SUPPLEMENTARY MATERIALS

Supplementary tables

Table S1: Total numbers of individuals of Darwin's finches sampled in four different habitats in Santa Cruz Island and from museum specimens.

Species	Common name	Dry	Transition	Humid	Farm	Museum	*Total*
Darwin's finches:							
Geospiza fuliginosa	Small Ground Finch (SGF)	24	20	20	19		**83**
Geospiza fortis	Medium Ground Finch (MGF)	30	9	6	6		**51**
Geospiza magnirostris	Large Ground Finch (LGF)	10	8	9		9	**36**
Geospiza scandens	Common Cactus Finch (CF)	9				7	**16**
Camarhynchus parvulus	Small Tree Finch (STF)	5	7	8	12	3	**35**
Camarhynchus pallidus	Woodpecker Finch (WF)		2	2	2		**6**
Carthidea olivacea	Green Warbler Finch (GWF)		2	8			**10**
Platyspiza crassirostris	Vegetarian Finch (VF)	7	1		5		**13**
	Total	**85**	**49**	**53**	**44**	**19**	**250**

Table S2: Museum collections at the Vertebrate Collection of the Charles Darwin Research Station (VCCDRS) in Puerto Ayora, Santa Cruz Island.

Accession number	Species	Date collected	Year	Altitude	Island	Latitude	Longitude
690	CF	3/1/62	1962	698	Santa Cruz	-0.637008	-90.33425
693	CF	7/19/62	1962	698	Santa Cruz	-0.637008	-90.33425
697	CF	2/27/62	1962	698	Santa Cruz	-0.637008	-90.33425
698	CF	3/1/62	1962	7	Santa Cruz	-0.74858	-90.311877
762	CF	12/1/68	1968	7	Santa Cruz	-0.74858	-90.311877
1990	CF	2/27/62	1962	7	Santa Cruz	-0.637008	-90.33425
2136	CF	6/8/11	2011	10	Santa Cruz	-0.742333	-90.303277
709	LGF	13/2/1963	1963	10	Santa Cruz	-0.742388	-90.304275
718	LGF	2/3/62	1962	698	Santa Cruz	-0.637008	-90.33425
765	LGF	24/5/1977	1977	7	Santa Cruz	-0.74858	-90.311877
766	LGF	26/9/1962	1962		Santa Cruz	0	0
767	LGF	1/12/68	1968	7	Santa Cruz	-0.74858	-90.311877
1357	LGF	31/8/2000	2000	271	Santa Cruz	0	0
1941	LGF	28/9/2006	2006		Santa Cruz	0	0
1986	LGF	10/11/00	2000	7	Santa Cruz	-0.748961	-90.304275
2141	LGF	21/9/2010	2010	7	Santa Cruz	-0.637008	-90.33425
726	STF	25/10/1962	1962	190	Santa Cruz	0	0
749	STF	27/8/1962	1962	698	Santa Cruz	-0.637008	-90.33425
2080	STF	11/2/63	1963	698	Santa Cruz	-0.637008	-90.33425

Table S3: Best two generalized linear models (GLM) that explain variation in feather $\delta^{13}C$, $\delta^{15}N$ and $\delta^{2}H$ values in each dataset analyzed: A) Live birds (N=231), and B) Species with live and museum data (N=85). Significant parameters are in bold.

