

Current Biology, Volume 31

Supplemental Information

Island songbirds as windows into evolution in small populations

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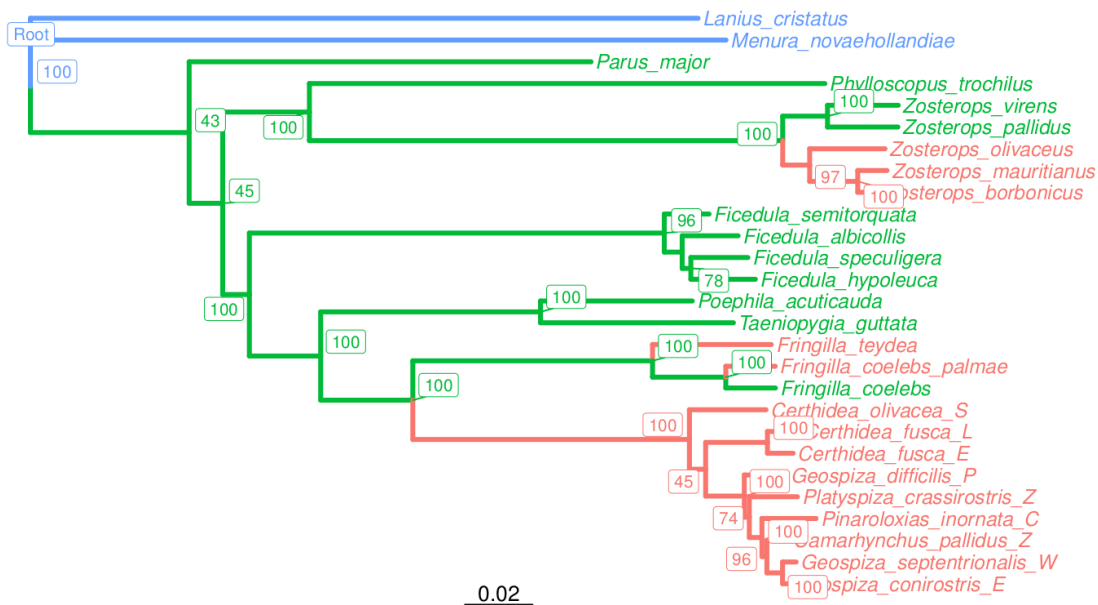


Figure S1: Phylogenetic relationship estimated using complete mitochondrial sequences and a maximum likelihood approach (Related to Figure 1). Island, continental and outgroup species are shown in red, green and blue, respectively. Numbers shown in boxes indicated ultrafast bootstrap supports estimated by IQTREE.

