B. Shift in clade (n = 11)							
BlinDcons	0.7796	-0.09079	4.858e-08	NA	-20.5379	50.5044	3.0065
BlinDlin	0.7799	-0.09087	5.995e-08	-9.361e-09	-20.5379	55.7425	8.2446
BexpDcons	0.7082	-0.10353	3.117e-08	NA	-20.7386	50.9057	3.4078
BexpDexp	0.7082	-0.10363	-4.906e-07	-5.520e-01	-20.7386	56.1438	8.6459
BconsDexp	0.5636	NA	-3.620e-08	-6.298e-01	-20.9990	51.4265	3.9286
BconsDlin	0.5636	NA	5.005e-07	-3.870e-07	-20.9990	51.4265	3.9286
BconsDcons	0.5638	NA	5.645e-07	NA	-20.9990	47.4979	0.0000

Global model

	Backbone	Clade	logLH	AICc	deltaAICc
	BexpDcons	BconsDcons	-95.5271	202.4495	0.0000

Figure S4. 1 shift in *Furcraea/Beschorneria* diversification rate through time plots.

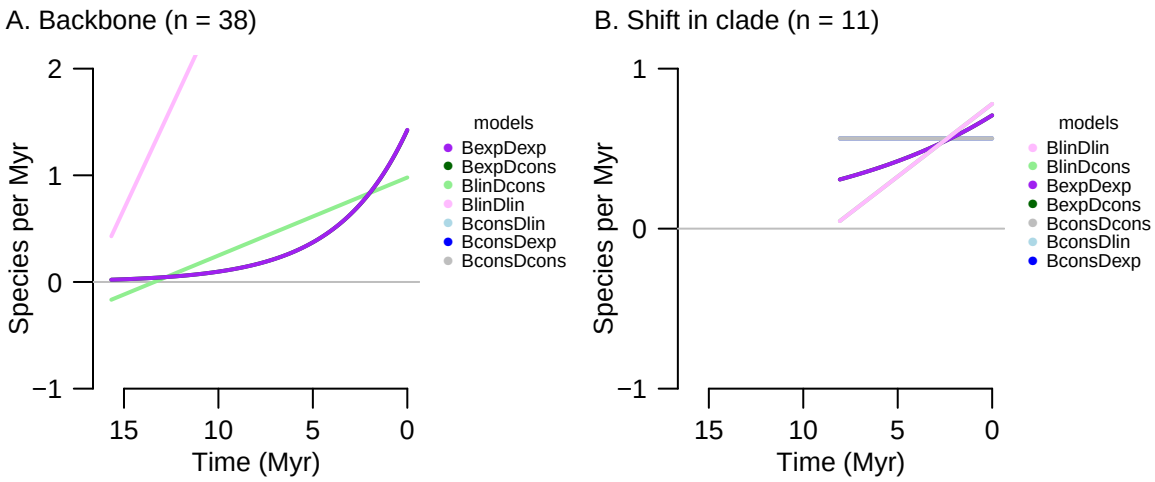


Table S5. 1 shift in *Yucca* + *Hesperoyucca*/*Hesperaloe* from stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 42)							
BexpDexp	1.4752	-0.24612	7.209e-07	-0.642098	-70.4750	150.0311	2.4476
BexpDcons	1.4764	-0.24423	4.935e-08	NA	-70.4760	147.5835	0.0000
BlinDcons	1.1672	-0.09926	-7.901e-09	NA	-71.6268	149.8852	2.3017
BlinDlin	1.1989	-0.09714	-7.745e-02	0.004823	-71.8500	152.7810	5.1975
BconsDlin	1.0593	NA	-9.144e-02	-0.044286	-78.6361	163.9039	16.3203
BconsDcons	1.3262	NA	-5.975e-01	NA	-79.5158	163.3394	15.7559
BconsDexp	0.9069	NA	-5.884e-07	-0.195414	-80.2794	167.1905	19.6069
B. Shift in clade (n = 7)							
BlinDcons	0.07923	0.009875	1.772e-08	NA	-18.5690	51.1380	6.7443
BexpDexp	0.10776	0.034348	-1.624e-08	3.263e-02	-18.6332	65.2663	20.8727
BexpDcons	0.10800	0.034459	1.554e-08	NA	-18.6332	51.2664	6.8728
BlinDlin	0.07284	0.013854	1.195e-02	-5.462e-03	-18.6766	65.3531	20.9595
BconsDcons	0.12983	NA	4.216e-09	NA	-18.6968	44.3936	0.0000
BconsDlin	0.12981	NA	-3.626e-08	1.003e-08	-18.6968	51.3936	7.0000
BconsDexp	0.12985	NA	-2.645e-08	2.244e-02	-18.6968	51.3936	7.0000

Global model

	Backbone	Clade	logLH	AICc	deltaAICc
	BexpDcons	BconsDcons	-89.1728	189.7409	0.0000

Figure S5. 1 shift in *Yucca* + *Hesperoyucca*/*Hesperaloe* diversification rate through time plots.

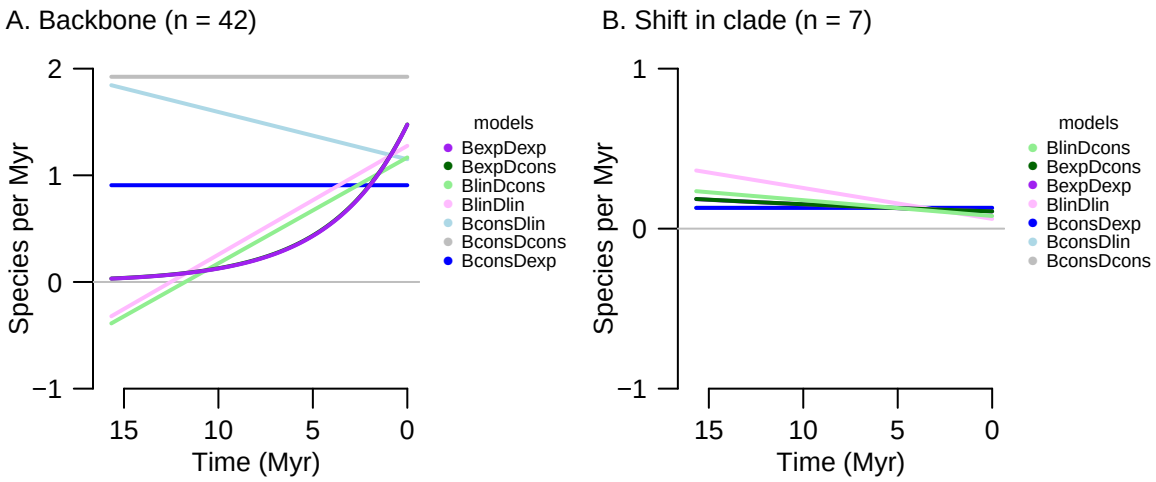


Table S6. 1 shift in *Yucca* from stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 45)							
BexpDcons	1.3020	-0.23262	1.209e-07	NA	-84.1968	174.9789	0.0000
BexpDexp	1.3039	-0.23329	-5.428e-07	-1.01488	-84.1968	177.3936	2.4147
BlinDcons	1.0519	-0.10103	-1.088e-02	NA	-86.0485	178.6823	3.7035
BlinDlin	1.0989	-0.08314	-2.335e-01	0.01626	-87.0050	183.0100	8.0311
BconsDlin	1.2107	NA	-5.561e-01	-0.02831	-93.6175	193.8203	18.8414
BconsDcons	1.4563	NA	-9.848e-01	NA	-94.2289	192.7435	17.7646
BconsDexp	0.7304	NA	-3.866e-07	-0.25507	-97.3132	201.2118	26.2330
B. Shift in clade (n = 4)							
BlinDcons	0.7723	-0.07488	1.339e-08	NA	-8.2567	Inf	Inf
BlinDlin	0.7753	-0.07494	8.751e-08	-1.145e-08	-8.2570	-15.4861	0.0000
BexpDcons	0.9302	-0.20918	-3.877e-08	NA	-8.6012	Inf	Inf
BexpDexp	0.9070	-0.20217	-2.938e-07	6.768e-01	-8.6038	-14.7925	0.6936
BconsDlin	0.4672	NA	1.859e-02	-1.625e-02	-9.8045	Inf	Inf
BconsDcons	0.4239	NA	-1.506e-07	NA	-9.8453	35.6905	51.1766
BconsDexp	0.4238	NA	-2.677e-07	-4.165e-01	-9.8453	Inf	Inf

Global model

	Backbone	Clade	logLH	AICc	deltaAICc
	BexpDcons	BlinDlin	-92.4538	201.6393	0.0000
	BexpDcons	BexpDexp	-92.8006	202.3329	0.6936

Figure S6. 1 shift in *Yucca* diversification rate through time plots.

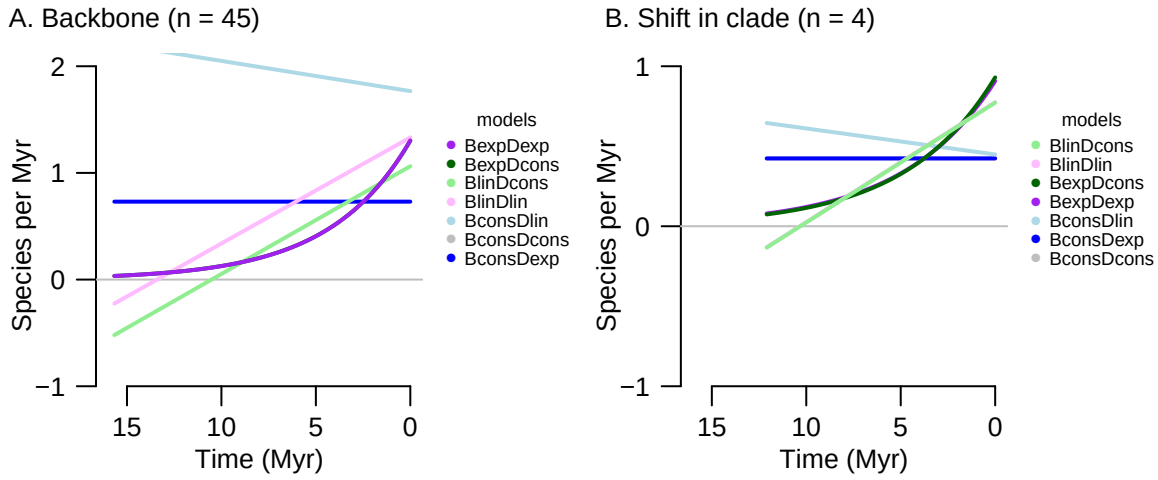


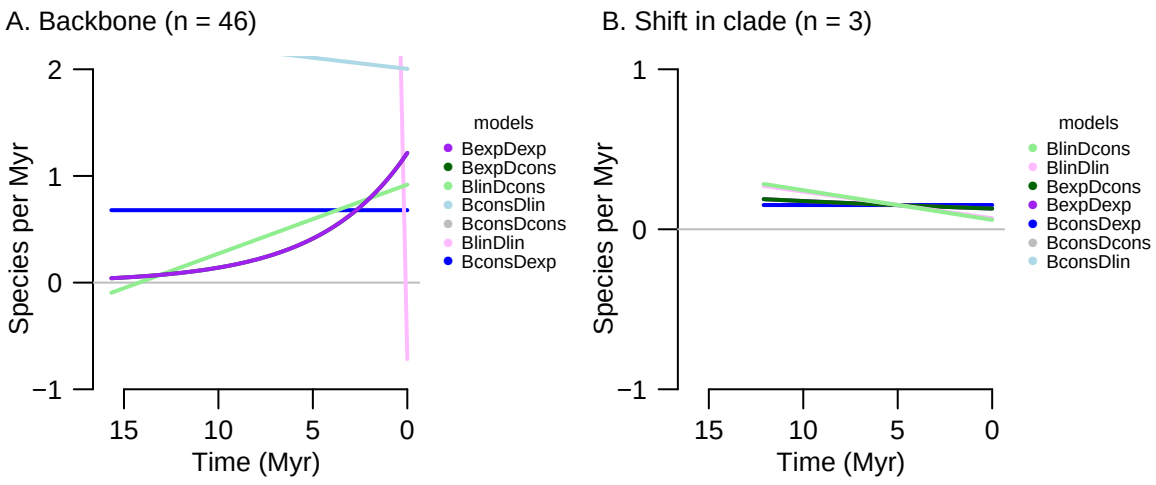
Table S7. 1 shift in *Hesperoyucca/Hesperaloe* from stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 46)							
BexpDcons	1.2151	-0.21580	4.435e-08	NA	-97.4742	201.4817	0.0000
BexpDexp	1.2162	-0.21591	2.398e-06	-0.62404	-97.4742	203.8575	2.3758
BlinDcons	0.9191	-0.06474	-9.185e-08	NA	-100.0983	206.7299	5.2483
BconsDlin	1.2790	NA	-7.247e-01	-0.02083	-106.4330	219.3993	17.9176
BconsDcons	1.4780	NA	-1.058e+00	NA	-106.8108	217.8824	16.4007
BlinDlin	-0.4663	4.04423	2.506e-01	-3.99627	-110.0303	228.9697	27.4880
BconsDexp	0.6789	NA	-5.648e-07	-0.40843	-111.0076	228.5486	27.0669
B. Shift in clade (n = 3)							
BlinDcons	0.05891	0.01854	3.229e-09	NA	-6.8930	-4.2140	0.00000
BlinDlin	0.07022	0.01714	1.113e-03	4.844e-04	-6.9116	1.8231	6.03718
BexpDexp	0.12956	0.03083	7.094e-09	1.296e-02	-6.9299	1.8597	6.07376
BexpDcons	0.12938	0.03102	-4.306e-09	NA	-6.9299	-4.1403	0.07376
BconsDlin	0.15167	NA	-8.086e-09	3.328e-09	-6.9427	-4.1146	0.09940
BconsDcons	0.15168	NA	-3.577e-08	NA	-6.9427	Inf	Inf
BconsDexp	0.15145	NA	1.344e-08	8.634e-03	-6.9427	-4.1146	0.09941

Global model

	Backbone	Clade	logLH	AICc	deltaAICc
	BexpDcons	BlinDcons	-104.3672	222.7344	0.0000
	BexpDcons	BexpDcons	-104.4041	222.8082	0.0738
	BexpDcons	BconsDlin	-104.4169	222.8338	0.0994
	BexpDcons	BconsDexp	-104.4169	222.8338	0.0994

Figure S7. 1 shift in *Hesperoyucca/Hesperaloe* diversification rate through time plots.