Model	Parameter	Estimate	SE	*p*-value
A. LIVE BIRDS (N=231)				
$\delta^{13}C$ ~ Mass + Species + Site	(Intercept)	-19.178	1.695	**<0.0001**
	Mass	-0.021	0.06	0.728
	Species (Ref. = CF)			
	Species GWF	-3.687	1.625	**0.024**
	Species LGF	-0.726	1.218	0.551
	Species MGF	-2.591	1.097	**0.019**
	Species SGF	-0.558	1.205	0.643
	Species STF	-2.292	1.307	0.081
	Species VF	-2.278	1.302	0.081
	Species WF	-3.139	1.564	**0.046**
	Site (Ref. = Barranco)			
	Site Canal	1.665	1.224	0.175
	Site Farm B	1.607	1.088	0.141
	Site Garrapatero	0.645	1.076	0.549
	Site Gemelos	-0.943	1.145	0.411
	Site Granillo Negro	-0.843	1.140	0.460
	Site Granillo Rojo	-1.526	1.182	0.197
	Site Farm A	0.631	1.209	0.602
	Site Manzanillo	-0.908	1.137	0.425
	Site Media Luna	-0.421	1.211	0.728
$\delta^{13}C$ ~ Mass + Guild + Habitat	(Intercept)	18.701	0.801	**<0.0001**
	Mass	-0.121	0.042	**0.004**
	Guild (Ref. = Graniv.)			
	Guild Herbivorous	1.087	0.587	0.065
	Guild Insectivorous	-1.844	0.501	**0.0002**
	Habitat (Ref. = Dry)			
	Habitat Farm	1.374	0.531	**0.010**
	Habitat Humid	-0.772	0.504	0.127
	Habitat Transition	-1.139	0.503	**0.025**
$\delta^{15}N$ ~ Mass + Guild + Habitat	(Intercept)	2.277	0.048	**<0.0001**
	Mass	0.002	0.002	0.051
	Guild (Ref. = Graniv.)			
	Guild Herbivorous	0.019	0.035	0.771
	Guild Insectivorous	0.095	0.029	**0.001**
	Habitat (Ref. = Dry)			
	Habitat Farm	-0.074	0.032	**0.024**
	Habitat Humid	-0.039	0.030	0.195
	Habitat Transition	-0.023	0.030	0.141
$\delta^{15}N$ ~ Mass	(Intercept)	2.298	0.036	**<0.0001**
	Mass	0.0002	0.001	0.911
$\delta^{2}H$ ~ Mass + Species + Site	(Intercept)	-51.85	5.47	**<0.0001**
	Mass	0.046	0.194	0.812
	Species (Ref. = CF)			
	Species GWF	10.684	5.252	**0.043**
	Species LGF	-8.040	3.935	**0.042**
	Species MGF	-2.695	3.545	0.447
	Species SGF	2.120	3.895	0.586
	Species STF	9.157	4.225	**0.031**
	Species VF	-0.618	4.206	0.883
	Species WF	14.465	5.055	**0.004**
	Site (Ref. = Barranco)			
	Site Canal	5.390	3.957	0.174
	Site Farm B	-7.057	3.157	**0.046**
	Site Garrapatero	0.140	3.477	0.967
	Site Gemelos	-7.965	3.702	**0.032**
	Site Granillo Negro	-7.212	3.683	0.051
	Site Granillo Rojo	-11.699	3.189	**0.002**
	Site Farm A	-5.417	3.907	0.167
	Site Manzanillo	-0.316	3.674	0.931
	Site Media Luna	-6.857	3.913	0.081

Table S3: Continued.

