Table 1: PhylANOVA results for all song traits. Sorted from most to least significant. Song-Stable and Song-Plastic columns show means. "*" denotes traits with significantly different groups.

Song Trait	Song-Stable	Song-Plastic	F-Value	Corrected α	p-Value
Syllable Rep	2.0085	4.0433	41.7621	0.0071	0.001*
Song Rep	1.2715	4.0179	32.4078	0.0083	0.001*
Syll Song	1.2871	2.359	9.3669	0.01	0.078
Duration	0.7858	1.2927	1.9851	0.0125	0.432
Continuity	-1.3274	-1.0286	1.9026	0.0167	0.509
Interval	1.5987	1.218	1.3307	0.025	0.579
Song Rate	1.8978	2.0971	0.606	0.05	0.702

Table 2: Brownie results for song traits. Sorted from most to least significant. Song-Stable and Song-Plastic columns show means. "*" denotes traits where the two-rate model fit the data significantly better than the one-rate model.

Song Trait	One Rate	Two Rates	p-Value
Duration	-71.446	-66.1294	0.001*
Syll Song	-105.515	-95.4003	0.001*
Song Rate	-43.6111	-39.0486	0.003*
Interval	-45.7435	-41.7043	0.004*
Continuity	-26.6192	-26.0083	0.269
Syllable Rep	-115.1413	-114.9815	0.572
Song Rep	-108.4187	-108.271	0.587

Table S1: PhylANOVA results for song traits when either the maximum or minimum reported values are used. Sorted from most to least significant. Song-Stable and Song-Plastic columns show means. "*" denotes traits with significantly different groups.

Song Trait	Song-Stable	Song-Plastic	F-Value	Corrected α	p-Value
Syllable Rep Min	1.8901	3.8334	40.9429	0.0071	0.001*
Syllable Rep Max	2.0708	4.1622	41.086	0.0071	0.001*
Song Rep Min	1.0193	3.4341	36.1792	0.0083	0.001*
Song Rep Max	1.353	4.3733	33.2005	0.0083	0.001*
Syll Song Max	1.335	2.5406	9.7568	0.01	0.07
Syll Song Min	1.2123	1.8494	5.6926	0.01	0.201
Duration Max	0.8017	1.3853	2.356	0.0125	0.389
Interval Max	1.682	1.2852	1.6894	0.025	0.534
Duration Min	0.7625	1.1234	1.251	0.0125	0.558
Interval Min	1.4033	0.9398	0.8588	0.025	0.655

Table S2: Brownie results for song traits when either the maximum or minimum reported values are used. Sorted from most to least significant. "*" denotes traits where the two-rate model fit the data significantly better than the one-rate model.

Song Trait	One Rate	Two Rates	p-Value
Duration Max	-74.4	-68.0492	0.001*
Syll Song Max	-113.5196	-99.6948	0.001*
Interval Max	-44.2755	-39.3999	0.002*
Duration Min	-65.9076	-62.4134	0.008*
Interval Min	-58.9869	-57.1737	0.057
Syll Song Min	-84.2999	-82.8848	0.093
Song Rep Max	-114.8711	-114.262	0.27
Syllable Rep Max	-119.908	-119.3887	0.308
Song Rep Min	-96.6532	-96.4026	0.479
Syllable Rep Min	-113.6678	-113.4656	0.525

Table S3: PhylANOVA results for syllable repertoire when each bird family is omitted. Sorted from most to least significant. Song-Stable and Song-Plastic columns show means. "*" denotes significantly different groups.

Removed Family	Song-Stable	Song-Plastic	F-Value	Corrected alpha	p-Value
Acrocephalidae	1.9587	4.1353	49.4976	0.0071	0.001*
Emberizidae	2.0084	4.0433	37.5914	0.0071	0.001*
Fringillidae	1.9532	4.0565	37.5607	0.0071	0.001*
Icteridae	1.9511	4.0708	41.1954	0.0071	0.001*
Mimidae	2.0085	3.6686	32.9261	0.0071	0.001*
Muscicapidae	2.0199	3.9745	37.3105	0.0071	0.001*
Parulidae	2.017	4.2097	47.7262	0.0071	0.001*
Passerellidae	2.1331	4.0814	32.4785	0.0071	0.001*

Table S4: PhylANOVA results for interval when each bird family is omitted. Sorted from most to least significant. Song-Stable and Song-Plastic columns show means. "*" denotes significantly different groups.

Removed Family	Song-Stable	Song-Plastic	F-Value	Corrected alpha	p-Value
Muscicapidae	1.5987	1.0449	2.5837	0.025	0.331
Acrocephalidae	1.8308	1.3251	2.9201	0.025	0.405
Icteridae	1.5987	1.0659	2.5164	0.025	0.482
Parulidae	1.5718	1.1387	1.3989	0.025	0.612
Fringillidae	1.5728	1.218	1.1043	0.025	0.625
Emberizidae	1.5031	1.218	0.6157	0.025	0.677
Passerellidae	1.4593	1.218	0.3878	0.025	0.732
Mimidae	1.5987	1.6071	9e-04	0.025	0.994

Table S5: PhylANOVA results for duration when each bird family is omitted. Sorted from most to least significant. Song-Stable and Song-Plastic columns show means. "*" denotes significantly different groups.

