Figure S1. Neibourgh-joining phylogenetic reconstruction based on K2p distance and 1000 bootstraps of COI sequences (627bp long) of 11 *Zenaida aurita* haplotypes (H_A-H_K). A set of seven *Z. galapagoensis* individuals is used as an out group.

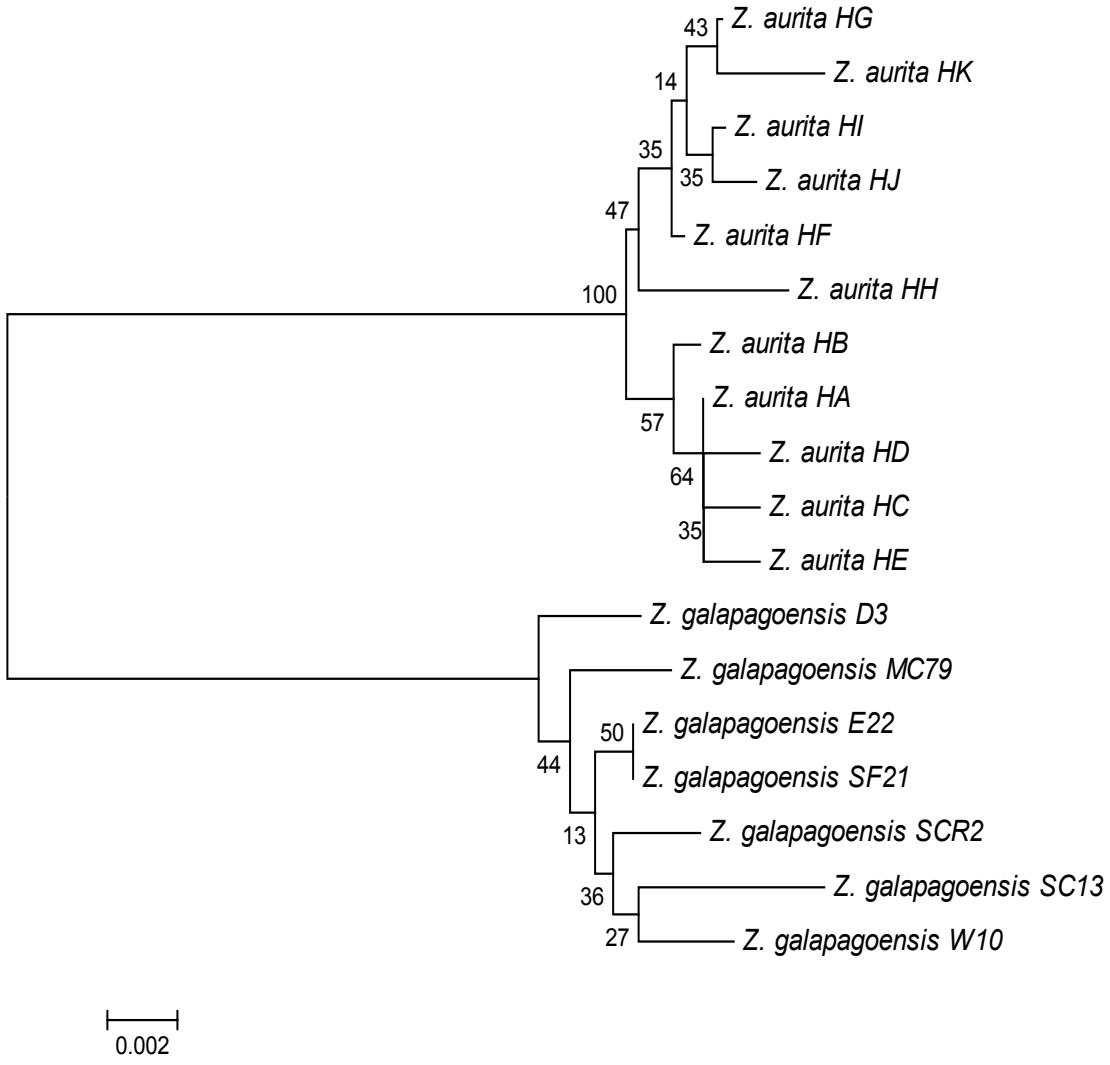

Figure S2. Genetic structure inferred by the Bayesian clustering analysis performed with STRUCTURE for *K* from 2 to 8. In each case, each colour represents a genetic cluster. Each bar corresponds to unique individual and its probability to belong in each cluster.