Model	Parameter	Estimate	SE	*p*-value
δ^2H ~ Species + Altitude + Habitat	(Intercept)	-49.856	2.866	**<0.0001**
	Species (Ref. = CF)			
	Species GWF	11.215	4.258	**0.009**
	Species LGF	-7.284	3.463	**0.036**
	Species MGF	-1.264	3.187	0.692
	Species SGF	2.779	3.195	0.385
	Species STF	9.573	3.458	**0.006**
	Species VF	-0.878	3.796	0.817
	Species WF	15.419	4.715	**0.001**
	Altitude	-0.032	0.005	**<0.0001**
	Habitat (Ref. = Dry)			
	Habitat Farm	-1.101	1.812	0.544
	Habitat Humid	9.783	2.961	**0.001**
	Habitat Transition	3.647	1.965	0.064
B. Species with live and museum data (N=85)				
$\delta^{13}C$ ~ Species + Habitat	(Intercept)	-18.562	0.800	**<0.0001**
	Species (Ref. = CF)			
	Species LGF	-2.411	0.929	**0.011**
	Species STF	-4.131	1.036	**<0.0001**
	Habitat (Ref. = Dry)			
	Habitat Farm	3.016	1.164	**0.011**
	Habitat Humid	-0.182	0.955	0.849
	Habitat Museum	1.875	0.888	**0.037**
	Habitat Transition	-0.669	0.986	0.499
$\delta^{13}C$ ~ Habitat + Site	(Intercept)	-22.20	0.808	**<0.0001**
	Habitat (Ref. = Dry)			
	Habitat Farm	0.224	1.565	0.866
	Habitat Humid	-1.053	1.445	1.468
	Habitat Museum	1.944	1.171	0.101
	Habitat Transition	-0.192	1.143	0.866
	Site (No Ref)			
	Site Barranco	1.727	1.565	0.273
	Site Canal	2.159	2.060	0.298
	Site Farm B	3.391	1.641	0.042
	Site Garrapatero	4.480	1.295	**0.001**
	Site Gemelos	1.828	1.426	0.204
	Site Granillo Rojo	-0.192	1.565	0.902
	Site Museum	4.489	1.321	**0.001**
$\delta^{15}N$ ~ Origin + Species	(Intercept)	11.387	0.575	**<0.0001**
	Origin (Ref. = Live)			
	Origin Museum	1.272	0.587	**0.033**
	Species (Ref. = CF)			
	Species LGF	-1.781	0.638	**0.006**
	Species STF	-1.011	0.654	0.126
$\delta^{15}N$ ~ Species + Habitat	(Intercept)	11.267	0.578	**<0.0001**
	Species (Ref. = CF)			
	Species LGF	-2.138	0.672	**0.002**
	Species STF	-1.006	0.749	0.183
	Habitat (Ref. = Dry)			
	Habitat Farm	-0.791	0.842	0.350
	Habitat Humid	0.950	0.690	0.172
	Habitat Museum	1.532	0.642	**0.019**
	Habitat Transition	0.704	0.713	0.326

Table S3. Continued.

Model	Parameter	Estimate	SE	*p*-value
δ^2H ~ Species + Habitat	(Intercept)	-50.935	2.381	**<0.0001**
	Species (Ref. = CF)			
	Species LGF	-16.271	2.764	**<0.0001**
	Species STF	4.136	3.084	0.184
	Habitat (Ref. = Dry)			
	Habitat Farm	-7.044	3.464	**0.045**
	Habitat Humid	1.048	2.841	0.713
	Habitat Museum	2.179	2.641	0.412
	Habitat Transition	7.695	2.934	**0.010**
δ^2H ~ Species + Altitude + Habitat	(Intercept)	-51.074	2.438	**<0.0001**
	Species (Ref. = CF)			
	Species LGF	-16.372	2.801	**<0.0001**
	Species STF	3.934	3.172	0.218
	Altitude	0.0016	0.005	0.762
	Habitat (Ref. = Dry)			
	Habitat Farm	-7.072	3.485	**0.045**
	Habitat Humid	0.346	3.675	0.925
	Habitat Museum	1.944	2.767	0.484
	Habitat Transition	7.533	2.998	**0.014**

Table S4. Differences among foraging guilds within each habitat. Significant guilds are in bold.

