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Table S1: Wild sampling information for the blue-throated macaw and thick-billed parrot. All ID's are as recorded in metadata provided by field crews. Samples in parentheses were randomly removed as assumed first-order relatives of another bird sampled from the same nest.

Species	Sampling Locality (*n*)	Sample ID's (Removed)
A. glaucogularis	Bethel (11)	25, (26), 28, (29), (30), 49, (50), (51), (52)
	Cantina (3)	69, (70), (71)
	Esperancita (25)	1, (3), (4), (5), (6), (9), (11), (13), (15), 19, (20), (21), (37), (38), (39), 47, 48, 60, (61), (62), 63, 72, (73), 74, (75), 76, 77
	Holanda (8)	(22), (34), (35), 36, 43, (44), 46, (55)
	La Verde (6)	16, (17), (18), (23), (24), 40
	Palma Sola (5)	31, (32), (33), 41, (42)
	Urkupiña (2)	27, (45)
	Total = 60 Birds	
R. pachyrhyncha	Madera (37)	(001), 002, 003, (004), (200201), 200202, 230201, (230202), (230203), 291201, (291501), 291502, (291503), 2302-40, (2604-41), 2604-42, (2915-48), (2915-49), 2915-50, M0129-1, (M0129-2), M0229-1, (M0429-1) M0429-2, M1-2, (M12-1), (M12-2), M12-3, M1628-1, (M1628-2), (M2604-1), M2604-2, (M2604-3), (PN02-44), PN02-45, X5-46, (X5-47)
	San Juanito (1)	SJ5801-2
	Tutuaca (8)	3711-2, T0739-2, (T0839-1), T0839-2, T0939-1, (T0939-2), (T1339-1), T1339-2
	Total = 46 birds	

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Table S2: Captive sampling information for the blue-throated macaw and thick-billed parrot. Sample ID's are studbook numbers. ID's marked with asterisk are local ID's for samples where no Studbook ID is available.

Species	Country	Organization	Sample ID's
A. glaucogularis	United States	Dallas World Aquarium	966, 973, 1099, 1103, 1146
	United States	Moody Gardens	996, 997, 1013
	United States	Natural Encounters Zoo	17, 38, 63, 72, 82, 109, 199, 216, 218, 219, 296, 297, 457, 805, 821, 877, 933, 940, 956, 958, 959, 961, 1079, 1085
	United States	Pinola Conservancy	1068, No_Band*, WPP_TX_1606_1.0*,
	United States	St. Augustine Alligator Farm	818, 983
	Bolivia	Blue-throated Macaw Conservation Center	53*, 54*, 56*, 57*, 58*, 59*
	Bolivia	Santa Cruz Zoo	64*, 65*, 66*, 67*, 68*
	Canada	African Lion Safari	806, 761, 765, 772, 779, 786, 794, 809, 812, 871, 1017, 1030
		Total = 60 Birds	
R. pachyrhyncha	United States	Akron Zoo	37, 148, 149, 151, 221, 287, 343, 386, 504, 527, 528, 544, 545
	United States	Albuquerque Zoo	450, 502
	United States	Ft. Worth Zoo	106, 274
	United States	Living Desert	75, 435, 503, 646
	United States	Phoenix Zoo	227, 556, 571, 572, 587
	United States	Riverbanks Zoo	322, 659, 6614*
	United States	Sacramento Zoo	58, 82, 90, 111, 216, 228, 397, 468, 575, 581, 592, 594, 595, 603, 604, 606, 651, 652, 201650*, 201651*
	United States	San Diego Zoo	589
	United States	San Diego Wild Animal Park	200, 421, 513, 808105*, 808146*
	United States	Sedgewick Zoo	574, 582, 601, 634, 640, 641, 11029*, 12137*, 12138*
	United States	Tulsa Zoo	240, 241, 15463*, 15464*
		Total = 68 Birds	68

Table S3: Previously unpublished primer sequences developed for the thick-billed parrot