Models of 2 shifts in diversification dynamics evaluated with RPANDA

Table S8. A shift in *Agave s.l.* + *Furcraea/Beschorneria* and another in *Yucca*, both from stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 3)							
BconsDlin	0.14371	NA	4.441e-08	-3.701e-09	-7.5373	-2.9254	0.000e+00
BconsDcons	0.14372	NA	1.682e-08	NA	-7.5373	Inf	Inf
BconsDexp	0.14376	NA	1.490e-08	-4.449e-02	-7.5373	-2.9254	6.440e-07
BlinDcons	0.06933	0.01646	-7.739e-08	NA	-9.2045	0.4089	3.334e+00
BlinDlin	0.07145	0.01617	8.339e-05	-2.428e-05	-9.2060	6.4120	9.337e+00
BexpDcons	0.12546	0.04905	4.956e-10	NA	-9.2767	0.5534	3.479e+00
BexpDexp	0.12554	0.04900	2.940e-08	-7.457e-03	-9.2767	6.5534	9.479e+00
B. Shift in clade 1 (n = 42)							
BexpDcons	1.4753	-0.2473	5.756e-09	NA	-70.4482	147.5280	0.0000
BexpDexp	1.4756	-0.2474	-1.182e-06	-0.96120	-70.4482	149.9775	2.4495
BlinDcons	1.2492	-0.1113	-8.503e-02	NA	-71.5603	149.7522	2.2242
BlinDlin	-0.7016	4.9921	7.160e-01	-4.98430	-73.4213	155.9237	8.3957
BconsDlin	1.2090	NA	2.016e-01	0.08524	-75.1796	156.9908	9.4628
BconsDcons	1.7600	NA	-1.173e+00	NA	-77.8278	159.9633	12.4353
BconsDexp	0.9069	NA	-5.884e-07	-0.19541	-80.2794	167.1905	19.6625
C. Shift in clade 2 (n = 4)							
BlinDcons	0.7723	-0.07488	1.339e-08	NA	-8.2567	Inf	Inf
BlinDlin	0.7753	-0.07494	8.751e-08	-1.145e-08	-8.2570	-15.4861	0.0000
BexpDcons	0.9302	-0.20918	-3.877e-08	NA	-8.6012	Inf	Inf
BexpDexp	0.9070	-0.20217	-2.938e-07	6.768e-01	-8.6038	-14.7925	0.6936
BconsDlin	0.4672	NA	1.859e-02	-1.625e-02	-9.8045	Inf	Inf
BconsDcons	0.4239	NA	-1.506e-07	NA	-9.8453	35.6905	51.1766
BconsDexp	0.4238	NA	-2.677e-07	-4.165e-01	-9.8453	Inf	Inf

Global model

	Backbone	Clade1	Clade2	logLH	AICc	deltaAICc
	BconsDlin	BexpDcons	BlinDlin	-86.2425	198.2745	0.0000
	BconsDexp	BexpDcons	BlinDlin	-86.2425	198.2745	0.0000
	BconsDlin	BexpDcons	BexpDexp	-86.5893	198.9681	0.6936
	BconsDexp	BexpDcons	BexpDexp	-86.5893	198.9681	0.6936

Figure S8. One shift in *Agave s.l.* + *Furcraea/Beschorneria* and another in *Yucca* backbone diversification rate through time plot.

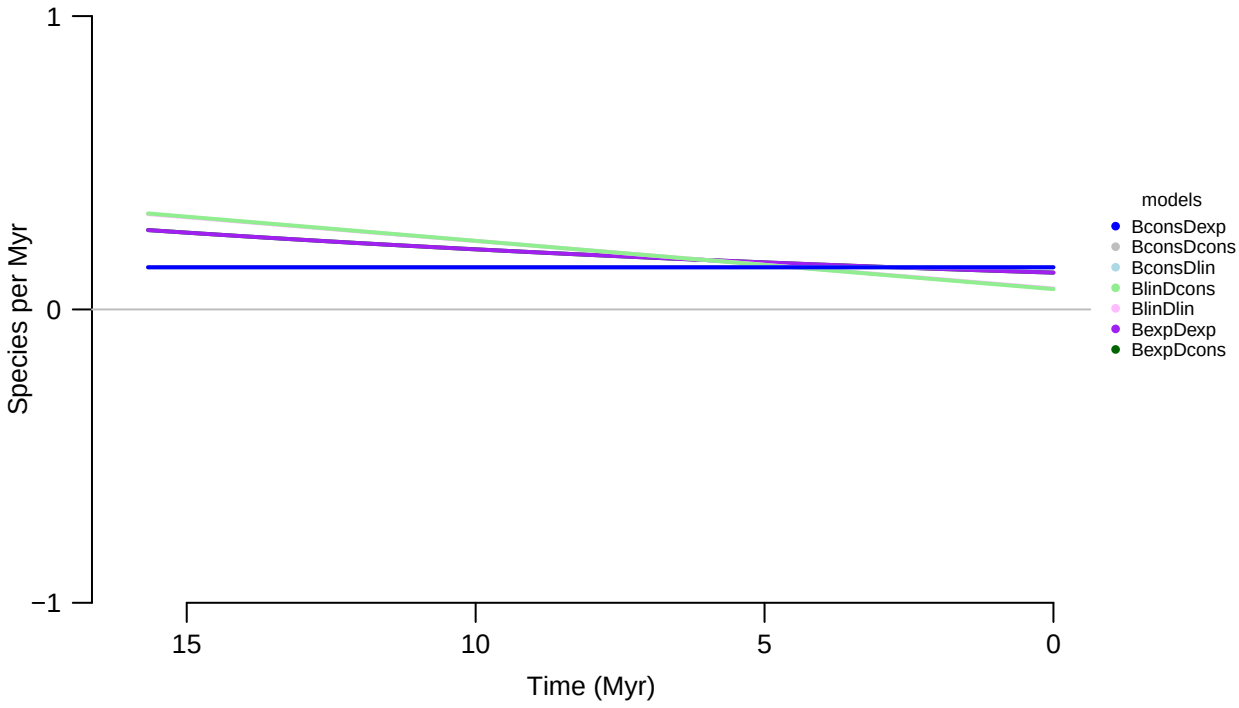


Table S9. A shift in *Agave s.l.* + *Furcraea/Beschorneria* and another in *Hesperoyucca/Hesperaloe*, both from stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 4)							
BlinDlin	0.6641	-0.04154	-1.327e-07	1.449e-08	-11.0623	-9.8755	0.00000
BlinDcons	0.6618	-0.04124	4.399e-09	NA	-11.0624	Inf	Inf
BexpDexp	0.7438	-0.11861	-3.283e-08	-9.245e-02	-11.1074	-9.7853	0.09019
BexpDcons	0.7453	-0.11837	6.010e-08	NA	-11.1074	Inf	Inf
BconsDcons	0.3586	NA	-8.614e-09	NA	-11.1430	38.2860	48.16149
BconsDlin	0.3587	NA	1.207e-07	-5.545e-09	-11.1430	Inf	Inf
BconsDexp	0.3585	NA	-3.505e-07	-1.991e-01	-11.1430	Inf	Inf
B. Shift in clade 1 (n = 42)							
BexpDcons	1.4753	-0.2473	5.756e-09	NA	-70.4482	147.5280	0.0000
BexpDexp	1.4756	-0.2474	-1.182e-06	-0.96120	-70.4482	149.9775	2.4495
BlinDcons	1.2492	-0.1113	-8.503e-02	NA	-71.5603	149.7522	2.2242
BlinDlin	-0.7016	4.9921	7.160e-01	-4.98430	-73.4213	155.9237	8.3957
BconsDlin	1.2090	NA	2.016e-01	0.08524	-75.1796	156.9908	9.4628
BconsDcons	1.7600	NA	-1.173e+00	NA	-77.8278	159.9633	12.4353
BconsDexp	0.9069	NA	-5.884e-07	-0.19541	-80.2794	167.1905	19.6625
C. Shift in clade 2 (n = 3)							
BlinDcons	0.05891	0.01854	3.229e-09	NA	-6.8930	-4.2140	0.00000
BlinDlin	0.07022	0.01714	1.113e-03	4.844e-04	-6.9116	1.8231	6.03718
BexpDexp	0.12956	0.03083	7.094e-09	1.296e-02	-6.9299	1.8597	6.07376
BexpDcons	0.12938	0.03102	-4.306e-09	NA	-6.9299	-4.1403	0.07376
BconsDlin	0.15167	NA	-8.086e-09	3.328e-09	-6.9427	-4.1146	0.09940
BconsDcons	0.15168	NA	-3.577e-08	NA	-6.9427	Inf	Inf
BconsDexp	0.15145	NA	1.344e-08	8.634e-03	-6.9427	-4.1146	0.09941

Global model

	Backbone	Clade1	Clade2	logLH	AICc	deltaAICc
	BlinDlin	BexpDcons	BlinDcons	-88.4035	202.5965	0.0000
	BlinDlin	BexpDcons	BexpDcons	-88.4404	202.6703	0.0738
	BexpDexp	BexpDcons	BlinDcons	-88.4486	202.6867	0.0902
	BlinDlin	BexpDcons	BconsDlin	-88.4532	202.6959	0.0994
	BlinDlin	BexpDcons	BconsDexp	-88.4532	202.6959	0.0994
	BexpDexp	BexpDcons	BexpDcons	-88.4855	202.7605	0.1640
	BexpDexp	BexpDcons	BconsDlin	-88.4983	202.7861	0.1896
	BexpDexp	BexpDcons	BconsDexp	-88.4983	202.7861	0.1896

Figure S9. One shift in *Agave s.l.* + *Furcraea*/*Beschorneria* and another in *Hesperoyucca*/*Hesperaloe* backbone diversification rate through time plot.