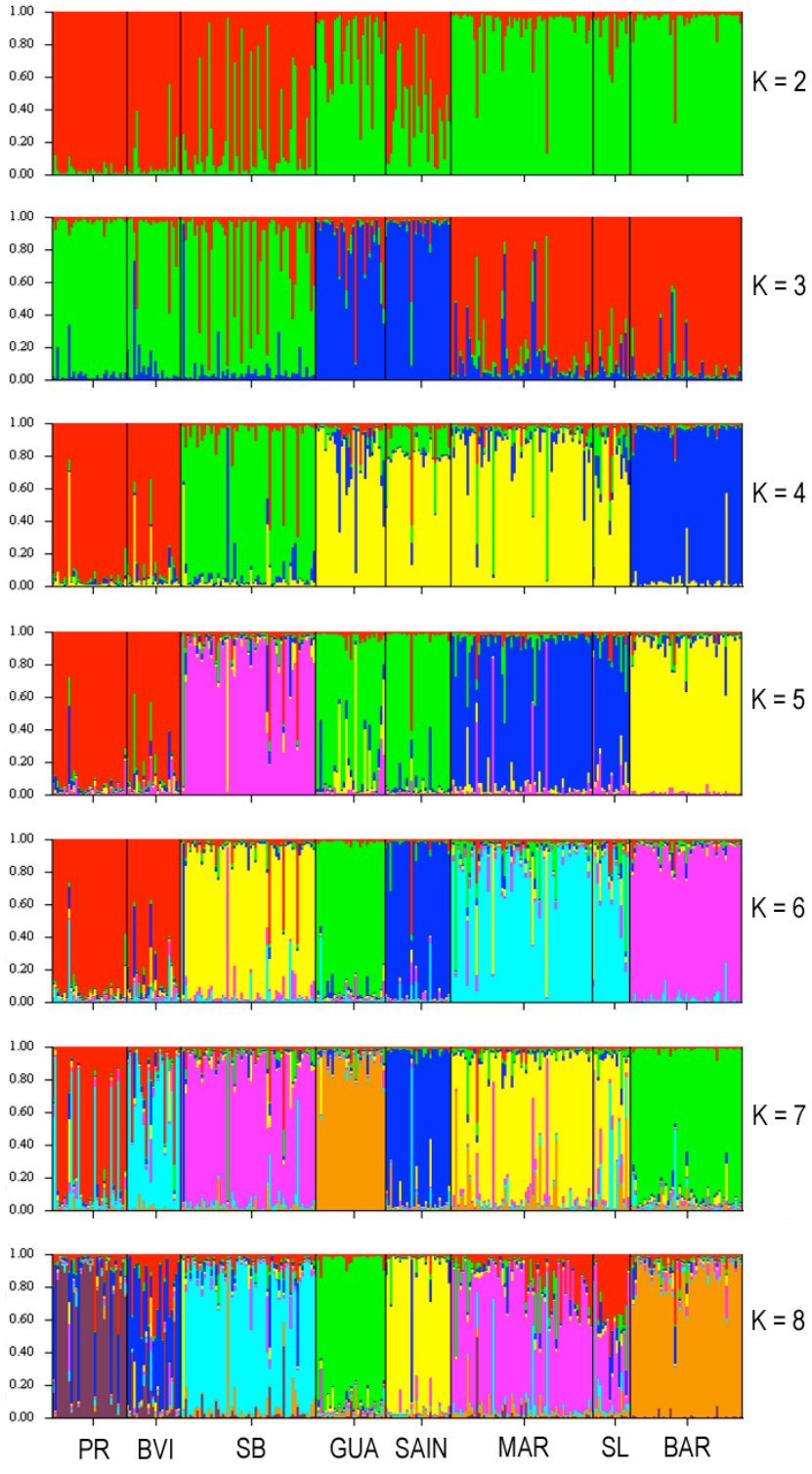

Table S1. Genetic diversity summary for 13 Zenaida Doves microsatellites for eight Caribbean islands with sample size in parenthesis. Na: Number of alleles. Ar: allelic richness after rarefaction based on minimum sample size of eight individuals. H_O: observed and H_E: expected heterozygosities. P_{HWE}: probability associated with Hardy Weinberg equilibrium (HWE) tests. Values in bold denote deviation from Hardy Weinberg equilibrium significant after BY's correction.

