

SUPPLEMENTARY INFORMATION

Century-long shifts in body size and proportions of lowland rainforest birds

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Table S1. Specimens measured, year of survey, and sex. F: Female, M: Male, U: Undetermined (gonads not examined or not recorded). AMNH: American Museum of Natural History, ICN: Instituto de Ciencias Naturales, Universidad Nacional de Colombia; FMNH: Field Museum of Natural History; MCZ: Museum of Comparative Zoology, Harvard University; USNM: National Museum of Natural History, Smithsonian Institution.

Species	Specimen catalog number	Collection year	Sex
<i>Florisuga mellivora</i>	AMNH-117664	1912	M
<i>Florisuga mellivora</i>	AMNH-117662	1912	F
<i>Florisuga mellivora</i>	AMNH-117663	1912	M
<i>Florisuga mellivora</i>	AMNH-117660	1912	U
<i>Florisuga mellivora</i>	AMNH-117665	1912	F
<i>Florisuga mellivora</i>	AMNH-117661	1912	M
<i>Florisuga mellivora</i>	AMNH-154732	1912	M
<i>Florisuga mellivora</i>	AMNH-154734	1912	M
<i>Florisuga mellivora</i>	ICN-43218	2021	F
<i>Florisuga mellivora</i>	ICN-43584	2021	M
<i>Florisuga mellivora</i>	ICN-43587	2021	F
<i>Florisuga mellivora</i>	ICN-43607	2021	M
<i>Florisuga mellivora</i>	ICN-43612	2021	M
<i>Florisuga mellivora</i>	ICN-43613	2021	F
<i>Florisuga mellivora</i>	ICN-43615	2021	F
<i>Phaethornis striigularis</i>	MCZ-124993	1912	U
<i>Phaethornis striigularis</i>	AMNH-117655	1912	M
<i>Phaethornis striigularis</i>	AMNH-117656	1912	U
<i>Phaethornis striigularis</i>	ICN-43120	2021	M
<i>Phaethornis striigularis</i>	ICN-43123	2021	U
<i>Phaethornis striigularis</i>	ICN-43207	2021	F
<i>Phaethornis striigularis</i>	ICN-43211	2021	M
<i>Phaethornis striigularis</i>	ICN-43304	2021	F
<i>Phaethornis striigularis</i>	ICN-43324	2021	F
<i>Phaethornis striigularis</i>	ICN-43332	2021	U
<i>Phaethornis striigularis</i>	ICN-43333	2021	U
<i>Phaethornis striigularis</i>	ICN-43341	2021	F
<i>Phaethornis striigularis</i>	ICN-43348	2021	U
<i>Phaethornis striigularis</i>	ICN-43395	2021	M
<i>Phaethornis striigularis</i>	ICN-43413	2021	M
<i>Androdon aequatorialis</i>	AMNH-117639	1912	M
<i>Androdon aequatorialis</i>	MCZ-124987	1912	U
<i>Androdon aequatorialis</i>	MCZ-124988	1912	M
<i>Androdon aequatorialis</i>	AMNH-117641	1912	M
<i>Androdon aequatorialis</i>	AMNH-154731	1912	M
<i>Androdon aequatorialis</i>	ICN-43336	2021	F

<i>Androdon aequatorialis</i>	ICN-43393	2021	M
<i>Androdon aequatorialis</i>	ICN-43396	2021	F
<i>Androdon aequatorialis</i>	ICN-43398	2021	M
<i>Androdon aequatorialis</i>	ICN-43414	2021	M
<i>Androdon aequatorialis</i>	ICN-43440	2021	M
<i>Androdon aequatorialis</i>	ICN-43442	2021	M
<i>Androdon aequatorialis</i>	ICN-43451	2021	M
<i>Androdon aequatorialis</i>	ICN-43473	2021	F
<i>Androdon aequatorialis</i>	ICN-43599	2021	F
<i>Polyerata rosenbergi</i>	AMNH-117669	1912	F
<i>Polyerata rosenbergi</i>	AMNH-117667	1912	M
<i>Polyerata rosenbergi</i>	AMNH-117671	1912	M
<i>Polyerata rosenbergi</i>	AMNH-117668	1912	M
<i>Polyerata rosenbergi</i>	AMNH-117666	1912	F
<i>Polyerata rosenbergi</i>	AMNH-117670	1912	F
<i>Polyerata rosenbergi</i>	AMNH-154754	1912	F
<i>Polyerata rosenbergi</i>	AMNH-154757	1912	F
<i>Polyerata rosenbergi</i>	AMNH-154755	1912	F
<i>Polyerata rosenbergi</i>	AMNH-154756	1912	F
<i>Polyerata rosenbergi</i>	AMNH-154739	1912	M
<i>Polyerata rosenbergi</i>	ICN-43083	2021	F
<i>Polyerata rosenbergi</i>	ICN-43094	2021	U
<i>Polyerata rosenbergi</i>	ICN-43109	2021	M
<i>Polyerata rosenbergi</i>	ICN-43119	2021	M
<i>Polyerata rosenbergi</i>	ICN-43125	2021	M
<i>Polyerata rosenbergi</i>	ICN-43138	2021	M
<i>Polyerata rosenbergi</i>	ICN-43139	2021	F
<i>Polyerata rosenbergi</i>	ICN-43191	2021	F
<i>Polyerata rosenbergi</i>	ICN-43193	2021	F
<i>Polyerata rosenbergi</i>	ICN-43328	2021	F
<i>Polyerata rosenbergi</i>	ICN-43637	2021	M
<i>Malacoptila panamensis</i>	AMNH-117771	1912	M
<i>Malacoptila panamensis</i>	AMNH-117770	1912	M
<i>Malacoptila panamensis</i>	AMNH-117773	1912	F
<i>Malacoptila panamensis</i>	AMNH-117768	1912	U
<i>Malacoptila panamensis</i>	AMNH-117772	1912	F
<i>Malacoptila panamensis</i>	AMNH-117769	1912	M
<i>Malacoptila panamensis</i>	ICN-43320	2021	F
<i>Malacoptila panamensis</i>	ICN-43322	2021	F
<i>Malacoptila panamensis</i>	ICN-43364	2021	F
<i>Malacoptila panamensis</i>	ICN-43376	2021	F
<i>Malacoptila panamensis</i>	ICN-43380	2021	M
<i>Malacoptila panamensis</i>	ICN-43416	2021	F
<i>Malacoptila panamensis</i>	ICN-43450	2021	M
<i>Malacoptila panamensis</i>	ICN-43545	2021	F
<i>Malacoptila panamensis</i>	ICN-43546	2021	M
<i>Thamnophilus atrinucha</i>	AMNH-117810	1912	F
<i>Thamnophilus atrinucha</i>	AMNH-117809	1912	M
<i>Thamnophilus atrinucha</i>	AMNH-117811	1912	F
<i>Thamnophilus atrinucha</i>	AMNH-117812	1912	M
<i>Thamnophilus atrinucha</i>	AMNH-117807	1912	M
<i>Thamnophilus atrinucha</i>	AMNH-117808	1912	M