Primer	Sequence (5'-3')	Repeat Motif	T_a (°C)
Rhpac074[30]	For: TGAACCTTCTGTGTCAAGAGGA Rev: CTTTTCCTGGGTGCTGATGT	$(CA)_{10}$	53
Rhpac149[30]	For: TCTTCTCCATGCACATCAGTG Rev: GCTTCCTGGTATGACCCTTG	$(GT)_9GA(GT)_{10}$	56
TBP2-39[29]	For: TCATTGCTATATTCGGGTTCCT Rev: TGCTCTGTCCTGTCTTGGATAA	$(GA)_{10}$	55
TBP2-61[29]	For: CAAACAAGCATCCAGAAGACAA Rev: TATTGCAACATCTTGCCTGACT	$(GT)_{14}$	58

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Table S4: Primer success rate in PCR for blue-throated macaw and thick-billed parrot

Species	Primer	Number of Individuals	Number Successfully Amplified	Success Rate (%)
A. glaucogularis	SCMA09	116	110	95
	SCMA46	116	101	87
	SCMA19	116	95	82
	SCMA31	116	95	82
	SCMA14	116	111	96
	SCMA27	116	112	97
	SCMA12	116	85	73
	SCMA11	116	110	95
	SCMA22	116	112	97
	SCMA26	116	113	97
	SCMA34	116	81	70
	SCMA02	116	107	92
R. pachyrhyncha	UnaCT74	113	108	96
	UnaCT21	113	111	98
	UnaCT55	113	112	99
	UnaCT43	113	105	93
	TBP2-39	113	108	96
	TBP2-61	113	111	98
	Rhpac149	113	110	97
	Rhpac074	113	106	94
	MmGT057	113	109	96
	MmGT090	113	109	96
	CyanP05	113	107	95

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Table S5: Relatedness matrix of blue-throated macaw individuals remaining after dataset reduction using captive pedigree and wild sampling data. Sample ID's in red are individuals randomly removed from dataset due as result of relatedness. Green cells= Confirmed unrelated; Yellow=Related but not 1st order; Red=Cannot confirm.

a. Captive Population

Sample ID	821	457	296	109	38	805	17	38	961	1079	973	WPP_TX_1606_1.0	1068	No_Band	1013	996	983	806	772	812	786	765	871	779	809	SC_Muestra53	BolCapt_Muestra64	Muestra65	Muestra66	Muestra67	Muestra68
821	1																														
457	0	1																													
296	0.09	0	1																												
109	0	0	0	1																											
38	0	0	0	0	1																										
805	0.07	0	0	0.13	0	1																									
17	0	0	0	0.25	0	0	1																								
38	0.16	0.14	0	0.12	0	0.31	0	1																							
961	0.05	0.07	0	0.12	0.09	0	0	0.09	1																						
1079	0.13	0	0	0.01	0	0.12	0	0	0	1																					
973	0.5	0	0	0	0.07	0.32	0	0.37	0.05	0.01	1																				
WPP_TX_1606_1.0	0.12	0	0	0.12	0	0	0.2	0	0.32	0.07	0	1																			
1068	0.41	0.5	0	0	0.15	0	0	0	0	0.07	0	0	1																		
No_Band	0.26	0.26	0	0.35	0	0	0	0.14	0	0.02	0	0	0.66	1																	
1013	0	0	0.11	0.07	0	0	0.05	0	0.28	0.12	0.19	0	0	0	1																
996	0.03	0	0	0	0	0	0	0	0	0.09	0	0	0	0.34	0	1															
983	0	0	0	0	0	0.14	0.01	0.16	0.11	0	0	0.03	0.16	0.04	0.5	0.13	1														
806	0	0.28	0	0	0.18	0.13	0	0.26	0.16	0.17	0	0	0	0	0	0	0	1													
772	0	0	0	0.14	0	0.13	0.12	0.11	0	0.04	0	0	0.01	0	0.2	0.05	0	0	1												
812	0.01	0	0.05	0	0	0	0	0	0.02	0.23	0	0.18	0	0	0	0.12	0.04	0	0	1											
786	0.02	0	0	0.11	0.25	0	0	0	0.04	0	0.06	0	0	0	0	0	0	0.2	0	0.3	1										
765	0	0	0.01	0	0.04	0.32	0	0.31	0	0	0.29	0	0	0.13	0	0.06	0	0.11	0	0.09	0.14	1									
871	0	0	0	0	0	0.01	0	0.02	0	0.01	0.14	0	0	0	0	0.12	0	0	0	0	0	0.5	1								
779	0	0	0.08	0.11	0	0.12	0	0	0.04	0	0	0	0	0	0.08	0	0	0	0	0	0.03	0	0.06	1							
809	0	0	0	0	0.18	0	0	0	0.02	0	0	0.02	0	0	0	0	0	0	0	0.13	0.27	0	0.16	0.11	1						
SC_Muestra53	0	0.17	0	0	0.28	0	0	0	0.01	0	0.26	0	0	0	0.04	0	0	0.35	0	0.03	0.41	0.23	0.27	0	0	1					
BolCapt_Muestra64	0.03	0	0.07	0.06	0.02	0.26	0.17	0	0	0	0	0.01	0	0.06	0	0	0	0.03	0	0.15	0	0	0	0.04	0.09	0	1				
Muestra65	0	0.08	0	0	0	0	0	0	0	0	0.04	0	0.19	0	0	0.07	0	0	0	0.28	0.35	0.09	0.14	0.05	0.11	0.39	0	1			
Muestra66	0	0.19	0	0	0.27	0	0.14	0	0	0	0	0	0	0	0	0.03	0	0.5	0	0	0.12	0	0	0	0.21	0.3	0.07	0.26	1		
Muestra67	0	0.34	0	0	0	0.11	0	0	0	0	0	0	0	0	0.08	0.06	0	0.18	0.16	0	0	0	0	0.13	0	0.04	0	0	0.05	1	
Muestra68	0	0.14	0	0.3	0.08	0	0	0	0	0	0	0	0.28	0.07	0	0	0	0	0.06	0.08	0.09	0	0	0.06	0.19	0	0	0.5	0	0.23	1