Habitat	Model	Parameter	Estimate	SE	*p*-value
Dry	$\delta^{13}C$ ~ Guild	(Intercept)	-20.861	0.369	**<0.0001**
		Guild (Ref. = Graniv.)			
		Guild Herbivorous	0.560	0.648	0.390
		Guild Insectivorous	-1.439	1.270	0.260
	$\delta^{15}N$ ~ Guild	(Intercept)	10.183	0.189	**<0.0001**
		Guild (Ref. = Graniv.)			
		Guild Herbivorous	-0.092	0.331	0.782
		Guild Insectivorous	0.293	0.649	0.653
	$\delta^{2}H$ ~ Guild	(Intercept)	-51.224	1.405	**<0.0001**
		Guild (Ref. = Graniv.)			
		Guild Herbivorous	-7.414	2.465	**0.003**
		Guild Insectivorous	2.130	4.827	0.660
Humid	$\delta^{13}C$ ~ Guild	(Intercept)	-21.181	0.464	**<0.0001**
		Guild (Ref. = Graniv.)			
		Guild Herbivorous	0.475	0.915	0.605
		Guild Insectivorous	-2.384	0.725	**0.001**
	$\delta^{15}N$ ~ Guild	(Intercept)	9.194	0.342	**<0.0001**
		Guild (Ref. = Graniv.)			
		Guild Herbivorous	0.642	0.675	0.345
		Guild Insectivorous	1.927	0.535	**0.0007**
	$\delta^{2}H$ ~ Guild	(Intercept)	-50.852	1.454	**<0.0001**
		Guild (Ref. = Graniv.)			
		Guild Herbivorous	-9.480	2.868	**0.001**
		Guild Insectivorous	13.292	1.274	**<0.0001**
Transition	$\delta^{13}C$ ~ Guild	(Intercept)	-21.865	0.484	**<0.0001**
		Guild (Ref. = Graniv.)			
		Guild Herbivorous	-0.065	0.996	0.948
		Guild Insectivorous	-1.432	0.924	0.128
	$\delta^{15}N$ ~ Guild	(Intercept)	9.716	0.366	**<0.0001**
		Guild (Ref. = Graniv.)			
		Guild Herbivorous	0.694	0.752	0.361
		Guild Insectivorous	0.924	0.698	0.192
	$\delta^{2}H$ ~ Guild	(Intercept)	-59.131	1.618	**<0.0001**
		Guild (Ref. = Graniv.)			
		Guild Herbivorous	2.743	3.324	0.413
		Guild Insectivorous	16.830	3.085	**<0.0001**
Farms	$\delta^{13}C$ ~ Guild	(Intercept)	-19.561	0.712	**<0.0001**
		Guild (Ref. = Graniv.)			
		Guild Herbivorous	-1.805	1.745	0.307
		Guild Insectivorous	-0.472	1.189	0.694
	$\delta^{15}N$ ~ Guild	(Intercept)	9.557	0.317	**<0.0001**
		Guild (Ref. = Graniv.)			
		Guild Herbivorous	0.449	0.778	0.567
		Guild Insectivorous	0.107	0.530	0.840
	$\delta^{2}H$ ~ Guild	(Intercept)	-55.700	1.866	**<0.0001**
		Guild (Ref. = Graniv.)			
		Guild Herbivorous	5.217	4.570	0.260
		Guild Insectivorous	3.888	3.114	0.219