<i>Thamnophilus atrinucha</i>	AMNH-154876/438054	1912	U
<i>Thamnophilus atrinucha</i>	AMNH-154878	1912	F
<i>Thamnophilus atrinucha</i>	USNM-323043	1912	F
<i>Thamnophilus atrinucha</i>	ICN-43155	2021	M
<i>Thamnophilus atrinucha</i>	ICN-43174	2021	F
<i>Thamnophilus atrinucha</i>	ICN-43182	2021	M
<i>Thamnophilus atrinucha</i>	ICN-43314	2021	M
<i>Thamnophilus atrinucha</i>	ICN-43321	2021	F
<i>Thamnophilus atrinucha</i>	ICN-43377	2021	M
<i>Thamnophilus atrinucha</i>	ICN-43435	2021	M
<i>Thamnophilus atrinucha</i>	ICN-43436	2021	F
<i>Thamnophilus atrinucha</i>	ICN-43464	2021	F
<i>Thamnophilus atrinucha</i>	ICN-43467	2021	F
<i>Myrmotherula pacifica</i>	AMNH-117821	1912	M
<i>Myrmotherula pacifica</i>	AMNH-117822	1912	M
<i>Myrmotherula pacifica</i>	AMNH-154903/438064	1912	F
<i>Myrmotherula pacifica</i>	AMNH-154902	1912	F
<i>Myrmotherula pacifica</i>	ICN-43264	2021	M
<i>Myrmotherula pacifica</i>	ICN-43292	2021	M
<i>Myrmotherula pacifica</i>	ICN-43301	2021	M
<i>Myrmotherula pacifica</i>	ICN-43536	2021	M
<i>Myrmotherula pacifica</i>	ICN-43541	2021	M
<i>Myrmotherula pacifica</i>	ICN-43576	2021	M
<i>Myrmotherula pacifica</i>	ICN-43596	2021	M
<i>Myrmotherula pacifica</i>	ICN-43600	2021	M
<i>Myrmotherula pacifica</i>	ICN-43601	2021	M
<i>Myrmotherula pacifica</i>	ICN-43604	2021	M
<i>Myrmotherula pacifica</i>	ICN-43617	2021	F
<i>Poliocrania exsul</i>	AMNH-154931/438121	1912	F
<i>Poliocrania exsul</i>	AMNH-154929	1912	F
<i>Poliocrania exsul</i>	AMNH-154932	1912	F
<i>Poliocrania exsul</i>	AMNH-154930	1912	F
<i>Poliocrania exsul</i>	AMNH-154928	1912	M
<i>Poliocrania exsul</i>	AMNH-154935/438120	1912	U
<i>Poliocrania exsul</i>	AMNH-154933/438119	1912	M
<i>Poliocrania exsul</i>	AMNH-154934	1912	M
<i>Poliocrania exsul</i>	USNM-256132	1912	M
<i>Poliocrania exsul</i>	AMNH-117863	1912	M
<i>Poliocrania exsul</i>	AMNH-117862	1912	M
<i>Poliocrania exsul</i>	AMNH-117865	1912	F
<i>Poliocrania exsul</i>	AMNH-117864	1912	F
<i>Poliocrania exsul</i>	AMNH-117866	1912	F
<i>Poliocrania exsul</i>	ICN-43093	2021	F
<i>Poliocrania exsul</i>	ICN-43116	2021	M
<i>Poliocrania exsul</i>	ICN-43194	2021	F
<i>Poliocrania exsul</i>	ICN-43195	2021	M
<i>Poliocrania exsul</i>	ICN-43317	2021	M
<i>Poliocrania exsul</i>	ICN-43366	2021	M
<i>Poliocrania exsul</i>	ICN-43369	2021	M
<i>Poliocrania exsul</i>	ICN-43424	2021	F
<i>Poliocrania exsul</i>	ICN-43425	2021	M
<i>Poliocrania exsul</i>	ICN-43474	2021	M

<i>Gymnopithys bicolor</i>	AMNH-154945	1912	M
<i>Gymnopithys bicolor</i>	AMNH-117848	1912	M
<i>Gymnopithys bicolor</i>	AMNH-117851	1912	U
<i>Gymnopithys bicolor</i>	MCZ-81831	1912	F
<i>Gymnopithys bicolor</i>	AMNH-117853	1912	M
<i>Gymnopithys bicolor</i>	AMNH-117850	1912	M
<i>Gymnopithys bicolor</i>	AMNH-117849	1912	F
<i>Gymnopithys bicolor</i>	AMNH-438133	1912	U
<i>Gymnopithys bicolor</i>	AMNH-438132	1912	F
<i>Gymnopithys bicolor</i>	ICN-43145	2021	M
<i>Gymnopithys bicolor</i>	ICN-43175	2021	F
<i>Gymnopithys bicolor</i>	ICN-43277	2021	F
<i>Gymnopithys bicolor</i>	ICN-43319	2021	M
<i>Gymnopithys bicolor</i>	ICN-43372	2021	M
<i>Gymnopithys bicolor</i>	ICN-43373	2021	F
<i>Gymnopithys bicolor</i>	ICN-43387	2021	F
<i>Gymnopithys bicolor</i>	ICN-43409	2021	M
<i>Gymnopithys bicolor</i>	ICN-43427	2021	F
<i>Gymnopithys bicolor</i>	ICN-43428	2021	M
<i>Gymnopithys bicolor</i>	ICN-43470	2021	M
<i>Hylophylax naevioides</i>	AMNH-117871	1912	M
<i>Hylophylax naevioides</i>	AMNH-117873	1912	F
<i>Hylophylax naevioides</i>	AMNH-117869	1912	M
<i>Hylophylax naevioides</i>	AMNH-117868	1912	M
<i>Hylophylax naevioides</i>	AMNH-117872	1912	F
<i>Hylophylax naevioides</i>	AMNH-154941/438136	1912	M
<i>Hylophylax naevioides</i>	ICN-43091	2021	M
<i>Hylophylax naevioides</i>	ICN-43165	2021	F
<i>Hylophylax naevioides</i>	ICN-43276	2021	M
<i>Hylophylax naevioides</i>	ICN-43360	2021	M
<i>Hylophylax naevioides</i>	ICN-43405	2021	F
<i>Hylophylax naevioides</i>	ICN-43406	2021	U
<i>Hylophylax naevioides</i>	ICN-43448	2021	F
<i>Hylophylax naevioides</i>	ICN-43449	2021	M
<i>Hylophylax naevioides</i>	ICN-43452	2021	M
<i>Hylophylax naevioides</i>	ICN-43465	2021	F
<i>Hylophylax naevioides</i>	ICN-43472	2021	F
<i>Glyphorynchus spirurus</i>	AMNH-117912	1912	U
<i>Glyphorynchus spirurus</i>	AMNH-117907	1912	F
<i>Glyphorynchus spirurus</i>	AMNH-117908	1912	M
<i>Glyphorynchus spirurus</i>	AMNH-117910	1912	M
<i>Glyphorynchus spirurus</i>	AMNH-117909	1912	M
<i>Glyphorynchus spirurus</i>	AMNH-117911	1912	F
<i>Glyphorynchus spirurus</i>	ICN-43108	2021	M
<i>Glyphorynchus spirurus</i>	ICN-43111	2021	F
<i>Glyphorynchus spirurus</i>	ICN-43150	2021	M
<i>Glyphorynchus spirurus</i>	ICN-43158	2021	M
<i>Glyphorynchus spirurus</i>	ICN-43163	2021	M
<i>Glyphorynchus spirurus</i>	ICN-43172	2021	M
<i>Glyphorynchus spirurus</i>	ICN-43201	2021	M
<i>Glyphorynchus spirurus</i>	ICN-43203	2021	F
<i>Glyphorynchus spirurus</i>	ICN-43220	2021	M