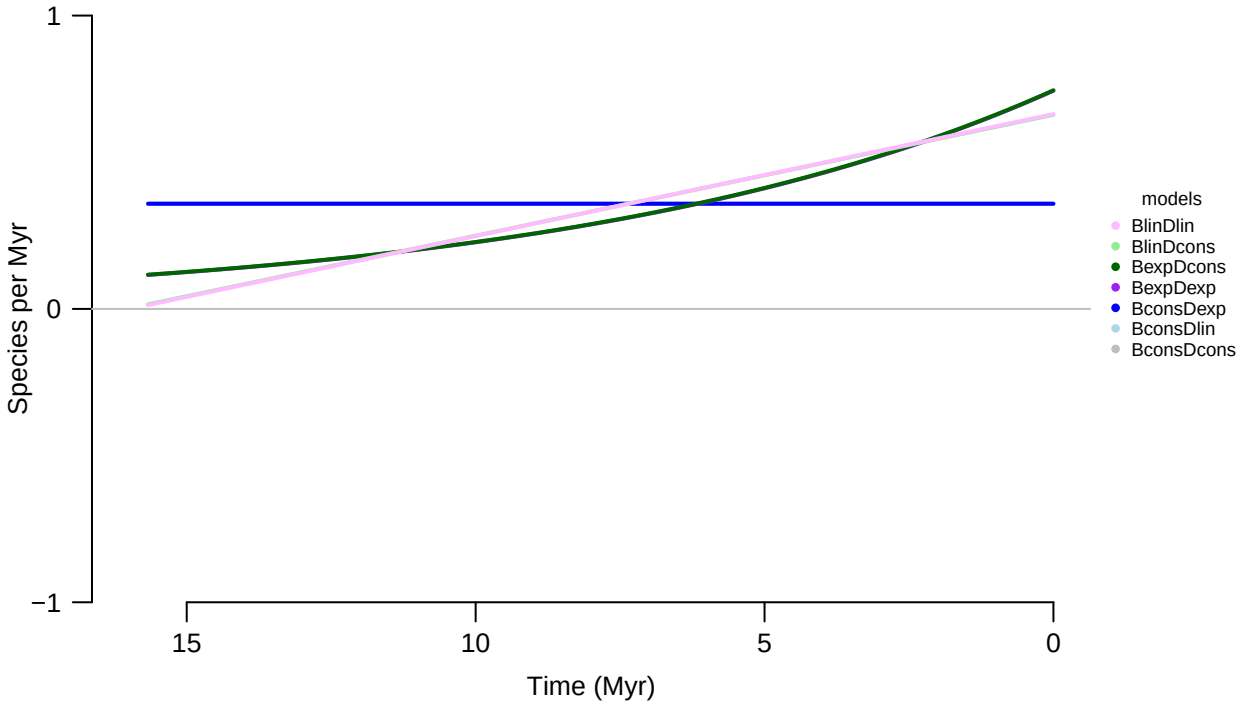


Table S10. A shift in *Agave s.l.* and another in *Furcraea/Beschorneria*, both from stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 7)							
BlinDcons	0.4731	-0.03019	-2.437e-02	NA	15.4352	-16.8705	0.0000
BlinDlin	0.6645	-0.04241	8.583e-02	-4.069e-03	15.1484	-2.2968	14.5737
BconsDcons	0.3224	NA	-9.124e-08	NA	-18.8443	44.6886	61.5591
BconsDlin	0.3223	NA	8.507e-08	-1.371e-09	-18.8443	51.6886	68.5591
BconsDexp	0.3221	NA	1.858e-07	-1.203e-01	-18.8443	51.6886	68.5591
BexpDcons	0.5818	-0.10874	1.705e-08	NA	-18.9088	51.8175	68.6880
BexpDexp	0.5833	-0.10919	-7.532e-05	-1.995e-02	-18.9098	65.8195	82.6900
B. Shift in clade 1 (n = 31)							
BlinDcons	1.4778	-0.2108	-5.422e-08	NA	-46.4985	99.8860	0.0000
BexpDexp	1.7814	-0.2816	-2.695e-02	-5.1515	-46.6835	102.9054	3.0195
BexpDcons	1.7775	-0.2809	-3.088e-07	NA	-46.6837	100.2563	0.3703
BlinDlin	1.1832	0.3413	1.261e-01	-0.5463	-49.7938	109.1260	9.2400
BconsDcons	1.7611	NA	-8.210e-01	NA	-50.1074	104.6433	4.7573
BconsDexp	1.1719	NA	5.641e-06	-0.1528	-50.6971	108.2830	8.3971
BconsDlin	1.3819	NA	-6.032e-01	0.3013	-51.1047	109.0982	9.2123
C. Shift in clade 2 (n = 11)							
BlinDcons	0.7796	-0.09079	4.858e-08	NA	-20.5379	50.5044	3.0065
BlinDlin	0.7799	-0.09087	5.995e-08	-9.361e-09	-20.5379	55.7425	8.2446
BexpDcons	0.7082	-0.10353	3.117e-08	NA	-20.7386	50.9057	3.4078
BexpDexp	0.7082	-0.10363	-4.906e-07	-5.520e-01	-20.7386	56.1438	8.6459
BconsDexp	0.5636	NA	-3.620e-08	-6.298e-01	-20.9990	51.4265	3.9286
BconsDlin	0.5636	NA	5.005e-07	-3.870e-07	-20.9990	51.4265	3.9286
BconsDcons	0.5638	NA	5.645e-07	NA	-20.9990	47.4979	0.0000

Global model

	Backbone	Clade1	Clade2	logLH	AICc	deltaAICc
	BlinDcons	BlinDcons	BconsDcons	-52.0623	123.7246	0.0000
	BlinDcons	BexpDcons	BconsDcons	-52.2475	124.0950	0.3704

Figure S10. One shift in *Agave s.l.* and another in *Furcraea/Beschorneria* backbone diversification rate through time plot.

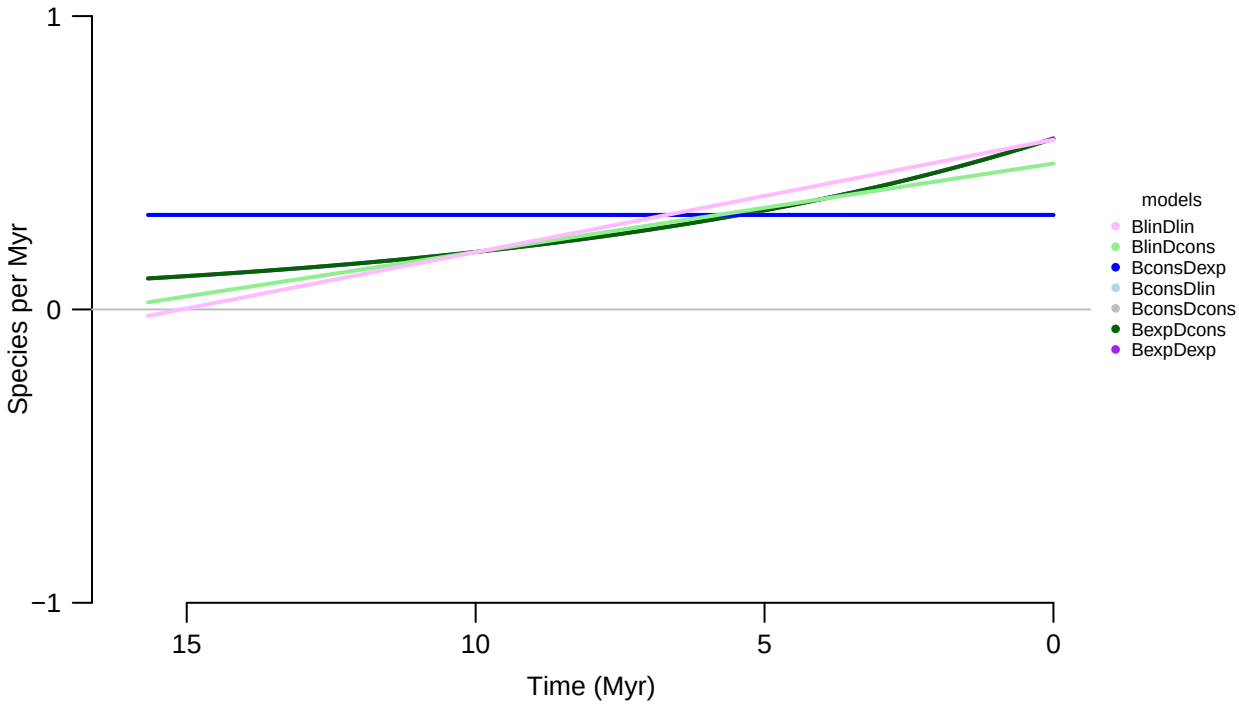


Table S11. A shift in *Agave s.l.* and another in *Yucca* + *Hesperoyucca*/*Hesperaloe*, both from stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 11)							
BlinDlin	0.6921	-0.05196	-1.550e-04	1.296e-05	-22.7827	60.2321	5.25988
BlinDcons	0.6979	-0.05208	2.528e-08	NA	-22.7838	54.9961	0.02391
BexpDcons	0.7865	-0.15754	-7.631e-09	NA	-23.2659	55.9603	0.98808
BexpDexp	0.7867	-0.15757	5.229e-07	-4.695e-01	-23.2659	61.1984	6.22618
BconsDcons	0.4426	NA	-1.272e-07	NA	-24.7361	54.9722	0.00000
BconsDexp	0.4426	NA	4.155e-07	-1.078e-01	-24.7361	58.9008	3.92857
BconsDlin	0.4423	NA	-1.524e-05	2.744e-05	-24.7365	58.9016	3.92935
B. Shift in clade 1 (n = 31)							
BlinDcons	1.4778	-0.2108	-5.422e-08	NA	-46.4985	99.8860	0.0000
BexpDexp	1.7814	-0.2816	-2.695e-02	-5.1515	-46.6835	102.9054	3.0195
BexpDcons	1.7775	-0.2809	-3.088e-07	NA	-46.6837	100.2563	0.3703
BlinDlin	1.1832	0.3413	1.261e-01	-0.5463	-49.7938	109.1260	9.2400
BconsDcons	1.7611	NA	-8.210e-01	NA	-50.1074	104.6433	4.7573
BconsDexp	1.1719	NA	5.641e-06	-0.1528	-50.6971	108.2830	8.3971
BconsDlin	1.3819	NA	-6.032e-01	0.3013	-51.1047	109.0982	9.2123
C. Shift in clade 2 (n = 7)							
BlinDcons	0.07923	0.009875	1.772e-08	NA	-18.5690	51.1380	6.7443
BexpDexp	0.10776	0.034348	-1.624e-08	3.263e-02	-18.6332	65.2663	20.8727
BexpDcons	0.10800	0.034459	1.554e-08	NA	-18.6332	51.2664	6.8728
BlinDlin	0.07284	0.013854	1.195e-02	-5.462e-03	-18.6766	65.3531	20.9595
BconsDcons	0.12983	NA	4.216e-09	NA	-18.6968	44.3936	0.0000
BconsDlin	0.12981	NA	-3.626e-08	1.003e-08	-18.6968	51.3936	7.0000
BconsDexp	0.12985	NA	-2.645e-08	2.244e-02	-18.6968	51.3936	7.0000

Global model

	Backbone	Clade1	Clade2	logLH	AICc	deltaAICc
	BlinDcons	BlinDcons	BconsDcons	-87.9791	195.5582	0.0000
	BlinDcons	BexpDcons	BconsDcons	-88.1643	195.9286	0.3704
	BexpDcons	BlinDcons	BconsDcons	-88.4612	196.5224	0.9642
	BexpDcons	BexpDcons	BconsDcons	-88.6464	196.8928	1.3346
	BconsDcons	BlinDcons	BconsDcons	-89.9314	199.4628	3.9046
	BconsDcons	BexpDcons	BconsDcons	-90.1166	199.8332	4.2750

Figure S11. One shift in *Agave s.l.* and another in *Yucca* + *Hesperoyucca*/*Hesperaloe* backbone diversification rate through time plot.