b. North Wild Population

Sample ID	Nwild_Muestra16	Muestra28	Muestra41	Muestra49	Muestra25	Muestra31	Muestra36	Muestra40	Muestra43	Muestra46	Muestra27
Nwild_Muestra16	1										
Muestra28	0	1									
Muestra41	0.08	0	1								
Muestra49	0.18	0	0	1							
Muestra25	0	0.23	0	0	1						
Muestra31	0	0	0	0	0	1					
Muestra36	0	0	0.23	0	0	0	1				
Muestra40	0.48	0	0	0.06	0	0	0	1			
Muestra43	0	0	0	0	0	0	0.41	0	1		
Muestra46	0	0	0.01	0	0.05	0	0.29	0	0.13	1	
Muestra27	0	0	0	0	0.5	0	0	0.1	0	0	1

c. South Wild Population

Sample ID	Swild_Muestra1	Muestra60	Muestra69	Muestra72	Muestra74	Muestra76	Muestra77	Muestra19	Muestra47	Muestra48	Muestra63
Swild_Muestra1	1										
Muestra60	0	1									
Muestra69	0.27	0	1								
Muestra72	0	0	0	1							
Muestra74	0	0.31	0	0	1						
Muestra76	0	0	0.02	0	0	1					
Muestra77	0.24	0	0.15	0.01	0.04	0	1				
Muestra19	0	0.26	0	0	0	0.04	0	1			
Muestra47	0.2	0.41	0	0	0	0.15	0	0	1		
Muestra48	0.66	0.1	0.16	0.23	0	0.14	0	0	0.11	1	
Muestra63	0	0	0.09	0	0.02	0.42	0	0	0	0	1

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Table S6: Relatedness matrix of thick-billed parrot individuals remaining after dataset reduction using captive pedigree and wild sampling data. Sample ID's in red are individuals randomly removed from dataset as result of relatedness. Green cells= Confirmed unrelated; Yellow=Related but not 1st order; Red=Cannot confirm.