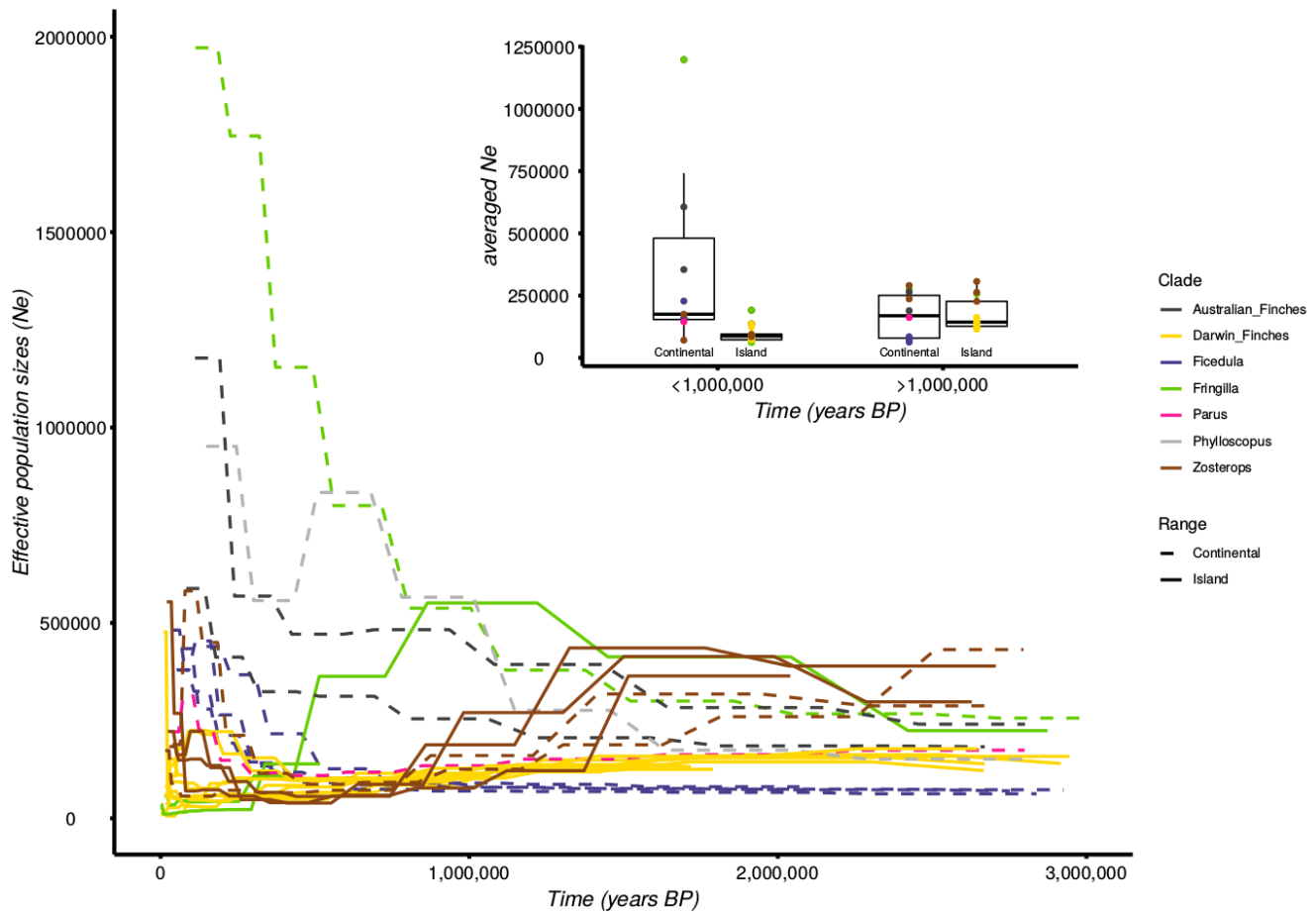


Figure S2: PSMC estimates of the changes in effective population size (N_e) over time for each species (outer plot) (Related to Figure 1). Each line represents the historical changes of N_e for one individual randomly selected among all individuals of each species. The inner boxplot shows the averaged mean N_e for all island and continental species over the last million years or estimates for older times. Estimates for the last million year exclude the last 4 estimates (see the STAR Methods), because PSMC can generate inaccurate estimates for present-day or very recent N_e .