	Overall (296)	PR (32)	BVI (23)	SB (58)	GUA (30)	SAIN (28)	MAR (61)	SL (16)	BAR (48)
ZaA4									
Na (Ar)	17(8.55)	10(7.39)	8(7.01)	11(8.03)	7(6.24)	7(6.31)	11(7.56)	6(5.59)	6(5.69)
H_O- H_E		0.67-0.68	0.71-0.74	0.72-0.79	0.68-0.68	0.67-0.81	0.56-0.68	0.62-0.73	0.79-0.76
P_{HWE}		0.5369	0.4660	0.0840	0.5768	0.0482	0.0154	0.2301	0.7492
ZaA5									
Na (Ar)	24(12.87)	16(11.85)	14(12.26)	12(9.69)	12(8.61)	7(5.89)	16(10.58)	11(10.34)	13(10.30)
H_O- H_E		0.93-0.91	1.00-0.92	0.94-0.89	0.83-0.84	0.65-0.76	0.85-0.90	0.87-0.90	0.93-0.89
P_{HWE}		0.7773	1.0000	0.9492	0.5300	0.1256	0.1917	0.4681	0.1422
ZaA112									
Na (Ar)	11(6.58)	7(5.99)	10(8.17)	7(6.14)	6(5.43)	7(6.33)	6(5.84)	6(5.44)	6(5.11)
H_O- H_E		0.80-0.75	0.82-0.85	0.84-0.77	0.83-0.81	0.82-0.80	0.79-0.82	0.81-0.70	0.95-0.75
P_{HWE}		0.8263	0.4463	0.9385	0.6923	0.6703	0.3816	0.9274	0.9999
ZaC11									
Na (Ar)	15(8.28)	13(10.52)	9(8.21)	7(6.22)	7(6.15)	6(5.00)	8(6.04)	4(3.81)	6(4.53)
H_O- H_E		0.94-0.90	0.95-0.86	0.92-0.94	0.67-0.74	0.68-0.67	0.86-0.78	0.69-0.71	0.62-0.74

	P_{HWE}		0.8292	0.9644	0.3917	0.1965	0.6022	0.9689	0.5329	0.0485
ZaC12										
	Na (Ar)	21(8.95)	13(9.87)	10(8.80)	9(6.49)	8(6.51)	8(6.46)	5(4.64)	6(5.96)	11(7.50)
	H_O- H_E		0.52-0.88	0.64-0.85	0.67-0.77	0.72-0.75	0.81-0.64	0.48-0.61	0.69-0.78	0.76-0.79
	P_{HWE}		***< P***	0.0071	0.0546	0.4389	0.9997	0.0084	0.2472	0.4021
ZaD1										
	Na (Ar)	13(7.29)	8(6.27)	8(6.47)	8(6.72)	8(6.95)	7(5.39)	7(5.33)	5(5.00)	7(6.59)
	H_O- H_E		0.43-0.59	0.43-0.65	0.51-0.78	0.87-0.78	0.82-0.78	0.62-0.69	0.61-0.66	0.79-0.82
	P_{HWE}		0.0087	0.0038	***< P***	0.9594	0.7717	0.1584	0.4531	0.3167
ZaD7										
	Na (Ar)	12(7.90)	7(5.95)	9(7.95)	11(7.82)	7(6.27)	8(7.61)	8(7.51)	7(6.99)	9(7.28)
	H_O- H_E		0.53-0.63	0.74-0.85	0.80-0.85	0.72-0.78	0.76-0.86	0.68-0.83	0.86-0.83	0.79-0.80
	P_{HWE}		0.1567	0.1341	0.2445	0.2807	0.108	0.0079	0.7544	0.5631
ZaD11										
	Na (Ar)	11(6.39)	10(7.73)	7(6.05)	7(5.73)	5(4.32)	3(3.00)	7(5.49)	4(4.00)	8(6.21)
	H_O- H_E		0.61-0.78	0.78-0.71	0.63-0.76	0.68-0.69	0.72-0.67	0.72-0.75	0.36-0.73	0.80-0.80
	P_{HWE}		0.0074	0.8802	0.0142	0.5125	0.778	0.3163	0.0032	0.5678
ZaD104										
	Na (Ar)	12(7.83)	7(6.06)	9(7.95)	8(7.14)	7(6.88)	6(4.39)	7(5.42)	6(6.00)	9(7.30)
	H_O- H_E		0.59-0.77	0.65-0.86	0.71-0.80	0.70-0.85	0.64-0.66	0.74-0.79	0.79-0.84	0.80-0.84
	P_{HWE}		0.0123	0.0086	0.0334	0.027	0.4803	0.2119	0.399	0.2751
ZaD105										