a. Captive Population

Sample ID	*37*	*75*	*82*	*106*	*111*	*148*	*149*	*151*	*200*	*216*	*227*	*228*	*240*	*241*	*274*	*386*	*421*	*435*	*450*	*468*	*502*	*503*	*513*	*527*	*544*	*556*	*571*	*572*	*575*	*587*	*589*	*592*	*640*	*641*	*646*	*659*
37	1																																			
75	0	1																																		
82	0	0.39	1																																	
106	0	0	0	1																																
111	0.5	0	0.09	0	1																															
148	0	0.1	0	0.03	0.01	1																														
149	0	0	0	0.33	0	0.03	1																													
151	0	0	0	0.32	0.27	0	0.34	1																												
200	0	0	0	0	0	0	0	0	1																											
216	0	0	0	0	0.42	0	0	0.05	0	1																										
227	0	0	0	0.04	0.05	0.38	0.04	0	0	0.28	1																									
228	0.02	0	0.11	0.14	0.06	0.03	0.37	0	0	0.06	0	1																								
240	0.1	0	0.14	0.34	0.09	0.01	0.23	0.23	0	0	0.11	0	1																							
241	0	0	0.2	0	0.43	0	0.18	0.28	0	0.1	0.39	0	0.22	1																						
274	0	0.01	0	0.11	0	0	0	0.15	0.21	0	0	0	0	0.05	1																					
386	0	0.11	0.04	0	0	0	0	0	0.11	0	0	0.13	0	0	0.5	1																				
421	0.2	0	0	0	0	0	0	0	0	0	0.08	0	0	0.5	0	0	1																			
435	0.33	0	0.1	0.08	0.5	0.06	0.07	0.12	0	0.03	0.08	0.11	0	0.03	0	0	0.15	1																		
450	0.18	0.52	0.14	0	0	0	0	0	0	0.17	0	0.15	0.26	0	0.18	0.11	0	0	1																	
468	0	0.07	0.12	0.1	0.5	0.22	0	0	0.12	0.27	0	0	0	0	0.17	0.15	0	0	0	1																
502	0	0.19	0	0.06	0	0.18	0	0.5	0	0	0	0	0	0	0.01	0.16	0	0.14	0.06	0	1															
503	0.17	0.47	0.18	0	0.12	0	0	0	0.21	0	0	0.24	0	0	0	0	0	0.02	0.07	0	0.11	1														
513	0	0	0.13	0	0	0	0.37	0.34	0.02	0	0	0	0	0.11	0	0	0	0.05	0	0.11	0	0	1													
527	0.14	0.21	0	0.1	0	0	0.25	0.18	0.23	0	0	0	0	0.14	0.1	0	0	0	0.21	0	0	0.2	0.25	1												
544	0	0.04	0	0	0	0.53	0	0	0.15	0	0.18	0	0	0	0	0	0	0	0	0	0.15	0	0.06	0	1											
556	0	0.1	0	0	0.05	0	0.17	0.5	0.04	0	0	0	0.23	0.12	0	0	0	0	0.07	0	0.08	0	0.04	0.23	0	1										
571	0	0	0.07	0.12	0.45	0	0	0	0	0.15	0.11	0	0.2	0.5	0	0	0	0.03	0	0.13	0	0	0	0.2	0	0	1								
572	0.02	0.18	0.14	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.23	0.08	0	0.5	0	0	0.37	0	0	0	0.17	1							
575	0	0	0	0.04	0	0.11	0.28	0.08	0	0	0	0.33	0.05	0	0.07	0	0	0	0.19	0	0.05	0	0.07	0.07	0	0.18	0	0	1						
587	0.04	0	0.14	0	0	0	0	0	0.15	0	0.2	0	0.03	0.43	0	0.5	0	0	0.03	0.18	0	0.04	0	0.18	0	0	0.71	0.13	0	1					
589	0	0.14	0.11	0	0	0	0.25	0	0.02	0	0	0.27	0	0	0.26	0.05	0.12	0	0	0	0.08	0.29	0	0.25	0.06	0	0	0	0.56	0	1				
592	0.5	0	0.09	0.1	0.11	0	0	0	0	0.16	0	0	0	0	0.22	0	0	0.26	0	0.5	0	0	0.11	0	0	0	0	0.06	0.04	0.15	0	1			
640	0	0	0.5	0	0	0	0.06	0	0	0.18	0	0.06	0	0	0	0	0	0	0.2	0	0	0.11	0.06	0	0.06	0.01	0	0.12	0.26	0	0.23	0.06	1		
641	0.19	0	0	0.09	0.31	0	0.5	0.43	0.11	0.18	0	0	0.24	0.48	0	0.3	0	0	0.36	0.19	0	0	0	0.11	0.02	0.22	0.18	0	0.28	0.2	0.04	0	0.25	1	
646	0	0.31	0	0	0	0.26	0	0	0.46	0	0	0	0	0	0.24	0.14	0	0	0	0.57	0.04	0	0.14	0	0.14	0.05	0	0.45	0	0.1	0	0.15	0	0.11	1
659	0	0	0.13	0	0.1	0	0.04	0	0	0.56	0.21	0.47	0	0	0	0	0	0	0.1	0	0	0.01	0	0.01	0.27	0.03	0.28	0	0.13	0.14	0.18	0	0.45	0.13	0	1