<i>Glyphorhynchus spirurus</i>	ICN-43225	2021	F
<i>Glyphorhynchus spirurus</i>	ICN-43284	2021	M
<i>Glyphorhynchus spirurus</i>	ICN-43356	2021	F
<i>Glyphorhynchus spirurus</i>	ICN-43368	2021	M
<i>Glyphorhynchus spirurus</i>	ICN-43371	2021	F
<i>Lepidothrix velutina</i>	AMNH-118022	1912	M
<i>Lepidothrix velutina</i>	AMNH-118021	1912	M
<i>Lepidothrix velutina</i>	AMNH-118026	1912	M
<i>Lepidothrix velutina</i>	AMNH-118025	1912	F
<i>Lepidothrix velutina</i>	AMNH-155010	1912	M
<i>Lepidothrix velutina</i>	AMNH-155009/438271	1912	M
<i>Lepidothrix velutina</i>	ICN-43097	2021	M
<i>Lepidothrix velutina</i>	ICN-43142	2021	F
<i>Lepidothrix velutina</i>	ICN-43148	2021	M
<i>Lepidothrix velutina</i>	ICN-43151	2021	F
<i>Lepidothrix velutina</i>	ICN-43153	2021	M
<i>Lepidothrix velutina</i>	ICN-43160	2021	M
<i>Lepidothrix velutina</i>	ICN-43167	2021	F
<i>Lepidothrix velutina</i>	ICN-43169	2021	F
<i>Lepidothrix velutina</i>	ICN-43181	2021	M
<i>Lepidothrix velutina</i>	ICN-43196	2021	F
<i>Lepidothrix velutina</i>	ICN-43202	2021	M
<i>Lepidothrix velutina</i>	ICN-43205	2021	M
<i>Lepidothrix velutina</i>	ICN-43223	2021	M
<i>Lepidothrix velutina</i>	ICN-43278	2021	M
<i>Lepidothrix velutina</i>	ICN-43306	2021	M
<i>Lepidothrix velutina</i>	ICN-43345	2021	F
<i>Lepidothrix velutina</i>	ICN-43351	2021	M
<i>Lepidothrix velutina</i>	ICN-43352	2021	F
<i>Lepidothrix velutina</i>	ICN-43354	2021	F
<i>Lepidothrix velutina</i>	ICN-43363	2021	M
<i>Lepidothrix velutina</i>	ICN-43374	2021	M
<i>Lepidothrix velutina</i>	ICN-43453	2021	F
<i>Lepidothrix velutina</i>	ICN-43480	2021	M
<i>Lepidothrix velutina</i>	ICN-43609	2021	M
<i>Lepidothrix velutina</i>	ICN-43625	2021	F
<i>Manacus manacus</i>	AMNH-118042	1912	F
<i>Manacus manacus</i>	AMNH-118040/493395	1912	M
<i>Manacus manacus</i>	AMNH-118038	1912	M
<i>Manacus manacus</i>	AMNH-118039	1912	M
<i>Manacus manacus</i>	AMNH-118041	1912	M
<i>Manacus manacus</i>	AMNH-154996	1912	F
<i>Manacus manacus</i>	AMNH-154998	1912	F
<i>Manacus manacus</i>	AMNH-154991	1912	M
<i>Manacus manacus</i>	AMNH-154992/493394	1912	M
<i>Manacus manacus</i>	AMNH-154990	1912	M
<i>Manacus manacus</i>	ICN-43086	2021	F
<i>Manacus manacus</i>	ICN-43089	2021	M
<i>Manacus manacus</i>	ICN-43112	2021	M
<i>Manacus manacus</i>	ICN-43113	2021	M
<i>Manacus manacus</i>	ICN-43141	2021	M
<i>Manacus manacus</i>	ICN-43144	2021	F

<i>Manacus manacus</i>	ICN-43152	2021	M
<i>Manacus manacus</i>	ICN-43179	2021	M
<i>Manacus manacus</i>	ICN-43185	2021	M
<i>Manacus manacus</i>	ICN-43186	2021	F
<i>Manacus manacus</i>	ICN-43197	2021	M
<i>Manacus manacus</i>	ICN-43198	2021	M
<i>Manacus manacus</i>	ICN-43212	2021	M
<i>Manacus manacus</i>	ICN-43213	2021	M
<i>Manacus manacus</i>	ICN-43260	2021	M
<i>Manacus manacus</i>	ICN-43315	2021	M
<i>Manacus manacus</i>	ICN-43359	2021	F
<i>Manacus manacus</i>	ICN-43500	2021	M
<i>Manacus manacus</i>	ICN-43519	2021	M
<i>Manacus manacus</i>	ICN-43530	2021	M
<i>Manacus manacus</i>	ICN-43531	2021	M
<i>Manacus manacus</i>	ICN-43547	2021	M
<i>Manacus manacus</i>	ICN-43552	2021	M
<i>Manacus manacus</i>	ICN-43558	2021	M
<i>Manacus manacus</i>	ICN-43633	2021	M
<i>Myiobius barbatus</i>	AMNH-117982	1912	M
<i>Myiobius barbatus</i>	AMNH-117980	1912	F
<i>Myiobius barbatus</i>	AMNH-117983	1912	F
<i>Myiobius barbatus</i>	AMNH-117981	1912	F
<i>Myiobius barbatus</i>	AMNH-117984	1912	M
<i>Myiobius barbatus</i>	ICN-43114	2021	M
<i>Myiobius barbatus</i>	ICN-43140	2021	M
<i>Myiobius barbatus</i>	ICN-43147	2021	M
<i>Myiobius barbatus</i>	ICN-43272	2021	F
<i>Myiobius barbatus</i>	ICN-43280	2021	F
<i>Myiobius barbatus</i>	ICN-43343	2021	M
<i>Myiobius barbatus</i>	ICN-43384	2021	M
<i>Myiobius barbatus</i>	ICN-43390	2021	M
<i>Myiobius barbatus</i>	ICN-43407	2021	M
<i>Myiobius barbatus</i>	ICN-43460	2021	M
<i>Mionectes olivaceus</i>	AMNH-117961	1912	M
<i>Mionectes olivaceus</i>	AMNH-117959	1912	U
<i>Mionectes olivaceus</i>	AMNH-117957	1912	F
<i>Mionectes olivaceus</i>	FMNH-50781	1912	U
<i>Mionectes olivaceus</i>	AMNH-117960	1912	M
<i>Mionectes olivaceus</i>	ICN-43098	2021	F
<i>Mionectes olivaceus</i>	ICN-43110	2021	F
<i>Mionectes olivaceus</i>	ICN-43134	2021	M
<i>Mionectes olivaceus</i>	ICN-43154	2021	M
<i>Mionectes olivaceus</i>	ICN-43156	2021	M
<i>Mionectes olivaceus</i>	ICN-43157	2021	M
<i>Mionectes olivaceus</i>	ICN-43159	2021	M
<i>Mionectes olivaceus</i>	ICN-43168	2021	M
<i>Mionectes olivaceus</i>	ICN-43173	2021	M
<i>Mionectes olivaceus</i>	ICN-43338	2021	M
<i>Mionectes olivaceus</i>	ICN-43355	2021	M
<i>Mionectes olivaceus</i>	ICN-43370	2021	M
<i>Mionectes olivaceus</i>	ICN-43402	2021	M