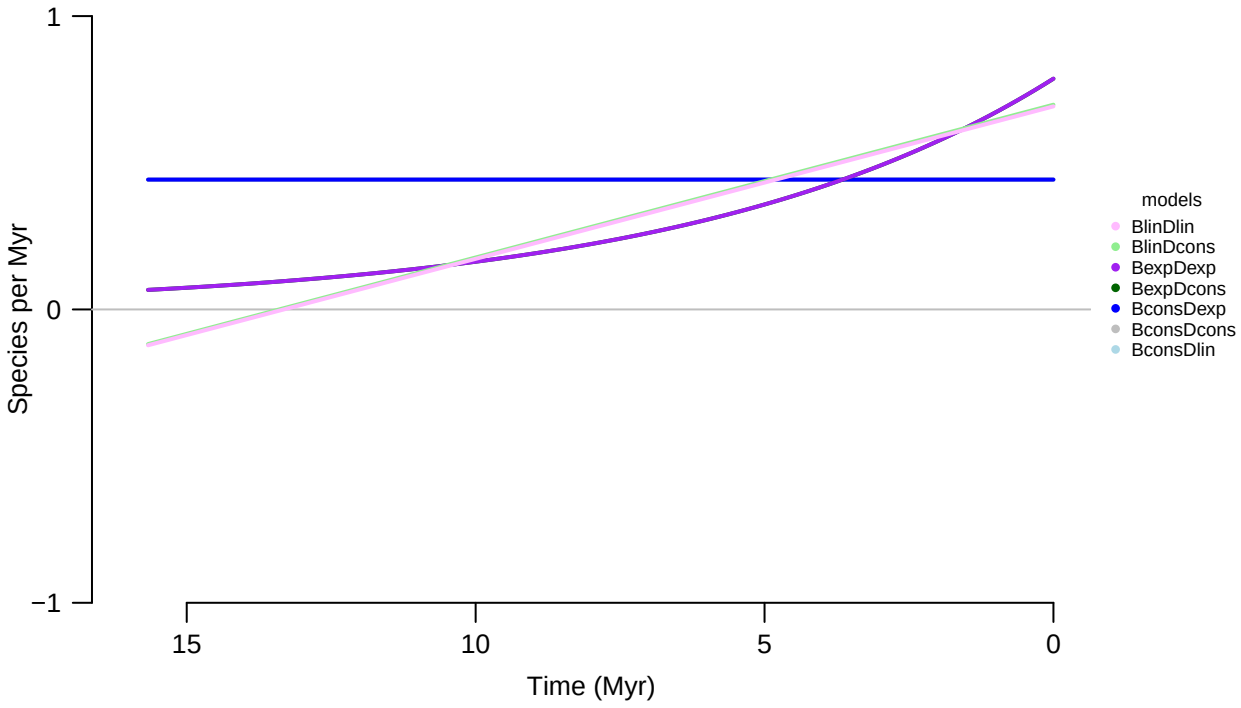


Table S12. A shift in *Agave s.l.* and another in *Yucca*, both from stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 14)							
BlinDcons	0.5139	-0.03363	-7.918e-09	NA	-34.1291	76.6582	1.0430
BlinDlin	0.5126	-0.03349	5.079e-06	-4.341e-07	-34.1292	80.7029	5.0876
BexpDexp	0.5797	-0.11462	-1.505e+00	-8.755e+00	-34.4239	81.2922	5.6770
BexpDcons	0.5484	-0.11416	6.221e-09	NA	-34.4903	77.3806	1.7654
BconsDlin	0.3184	NA	-1.835e-07	-9.913e-09	-35.2622	78.9243	3.3091
BconsDcons	0.3185	NA	-1.674e-07	NA	-35.2622	75.6152	0.0000
BconsDexp	0.3184	NA	-7.874e-07	-7.537e-02	-35.2622	78.9243	3.3091
B. Shift in clade 1 (n = 31)							
BlinDcons	1.4778	-0.2108	-5.422e-08	NA	-46.4985	99.8860	0.0000
BexpDexp	1.7814	-0.2816	-2.695e-02	-5.1515	-46.6835	102.9054	3.0195
BexpDcons	1.7775	-0.2809	-3.088e-07	NA	-46.6837	100.2563	0.3703
BlinDlin	1.1832	0.3413	1.261e-01	-0.5463	-49.7938	109.1260	9.2400
BconsDcons	1.7611	NA	-8.210e-01	NA	-50.1074	104.6433	4.7573
BconsDexp	1.1719	NA	5.641e-06	-0.1528	-50.6971	108.2830	8.3971
BconsDlin	1.3819	NA	-6.032e-01	0.3013	-51.1047	109.0982	9.2123
C. Shift in clade 2 (n = 4)							
BlinDcons	0.7723	-0.07488	1.339e-08	NA	-8.2567	Inf	Inf
BlinDlin	0.7753	-0.07494	8.751e-08	-1.145e-08	-8.2570	-15.4861	0.0000
BexpDcons	0.9302	-0.20918	-3.877e-08	NA	-8.6012	Inf	Inf
BexpDexp	0.9070	-0.20217	-2.938e-07	6.768e-01	-8.6038	-14.7925	0.6936
BconsDlin	0.4672	NA	1.859e-02	-1.625e-02	-9.8045	Inf	Inf
BconsDcons	0.4239	NA	-1.506e-07	NA	-9.8453	35.6905	51.1766
BconsDexp	0.4238	NA	-2.677e-07	-4.165e-01	-9.8453	Inf	Inf

Global model

	Backbone	Clade1	Clade2	logLH	AICc	deltaAICc
	BlinDcons	BlinDcons	BlinDlin	-88.8846	203.5587	0.0000
	BlinDcons	BexpDcons	BlinDlin	-89.0698	203.9291	0.3704
	BlinDcons	BlinDcons	BexpDexp	-89.2314	204.2523	0.6936
	BexpDcons	BlinDcons	BlinDlin	-89.2458	204.2811	0.7224
	BlinDcons	BexpDcons	BexpDexp	-89.4166	204.6227	1.0640
	BexpDcons	BexpDcons	BlinDlin	-89.4310	204.6515	1.0928
	BexpDcons	BlinDcons	BexpDexp	-89.5926	204.9747	1.4160
	BexpDcons	BexpDcons	BexpDexp	-89.7778	205.3451	1.7864
	BconsDcons	BlinDcons	BlinDlin	-90.0177	205.8249	2.2662
	BconsDcons	BexpDcons	BlinDlin	-90.2029	206.1953	2.6366
	BconsDcons	BlinDcons	BexpDexp	-90.3645	206.5185	2.9598
	BconsDcons	BexpDcons	BexpDexp	-90.5497	206.8889	3.3302

Figure S12. One shift in *Agave s.l.* and another in *Yucca* backbone diversification rate through time plot.

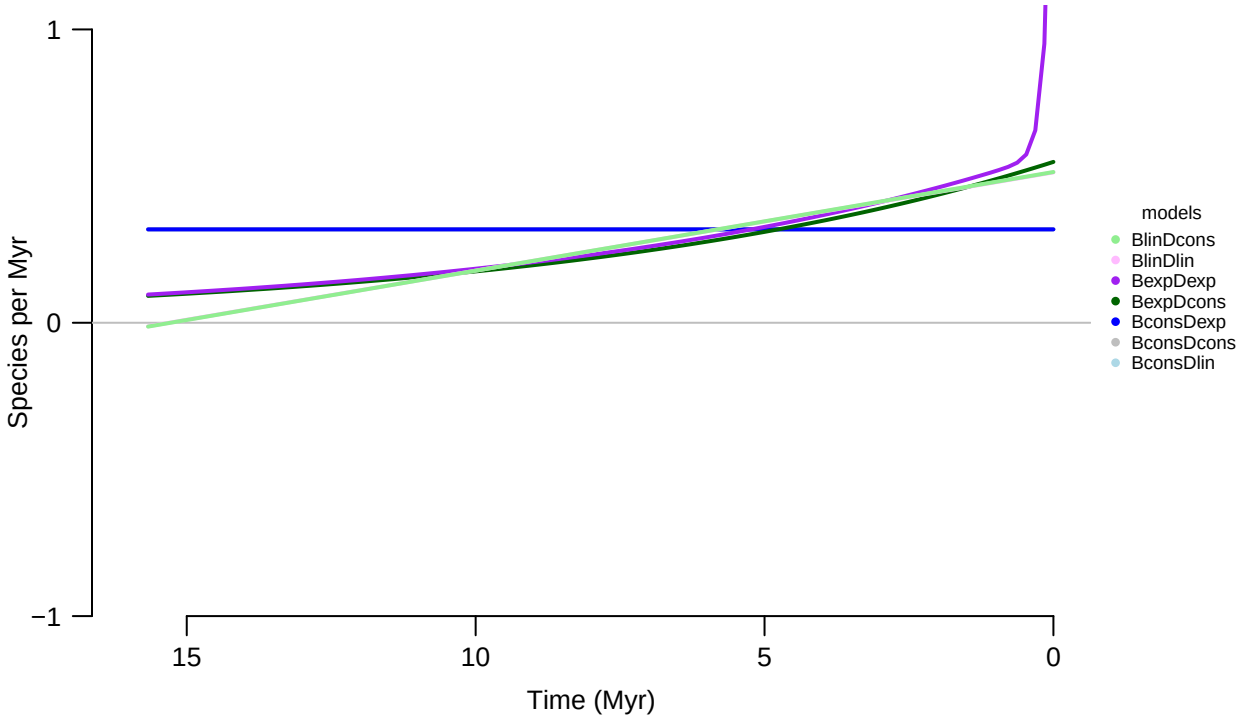


Table S13. A shift in *Agave s.l.* and another in *Hesperoyucca/Hesperaloe*, both from stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 15)							
BlinDcons	0.7141	-0.04903	3.225e-08	NA	-34.8802	77.9422	0.0000
BexpDcons	0.8714	-0.16587	7.197e-07	NA	-35.0102	78.2021	0.2599
BexpDexp	0.8744	-0.16679	-5.559e-06	-0.39016	-35.0103	82.0205	4.0783
BlinDlin	1.4064	-0.06647	-1.242e+00	0.08399	-37.2994	86.5989	8.6567
BconsDlin	0.4893	NA	2.392e-03	-0.01156	-38.5339	85.2496	7.3074
BconsDexp	0.4913	NA	-5.145e-02	0.04191	-38.6791	85.5400	7.5978
BconsDcons	0.4714	NA	-3.750e-02	NA	-38.7119	82.4237	4.4815
B. Shift in clade 1 (n = 31)							
BlinDcons	1.4778	-0.2108	-5.422e-08	NA	-46.4985	99.8860	0.0000
BexpDexp	1.7814	-0.2816	-2.695e-02	-5.1515	-46.6835	102.9054	3.0195
BexpDcons	1.7775	-0.2809	-3.088e-07	NA	-46.6837	100.2563	0.3703
BlinDlin	1.1832	0.3413	1.261e-01	-0.5463	-49.7938	109.1260	9.2400
BconsDcons	1.7611	NA	-8.210e-01	NA	-50.1074	104.6433	4.7573
BconsDexp	1.1719	NA	5.641e-06	-0.1528	-50.6971	108.2830	8.3971
BconsDlin	1.3819	NA	-6.032e-01	0.3013	-51.1047	109.0982	9.2123
C. Shift in clade 2 (n = 3)							
BlinDcons	0.05891	0.01854	3.229e-09	NA	-6.8930	-4.2140	0.00000
BlinDlin	0.07022	0.01714	1.113e-03	4.844e-04	-6.9116	1.8231	6.03718
BexpDexp	0.12956	0.03083	7.094e-09	1.296e-02	-6.9299	1.8597	6.07376
BexpDcons	0.12938	0.03102	-4.306e-09	NA	-6.9299	-4.1403	0.07376
BconsDlin	0.15167	NA	-8.086e-09	3.328e-09	-6.9427	-4.1146	0.09940
BconsDcons	0.15168	NA	-3.577e-08	NA	-6.9427	Inf	Inf
BconsDexp	0.15145	NA	1.344e-08	8.634e-03	-6.9427	-4.1146	0.09941

Global model

	Backbone	Clade1	Clade2	logLH	AICc	deltaAICc
	BlinDcons	BlinDcons	BlinDcons	-88.2717	199.1588	0.0000
	BlinDcons	BlinDcons	BexpDcons	-88.3086	199.2326	0.0738
	BlinDcons	BlinDcons	BconsDlin	-88.3214	199.2582	0.0994
	BlinDcons	BlinDcons	BconsDexp	-88.3214	199.2582	0.0994
	BexpDcons	BlinDcons	BlinDcons	-88.4017	199.4188	0.2600
	BexpDcons	BlinDcons	BexpDcons	-88.4386	199.4926	0.3338
	BexpDcons	BlinDcons	BconsDlin	-88.4514	199.5182	0.3594
	BexpDcons	BlinDcons	BconsDexp	-88.4514	199.5182	0.3594
	BlinDcons	BexpDcons	BlinDcons	-88.4569	199.5292	0.3704
	BlinDcons	BexpDcons	BexpDcons	-88.4938	199.6030	0.4442
	BlinDcons	BexpDcons	BconsDlin	-88.5066	199.6286	0.4698
	BlinDcons	BexpDcons	BconsDexp	-88.5066	199.6286	0.4698
	BexpDcons	BexpDcons	BlinDcons	-88.5869	199.7892	0.6304
	BexpDcons	BexpDcons	BexpDcons	-88.6238	199.8630	0.7042
	BexpDcons	BexpDcons	BconsDlin	-88.6366	199.8886	0.7298
	BexpDcons	BexpDcons	BconsDexp	-88.6366	199.8886	0.7298

Figure S13. One shift in *Agave s.l.* and another in *Hesperoyucca*/*Hesperaloe* backbone diversification rate through time plot.