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b. Madera Population

Sample ID	292201_Mad	1376_Mad	003_Mad	230201_Mad	200202_Mad	291502_Mad	M0129-1Mad	X5-46_Mad	2302-40_Mad	PN02-45_Mad	2915-50_Mad	2604-42_Mad	M12-3_Mad	M2604-2_Mad	M0229-1_Mad	M1-2_Mad	M0429-2_Mad	M1628-1_Mad
292201_Mad	1																	
1376_Mad	0	1																
003_Mad	0.05	0	1															
230201_Mad	0	0	0	1														
200202_Mad	0	0	0.5	0	1													
291502_Mad	0	0	0	0.02	0.27	1												
M0129-1Mad	0.35	0	0	0.04	0	0	1											
X5-46_Mad	0.1	0	0	0	0.31	0	0	1										
2302-40_Mad	0.28	0	0.26	0.38	0.5	0	0	0	1									
PN02-45_Mad	0	0.45	0	0.5	0	0	0	0	0.16	1								
2915-50_Mad	0	0	0	0.19	0.27	0.71	0	0	0	0	1							
2604-42_Mad	0.01	0	0	0	0	0	0.19	0.1	0	0	0	1						
M12-3_Mad	0.27	0	0	0	0	0	0	0.5	0.11	0	0	0	1					
M2604-2_Mad	0.11	0	0	0	0	0	0.19	0.28	0	0.05	0	0.8	0.06	1				
M0229-1_Mad	0	0.05	0	0.35	0.27	0.56	0	0	0	0	0.8	0	0	0	1			
M1-2_Mad	0	0.5	0.1	0	0	0	0.5	0	0	0.5	0	0	0	0	0	1		
M0429-2_Mad	0.5	0	0.01	0	0.5	0.02	0	0	0	0	0.02	0.11	0.27	0	0	0	1	
M1628-1_Mad	0.26	0	0	0	0	0.13	0	0.07	0.06	0.23	0	0	0.07	0	0	0.15	0	1

c. Tutuaca Population

Sample ID		T0739-2_Tut	T0839-2_Tut	T0939-1_Tut	T1339-2_Tut	3711-2_Tut
T0739-2_Tut		1				
T0839-2_Tut		0	1			
T0939-1_Tut		0	0	1		
T1339-2_Tut		0	0.02	0	1	
3711-2_Tut		0.01	0	0	0	1

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Table S7: Proportions of self-assignment of wild and captive individuals to the wild populations

***Treating Last Population as Unknown**	
Data Sheet	BTM_Partition
Data Title	BTM_Reduced_3/20/21
No. Loci	10
No. Samples	48
No. Pops.	3
Zero Freq. =	0.01

Summary of Population Assignment Outcomes to 'Self' or 'Other' Population (With Leave One Out Option)

Pop	Self Pop	Other Pop
NWild	8	1
SWild	10	
Total	18	1
Percent	95%	5%

Assignment Values (With Leave One Out Option)