<i>Cantorchilus nigricapillus</i>	AMNH-118085	1912	F
<i>Cantorchilus nigricapillus</i>	USNM-256222	1912	M
<i>Cantorchilus nigricapillus</i>	MCZ-124822	1912	M
<i>Cantorchilus nigricapillus</i>	AMNH-118080	1912	M
<i>Cantorchilus nigricapillus</i>	AMNH-118082	1912	U
<i>Cantorchilus nigricapillus</i>	AMNH-118084	1912	M
<i>Cantorchilus nigricapillus</i>	AMNH-155026	1912	F
<i>Cantorchilus nigricapillus</i>	ICN-43136	2021	F
<i>Cantorchilus nigricapillus</i>	ICN-43357	2021	F
<i>Cantorchilus nigricapillus</i>	ICN-43391	2021	M
<i>Cantorchilus nigricapillus</i>	ICN-43632	2021	M
<i>Cantorchilus nigricapillus</i>	ICN-43635	2021	M
<i>Microbates cinereiventris</i>	MCZ-81827	1912	U
<i>Microbates cinereiventris</i>	MCZ-81826	1912	M
<i>Microbates cinereiventris</i>	AMNH-117836	1912	F
<i>Microbates cinereiventris</i>	AMNH-117834	1912	U
<i>Microbates cinereiventris</i>	AMNH-117835	1912	M
<i>Microbates cinereiventris</i>	ICN-43092	2021	F
<i>Microbates cinereiventris</i>	ICN-43255	2021	M
<i>Microbates cinereiventris</i>	ICN-43329	2021	M
<i>Microbates cinereiventris</i>	ICN-43344	2021	F
<i>Microbates cinereiventris</i>	ICN-43365	2021	M
<i>Microbates cinereiventris</i>	ICN-43408	2021	M
<i>Microbates cinereiventris</i>	ICN-43415	2021	M
<i>Microbates cinereiventris</i>	ICN-43421	2021	F
<i>Microbates cinereiventris</i>	ICN-43423	2021	M
<i>Microbates cinereiventris</i>	ICN-43454	2021	F
<i>Microbates cinereiventris</i>	ICN-43466	2021	F
<i>Tachyphonus delatii</i>	AMNH-118326	1912	U
<i>Tachyphonus delatii</i>	AMNH-118325	1912	M
<i>Tachyphonus delatii</i>	AMNH-118324	1912	U
<i>Tachyphonus delatii</i>	AMNH-118322	1912	F
<i>Tachyphonus delatii</i>	AMNH-155185	1912	M
<i>Tachyphonus delatii</i>	AMNH-155183/441340	1912	M
<i>Tachyphonus delatii</i>	AMNH-155184	1912	M
<i>Tachyphonus delatii</i>	AMNH-155182	1912	M
<i>Tachyphonus delatii</i>	ICN-43099	2021	M
<i>Tachyphonus delatii</i>	ICN-43101	2021	F
<i>Tachyphonus delatii</i>	ICN-43124	2021	M
<i>Tachyphonus delatii</i>	ICN-43126	2021	F
<i>Tachyphonus delatii</i>	ICN-43143	2021	M
<i>Tachyphonus delatii</i>	ICN-43146	2021	M
<i>Tachyphonus delatii</i>	ICN-43176	2021	M
<i>Tachyphonus delatii</i>	ICN-43178	2021	M
<i>Tachyphonus delatii</i>	ICN-43184	2021	F
<i>Tachyphonus delatii</i>	ICN-43346	2021	M
<i>Tachyphonus delatii</i>	ICN-43358	2021	M
<i>Ramphocelus flammigerus</i>	AMNH-118297	1912	U
<i>Ramphocelus flammigerus</i>	AMNH-118295	1912	F
<i>Ramphocelus flammigerus</i>	AMNH-118294	1912	F
<i>Ramphocelus flammigerus</i>	AMNH-118296	1912	M
<i>Ramphocelus flammigerus</i>	AMNH-118293	1912	M

<i>Ramphocelus flammigerus</i>	AMNH-155165	1912	M
<i>Ramphocelus flammigerus</i>	AMNH-155164/441269	1912	F
<i>Ramphocelus flammigerus</i>	ICN-43208	2021	F
<i>Ramphocelus flammigerus</i>	ICN-43243	2021	M
<i>Ramphocelus flammigerus</i>	ICN-43261	2021	M
<i>Ramphocelus flammigerus</i>	ICN-43273	2021	F
<i>Ramphocelus flammigerus</i>	ICN-43296	2021	M
<i>Ramphocelus flammigerus</i>	ICN-43300	2021	M
<i>Ramphocelus flammigerus</i>	ICN-43507	2021	F
<i>Ramphocelus flammigerus</i>	ICN-43521	2021	F
<i>Ramphocelus flammigerus</i>	ICN-43548	2021	M
<i>Ramphocelus flammigerus</i>	ICN-43569	2021	M
<i>Ramphocelus flammigerus</i>	ICN-43570	2021	M
<i>Ramphocelus flammigerus</i>	ICN-43571	2021	M
<i>Sporophila corvina</i>	AMNH-118156	1912	M
<i>Sporophila corvina</i>	AMNH-118155	1912	F
<i>Sporophila corvina</i>	AMNH-118154	1912	M
<i>Sporophila corvina</i>	AMNH-118153	1912	M
<i>Sporophila corvina</i>	AMNH-155052	1912	M
<i>Sporophila corvina</i>	AMNH-155053	1912	F
<i>Sporophila corvina</i>	AMNH-155051	1912	M
<i>Sporophila corvina</i>	ICN-43265	2021	M
<i>Sporophila corvina</i>	ICN-43266	2021	M
<i>Sporophila corvina</i>	ICN-43308	2021	F
<i>Sporophila corvina</i>	ICN-43311	2021	F
<i>Sporophila corvina</i>	ICN-43488	2021	F
<i>Sporophila corvina</i>	ICN-43489	2021	M
<i>Sporophila corvina</i>	ICN-43490	2021	M
<i>Sporophila corvina</i>	ICN-43491	2021	F
<i>Sporophila corvina</i>	ICN-43493	2021	M
<i>Sporophila corvina</i>	ICN-43498	2021	M
<i>Sporophila corvina</i>	ICN-43501	2021	M
<i>Sporophila corvina</i>	ICN-43502	2021	M
<i>Sporophila corvina</i>	ICN-43506	2021	F
<i>Sporophila corvina</i>	ICN-43516	2021	F
<i>Sporophila corvina</i>	ICN-43572	2021	M
<i>Sporophila nigricollis</i>	AMNH-118152	1912	F
<i>Sporophila nigricollis</i>	AMNH-118149	1912	M
<i>Sporophila nigricollis</i>	AMNH-118150	1912	F
<i>Sporophila nigricollis</i>	AMNH-118147	1912	M
<i>Sporophila nigricollis</i>	AMNH-118146	1912	M
<i>Sporophila nigricollis</i>	AMNH-118148/441408	1912	M
<i>Sporophila nigricollis</i>	ICN-43529	2021	F
<i>Sporophila nigricollis</i>	ICN-43533	2021	M
<i>Sporophila nigricollis</i>	ICN-43555	2021	M
<i>Sporophila nigricollis</i>	ICN-43557	2021	F
<i>Sporophila nigricollis</i>	ICN-43560	2021	F
<i>Sporophila nigricollis</i>	ICN-43561	2021	F
<i>Sporophila nigricollis</i>	ICN-43563	2021	M
<i>Sporophila nigricollis</i>	ICN-43566	2021	M
<i>Sporophila nigricollis</i>	ICN-43567	2021	F
<i>Sporophila nigricollis</i>	ICN-43568	2021	M

<i>Saltator maximus</i>	AMNH-118203	1912	M
<i>Saltator maximus</i>	AMNH-118204	1912	M
<i>Saltator maximus</i>	AMNH-118201	1912	U
<i>Saltator maximus</i>	AMNH-118200	1912	F
<i>Saltator maximus</i>	AMNH-118202	1912	M
<i>Saltator maximus</i>	ICN-43295	2021	M
<i>Saltator maximus</i>	ICN-43307	2021	U
<i>Saltator maximus</i>	ICN-43573	2021	M
<i>Saltator maximus</i>	ICN-43577	2021	M
<i>Saltator maximus</i>	ICN-43579	2021	M
<i>Saltator maximus</i>	ICN-43594	2021	F
<i>Stilpnia larvata</i>	AMNH-118275	1912	M
<i>Stilpnia larvata</i>	AMNH-118274	1912	F
<i>Stilpnia larvata</i>	AMNH-118273	1912	U
<i>Stilpnia larvata</i>	AMNH-118270	1912	M
<i>Stilpnia larvata</i>	AMNH-118272/441150	1912	M
<i>Stilpnia larvata</i>	AMNH-118271	1912	M
<i>Stilpnia larvata</i>	ICN-43248	2021	F
<i>Stilpnia larvata</i>	ICN-43250	2021	F
<i>Stilpnia larvata</i>	ICN-43271	2021	F
<i>Stilpnia larvata</i>	ICN-43297	2021	M
<i>Stilpnia larvata</i>	ICN-43309	2021	M
<i>Stilpnia larvata</i>	ICN-43523	2021	M

Table S2. Species, sampling summary, and average of the traits for historical (1912) and modern (2021) comparisons. Total bill length (TBL), bill from nostrils (BN), maxilla depth (MS), bill width (BW), maxilla area (MA)wing length (WL), and hand-wing index (HWI). Units in mm (mm² in MA).