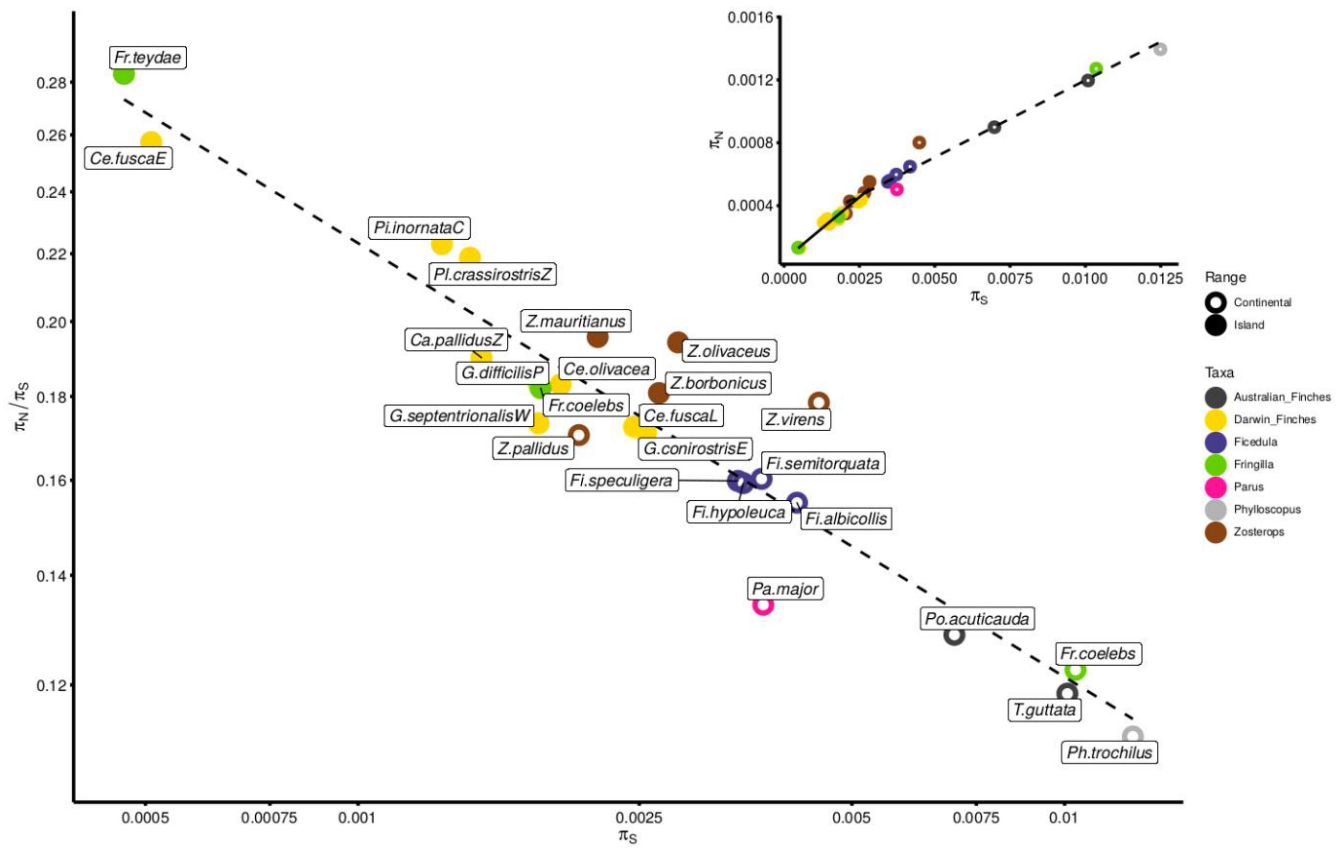


Figure S3: Linear regression between the log-transformed ratio of nonsynonymous to synonymous nucleotide diversity (π_N/π_S) and the log-transformed levels of nucleotide diversity (π_S), used as an indicator of effective population sizes (outer plot) (Related to Figures 1 and 2). Species genera are: Ca=Camarhynchus, Ce=Certhidea, Fi=Ficedula, Fr=Fringilla, G=Geospiza, Pa=Parus, Ph=Phylloscopus, Pi=Pinaroloxias, Pl=Platypiza, Po= Poephila, T=Taeniopygia, Z= Zosterops. Inner plot: linear regressions between π_N and π_S for insular species (solid line) vs. continental species (dotted line).