Supplementary Figures

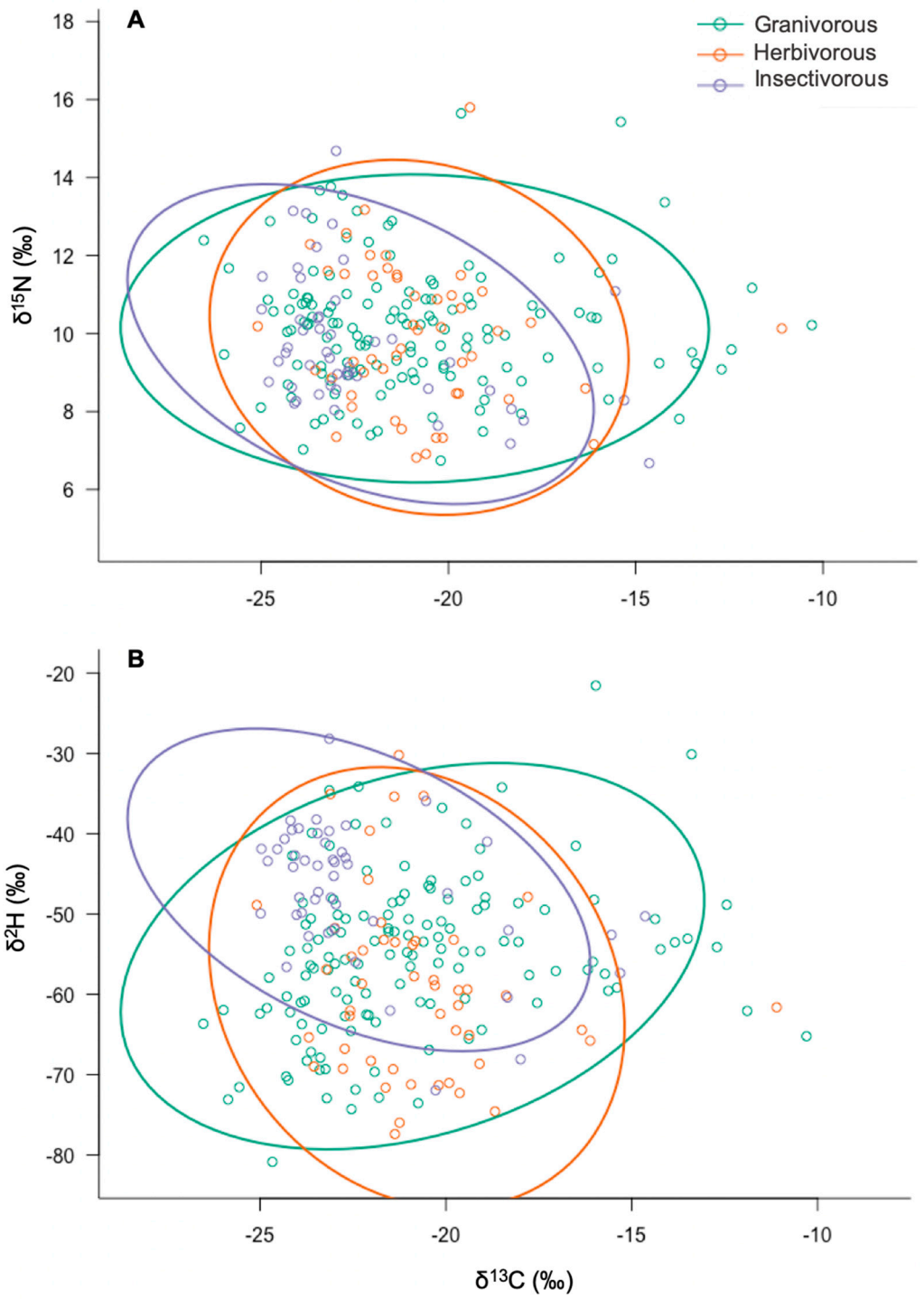

Figure S1: Standard ellipse areas (SEA) based on $\delta^{13}C \sim \delta^{15}N$ (A) and $\delta^{13}C \sim \delta^{2}H$ (B).