Species	Time	Sample	TBL	BN	MD	BW	MA	Tarsu s	WL	HWI	Tail
<i>Florisuga mellivora</i>	1912	8	25.23	17.34	2.35	2.64	199.19	NA	67.71	66.25	32.88
<i>Florisuga mellivora</i>	2021	7	26.42	17.42	2.21	2.53	196.86	NA	61.86	67.93	31.76
<i>Phaethornis striigularis</i>	1912	3	23.25	18.48	1.64	1.92	129.68	NA	36.84	64.60	33.33
<i>Phaethornis striigularis</i>	2021	12	23.99	18.44	1.53	1.91	129.58	NA	34.78	66.97	33.15
<i>Androdon aequatorialis</i>	1912	5	42.00	35.12	2.90	3.21	374.91	NA	65.93	59.32	40.33
<i>Androdon aequatorialis</i>	2021	10	43.65	36.84	2.72	3.03	393.4	NA	64.33	61.39	40.27
<i>Polyerata rosenbergi</i>	1912	11	25.66	19.74	1.83	2.27	168.08	NA	51.17	63.06	25.78
<i>Polyerata rosenbergi</i>	2021	11	25.62	19.08	1.82	2.19	161.27	NA	50.21	64.75	27.15
<i>Malacoptila panamensis</i>	1912	6	32.77	22.02	7.04	8.49	814.03	19.12	88.20	19.19	70.56
<i>Malacoptila panamensis</i>	2021	9	33.62	21.96	7.17	8.35	819.72	17.84	86.37	22.27	71.30
<i>Thamnophilus atrinucha</i>	1912	9	22.70	12.67	4.89	5.12	358.02	21.64	69.74	10.14	51.85
<i>Thamnophilus atrinucha</i>	2021	10	23.24	13.08	4.73	5.52	374.33	21.44	68.17	8.96	53.30
<i>Myrmotherula pacifica</i>	1912	4	16.95	9.53	2.50	3.46	158.61	17.30	50.50	10.11	24.92
<i>Myrmotherula pacifica</i>	2021	11	17.32	9.94	2.67	3.59	170.45	17.99	51.30	10.67	27.36
<i>Poliocrania exsul</i>	1912	14	20.69	11.19	3.73	4.45	266.22	26.67	62.57	9.90	37.15
<i>Poliocrania exsul</i>	2021	10	20.95	11.62	3.84	4.53	275.54	26.48	62.23	8.56	38.37
<i>Gymnopathys bicolor</i>	1912	9	21.99	12.92	4.32	4.95	320.14	28.99	79.26	11.02	45.70
<i>Gymnopathys bicolor</i>	2021	11	22.22	13.15	4.36	4.98	325.98	29.25	77.64	10.65	46.52
<i>Hylophylax naevioides</i>	1912	6	18.99	10.15	3.41	4.59	234.67	22.34	61.78	13.46	32.28
<i>Hylophylax naevioides</i>	2021	11	18.42	10.36	3.52	4.72	238.32	22.41	61.55	12.48	34.09
<i>Glyphorhynchus spirurus</i>	1912	6	13.07	8.55	2.78	3.94	137.98	16.18	67.17	20.97	60.67
<i>Glyphorhynchus spirurus</i>	2021	14	12.87	8.33	3.08	3.86	140.21	16.16	66.57	21.87	60.33
<i>Lepidothrix velutina</i>	1912	6	10.32	5.39	2.42	3.22	91.61	13.72	55.83	15.49	21.95
<i>Lepidothrix velutina</i>	2021	25	10.10	5.61	2.66	3.38	95.81	13.60	55.48	16.00	23.56
<i>Manacus manacus</i>	1912	10	12.85	6.53	3.00	3.97	141.01	20.10	52.10	15.23	25.96
<i>Manacus manacus</i>	2021	25	12.69	6.49	3.15	3.92	141.22	20.68	51.56	15.50	26.83
<i>Myiobius barbatus</i>	1912	5	13.27	6.30	2.46	4.06	137.48	16.84	58.42	13.64	48.75
<i>Myiobius barbatus</i>	2021	10	14.09	6.75	2.86	4.45	161.84	16.98	61.37	15.65	49.60
<i>Mionectes olivaceus</i>	1912	5	15.91	9.32	3.06	4.03	178.68	16.47	63.27	17.38	44.87
<i>Mionectes olivaceus</i>	2021	13	16.46	9.67	3.10	4.14	187.42	16.37	65.51	16.63	47.17
<i>Cantorchilus nigricapillus</i>	1912	7	21.17	12.59	3.32	3.95	237.93	24.35	65.33	9.62	45.83
<i>Cantorchilus nigricapillus</i>	2021	5	21.62	12.82	3.34	4.05	251.20	24.46	64.00	10.77	46.87
<i>Microbates cinereiventris</i>	1912	5	19.26	9.48	2.32	3.33	161.59	22.45	51.20	9.35	25.00
<i>Microbates cinereiventris</i>	2021	11	20.79	12.07	2.61	3.58	201.99	23.35	51.91	9.13	27.82
<i>Tachyphonus delatrii</i>	1912	8	15.71	9.34	4.09	4.63	217.23	18.80	71.04	15.34	57.38
<i>Tachyphonus delatrii</i>	2021	11	15.86	9.20	4.28	4.70	223.72	18.86	68.45	15.37	56.45
<i>Ramphocelus flammigerus</i>	1912	7	20.10	13.22	5.79	7.39	416.29	23.36	82.67	14.05	66.44
<i>Ramphocelus flammigerus</i>	2021	12	20.09	13.13	5.89	7.54	423.96	23.29	81.61	15.71	68.56
<i>Sporophila corvina</i>	1912	7	12.26	7.39	4.57	5.23	188.54	15.83	52.57	14.36	39.33
<i>Sporophila corvina</i>	2021	15	12.22	7.18	4.66	5.18	188.9	15.72	52.73	15.85	42.84
<i>Sporophila nigricollis</i>	1912	6	10.72	6.06	3.56	4.47	135.62	14.60	53.92	16.59	40.07
<i>Sporophila nigricollis</i>	2021	10	9.63	5.40	3.58	4.15	116.99	13.86	51.59	19.39	41.17
<i>Saltator maximus</i>	1912	5	22.48	14.19	7.55	8.74	575.19	25.39	96.59	14.80	76.20
<i>Saltator maximus</i>	2021	6	22.56	14.04	7.60	8.75	579.68	25.67	95.89	16.98	81.67

<i>Stilpnia larvata</i>	1912	6	13.58	6.93	3.25	4.21	159.42	16.39	68.00	21.18	41.72
<i>Stilpnia larvata</i>	2021	6	13.94	7.37	3.26	3.99	158.76	16.62	66.50	22.00	43.73

Table S3. Statistical summary of morphological traits: repeatability, Pagel's lambda (λ , top values correspond to the trait; bottom values correspond to its delta), missing data, and Potential Scale Reduction Factor (PSRF) where values close to 1 indicate convergence and values much higher than 1 indicate no convergence (Gelman and Rubin 1992).