Groups	species	outgroup	Range	π_S (meth1)	π_N (meth1)	π_N/π_S (meth1)	π_S (meth2)	π_N (meth2)	π_N/π_S (meth2)
Zosterops	<i>Z.borbonicus</i>	<i>Z.pallidus</i>	Island	0.00267	0.00048	0.18086	0.00049	0.00239	0.20353
Zosterops	<i>Z.olivaceus</i>	<i>Z.virens</i>	Island	0.00284	0.00055	0.19422	0.00061	0.00268	0.22600
Zosterops	<i>Z.mauritanus</i>	<i>Z.virens</i>	Island	0.00218	0.00043	0.19569	0.00038	0.00166	0.22898
Zosterops	<i>Z.pallidus</i>	<i>Z.borbonicus</i>	Continental	0.00205	0.00035	0.17048	0.00029	0.00141	0.20435
Zosterops	<i>Z.virens</i>	<i>Z.borbonicus</i>	Continental	0.004490	0.00080	0.17844	0.00097	0.00463	0.20842
Ficedula	<i>Fi.albicollis</i>	<i>Fi.speculigera</i>	Continental	0.00418	0.00065	0.15502	0.00151	0.00830	0.18185
Ficedula	<i>Fi.semitorquata</i>	<i>Fi.speculigera</i>	Continental	0.00372	0.00060	0.16031	0.00269	0.01384	0.19446
Ficedula	<i>Fi.hypoleuca</i>	<i>Fi.speculigera</i>	Continental	0.00351	0.00056	0.15935	0.00175	0.00904	0.19362
Ficedula	<i>Fi.speculigera</i>	<i>Fi.albicollis</i>	Continental	0.00345	0.00055	0.15985	0.00097	0.00493	0.19631
Darwin Finches	<i>Ce.olivacea</i>	<i>Ce.fuscaE</i>	Island	0.00193	0.00035	0.18304	0.00027	0.00118	0.22832
Darwin Finches	<i>G.septentrionalis W</i>	<i>Ce.olivacea</i>	Island	0.00180	0.00031	0.17333	0.00033	0.00149	0.21897
Darwin Finches	<i>Ce.fuscaE</i>	<i>Ce.olivacea</i>	Island	0.00051	0.00013	0.25737	0.00019	0.00057	0.33101
Darwin Finches	<i>Pl.crassirostrisZ</i>	<i>Ce.olivacea</i>	Island	0.00144	0.00032	0.21875	0.00022	0.00079	0.27822
Darwin Finches	<i>Pi.inornataC</i>	<i>Ce.olivacea</i>	Island	0.00131	0.00029	0.22298	0.00036	0.00133	0.27235
Darwin Finches	<i>Ce.fuscaL</i>	<i>Ce.olivacea</i>	Island	0.00246	0.00042	0.17250	0.00070	0.00327	0.21465
Darwin Finches	<i>Ca.pallidusZ</i>	<i>Ce.olivacea</i>	Island	0.00149	0.00028	0.19009	0.00010	0.00041	0.23349
Darwin Finches	<i>G.conirostrisE</i>	<i>Ce.olivacea</i>	Island	0.00255	0.00044	0.17110	0.00041	0.00195	0.20801
Darwin Finches	<i>G.difficilisP</i>	<i>Ce.olivacea</i>	Island	0.00180	0.00033	0.18333	0.00038	0.00167	0.22543
Parus	<i>Pa.major</i>	NA	Continental	0.00375	0.00050	0.13431	NA	NA	NA
Phylloscopus	<i>Ph.trochilus</i>	NA	Continental	0.01249	0.00139	0.1116	NA	NA	NA
Australian Finches	<i>T.guttata castanodis</i>	<i>Po.acuticauda</i>	Continental	0.01009	0.00120	0.11853	0.00109	0.00856	0.12702
Australian Finches	<i>Po.acuticauda</i>	<i>T.guttata castanodis</i>	Continental	0.00698	0.00090	0.12876	0.00076	0.00526	0.14493
Fringilla	<i>Fr.coelebs</i>	<i>Fr.teydae</i>	Continental	0.01036	0.00127	0.12258	0.00119	0.00869	0.13703
Fringilla	<i>Fr.coelebs</i>	<i>Fr.teydae</i>	Island	0.00181	0.00033	0.18212	0.00032	0.00151	0.21456
Fringilla	<i>Fr.teydae</i>	<i>Fr.coelebs(M)</i>	Island	0.00047	0.00013	0.28326	0.00010	0.00029	0.34870

Table S2: π_N , π_S and π_N/π_S as estimated by the diversity-based (meth.1) and the SFS-based (meth.2) methods (Related to Figures 1 and 2). For the method 2, P. major and P. trochilus were not excluded for the computations (no phylogenetically relevant outgroup information available).

<https://tinyurl.com/OSFWithinGenomeVariation> for additional information regarding the method 2.

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