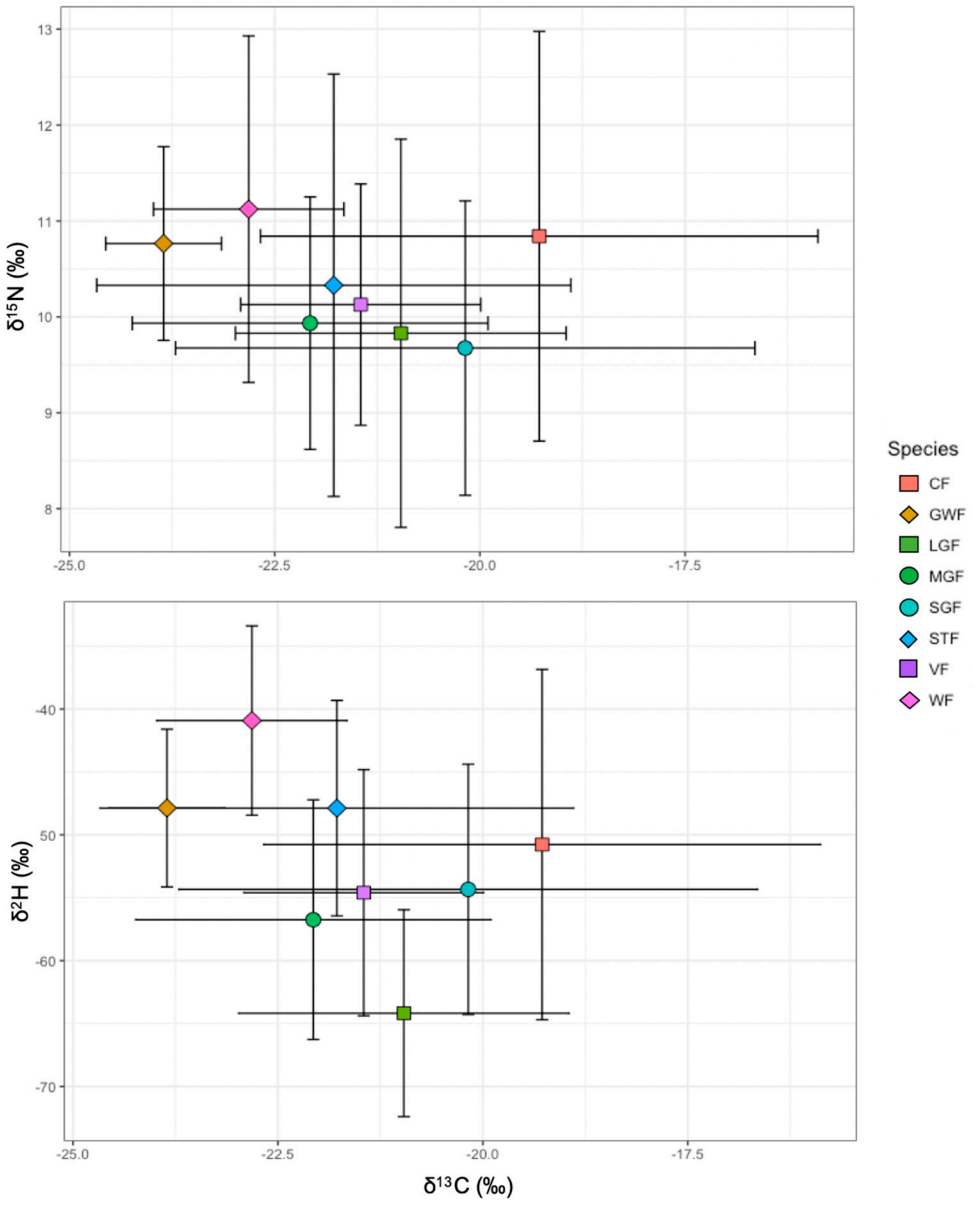

Figure S2: Biplots that show the trophic position of each Darwin's finch species, with the Y axis given by $\delta^{15}N$ values (upper graph) or $\delta^{2}H$ values (lower graph). For making this figure we used the package `tRophicPosition` in R [55].