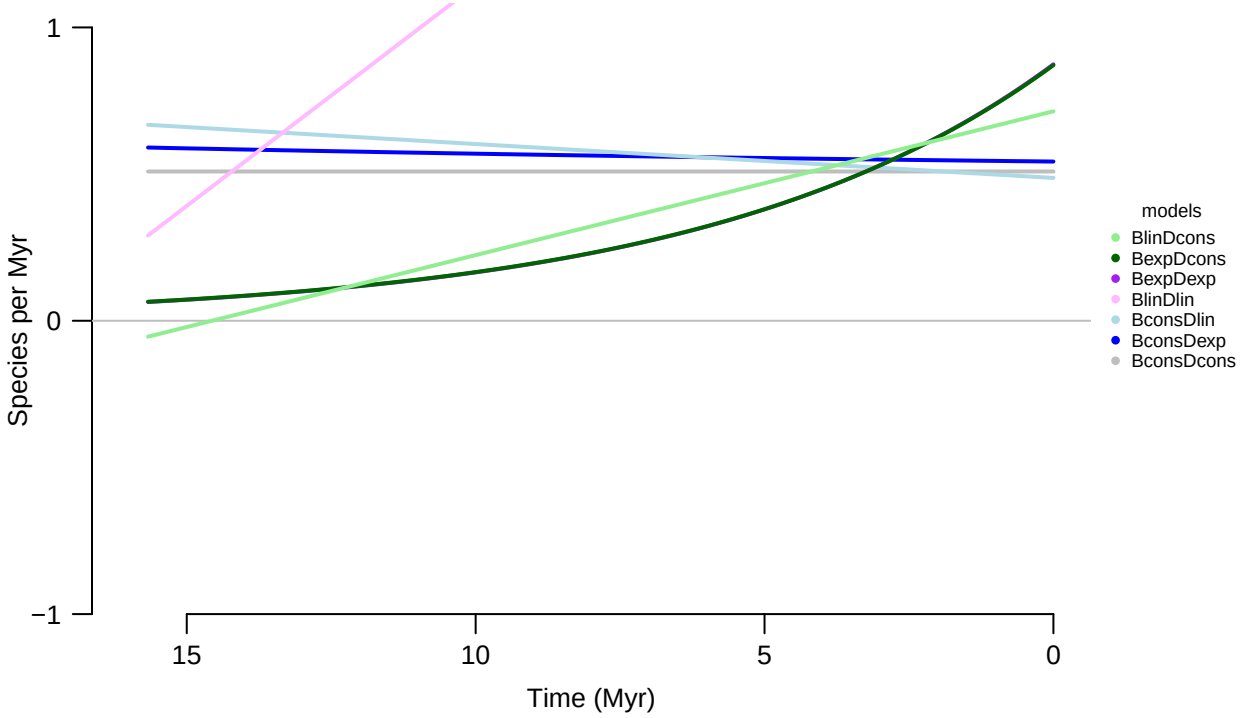


Table S14. A shift in *Furcraea/Beschorneria* and another in *Yucca + Hesperoyucca/Hesperaloe*, both from stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 31)							
BexpDexp	1.7590	-0.2692	-4.445e-07	-1.5287	-48.9471	107.4327	2.6496
BexpDcons	1.7586	-0.2690	-8.109e-08	NA	-48.9471	104.7831	0.0000
BlinDcons	1.3663	-0.1125	3.005e-07	NA	-50.3407	107.5703	2.7872
BconsDlin	1.3160	NA	-2.271e-01	-0.0513	-57.0589	121.0066	16.2235
BconsDcons	1.7467	NA	-9.775e-01	NA	-58.0186	120.4658	15.6827
BconsDexp	1.0372	NA	-5.464e-08	-1.7635	-59.0775	125.0439	20.2608
BlinDlin	1.2532	1.4052	-7.353e-01	-1.4154	-60.9316	131.4016	26.6185
B. Shift in clade 1 (n = 11)							
BlinDcons	0.7796	-0.09079	4.858e-08	NA	-20.5379	50.5044	3.0065
BlinDlin	0.7799	-0.09087	5.995e-08	-9.361e-09	-20.5379	55.7425	8.2446
BexpDcons	0.7082	-0.10353	3.117e-08	NA	-20.7386	50.9057	3.4078
BexpDexp	0.7082	-0.10363	-4.906e-07	-5.520e-01	-20.7386	56.1438	8.6459
BconsDexp	0.5636	NA	-3.620e-08	-6.298e-01	-20.9990	51.4265	3.9286
BconsDlin	0.5636	NA	5.005e-07	-3.870e-07	-20.9990	51.4265	3.9286
BconsDcons	0.5638	NA	5.645e-07	NA	-20.9990	47.4979	0.0000
C. Shift in clade 2 (n = 7)							
BlinDcons	0.07923	0.009875	1.772e-08	NA	-18.5690	51.1380	6.7443
BexpDexp	0.10776	0.034348	-1.624e-08	3.263e-02	-18.6332	65.2663	20.8727
BexpDcons	0.10800	0.034459	1.554e-08	NA	-18.6332	51.2664	6.8728
BlinDlin	0.07284	0.013854	1.195e-02	-5.462e-03	-18.6766	65.3531	20.9595
BconsDcons	0.12983	NA	4.216e-09	NA	-18.6968	44.3936	0.0000
BconsDlin	0.12981	NA	-3.626e-08	1.003e-08	-18.6968	51.3936	7.0000
BconsDexp	0.12985	NA	-2.645e-08	2.244e-02	-18.6968	51.3936	7.0000

Global model

Backbone	Clade1	Clade2	logLH	AICc	deltaAICc
BexpDcons	BconsDcons	BconsDcons	-88.6429	194.0175	0.0000

Figure S14. One shift in *Furcraea/Beschorneria* and another in *Yucca* + *Hesperoyucca/Hesperaloe* backbone diversification rate through time plot.

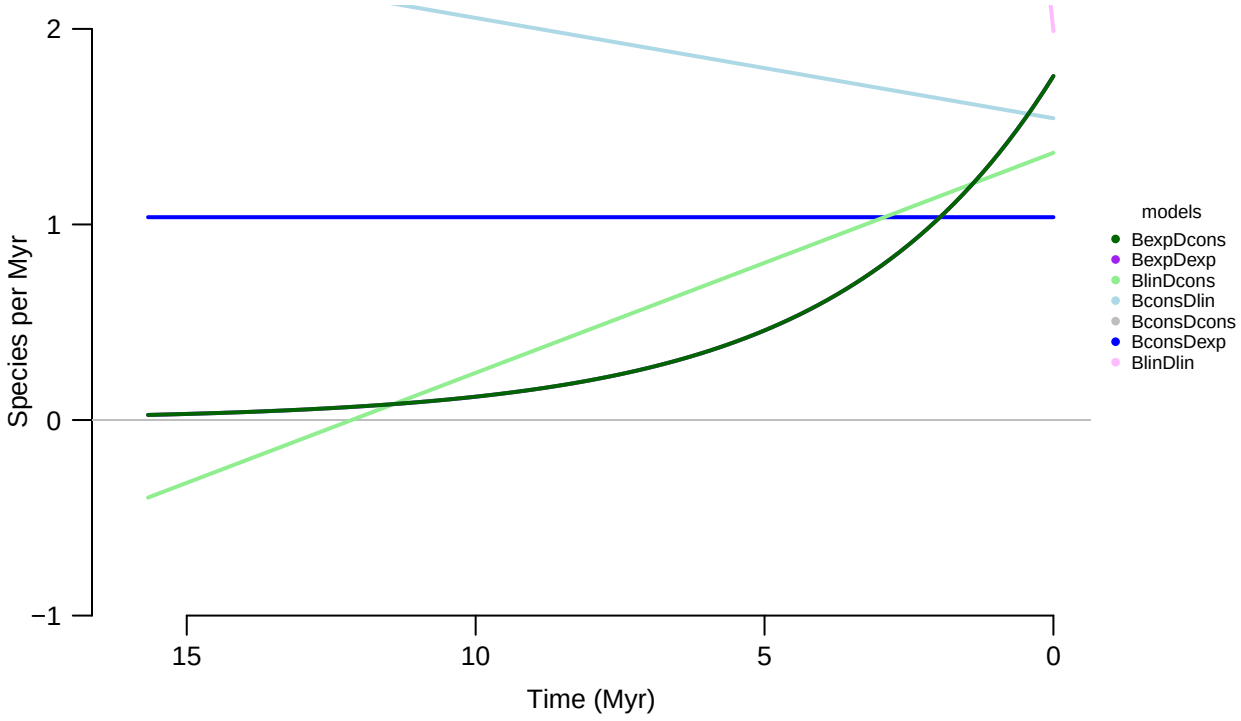


Table S15. A shift in *Furcraea/Beschorneria* and another in *Yucca*, both from stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 34)							
BexpDexp	1.6156	-0.27164	-4.802e-06	-0.89016	-63.3999	136.1791	0.0000
BlinDcons	0.9401	-0.06644	8.460e-08	NA	-68.1861	143.1721	6.9930
BexpDcons	1.1472	-0.08213	4.583e-02	NA	-69.3868	145.5735	9.3944
BconsDlin	1.9924	NA	-1.427e+00	-0.02012	-72.9096	152.6193	16.4402
BconsDcons	2.2966	NA	-1.880e+00	NA	-73.1757	150.7385	14.5594
BlinDlin	-1.3661	8.86651	9.170e-01	-8.80116	-73.2662	155.9116	19.7325
BconsDexp	0.7994	NA	2.677e-07	-0.17620	-78.7439	164.2879	28.1087
B. Shift in clade 1 (n = 11)							
BlinDcons	0.7796	-0.09079	4.858e-08	NA	-20.5379	50.5044	3.0065
BlinDlin	0.7799	-0.09087	5.995e-08	-9.361e-09	-20.5379	55.7425	8.2446
BexpDcons	0.7082	-0.10353	3.117e-08	NA	-20.7386	50.9057	3.4078
BexpDexp	0.7082	-0.10363	-4.906e-07	-5.520e-01	-20.7386	56.1438	8.6459
BconsDexp	0.5636	NA	-3.620e-08	-6.298e-01	-20.9990	51.4265	3.9286
BconsDlin	0.5636	NA	5.005e-07	-3.870e-07	-20.9990	51.4265	3.9286
BconsDcons	0.5638	NA	5.645e-07	NA	-20.9990	47.4979	0.0000
C. Shift in clade 2 (n = 4)							
BlinDcons	0.7723	-0.07488	1.339e-08	NA	-8.2567	Inf	Inf
BlinDlin	0.7753	-0.07494	8.751e-08	-1.145e-08	-8.2570	-15.4861	0.0000
BexpDcons	0.9302	-0.20918	-3.877e-08	NA	-8.6012	Inf	Inf
BexpDexp	0.9070	-0.20217	-2.938e-07	6.768e-01	-8.6038	-14.7925	0.6936
BconsDlin	0.4672	NA	1.859e-02	-1.625e-02	-9.8045	Inf	Inf
BconsDcons	0.4239	NA	-1.506e-07	NA	-9.8453	35.6905	51.1766
BconsDexp	0.4238	NA	-2.677e-07	-4.165e-01	-9.8453	Inf	Inf

Global model

	Backbone	Clade1	Clade2	logLH	AICc	deltaAICc
	BexpDexp	BconsDcons	BlinDlin	-92.6559	211.1013	0.0000
	BexpDexp	BconsDcons	BexpDexp	-93.0027	211.7949	0.6936

Figure S15. One shift in *Furcraea/Beschorneria* and another in *Yucca* backbone diversification rate through time plot.

