The Complete Genome Sequences of 23 Finch Species (Fringillidae, Passeriformes)

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Biodiversity Genomes

We present complete genome sequences of 23 species of finches from 6 genera.

Introduction

Birds in the Fringillidae family are true finches. There are three subfamilies, Fringillinae, Euphoniinae and Carduelinae (Zuccon et al. 2012). They are small to medium-sized, widespread, largely granivorous birds and are native to every continent except Antarctica and Australia. They also have colonized and differentiated on oceanic islands. They often have stout, conical-shaped bills (except Hawaiian honeycreepers) (Winkler, Billerman, and Lovette 2015). Some of European origin have been introduced to Australia and New Zealand. There are also introduced populations across the world, including in the United States and Argentina, where they share geography with native finches (North and South American siskins, redpolls, rosefinches etc.). Several species are common caged birds and historically have been kept as pets (e.g. European Goldfinches) or for human services (e.g. Canaries to detect carbon monoxide in coal mines).

Methods

Tissues single, wild-collected individuals were used for this study. DNA extraction was performed using the Qiagen DNEasy genomic extraction kit using the standard process. Paired-end sequencing libraries were constructed using the Illumina TruSeq kit according to the manufacturer's instructions. The libraries were sequenced on an Illumina Hi-Seq platform in paired-end, 2 × 150bp format. The resulting fastq files were trimmed of adapter/primer sequences and low-quality regions with Trimmomatic v0.33 (Bolger, Lohse, and Usadel 2014). The trimmed sequence was assembled by SPAdes v3.15.4 (Bankevich et al. 2012) followed by a finishing step using Zanfona (Kieras, O'Neill, and Pirro 2021).

Results and Data Availability

All raw read data and assembled genomes are available on Genbank:

Species	Genome	Specimen_voucher
Acanthis cabaret	JAUYWM000000000	FMNH 177662

Species	Genome	Specimen_voucher
Acanthis flamea	JAYJLY000000000	FMNH 95021
Carduelis citrinella	JAYRBP000000000	FMNH 343157
Carduelis corsicana	JAUYWN000000000	FMNH 343161
Linurgus olivaceus	JAYRCA000000000	FMNH 298894
Loxia leucoptera	JAWWMI000000000	FMNH 328157
Loxia pytyopsittacus	JAUYWL000000000	FMNH 126802
Serinus cacnicollis	JAUUDU000000000	FMNH 441104
Serinus flavivertex	JAYDBR000000000	FMNH 83958
Serinus nigriceps	JAUZTC000000000	FMNH 83996
Serinus pusillus	JAYRBO000000000	FMNH 66471
Serinus serinus	JAVCKY000000000	FMNH 185003
Serinus syriacus	JAWWMM000000000	FMNH 343155
Spinus atriceps	JAVRMD000000000	FMNH 189863
Spinus crassirostris	JAYRBZ000000000	FMNH 391990
Spinus lawrencei	JAUZTD000000000	FMNH 177750
Spinus olivaceus	JAYRCE000000000	FMNH 481061
Spinus pinus	JAUUDX000000000	FMNH 437097
Spinus psaltria	JAYJLW000000000	FMNH 121653
Spinus spinescens	JAUYUU000000000	FMNH 220593
Spinus spinus	JAUUDX000000000	FMNH 185006
Spinus tristis	JAYRBQ000000000	FMNH 495559
Spinus yarrellii	JAYDZH000000000	FMNH 53368

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