Trait	Missing data	Repeatability	λ	PSR F trait	PSRF PC1 ratios Hummingbirds	PSRF PC1 ratios non- Hummingbirds
Total bill length	17	0.98	0.012 0.066	1.04	1.01	1.03
Bill length from nares	19	0.98	0.011 0.092	1.04	1.01	1.04
Bill depth	123	0.99	-	-	-	-
Maxilla depth	16	0.99	0.012 0.138	1.04	1.01	1.04
Bill width	16	0.99	0.012 0.085	1.04	1.01	1.03
Maxilla area	31	NA	0.011 0.059	1.05	1.01	1.04
HWI	34	0.98 (Kipp's distance)	NA	1.01	1.01	-
Tarsus	67 hummingbirds 3 non-hummingbirds	0.91	0.016 0.012	1.04	1.01	1.03
Wing	10	0.89	0.011 0.097	1.04		1.03
Tail	27	0.99	0.011 0.078	1.03	1.01	1.04
PC1 Humming birds	-	-	NA	1.01	-	-
PC1 non-Humming birds	-	-	0.016 0.128	1.03	-	-

Table S4. Coefficients of variation for morphometric traits per species. In gray the coefficients above 10%.

#	Species	Total bill length	Bill length from nostrils	Bill depth	Maxilla depth	Bill width	HWI	Tarsus	Wing length	Tail length
1	<i>Florisuga mellivora</i>	4.95	4.47	6.30	6.59	4.55	2.31	NA	5.08	5.23
2	<i>Phaethornis striigularis</i>	3.75	4.80	6.26	6.99	9.84	4.81	NA	4.37	7.24
3	<i>Androdon aequatorialis</i>	3.56	4.09	12.54	8.07	11.94	2.66	NA	2.75	3.29
4	<i>Polyerata rosenbergi</i>	4.22	4.61	9.01	6.63	6.66	2.93	NA	4.66	6.20
5	<i>Malacoptila panamensis</i>	3.23	2.91	2.51	4.06	5.44	10.12	4.47	2.35	5.05
6	<i>Thamnophilus atrinucha</i>	3.49	9.85	2.44	11.99	9.45	14.09	2.50	2.91	4.89
7	<i>Myrmotherula pacifica</i>	2.24	3.45	4.17	3.91	3.86	16.03	3.13	2.52	5.56
8	<i>Poliocrania exsul</i>	2.08	4.77	4.09	3.89	3.89	19.96	3.28	2.71	5.50
9	<i>Gymnopithys bicolor</i>	1.77	3.26	3.31	4.23	4.51	17.33	2.83	2.40	3.04
10	<i>Hylophylax naevioides</i>	3.71	3.47	3.17	3.16	4.16	10.25	2.25	1.40	3.45
11	<i>Glyphorynchus spirurus</i>	2.56	4.65	4.91	6.38	4.11	9.74	3.26	3.91	4.37
12	<i>Lepidothrix velutina</i>	7.23	7.11	6.62	6.73	8.00	8.84	2.75	2.20	4.46
13	<i>Manacus manacus</i>	2.57	4.46	4.40	5.73	7.48	13.84	4.02	2.73	4.97
14	<i>Myiobius barbatus</i>	6.14	7.99	3.96	10.15	12.11	18.47	5.25	3.71	5.38
15	<i>Mionectes olivaceus</i>	3.82	3.90	4.81	4.10	5.58	9.63	3.79	4.33	5.14
16	<i>Cantorchilus nigricapillus</i>	5.47	5.42	2.77	6.14	5.74	23.05	3.43	4.61	5.88
17	<i>Microbates cinereiventris</i>	6.19	11.09	6.55	7.49	5.96	12.34	3.78	3.69	12.04
18	<i>Tachyphonus delatrii</i>	4.74	5.67	4.43	4.33	5.01	9.39	3.23	4.64	3.62
19	<i>Ramphocelus flammigerus</i>	2.98	3.46	3.70	2.20	3.03	11.31	3.74	3.10	3.47
20	<i>Sporophila corvina</i>	4.60	3.97	3.38	3.79	3.38	10.15	3.66	2.62	4.56
21	<i>Sporophila nigricollis</i>	6.70	10.14	2.61	4.42	5.40	8.96	5.15	3.41	4.58
22	<i>Saltator maximus</i>	2.54	3.47	3.50	2.79	3.17	11.55	3.62	2.32	5.11
23	<i>Stilpnia larvata</i>	3.56	4.58	5.29	3.85	5.86	8.49	2.18	3.82	4.86

Table S5. Summary of PCA loadings and cumulative variance contributions in the four hummingbird species.

	PC1	PC2	PC3	PC4	PC5	PC6	PC7
Total bill length	-0.40	0.34	-0.33	0.25	0.02	-0.64	-0.38
Bill length from nostrils	-0.36	0.46	-0.42	0.19	-	0.50	0.42
Maxilla depth	-0.43	-0.10	0.03	-0.23	0.86	0.10	0.07
Bill width	-0.42	-0.11	-0.08	-0.79	-	-0.10	0.01
Kipp's distance	-0.35	-0.50	0.15	0.37	-	-0.33	0.57
Wing length	-0.38	-0.43	0.01	0.29	-	0.46	-0.59
Tail length	-0.30	0.46	0.83	0.06	-	0.04	-0.04
Standard deviation	2.24	1.16	0.64	0.41	0.24	0.11	0.09
Proportion of Variance	0.72	0.19	0.06	0.02	0.01	0.00	0.00
Cumulative Proportion	0.72	0.91	0.97	0.99	1.00	1.00	1.00

Table S6. Summary of PCA loadings and cumulative variance contributions in the 19 non-hummingbird study species.

	PC1	PC2	PC3	PC4	PC5	PC6	PC7
Total bill length	-0.39	-0.40	-0.13	-0.42	-0.05	0.09	0.70
Bill length from nostrils	-0.41	-0.29	-0.18	-0.46	-0.05	-0.15	-0.69
Maxilla depth	-0.39	0.29	0.54	-0.02	0.03	-0.67	0.13
Bill width	-0.40	0.29	0.47	-0.08	0.02	0.72	-0.11
Tarsus	-0.28	-0.63	0.22	0.68	-0.14	0.03	-0.08
Wing length	-0.40	0.18	-0.42	0.29	0.74	-0.01	0.02
Tail length	-0.36	0.41	-0.46	0.25	-0.65	-0.01	0.04
Standard deviation	2.22	1.07	0.63	0.56	0.39	0.23	0.14
Proportion of Variance	0.70	0.16	0.06	0.04	0.02	0.01	0.00
Cumulative Proportion	0.70	0.87	0.92	0.97	0.99	1.00	1.00