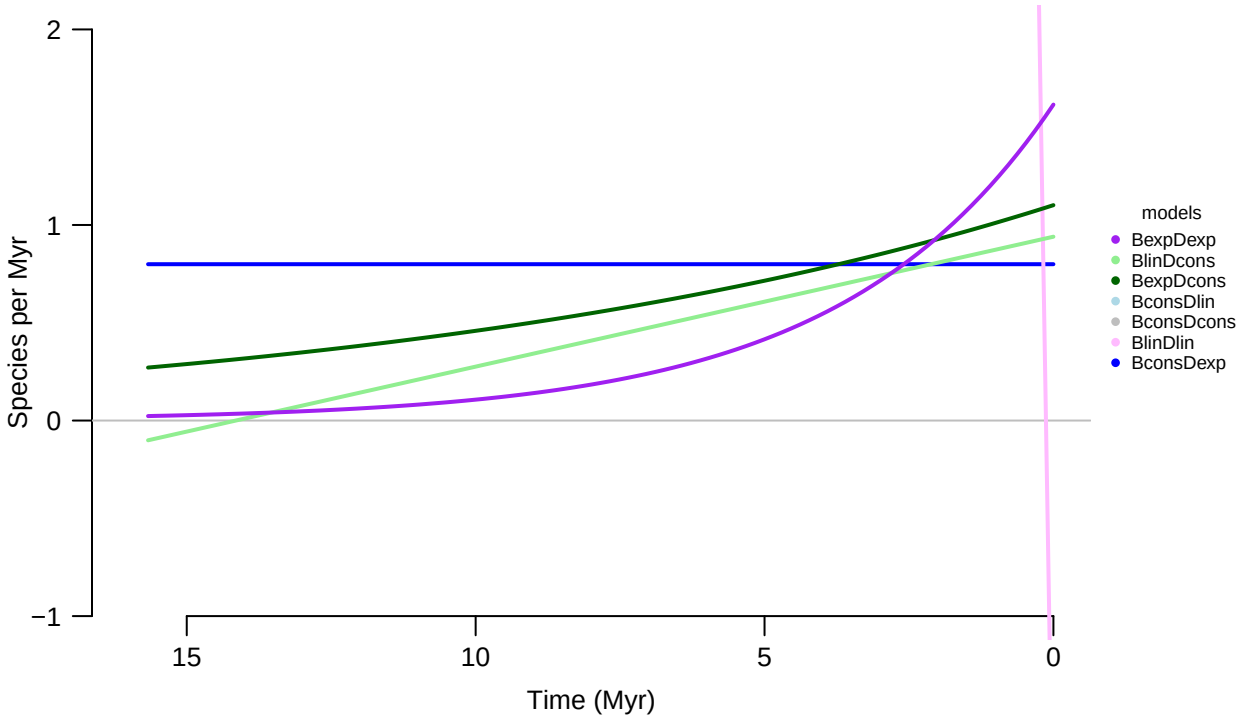


Table S16. A shift in *Furcraea/Beschorneria* and another in *Hesperoyucca/Hesperaloe*, both from stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 35)							
BexpDexp	1.5819	-0.25993	1.412e-06	-0.89005	-63.9690	137.2713	2.5586
BexpDcons	1.5852	-0.26133	-1.259e-07	NA	-63.9693	134.7127	0.0000
BlinDcons	1.1797	-0.08661	-4.686e-03	NA	-66.8630	140.5003	5.7876
BconsDlin	1.7186	NA	-1.037e+00	-0.03039	-73.5471	153.8683	19.1556
BconsDcons	2.1425	NA	-1.685e+00	NA	-74.1437	152.6624	17.9497
BlinDlin	1.5965	1.61527	-1.413e+00	-1.60886	-76.8178	162.9689	28.2562
BconsDexp	0.8275	NA	5.447e-07	-0.19711	-78.6226	164.0195	29.3068
B. Shift in clade 1 (n = 11)							
BlinDcons	0.7796	-0.09079	4.858e-08	NA	-20.5379	50.5044	3.0065
BlinDlin	0.7799	-0.09087	5.995e-08	-9.361e-09	-20.5379	55.7425	8.2446
BexpDcons	0.7082	-0.10353	3.117e-08	NA	-20.7386	50.9057	3.4078
BexpDexp	0.7082	-0.10363	-4.906e-07	-5.520e-01	-20.7386	56.1438	8.6459
BconsDexp	0.5636	NA	-3.620e-08	-6.298e-01	-20.9990	51.4265	3.9286
BconsDlin	0.5636	NA	5.005e-07	-3.870e-07	-20.9990	51.4265	3.9286
BconsDcons	0.5638	NA	5.645e-07	NA	-20.9990	47.4979	0.0000
C. Shift in clade 2 (n = 3)							
BlinDcons	0.05891	0.01854	3.229e-09	NA	-6.8930	-4.2140	0.00000
BlinDlin	0.07022	0.01714	1.113e-03	4.844e-04	-6.9116	1.8231	6.03718
BexpDexp	0.12956	0.03083	7.094e-09	1.296e-02	-6.9299	1.8597	6.07376
BexpDcons	0.12938	0.03102	-4.306e-09	NA	-6.9299	-4.1403	0.07376
BconsDlin	0.15167	NA	-8.086e-09	3.328e-09	-6.9427	-4.1146	0.09940
BconsDcons	0.15168	NA	-3.577e-08	NA	-6.9427	Inf	Inf
BconsDexp	0.15145	NA	1.344e-08	8.634e-03	-6.9427	-4.1146	0.09941

Global model

	Backbone	Clade1	Clade2	logLH	AICc	deltaAICc
	BexpDcons	BconsDcons	BlinDcons	-91.8613	203.3226	0.0000
	BexpDcons	BconsDcons	BexpDcons	-91.8982	203.3964	0.0738
	BexpDcons	BconsDcons	BconsDlin	-91.9110	203.4220	0.0994
	BexpDcons	BconsDcons	BconsDexp	-91.9110	203.4220	0.0994

Figure S16. One shift in *Furcraea/Beschorneria* and another in *Hesperoyucca/Hesperaloe* backbone diversification rate through time plot.

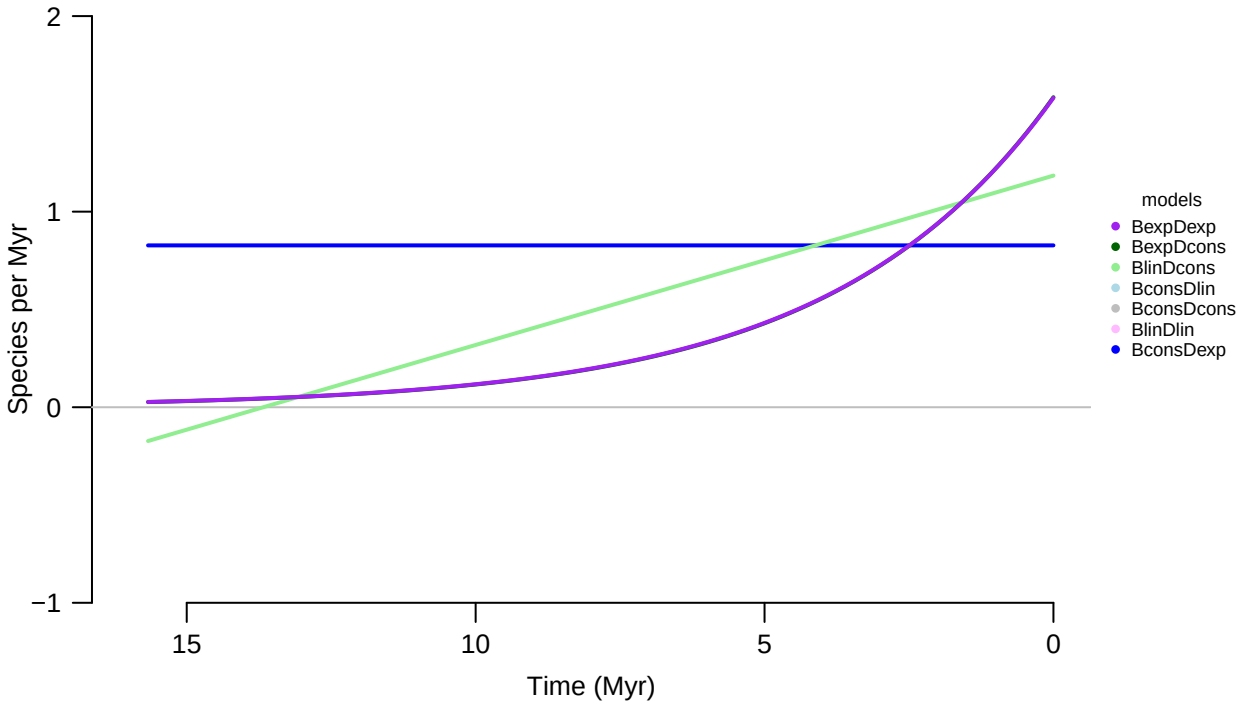


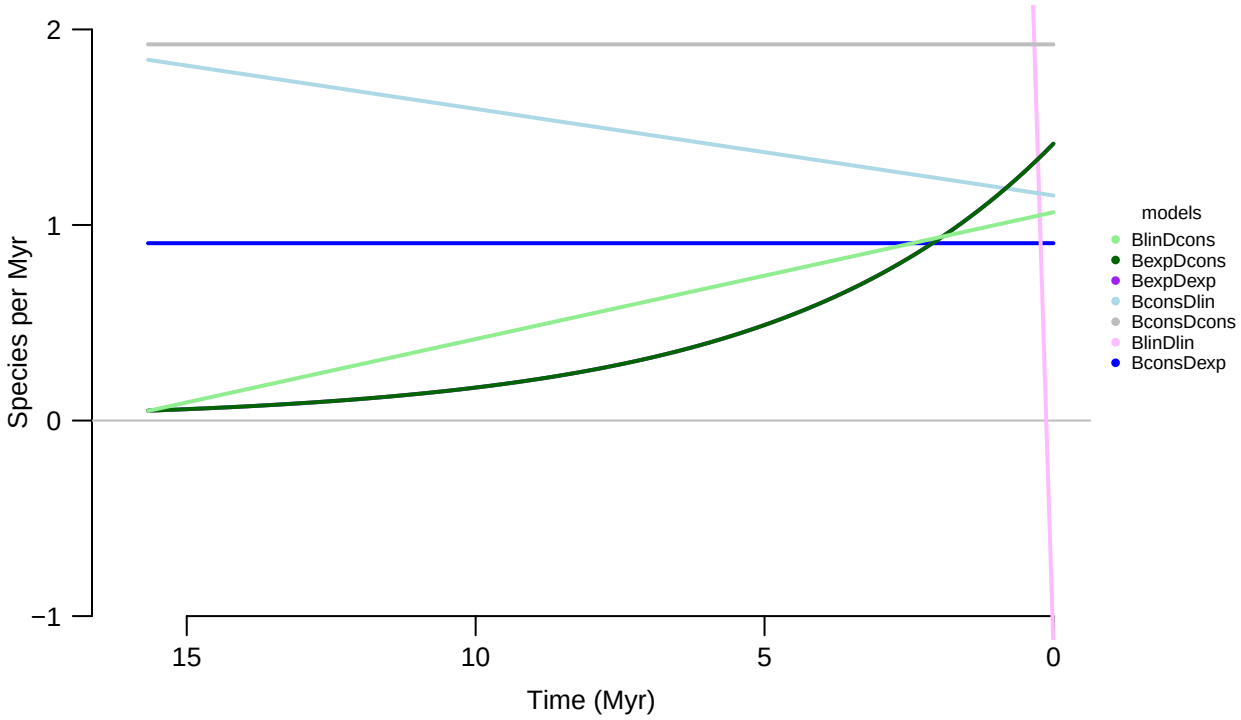
Table S17. A shift in *Yucca* and another in *Hesperoyucca*/*Hesperaloe*, both from stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 42)							
BlinDcons	1.0157	-0.06482	-4.926e-02	NA	-40.8399	88.3113	0.0000
BexpDexp	1.4155	-0.21283	-2.573e-07	-0.16303	-72.0566	153.1942	64.8829
BexpDcons	1.4155	-0.21276	1.040e-07	NA	-72.0566	150.7447	62.4334
BconsDlin	1.0593	NA	-9.144e-02	-0.04429	-78.6361	163.9039	75.5925
BconsDcons	1.3262	NA	-5.975e-01	NA	-79.5158	163.3394	75.0281
BlinDlin	-0.6119	4.68544	5.478e-01	-4.64359	-80.1451	169.3713	81.0600
BconsDexp	0.9069	NA	-5.884e-07	-0.19541	-80.2794	167.1905	78.8791
B. Shift in clade 1 (n = 4)							
BlinDcons	0.7723	-0.07488	1.339e-08	NA	-8.2567	Inf	Inf
BlinDlin	0.7753	-0.07494	8.751e-08	-1.145e-08	-8.2570	-15.4861	0.0000
BexpDcons	0.9302	-0.20918	-3.877e-08	NA	-8.6012	Inf	Inf
BexpDexp	0.9070	-0.20217	-2.938e-07	6.768e-01	-8.6038	-14.7925	0.6936
BconsDlin	0.4672	NA	1.859e-02	-1.625e-02	-9.8045	Inf	Inf
BconsDcons	0.4239	NA	-1.506e-07	NA	-9.8453	35.6905	51.1766
BconsDexp	0.4238	NA	-2.677e-07	-4.165e-01	-9.8453	Inf	Inf
C. Shift in clade 2 (n = 3)							
BlinDcons	0.05891	0.01854	3.229e-09	NA	-6.8930	-4.2140	0.00000
BlinDlin	0.07022	0.01714	1.113e-03	4.844e-04	-6.9116	1.8231	6.03718
BexpDexp	0.12956	0.03083	7.094e-09	1.296e-02	-6.9299	1.8597	6.07376
BexpDcons	0.12938	0.03102	-4.306e-09	NA	-6.9299	-4.1403	0.07376
BconsDlin	0.15167	NA	-8.086e-09	3.328e-09	-6.9427	-4.1146	0.09940
BconsDcons	0.15168	NA	-3.577e-08	NA	-6.9427	Inf	Inf
BconsDexp	0.15145	NA	1.344e-08	8.634e-03	-6.9427	-4.1146	0.09941

Global model

	Backbone	Clade1	Clade2	logLH	AICc	deltaAICc
	BlinDcons	BlinDlin	BlinDcons	-55.9899	137.7693	0.0000
	BlinDcons	BlinDlin	BexpDcons	-56.0268	137.8431	0.0738
	BlinDcons	BlinDlin	BconsDlin	-56.0396	137.8687	0.0994
	BlinDcons	BlinDlin	BconsDexp	-56.0396	137.8687	0.0994
	BlinDcons	BexpDexp	BlinDcons	-56.3367	138.4629	0.6936
	BlinDcons	BexpDexp	BexpDcons	-56.3736	138.5367	0.7674
	BlinDcons	BexpDexp	BconsDlin	-56.3864	138.5623	0.7930
	BlinDcons	BexpDexp	BconsDexp	-56.3864	138.5623	0.7930

Figure S17. One shift in *Yucca* and another in *Hesperoyucca*/*Hesperaloe* backbone diversification rate through time plot.