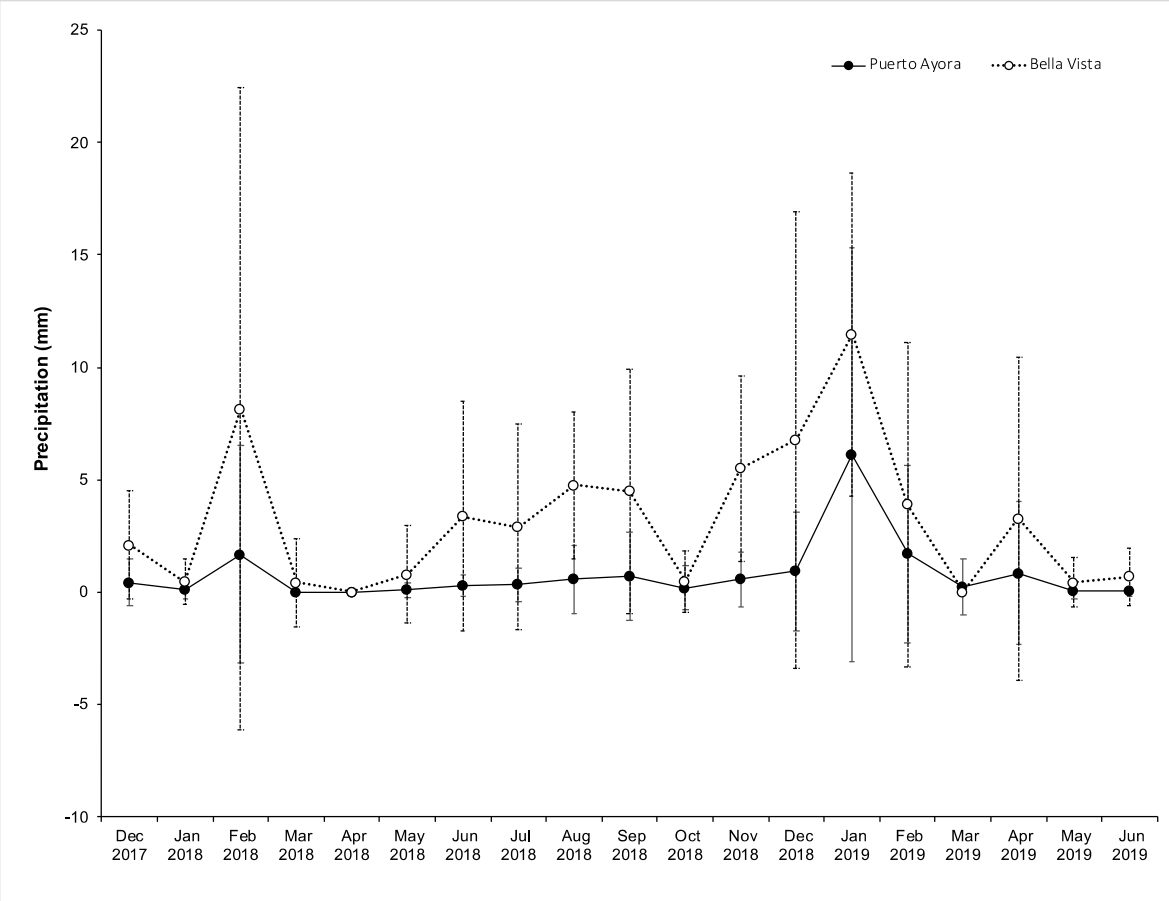

Figure S3: Monthly precipitation (mean ± SD) from December 2017 to June 2019, based on data from the two climatological stations on Santa Cruz Island (Puerto Ayora at 2 masl, and Bella Vista at 223 masl; [52]). This time frame covers breeding seasons and molt periods of feathers of live birds analyzed in this research. Breeding season in Darwin's finches starts around December when precipitation is higher, and molt after the breeding season, around April to June [47].

References

[47] Snow. D.W. Moult and the breeding cycle in Darwin's finches. *J. Ornithol.* **1966**, *107*, 283-291.

[52] Charles Darwin Foundation. Available online: https://www.darwinfoundation.org/en/datazone/climate (Accessed on 13 January 2021).

[55] Quezada-Romegialli, C.; Jackson, A.L.; Hayden, B.; Kahilainen, K.K.; Lopes, C.; Harrod, C. tRophicPosition, an r package for the Bayesian estimation of trophic position from consumer stable isotope ratios. *Methods Ecol. Evol.* **2018**, *9*, 1592–1599.