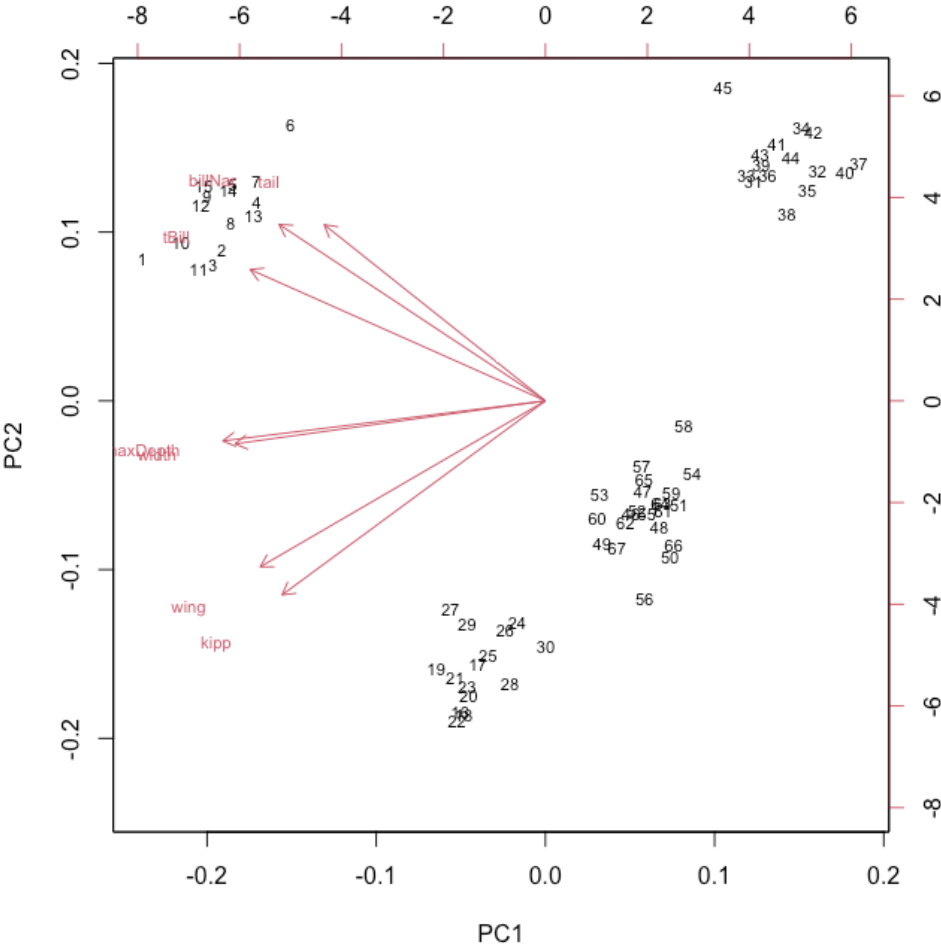


Fig. S1 Biplot of the PCA for hummingbirds (four species) from seven morphometric variables.

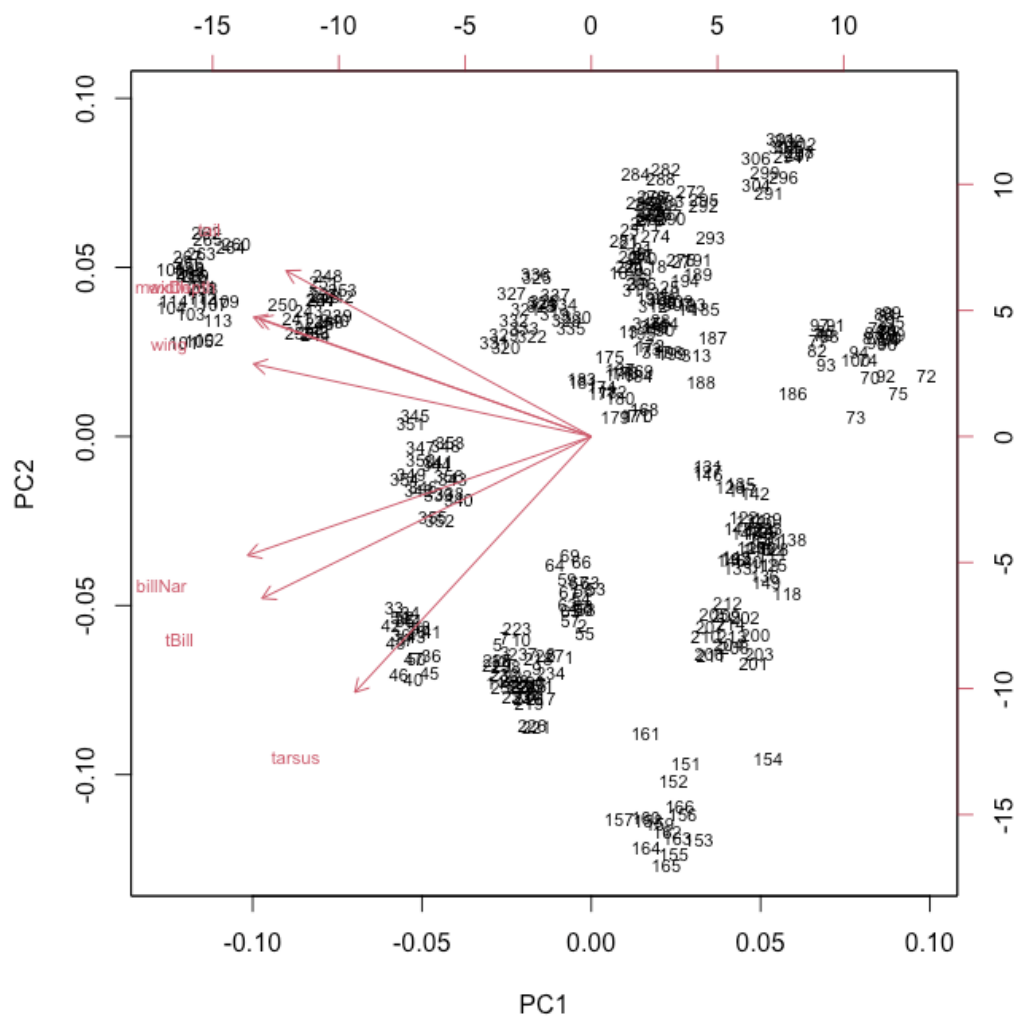


Fig. S2 Biplot of the PCA for non-hummingbirds (19 species) from seven morphometric variables.