Models of 3 shifts in diversification dynamics evaluated with RPANDA

Table S18. Three shifts in *Agave s.l.*, *Furcraea/Beschorneria* and in *Yucca*, from clade stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 3)							
BlinDlin	0.4777	-0.03049	1.274e-01	-9.761e-03	23.3686	-58.7373	5.4237
BlinDcons	0.3088	-0.01971	-1.322e-02	NA	23.0805	-64.1610	0.0000
BconsDlin	0.1437	NA	4.441e-08	-3.701e-09	-7.5373	-2.9254	61.2356
BconsDcons	0.1437	NA	1.682e-08	NA	-7.5373	Inf	Inf
BconsDexp	0.1438	NA	1.490e-08	-4.449e-02	-7.5373	-2.9254	61.2356
BexpDcons	0.2388	-0.02233	-3.733e-08	NA	-10.9952	3.9904	68.1514
BexpDexp	0.2388	-0.02226	1.696e-08	-5.896e-02	-10.9952	9.9904	74.1514
B. Shift in clade 1 (n = 31)							
BlinDcons	1.4778	-0.2108	-5.422e-08	NA	-46.4985	99.8860	0.0000
BexpDexp	1.7814	-0.2816	-2.695e-02	-5.1515	-46.6835	102.9054	3.0195
BexpDcons	1.7775	-0.2809	-3.088e-07	NA	-46.6837	100.2563	0.3703
BlinDlin	1.1832	0.3413	1.261e-01	-0.5463	-49.7938	109.1260	9.2400
BconsDcons	1.7611	NA	-8.210e-01	NA	-50.1074	104.6433	4.7573
BconsDexp	1.1719	NA	5.641e-06	-0.1528	-50.6971	108.2830	8.3971
BconsDlin	1.3819	NA	-6.032e-01	0.3013	-51.1047	109.0982	9.2123
C. Shift in clade 2 (n = 11)							
BlinDcons	0.7796	-0.09079	4.858e-08	NA	-20.5379	50.5044	3.0065
BlinDlin	0.7799	-0.09087	5.995e-08	-9.361e-09	-20.5379	55.7425	8.2446
BexpDcons	0.7082	-0.10353	3.117e-08	NA	-20.7386	50.9057	3.4078
BexpDexp	0.7082	-0.10363	-4.906e-07	-5.520e-01	-20.7386	56.1438	8.6459
BconsDexp	0.5636	NA	-3.620e-08	-6.298e-01	-20.9990	51.4265	3.9286
BconsDlin	0.5636	NA	5.005e-07	-3.870e-07	-20.9990	51.4265	3.9286
BconsDcons	0.5638	NA	5.645e-07	NA	-20.9990	47.4979	0.0000
C. Shift in clade 3 (n = 4)							
BlinDcons	0.7723	-0.07488	1.339e-08	NA	-8.2567	Inf	Inf
BlinDlin	0.7753	-0.07494	8.751e-08	-1.145e-08	-8.2570	-15.4861	0.0000
BexpDcons	0.9302	-0.20918	-3.877e-08	NA	-8.6012	Inf	Inf
BexpDexp	0.9070	-0.20217	-2.938e-07	6.768e-01	-8.6038	-14.7925	0.6936
BconsDlin	0.4672	NA	1.859e-02	-1.625e-02	-9.8045	Inf	Inf
BconsDcons	0.4239	NA	-1.506e-07	NA	-9.8453	35.6905	51.1766
BconsDexp	0.4238	NA	-2.677e-07	-4.165e-01	-9.8453	Inf	Inf

Global model

	Clade1	Clade2	Clade3	logLH	AICc	deltaAICc
BlinDcons	BlinDcons	BconsDcons	BlinDlin	-52.6740	138.0147	0.0000
BlinDcons	BexpDcons	BconsDcons	BlinDlin	-52.8592	138.3851	0.3704
BlinDcons	BlinDcons	BconsDcons	BexpDexp	-53.0208	138.7083	0.6936
BlinDcons	BexpDcons	BconsDcons	BexpDexp	-53.2060	139.0787	1.0640

Figure S18. Shifts in *Agave s.l.*, *Furcraea/Beschorneria* and *Yucca* backbone diversification rate through time plot.

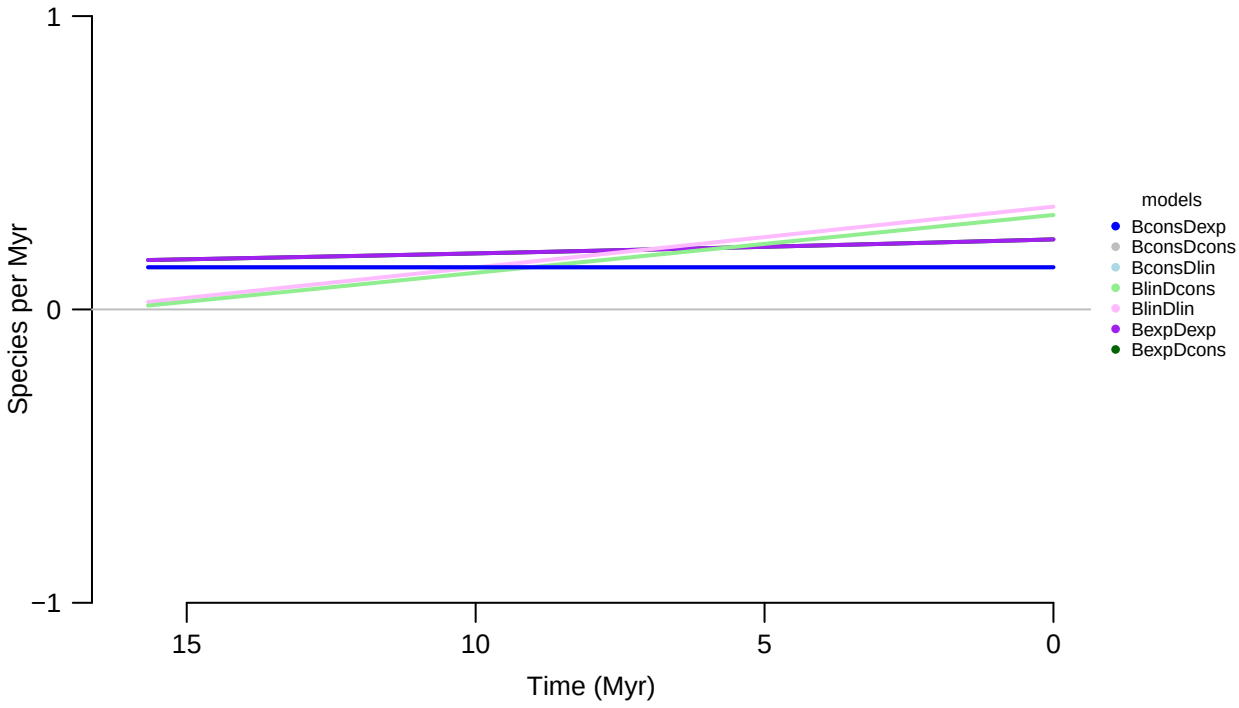


Table S19. Three shifts in *Agave s.l.*, *Furcraea/Beschorneria* and in *Hesperoyucca/Hesperaloe*, from clade stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 4)							
BlinDlin	2.6548	-0.16942	-2.439e+00	1.800e-01	21.8517	-75.7035	0.0000
BlinDcons	0.7473	-0.04769	-1.874e-01	NA	20.1156	Inf	Inf
BconsDcons	0.3586	NA	-8.614e-09	NA	-11.1430	38.2860	113.9895
BconsDlin	0.3587	NA	1.207e-07	-5.545e-09	-11.1430	Inf	Inf
BconsDexp	0.3585	NA	-3.505e-07	-1.991e-01	-11.1430	Inf	Inf
BexpDexp	0.8699	-0.14556	-1.093e-08	5.721e-02	-11.3834	-9.2333	66.4702
BexpDcons	0.8698	-0.14555	-2.327e-08	NA	-11.3834	Inf	Inf
B. Shift in clade 1 (n = 31)							
BlinDcons	1.4778	-0.2108	-5.422e-08	NA	-46.4985	99.8860	0.0000
BexpDexp	1.7814	-0.2816	-2.695e-02	-5.1515	-46.6835	102.9054	3.0195
BexpDcons	1.7775	-0.2809	-3.088e-07	NA	-46.6837	100.2563	0.3703
BlinDlin	1.1832	0.3413	1.261e-01	-0.5463	-49.7938	109.1260	9.2400
BconsDcons	1.7611	NA	-8.210e-01	NA	-50.1074	104.6433	4.7573
BconsDexp	1.1719	NA	5.641e-06	-0.1528	-50.6971	108.2830	8.3971
BconsDlin	1.3819	NA	-6.032e-01	0.3013	-51.1047	109.0982	9.2123
C. Shift in clade 2 (n = 11)							
BlinDcons	0.7796	-0.09079	4.858e-08	NA	-20.5379	50.5044	3.0065
BlinDlin	0.7799	-0.09087	5.995e-08	-9.361e-09	-20.5379	55.7425	8.2446
BexpDcons	0.7082	-0.10353	3.117e-08	NA	-20.7386	50.9057	3.4078
BexpDexp	0.7082	-0.10363	-4.906e-07	-5.520e-01	-20.7386	56.1438	8.6459
BconsDexp	0.5636	NA	-3.620e-08	-6.298e-01	-20.9990	51.4265	3.9286
BconsDlin	0.5636	NA	5.005e-07	-3.870e-07	-20.9990	51.4265	3.9286
BconsDcons	0.5638	NA	5.645e-07	NA	-20.9990	47.4979	0.0000
C. Shift in clade 3 (n = 3)							
BlinDcons	0.05891	0.01854	3.229e-09	NA	-6.8930	-4.2140	0.00000
BlinDlin	0.07022	0.01714	1.113e-03	4.844e-04	-6.9116	1.8231	6.03718
BexpDexp	0.12956	0.03083	7.094e-09	1.296e-02	-6.9299	1.8597	6.07376
BexpDcons	0.12938	0.03102	-4.306e-09	NA	-6.9299	-4.1403	0.07376
BconsDlin	0.15167	NA	-8.086e-09	3.328e-09	-6.9427	-4.1146	0.09940
BconsDcons	0.15168	NA	-3.577e-08	NA	-6.9427	Inf	Inf
BconsDexp	0.15145	NA	1.344e-08	8.634e-03	-6.9427	-4.1146	0.09941

Global model

	Clade1	Clade2	Clade3	logLH	AICc	deltaAICc
BlinDlin	BlinDcons	BconsDcons	BlinDcons	-52.5388	137.7443	0.0000
BlinDlin	BlinDcons	BconsDcons	BexpDcons	-52.5757	137.8181	0.0738
BlinDlin	BlinDcons	BconsDcons	BconsDlin	-52.5885	137.8437	0.0994
BlinDlin	BlinDcons	BconsDcons	BconsDexp	-52.5885	137.8437	0.0994
BlinDlin	BexpDcons	BconsDcons	BlinDcons	-52.7240	138.1147	0.3704
BlinDlin	BexpDcons	BconsDcons	BexpDcons	-52.7609	138.1885	0.4442
BlinDlin	BexpDcons	BconsDcons	BconsDlin	-52.7737	138.2141	0.4698
BlinDlin	BexpDcons	BconsDcons	BconsDexp	-52.7737	138.2141	0.4698

Figure S19. Shifts in *Agave s.l.*, *Furcraea/Beschorneria* and *Hesperoyucca/Hesperaloe* backbone diversification rate through time plot.