Removed Family	Song-Stable	Song-Plastic	F-Value	Corrected α	p-Value
Mimidae	0.7858	1.5596	4.6683	0.0125	0.161
Muscicapidae	0.7858	1.3495	2.095	0.0125	0.363
Acrocephalidae	0.6331	1.1605	2.273	0.0125	0.428
Parulidae	0.8125	1.4276	2.5694	0.0125	0.429
Passerellidae	0.8239	1.2927	1.1648	0.0125	0.439
Icteridae	0.7858	1.3928	2.6278	0.0125	0.443
Emberizidae	0.8209	1.2927	1.4742	0.0125	0.489
Fringillidae	0.7874	0.9735	0.3763	0.0125	0.787

Table S6: PhylANOVA results for syllables per song when each bird family is omitted. Sorted from most to least significant. Song-Stable and Song-Plastic columns show means. "*" denotes significantly different groups.

Removed Family	Song-Stable	Song-Plastic	F-Value	Corrected alpha	p-Value
Acrocephalidae	1.2207	2.422	11.8976	0.01	0.06
Emberizidae	1.2515	2.359	9.036	0.01	0.062
Muscicapidae	1.2871	2.417	9.0216	0.01	0.065
Parulidae	1.2759	2.5087	11.2491	0.01	0.084
Fringillidae	1.2656	2.4274	9.5546	0.01	0.105
Passerellidae	1.4322	2.359	5.3541	0.01	0.11
Icteridae	1.2871	2.436	9.9891	0.01	0.113
Mimidae	1.2871	1.8406	4.5644	0.01	0.168

Table S7: PhylANOVA results for song rate when each bird family is omitted. Sorted from most to least significant. Song-Stable and Song-Plastic columns show means. "*" denotes significantly different groups.

Removed Family	Song-Stable	Song-Plastic	F-Value	Corrected alpha	p-Value
Muscicapidae	1.8978	2.1768	1.0362	0.05	0.558
Mimidae	1.8978	1.7406	0.7583	0.05	0.605
Icteridae	1.8978	2.1642	0.9841	0.05	0.667
Acrocephalidae	1.9659	2.1804	0.7127	0.05	0.695
Passerellidae	1.8878	2.0971	0.4786	0.05	0.7
Emberizidae	1.9034	2.0971	0.4608	0.05	0.732
Fringillidae	1.9043	2.0971	0.5379	0.05	0.742
Parulidae	1.8839	2.0942	0.5346	0.05	0.768

Table S8: PhylANOVA results for song repertoire when each bird family is omitted. Sorted from most to least significant. Song-Stable and Song-Plastic columns show means. "*" denotes traits different groups.

Removed Family	Song-Stable	Song-Plastic	F-Value	Corrected alpha	p-Value
Acrocephalidae	1.205	3.8787	29.49	0.0083	0.001*
Emberizidae	1.2576	4.0179	29.2291	0.0083	0.001*
Icteridae	1.1303	4.2353	43.0111	0.0083	0.001*
Mimidae	1.2715	3.4912	20.9511	0.0083	0.001*
Muscicapidae	1.2715	3.799	24.8704	0.0083	0.001*
Parulidae	1.2734	4.2699	36.7003	0.0083	0.001*
Fringillidae	1.2165	3.8563	27.6509	0.0083	0.002*
Passerellidae	1.4049	4.1762	25.9816	0.0083	0.002*

Table S9: Brownie results for syllable repertoire when each bird family is omitted. Sorted from most to least significant. "*" denotes cases where the two-rate model fit the data significantly better than the one-rate model.

Removed Family	One Rate	Two Rates	p-Value
Passerellidae	-94.7092	-92.8835	0.056
Acrocephalidae	-104.5746	-104.1284	0.345
Mimidae	-106.7329	-106.3413	0.376
Emberizidae	-109.9331	-109.7074	0.502
Fringillidae	-105.8758	-105.6551	0.506
Muscicapidae	-106.139	-105.9175	0.506
Icteridae	-108.6157	-108.4003	0.512
Parulidae	-110.3641	-110.1647	0.528

Table S10: Brownie results for interval when each bird family is omitted. Sorted from most to least significant. "*" denotes cases where the two-rate model fit the data significantly better than the one-rate model.