Sample	Pop	NWild	SWild	Captive	Assigned Pop	
NWild_Muestra28	**NWild**	−9.318	−11.320	0.000	1	NWild
Muestra41_NWild	**NWild**	−10.883	−11.758	0.000	1	NWild
Muestra49_NWild	**NWild**	−15.388	−8.596	0.000	2	SWild
Muestra25_NWild	**NWild**	−11.268	−13.293	0.000	1	NWild
Muestra31_NWild	**NWild**	−11.980	−15.802	0.000	1	NWild
Muestra36_NWild	**NWild**	−9.910	−13.906	0.000	1	NWild
Muestra40_NWild	**NWild**	−10.856	−11.133	0.000	1	NWild
Muestra43_NWild	**NWild**	−11.199	−18.513	0.000	1	NWild
Muestra46_NWild	**NWild**	−7.976	−9.039	0.000	1	NWild
SWild_Muestra60	**SWild**	−10.092	−7.826	0.000	2	SWild
Muestra63_SWild	**SWild**	−15.601	−12.433	0.000	2	SWild
Muestra69_SWild	**SWild**	−9.321	−6.816	0.000	2	SWild
Muestra72_SWild	**SWild**	−13.983	−11.990	0.000	2	SWild
Muestra74_SWild	**SWild**	−11.643	−10.403	0.000	2	SWild
Muestra76_SWild	**SWild**	−9.560	−6.816	0.000	2	SWild
Muestra77_SWild	**SWild**	−12.634	−8.294	0.000	2	SWild
Muestra19_SWild	**SWild**	−10.791	−10.442	0.000	2	SWild
Muestra47_SWild	**SWild**	−9.494	−7.836	0.000	2	SWild
Muestra48_SWild	**SWild**	−9.965	−6.573	0.000	2	SWild
Capt_821	**Captive**	−12.455	−13.887	0.000	1	NWild
457_Capt	**Captive**	−11.330	−11.501	0.000	1	NWild
296_Capt	**Captive**	−16.342	−18.835	0.000	1	NWild
877_Capt	**Captive**	−6.589	−9.277	0.000	1	NWild
38_Capt	**Captive**	−15.277	−12.155	0.000	2	SWild
805_Capt	**Captive**	−7.249	−12.154	0.000	1	NWild

17_Capt	**Captive**	−14.983	−17.080	0.000	1	NWild
63_Capt	**Captive**	−10.881	−12.806	0.000	1	NWild
961_Capt	**Captive**	−15.048	−15.534	0.000	1	NWild
1079_Capt	**Captive**	−15.071	−14.635	0.000	2	SWild
973_Capt	**Captive**	−9.559	−12.547	0.000	1	NWild
WPP_TX_1606_1.0_Capt	**Captive**	−10.044	−11.685	0.000	1	NWild
1068_Capt	**Captive**	−12.462	−8.793	0.000	2	SWild
1013_Capt	**Captive**	−9.152	−9.164	0.000	1	NWild
996_Capt	**Captive**	−13.928	−12.966	0.000	2	SWild
983_Capt	**Captive**	−14.456	−10.772	0.000	2	SWild
806_Capt	**Captive**	−10.342	−13.237	0.000	1	NWild
772_Capt	**Captive**	−12.212	−12.590	0.000	1	NWild
812_Capt	**Captive**	−10.631	−10.820	0.000	1	NWild
786_Capt	**Captive**	−10.685	−13.346	0.000	1	NWild
765_Capt	**Captive**	−8.731	−11.989	0.000	1	NWild
871_Capt	**Captive**	−10.472	−12.085	0.000	1	NWild
779_Capt	**Captive**	−12.537	−13.110	0.000	1	NWild
809_Capt	**Captive**	−13.065	−12.751	0.000	2	SWild
Muestra53_Capt	**Captive**	−8.750	−11.020	0.000	1	NWild
Muestra64_Capt	**Captive**	−11.868	−11.360	0.000	2	SWild
Muestra65_Capt	**Captive**	−9.096	−9.348	0.000	1	NWild
Muestra66_Capt	**Captive**	−11.194	−12.738	0.000	1	NWild
Muestra67_Capt	**Captive**	−13.881	−18.303	0.000	1	NWild

Data Sheet	TBP_Partition
Data Title	TBP_Reduced_3/20/21

No. Loci	10
No. Samples	42
No. Pops.	3
Zero Freq. =	0.01

Summary of Population Assignment Outcomes to 'Self' or 'Other' Population (With Leave One Out Option)

Pop	**Self Pop**	**Other Pop**
Madera	8	2
Tutuaca	3	2
Total	11	4
Percent	73%	27%

Assignment Values (With Leave One Out Option)