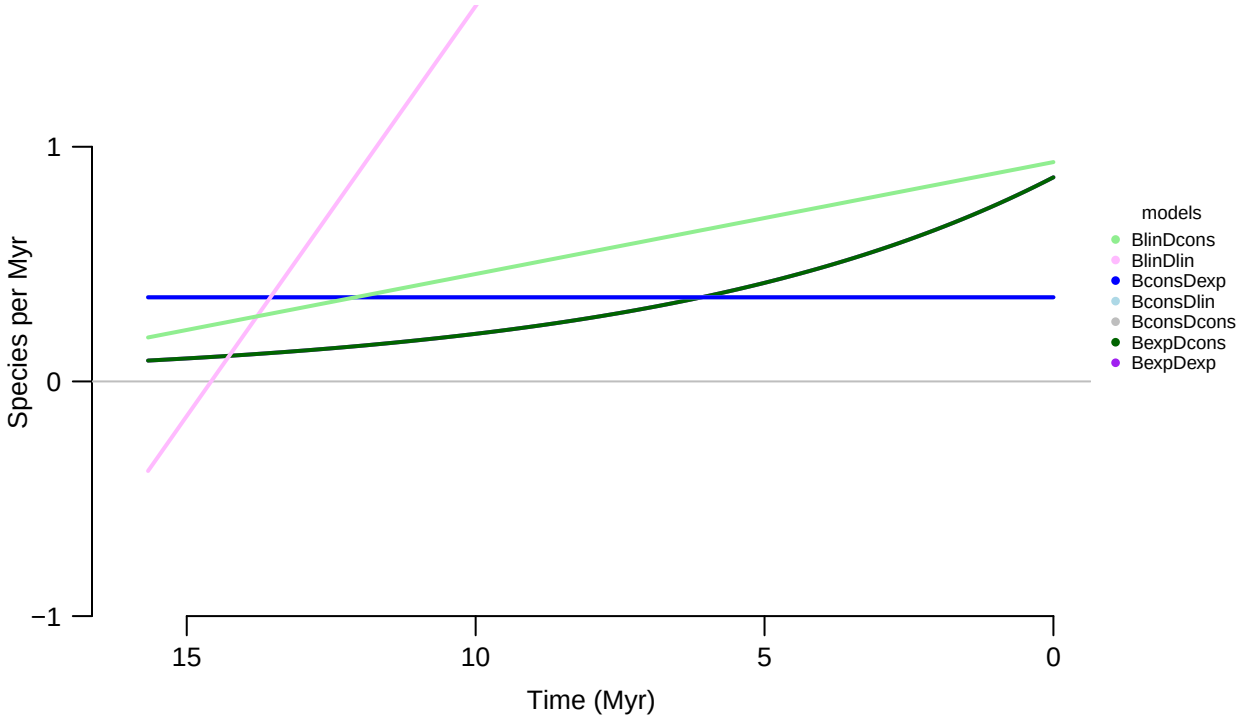


Table S20. Three shifts in *Agave s.l.*, *Yucca* and in *Hesperoyucca/Hesperaloe*, from clade stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 11)							
BlinDlin	0.5241	-0.03345	1.225e-01	-9.897e-03	7.1899	0.2869	2.1334
BlinDcons	0.7666	-0.04892	-2.418e-01	NA	5.6375	-1.8465	0.0000
BexpDcons	0.7455	-0.11763	-1.484e-08	NA	-24.6971	58.8228	60.6693
BexpDexp	0.7454	-0.11763	5.158e-07	-7.042e-01	-24.6971	64.0609	65.9074
BconsDcons	0.4426	NA	-1.272e-07	NA	-24.7361	54.9722	56.8187
BconsDexp	0.4426	NA	4.155e-07	-1.078e-01	-24.7361	58.9008	60.7473
BconsDlin	0.4423	NA	-1.524e-05	2.744e-05	-24.7365	58.9016	60.7481
B. Shift in clade 1 (n = 31)							
BlinDcons	1.4778	-0.2108	-5.422e-08	NA	-46.4985	99.8860	0.0000
BexpDexp	1.7814	-0.2816	-2.695e-02	-5.1515	-46.6835	102.9054	3.0195
BexpDcons	1.7775	-0.2809	-3.088e-07	NA	-46.6837	100.2563	0.3703
BlinDlin	1.1832	0.3413	1.261e-01	-0.5463	-49.7938	109.1260	9.2400
BconsDcons	1.7611	NA	-8.210e-01	NA	-50.1074	104.6433	4.7573
BconsDexp	1.1719	NA	5.641e-06	-0.1528	-50.6971	108.2830	8.3971
BconsDlin	1.3819	NA	-6.032e-01	0.3013	-51.1047	109.0982	9.2123
C. Shift in clade 2 (n = 4)							
BlinDcons	0.7723	-0.07488	1.339e-08	NA	-8.2567	Inf	Inf
BlinDlin	0.7753	-0.07494	8.751e-08	-1.145e-08	-8.2570	-15.4861	0.0000
BexpDcons	0.9302	-0.20918	-3.877e-08	NA	-8.6012	Inf	Inf
BexpDexp	0.9070	-0.20217	-2.938e-07	6.768e-01	-8.6038	-14.7925	0.6936
BconsDlin	0.4672	NA	1.859e-02	-1.625e-02	-9.8045	Inf	Inf
BconsDcons	0.4239	NA	-1.506e-07	NA	-9.8453	35.6905	51.1766
BconsDexp	0.4238	NA	-2.677e-07	-4.165e-01	-9.8453	Inf	Inf
C. Shift in clade 3 (n = 3)							
BlinDcons	0.05891	0.01854	3.229e-09	NA	-6.8930	-4.2140	0.00000
BlinDlin	0.07022	0.01714	1.113e-03	4.844e-04	-6.9116	1.8231	6.03718
BexpDexp	0.12956	0.03083	7.094e-09	1.296e-02	-6.9299	1.8597	6.07376
BexpDcons	0.12938	0.03102	-4.306e-09	NA	-6.9299	-4.1403	0.07376
BconsDlin	0.15167	NA	-8.086e-09	3.328e-09	-6.9427	-4.1146	0.09940
BconsDcons	0.15168	NA	-3.577e-08	NA	-6.9427	Inf	Inf
BconsDexp	0.15145	NA	1.344e-08	8.634e-03	-6.9427	-4.1146	0.09941

Global model

	Clade1	Clade2	Clade3	logLH	AICc	deltaAICc
BlinDcons	BlinDcons	BlinDlin	BlinDcons	-56.0110	148.4220	0.0000
BlinDcons	BlinDcons	BlinDlin	BexpDcons	-56.0479	148.4958	0.0738
BlinDcons	BlinDcons	BlinDlin	BconsDlin	-56.0607	148.5214	0.0994
BlinDcons	BlinDcons	BlinDlin	BconsDexp	-56.0607	148.5214	0.0994
BlinDcons	BexpDcons	BlinDlin	BlinDcons	-56.1962	148.7924	0.3704
BlinDcons	BexpDcons	BlinDlin	BexpDcons	-56.2331	148.8662	0.4442
BlinDcons	BexpDcons	BlinDlin	BconsDlin	-56.2459	148.8918	0.4698
BlinDcons	BexpDcons	BlinDlin	BconsDexp	-56.2459	148.8918	0.4698
BlinDcons	BlinDcons	BexpDexp	BlinDcons	-56.3578	149.1156	0.6936
BlinDcons	BlinDcons	BexpDexp	BexpDcons	-56.3947	149.1894	0.7674
BlinDcons	BlinDcons	BexpDexp	BconsDlin	-56.4075	149.2150	0.7930
BlinDcons	BlinDcons	BexpDexp	BconsDexp	-56.4075	149.2150	0.7930
BlinDcons	BexpDcons	BexpDexp	BlinDcons	-56.5430	149.4860	1.0640
BlinDcons	BexpDcons	BexpDexp	BexpDcons	-56.5799	149.5598	1.1378
BlinDcons	BexpDcons	BexpDexp	BconsDlin	-56.5927	149.5854	1.1634
BlinDcons	BexpDcons	BexpDexp	BconsDexp	-56.5927	149.5854	1.1634

Figure S20. Shifts in *Agave s.l.*, *Yucca* and *Hesperoyucca/Hesperaloe* backbone diversification rate through time plot.

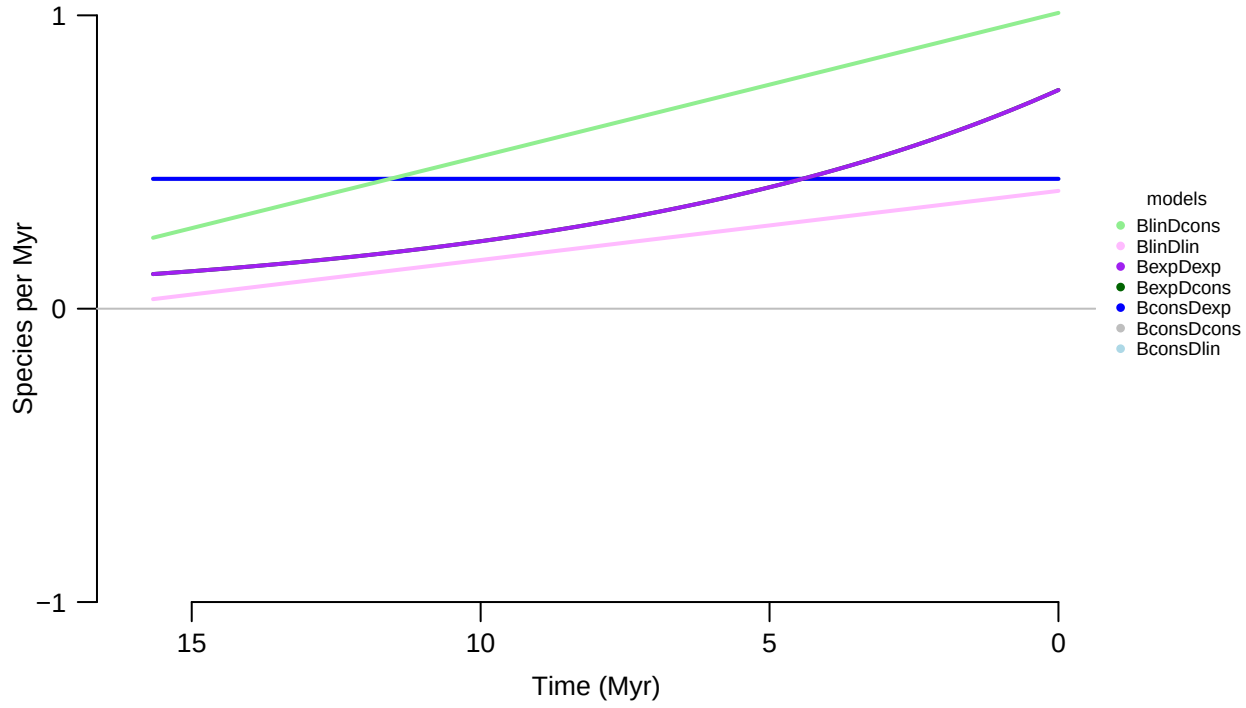


Table S21. Three shifts in *Furcraea/Beschorneria*, *Yucca* and in *Hesperoyucca/Hesperaloe*, from clade stem age.

model	lambda	alpha	mu	beta	logLH	AICc	deltaAICc
A. Backbone (n = 31)							
BlinDcons	1.1062	-0.0706	6.420e-02	NA	-20.0769	47.0427	0.0000
BexpDcons	1.6768	-0.2258	4.295e-08	NA	-50.5075	107.9039	60.8612
BexpDexp	1.6804	-0.2243	4.844e-06	-0.8409	-50.5085	110.5555	63.5128
BlinDlin	-1.3374	8.6873	1.126e+00	-8.6342	-55.2939	120.1264	73.0837
BconsDlin	1.3160	NA	-2.271e-01	-0.0513	-57.0589	121.0066	73.9639
BconsDcons	1.7467	NA	-9.775e-01	NA	-58.0186	120.4658	73.4231
BconsDexp	1.0372	NA	-5.464e-08	-1.7635	-59.0775	125.0439	78.0013
B. Shift in clade 1 (n = 11)							
BlinDcons	0.7796	-0.09079	4.858e-08	NA	-20.5379	50.5044	3.0065
BlinDlin	0.7799	-0.09087	5.995e-08	-9.361e-09	-20.5379	55.7425	8.2446
BexpDcons	0.7082	-0.10353	3.117e-08	NA	-20.7386	50.9057	3.4078
BexpDexp	0.7082	-0.10363	-4.906e-07	-5.520e-01	-20.7386	56.1438	8.6459
BconsDexp	0.5636	NA	-3.620e-08	-6.298e-01	-20.9990	51.4265	3.9286
BconsDlin	0.5636	NA	5.005e-07	-3.870e-07	-20.9990	51.4265	3.9286
BconsDcons	0.5638	NA	5.645e-07	NA	-20.9990	47.4979	0.0000
C. Shift in clade 2 (n = 4)							
BlinDcons	0.7723	-0.07488	1.339e-08	NA	-8.2567	Inf	Inf
BlinDlin	0.7753	-0.07494	8.751e-08	-1.145e-08	-8.2570	-15.4861	0.0000
BexpDcons	0.9302	-0.20918	-3.877e-08	NA	-8.6012	Inf	Inf
BexpDexp	0.9070	-0.20217	-2.938e-07	6.768e-01	-8.6038	-14.7925	0.6936
BconsDlin	0.4672	NA	1.859e-02	-1.625e-02	-9.8045	Inf	Inf
BconsDcons	0.4239	NA	-1.506e-07	NA	-9.8453	35.6905	51.1766
BconsDexp	0.4238	NA	-2.677e-07	-4.165e-01	-9.8453	Inf	Inf
C. Shift in clade 3 (n = 3)							
BlinDcons	0.05891	0.01854	3.229e-09	NA	-6.8930	-4.2140	0.00000
BlinDlin	0.07022	0.01714	1.113e-03	4.844e-04	-6.9116	1.8231	6.03718
BexpDexp	0.12956	0.03083	7.094e-09	1.296e-02	-6.9299	1.8597	6.07376
BexpDcons	0.12938	0.03102	-4.306e-09	NA	-6.9299	-4.1403	0.07376
BconsDlin	0.15167	NA	-8.086e-09	3.328e-09	-6.9427	-4.1146	0.09940
BconsDcons	0.15168	NA	-3.577e-08	NA	-6.9427	Inf	Inf
BconsDexp	0.15145	NA	1.344e-08	8.634e-03	-6.9427	-4.1146	0.09941

Global model

	Clade1	Clade2	Clade3	logLH	AICc	deltaAICc
BlinDcons	BconsDcons	BlinDlin	BlinDcons	-56.2259	145.1185	0.0000
BlinDcons	BconsDcons	BlinDlin	BexpDcons	-56.2628	145.1923	0.0738
BlinDcons	BconsDcons	BlinDlin	BconsDlin	-56.2756	145.2179	0.0994
BlinDcons	BconsDcons	BlinDlin	BconsDexp	-56.2756	145.2179	0.0994
BlinDcons	BconsDcons	BexpDexp	BlinDcons	-56.5727	145.8121	0.6936
BlinDcons	BconsDcons	BexpDexp	BexpDcons	-56.6096	145.8859	0.7674
BlinDcons	BconsDcons	BexpDexp	BconsDlin	-56.6224	145.9115	0.7930
BlinDcons	BconsDcons	BexpDexp	BconsDexp	-56.6224	145.9115	0.7930

Figure S21. Shifts in *Furcraea/Beschorneria*, *Yucca* and *Hesperoyucca/Hesperaloe* backbone diversification rate through time plot.