Removed Family	One Rate	Two Rates	p-Value
Acrocephalidae	-38.8204	-32.6546	0.001*
Icteridae	-43.9067	-39.769	0.004*
Fringillidae	-44.687	-41.0652	0.007*
Parulidae	-43.6899	-40.1743	0.008*
Emberizidae	-42.7687	-39.7137	0.013*
Mimidae	-38.2762	-35.3337	0.015*
Passerellidae	-41.7493	-38.8285	0.016*
Muscicapidae	-35.9688	-34.5783	0.095

Table S11: Brownie results for duration when each bird family is omitted. Sorted from most to least significant. "*" denotes cases where the two-rate model fit the data significantly better than the one-rate model.

Removed Family	One Rate	Two Rates	p-Value
Acrocephalidae	-64.257	-57.33	0.001*
Icteridae	-69.5007	-64.2152	0.001*
Muscicapidae	-68.6623	-62.4149	0.001*
Parulidae	-68.2428	-63.3456	0.002*
Mimidae	-64.5013	-59.9448	0.003*
Emberizidae	-68.0418	-64.4014	0.007*
Passerellidae	-64.1314	-60.9289	0.011*
Fringillidae	-53.8896	-52.4634	0.091

Table S12: Brownie results for syllables per song when each bird family is omitted. Sorted from most to least significant. "*" denotes cases where the two-rate model fit the data significantly better than the one-rate model.

Removed Family	One Rate	Two Rates	p-Value
Acrocephalidae	-97.0668	-84.0949	0.001*
Emberizidae	-99.2571	-89.6643	0.001*
Fringillidae	-98.8075	-89.3303	0.001*
Icteridae	-102.4934	-92.4344	0.001*
Muscicapidae	-101.5469	-90.2989	0.001*
Parulidae	-100.3308	-90.9249	0.001*
Passerellidae	-93.2162	-84.7065	0.001*
Mimidae	-67.072	-65.9722	0.138

Table S13: Brownie results for song rate when each bird family is omitted. Sorted from most to least significant. "*" denotes cases where the two-rate model fit the data significantly better than the one-rate model.

Removed Family	One Rate	Two Rates	p-Value
Acrocephalidae	-36.9543	-29.3749	0.001*
Icteridae	-42.0655	-37.4982	0.003*
Fringillidae	-42.6676	-38.5222	0.004*
Parulidae	-41.7483	-37.7895	0.005*
Passerellidae	-39.904	-36.4006	0.008*
Emberizidae	-41.1093	-37.9529	0.012*
Muscicapidae	-36.0979	-33.3061	0.018*
Mimidae	-33.8912	-31.4482	0.027*

Table S14: Brownie results for song repertoire when each bird family is omitted. Sorted from most to least significant. "*" denotes cases where the two-rate model fit the data significantly better than the one-rate model.

Removed Family	One Rate	Two Rates	p-Value
Icteridae	-99.542	-99.0294	0.311
Mimidae	-101.284	-100.9359	0.404
Fringillidae	-95.1424	-94.8671	0.458
Acrocephalidae	-98.2789	-98.0303	0.481
Muscicapidae	-101.437	-101.2221	0.512
Parulidae	-102.3087	-102.1154	0.534
Passerellidae	-93.906	-93.7771	0.612
Emberizidae	-102.3833	-102.2711	0.636

Table S15: Brownie results for syllables per song when each mimid sepcies is omitted. Sorted from most to least significant. "*" denotes cases where the two-rate model fit the data significantly better than the one-rate model.

Removed Mimid	One Rate	Two Rates	p-Value
Toxostoma rufum	-102.932	-92.9691	0.001*
Dumetella carolinensis	-103.0273	-93.1399	0.001*
Mimus polyglottos	-84.376	-82.5821	0.058
Mimus gilvus	-77.7155	-77.4441	0.461

Table S16: PhylANOVA results for all song traits when *Melospiza melodia* is labeled Song-Stable. Song-Stable and Song-Plastic columns show means. Sorted from most to least significant. "*" denotes traits with significantly different groups.

Song Trait	Song-Stable	Song-Plastic	F-Value	Corrected alpha	p-Value
Syllable Rep	2.0357	4.0814	41.8787	0.0071	0.001*
Song Rep	1.2545	4.1762	38.7502	0.0083	0.001*
Syll Song	1.2871	2.359	9.3669	0.01	0.078
Duration	0.7858	1.2927	1.9851	0.0125	0.432
Continuity	-1.3274	-1.0286	1.9026	0.0167	0.509
Interval	1.5987	1.218	1.3307	0.025	0.579
Song Rate	1.8978	2.0971	0.606	0.05	0.702

Table S17: Brownie results for song traits when *Melospiza melodia* is labeled Song-Stable. Sorted from most to least significant. "*" denotes traits where the two-rate model fit the data significantly better than the one-rate model.

Song Trait	One Rate	Two Rates	p-Value
Duration	-71.446	-66.1294	0.001*
Syll Song	-105.515	-95.4003	0.001*
Interval	-45.7435	-41.7043	0.004*
Syllable Rep	-115.1413	-114.9228	0.509
Song Rep	-108.4187	-108.2635	0.577