Na (Ar)	9(6.29)	9(7.16)	7(6.30)	6(5.86)	6(5.33)	4(3.39)	6(5.23)	6(6.00)	6(4.71)
H_O- H_E		0.72-0.81	0.78-0.78	0.72-0.80	0.73-0.75	0.61-0.59	0.71-0.74	0.92-0.82	0.61-0.60
P_{HWE}		0.107	0.5907	0.0791	0.4838	0.6584	0.3212	0.9199	0.6612
ZaD108									
Na (Ar)	14(9.15)	11(10.13)	9(8.51)	9(7.21)	10(8.27)	7(6.26)	8(6.19)	5(4.81)	10(8.87)
H_O- H_E		0.58-0.91	0.38-0.88	0.59-0.81	0.72-0.85	0.67-0.75	0.72-0.82	0.56-0.71	0.85-0.89
P_{HWE}		***< P***	***< P***	***< P***	0.0543	0.1973	0.0329	0.1267	0.3017
ZaD119									
Na (Ar)	14(7.64)	9(7.03)	9(7.50)	8(6.78)	9(6.74)	9(8.11)	7(6.43)	6(5.86)	10(6.89)
H_O- H_E		0.61-0.81	0.69-0.84	0.82-0.83	0.69-0.79	0.67-0.84	0.72-0.82	0.93-0.79	0.85-0.76
P_{HWE}		0.004	0.0502	0.5130	0.1429	0.0108	0.0302	0.9778	0.9702
ZaD121									
Na (Ar)	15(8.82)	11(9.39)	10(9.00)	8(6.45)	7(5.81)	8(7.27)	13(8.32)	9(8.70)	10(9.10)
H_O- H_E		0.65-0.89	0.56-0.89	0.65-0.81	0.80-0.80	0.92-0.86	0.78-0.85	0.80-0.88	0.73-0.89
P_{HWE}		***< P***	***< P***	0.0021	0.5947	0.9186	0.0933	0.2606	0.0032
All (mean values)									
Na (Ar)		10.08	9.15	8.54	7.61	6.69	8.38	6.23	8.54
H_O- H_E		0.66-0.79	0.70-0.82	0.73-0.81	0.74-0.78	0.73-0.74	0.71-0.77	0.73-0.77	0.79-0.79
P_{HWE}		***< P***	***< P***	***< P***	0.0357	0.1535	***< P***	0.0628	0.2519

Table S2. Haplotype definition and its spatial distribution for COI mt-DNA (627 pb) in *Zenaida aurita*. GenBank: Accession JN639022-32. Position: the number represents the position of polymorphic sites relative Genbank sequence Accession number JN639022 (denotes homology to reference haplotype H_A). Island: sample size for each haplotype for each sampled island. N: total sample size for each haplotype.