Sample	**Pop**	**Madera**	**Tutuaca**	**Captive**	**Assigned Pop**	
Wild_291201_Mad	**Madera**	−7.443	−11.171	0.000	1	Madera
1376_Mad	**Madera**	−11.945	−12.569	0.000	1	Madera
003_Mad	**Madera**	−12.650	−12.567	0.000	2	Tutuaca
230210_Mad	**Madera**	−8.527	−12.852	0.000	1	Madera

291502_Mad	**Madera**	−8.992	−11.655	0.000	1	Madera
M0129-1_Mad	**Madera**	−9.865	−8.745	0.000	2	Tutuaca
X5-46_Mad	**Madera**	−9.949	−14.268	0.000	1	Madera
2302-40_Mad	**Madera**	−6.457	−12.199	0.000	1	Madera
2604_42Mad	**Madera**	−8.826	−9.819	0.000	1	Madera
M1628-1_Mad	**Madera**	−8.375	−12.958	0.000	1	Madera
T0739-2_Tut	**Tutuaca**	−10.464	−10.288	0.000	2	Tutuaca
T0839-2_Tut	**Tutuaca**	−11.937	−11.275	0.000	2	Tutuaca
T0939-1_Tut	**Tutuaca**	−11.451	−11.901	0.000	1	Madera
T1339-2_Tut	**Tutuaca**	−11.771	−11.372	0.000	2	Tutuaca
3711-2_Tut	**Tutuaca**	−11.287	−13.693	0.000	1	Madera
Captive_513_Capt	**Captive**	−8.784	−8.502	0.000	2	Tutuaca
111_Capt	**Captive**	−6.788	−4.692	0.000	2	Tutuaca
228_Capt	**Captive**	−8.384	−11.393	0.000	1	Madera
468_Capt	**Captive**	−9.798	−10.296	0.000	1	Madera
592_Capt	**Captive**	−9.150	−10.062	0.000	1	Madera
216_Capt	**Captive**	−6.304	−9.044	0.000	1	Madera
82_Capt	**Captive**	−8.739	−9.247	0.000	1	Madera
421_Capt	**Captive**	−10.968	−12.597	0.000	1	Madera
240_Capt	**Captive**	−8.786	−10.025	0.000	1	Madera
106_Capt	**Captive**	−9.397	−10.472	0.000	1	Madera
200_Capt	**Captive**	−9.066	−10.472	0.000	1	Madera
274_Capt	**Captive**	−11.905	−11.694	0.000	2	Tutuaca
527_Capt	**Captive**	−7.975	−13.074	0.000	1	Madera
659_Capt	**Captive**	−8.710	−12.016	0.000	1	Madera
502_Capt	**Captive**	−8.871	−12.859	0.000	1	Madera
527_Capt	**Captive**	−8.498	−12.074	0.000	1	Madera
450_Capt	**Captive**	−7.519	−11.773	0.000	1	Madera
386_Capt	**Captive**	−9.004	−11.521	0.000	1	Madera
544_Capt	**Captive**	−9.627	−10.393	0.000	1	Madera
148_Capt	**Captive**	−8.125	−6.141	0.000	2	Tutuaca
149_Capt	**Captive**	−8.898	−11.104	0.000	1	Madera
37_Capt	**Captive**	−5.544	−9.965	0.000	1	Madera
587_Capt	**Captive**	−8.847	−10.560	0.000	1	Madera
227_Capt	**Captive**	−11.255	−7.493	0.000	2	Tutuaca
640_Capt	**Captive**	−8.022	−13.074	0.000	1	Madera
503_Capt	**Captive**	−11.673	−15.023	0.000	1	Madera
556_Capt	**Captive**	−9.163	−8.326	0.000	2	Tutuaca

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Table S8: Evanno Table output from STRUCTURE Harvester based on 10 iterations of STRUCTURE output and number of clusters (K) ranging from 1 to 10

Blue-throated macaw

K	Repetitions	Mean LnP(K)	Stdev LnP(K)	Ln'(K)	|Ln"(K)|	Delta K
1	10	−498.6	0.8832	NA	NA	NA
2	10	−500.51	4.1786	-1.91	2.18	0.521701
3	10	−500.24	4.9437	0.27	1.5	0.303415
4	10	−498.47	2.0688	1.77	1.76	0.850717
5	10	−498.46	0.726	0.01	0.67	0.922834
6	10	−499.12	0.7685	-0.66	1.65	2.146904
7	10	−498.13	1.1748	0.99	0.93	0.791637
8	10	−498.07	1.2157	0.06	1.21	0.995324
9	10	−499.22	1.9993	-1.15	1.44	0.72024
10	10	−498.93	2.6758	0.29	NA	NA