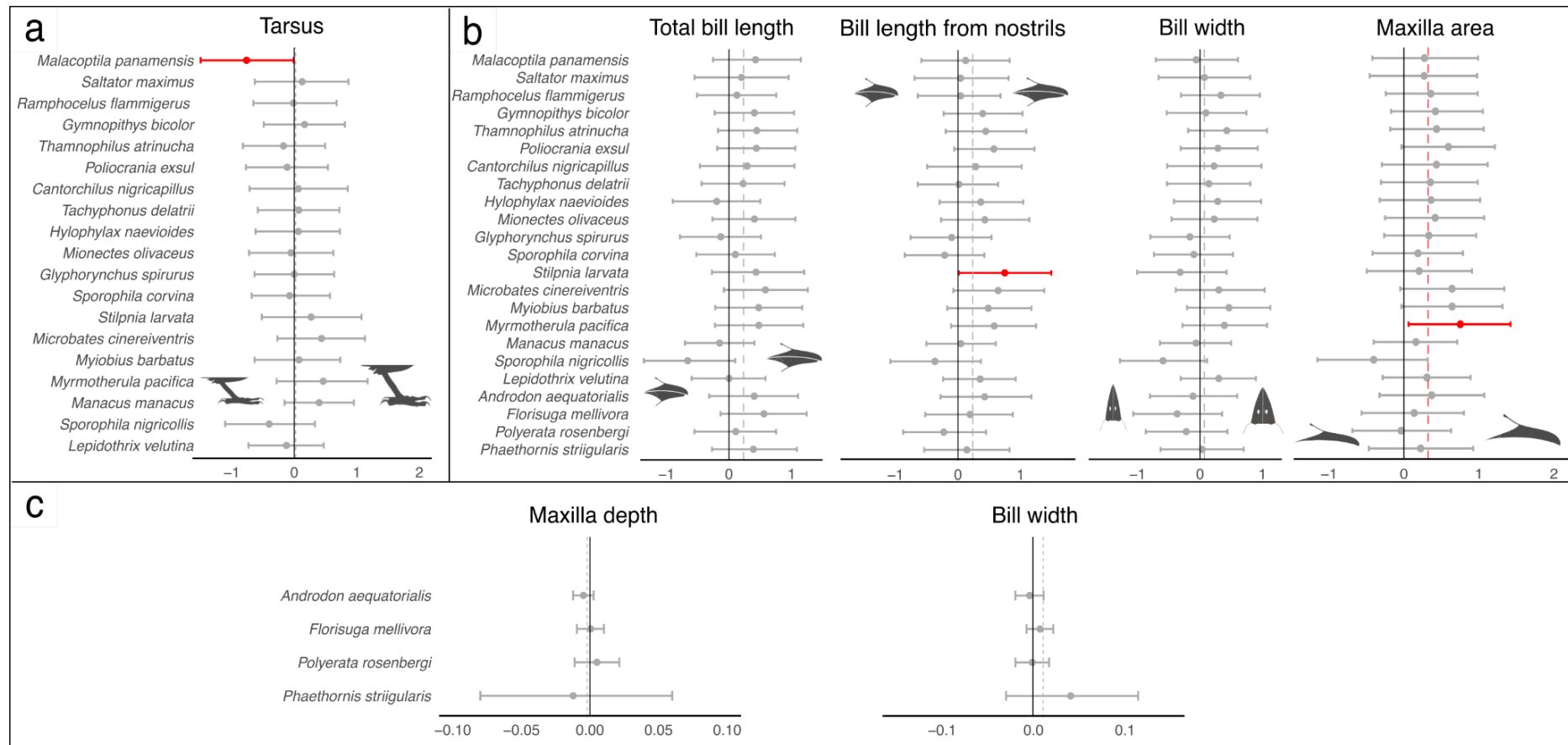


Fig. S3 Morphological trait size comparison between historical (1912) and modern (2021) specimens for tarsus in non-hummingbirds (a), bill traits (b), and in relation to PC1 loading (c). Solid line in red, indicates 95% credible intervals do not cross zero. Points represent mean values. The dotted gray line shows the group mean (i.e. model hyper-parameter). Species are arranged by order of body size according to PC1 loadings.



Fig. S4 Photographs of study species, arranged phylogenetically by family. Trochilidae: (A) *Florisuga mellivora*, (B) *Phaethornis striigularis*, (C) *Androdon aequatorialis*, (D) *Polyerata rosenbergi*; Bucconidae: (E) *Malacoptila panamensis*; Thamnophilidae: (F) *Thamnophilus atrinucha*, (G) *Myrmotherula pacifica*, (H) *Poliocrania exsul*, (I) *Gymnopithys bicolor*, (J) *Hylophylax naevioides*; Furnariidae: (K) *Glyphorhynchus spirurus*; Pipridae: (L) *Lepidothrix velutina*, (M) *Manacus manacus*; Onychorhynchidae: (N) *Myiobius barbatus*; Tyrannidae: (O) *Mionectes olivaceus*; Troglodytidae: (P) *Cantorchilus nigricapillus*; Polioptilidae: (Q) *Microbates cinereiventris*; Thraupidae: (R) *Tachyphonus delatrii*, (S) *Ramphocelus flammigerus*, (T) *Sporophila corvina*, (U) *Sporophila nigricollis*, (V) *Saltator maximus*, (W) *Stilpnia larvata*. All photos by AMC except: (A) Félix Uribe; (B) Juan P. Arboleda; (G) Fernando Ayerbe (U) Carlos I. Restrepo; (T) Egon Fink; (V) Jairo Cadavid; and (W) Guillermo Gomez. For details, see Table 1 in main text.

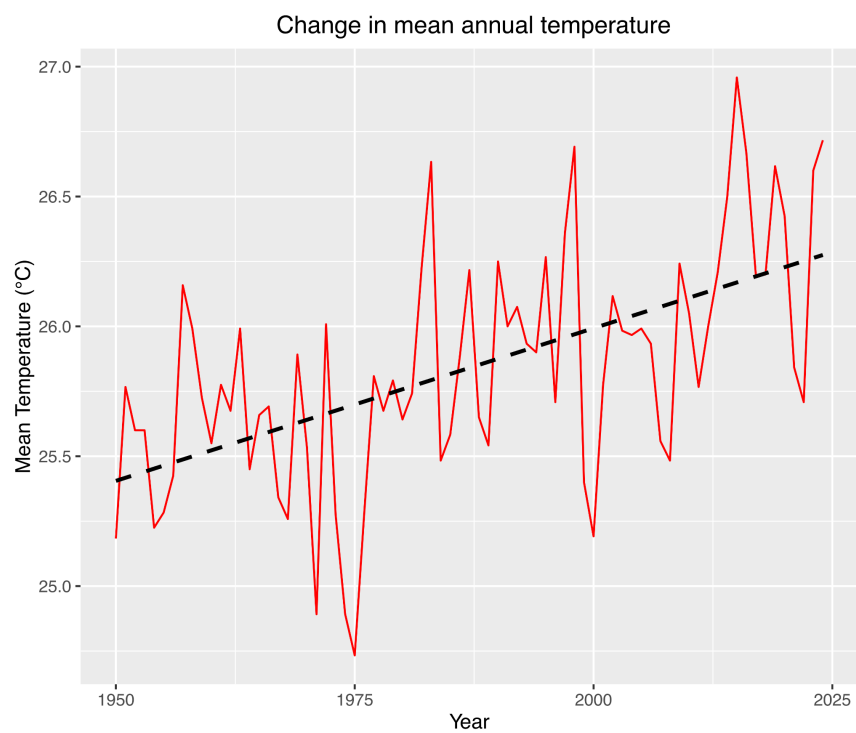


Fig. S5 Variation of the mean annual temperature in the sampling region between 1950 to 2025.

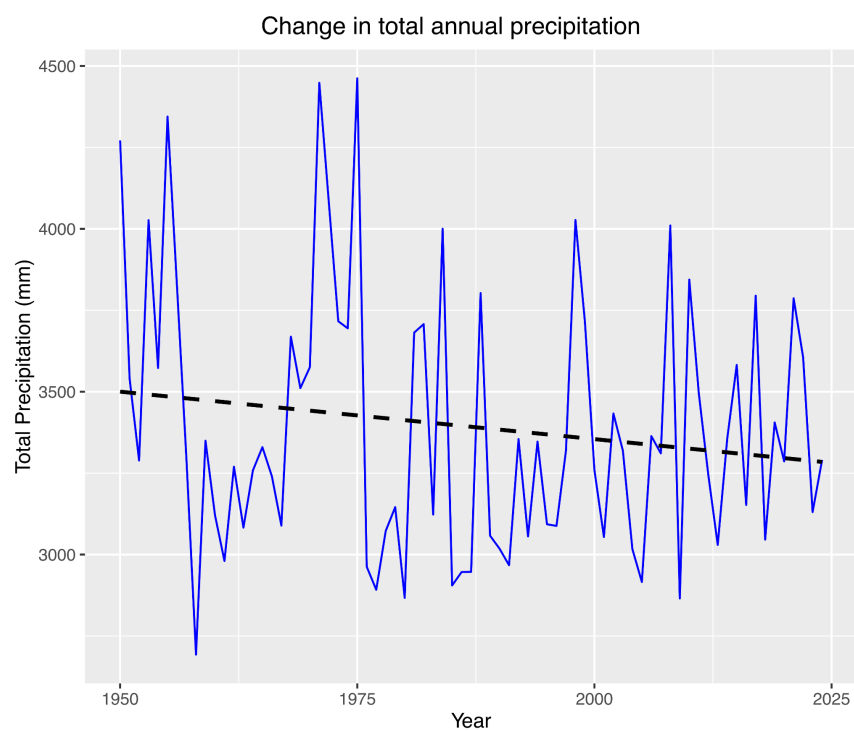


Fig. S6 Variation of the total precipitation in the sampling region between 1950 to 2025.