Haplotype	Position										Island								N
	16	220	229	232	277	350	372	436	479	547	PR	BVI	SB	GUA	SAIN	MAR	SL	BAR	
H_A	T	C	G	T	C	G	C	A	C	A	2	4	52	24	27	41	13	31	194
H_B	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	3
H_C	-	T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	16
H_D	-	-	-	-	T	-	-	-	-	-	-	-	-	-	-	-	-	1	1
H_E	-	-	-	-	-	-	T	-	-	-	-	-	-	-	-	1	-	-	1
H_F	-	-	A	-	-	-	-	-	-	T	7	5	-	-	-	-	-	-	12
H_G	-	-	A	C	-	-	-	-	-	T	9	14	-	-	-	-	-	-	23
H_H	-	-	A	-	-	A	-	C	-	-	1	-	-	-	-	-	-	-	1
H_I	-	-	A	-	-	-	-	C	-	T	1	-	-	-	-	-	-	-	1
H_J	-	-	A	C	-	-	-	C	-	T	1	-	-	-	-	-	-	-	1
H_K	-	-	A	C	-	A	-	-	G	T	1	-	-	-	-	-	-	-	1

Table S3. Repeatability (R) for tarsus length, wing chord and tail length measurements with 95% confidence intervals (95% CI) and statistical significance of likelihood ratio tests (*P*), per islands and overall (N = 235). Measurement error (ME in %) defined as (1 – R) x 100 is also presented.

	Tarsus length				Wing chord				Tail length			
Island	R	95% CI	*P*	ME	R	95% CI	*P*	ME	R	95% CI	*P*	ME
SB	0.950	0.918-0.970	< 0.0001	5.00	0.962	0.936-0.977	< 0.0001	3.80	0.937	0.901-0.961	< 0.0001	6.30
GUA	0.988	0.974-0.995	< 0.0001	1.20	0.983	0.964-0.991	< 0.0001	1.70	0.977	0.950-0.989	< 0.0001	2.30
SAIN	0.988	0.975-0.994	< 0.0001	1.20	0.983	0.967-0.992	< 0.0001	1.70	0.982	0.961-0.991	< 0.0001	1.80
MAR	0.965	0.941-0.980	< 0.0001	3.50	0.941	0.900-0.967	< 0.0001	5.90	0.950	0.915-0.970	< 0.0001	5.00
SL	0.990	0.97-0.996	< 0.0001	1.00	0.980	0.936-0.993	< 0.0001	2.00	0.955	0.868-0.983	< 0.0001	4.50
BAR	0.953	0.919-0.974	< 0.0001	4.70	0.953	0.920-0.972	< 0.0001	4.70	0.935	0.884-0.961	< 0.0001	6.50
Overall	0.970	0.962-0.977	< 0.0001	3.00	0.972	0.965-0.978	< 0.0001	2.80	0.978	0.971-0.983	< 0.0001	2.20

Text S1. Ethics Statement details.

The permits were obtained from Natural Heritage Department (Ministry of Environment and Drainage) for Barbados, from the Forestry Department (Ministry of Agriculture) for Saint Lucia and from the Centre de Recherches par le Baguage des Populations d'Oiseaux (MNHN, Paris, France) for the French Antilles (Saint Barthélemy, Guadeloupe, Les Saintes, Martinique). The samples from Puerto Rico were provided by Francisco J Vilella and Huisheng Chen (MS Cooperative Fish & Wildlife Research Unit, Mississippi State University, USA), and required three permits: (1) USGS Bird Banding Laboratory Master Station (permit 22456), (2) Puerto Rico Department of Natural and Environmental Resources (permit 2010-EPE-010) and (3) Mississippi State University Institutional Animal Care and Use Committee (protocol 07-020). The samples from Guana Island (British Virgin Islands) were made available by Robert Ricklefs and Steven Latta, with support for their collection provided by Fred Sibley, James Lazell and the Falconwood Foundation. These samples only required US Fish and Wildlife Service and USDA APHIS permits for importing the samples (no specific permit was necessary in Guana Island for bird catching/blood sampling and the export of samples). Doves were mainly caught in public areas, but sometimes in private properties. In this case, permissions were obtained from the landowners to enter their property.