Thick-billed parrot

K	Repetitions	Mean LnP(K)	Stdev LnP(K)	Ln'(K)	|Ln"(K)|	Delta K
1	10	−368.33	0.3401	NA	NA	NA
2	10	−368.2	1.3115	0.13	0.3	0.228748
3	10	−368.37	0.9989	−0.17	0.17	0.17018
4	10	−368.71	1.511	−0.34	0.71	0.469877
5	10	−368.34	1.8167	0.37	0.82	0.451365
6	10	−368.79	1.5191	−0.45	0.9	0.592456
7	10	−368.34	1.3343	0.45	0.14	0.104921
8	10	−368.03	1.3736	0.31	0.61	0.444088
9	10	−368.33	1.0853	−0.3	0.49	0.451486
10	10	−368.14	1.5123	0.19	NA	NA

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Figure Legend

Figure S1: Captive pedigrees for the blue-throated macaw and thick-billed parrot. Pedigree was constructed to one generation above any sampled individuals when possible.

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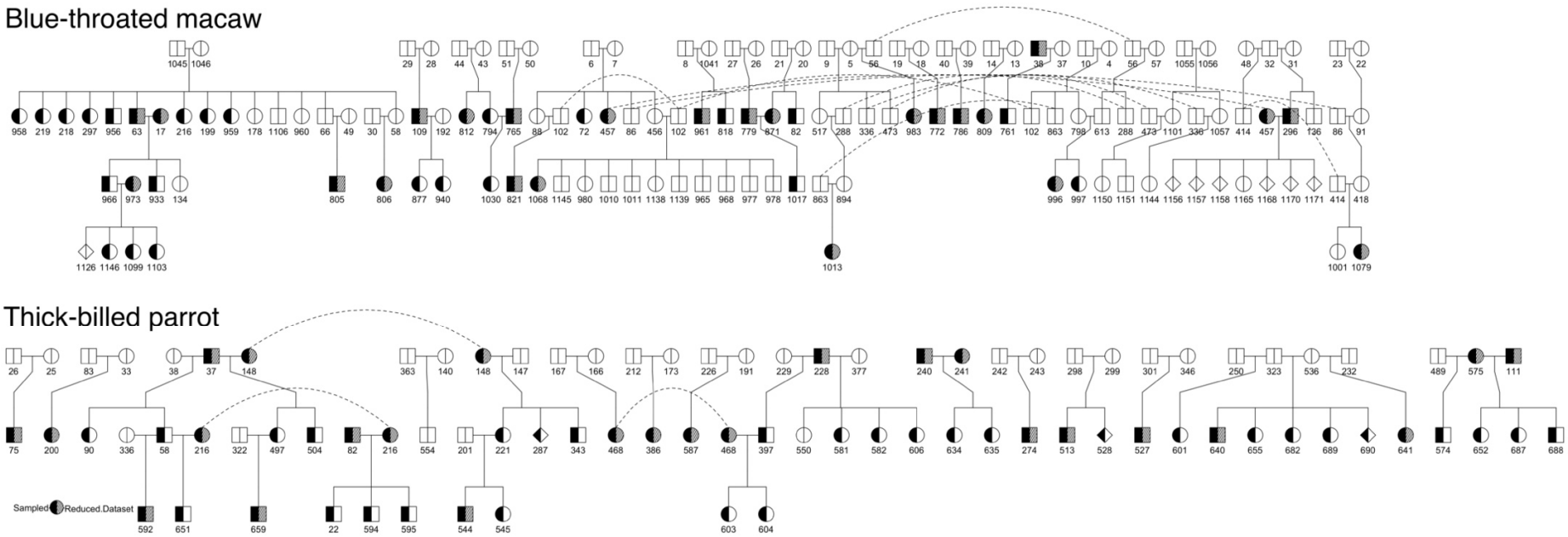
Figure S1



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