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Appendix 1.

Table A1. Geographic data and tissue samples of White-Throated Thrushes used in genetic analyses.

Locality	Museum code	Geographic data		GenBank Accessions		Coloration measures
		Lat	Long	ND2	Cyt B	
Costa Rica, Punta Arenas, Monteverde	KU10560	10.30	-84.82	KX077547	KX077574	
Costa Rica, Punta Arenas, Monteverde	KU10561	10.30	-84.82	MH651114	MH651045	
El Salvador, Ahuachapan, San Pedro Puxtla	KU5939	13.81	-89.807	-	MH651046	
El Salvador, San Vicente, Nuevo Tepelitán	KU6473	13.608	-88.837	-	MH651047	
Honduras, Copan, Copan ruins	UWBM-94367	14.84	-89.15	DQ911066	DQ910935	
Honduras, Olancho, Palestina	CUMV-H4715	14.11	-85.72	KX077559	KX077586	
Honduras, Olancho, Catacamas	CUMV-H4864	14.93	-85.89	KX077560	KX077587	
Mexico, Chiapas, Yaxchilán	MZFC-14490	16.91	-90.98	KX077558	KX077585	✓
Mexico, Chihuahua, El Llano	MZFC-19784	26.66	-107.31	KX077554	KX077581	
Mexico, Chihuahua, El Llano	MZFC-19785	26.66	-107.31	KX077555	KX077582	✓
Mexico, Chihuahua, El Llano	MZFC-19796	26.66	-107.31	KX077556	KX077583	✓
Mexico, Chihuahua, El Llano	MZFC-19786	26.66	-107.31	KX077557	KX077584	✓
Mexico, Colima, Laguna La María	MZFC-16640	19.46	-103.71	MH651115	MH651048	
Mexico, Colima, Laguna La María	MZFC-16417	19.46	-103.71	MH651116	MH651049	
Mexico, Estado de Mexico, Cuernavaca	MZFC-10713	18.97	-99.29	MH651117	MH651050	✓
Mexico, Estado de Mexico, Cuernavaca	MZFC-10712	18.97	-99.29	-	MH651051	✓
Mexico, Estado de Mexico, Cuernavaca	MZFC-10716	18.97	-99.29	MH651118	MH651052	✓
Mexico, Estado de Mexico, Cuernavaca	MZFC-10709	18.97	-99.29	KX077562	KX077589	
Mexico, Guerrero, Carrizal de Bravo	MZFC-17511	17.82	-99.97	MH651119	MH651053	✓
Mexico, Guerrero, Carrizal de Bravo	MZFC-17728	17.82	-99.97	MH651120	MH651054	✓
Mexico, Guerrero, Carrizal de Bravo	MZFC-17727	17.82	-99.97	MH651121	MH651055	✓
Mexico, Guerrero, Carrizal de Bravo	MZFC-22465	17.82	-99.97	MH651122	MH651056	✓
Mexico, Guerrero, Carrizal de Bravo	MZFC-22468	17.82	-99.97	KX077563	KX077590	✓
Mexico, Guerrero, Carrizal de Bravo	MZFC-22466	17.82	-99.97	MH651123	MH651057	✓
Mexico, Guerrero, Carrizal de Bravo	MZFC-22467	17.82	-99.97	MH651124	MH651058	✓
Mexico, Guerrero, Carrizal de Bravo	MZFC-26403	17.82	-99.97	-	MH651059	
Mexico, Guerrero, Carrizal de Bravo	MZFC-26404	17.82	-99.97	-	MH651060	
Mexico, Guerrero, Carrizal de Bravo	MZFC-26364	17.82	-99.97	-	MH651061	✓
Mexico, Guerrero, Omiltemi	MZFC-19327	17.55	-99.77	MH651125	MH651062	✓
Mexico, Guerrero, Omiltemi	MZFC-26231	17.55	-99.77	-	MH651063	✓
Mexico, Guerrero, Omiltemi	MZFC-26232	17.55	-99.77	-	MH651064	✓
Mexico, Hidalgo, El Coyol	MZFC-15247	21.07	-98.99	MH651126	MH651065	✓
Mexico, Hidalgo, Tenango de Doria	MZFC-11502	20.34	-98.22	KX077553	KX077580	
Mexico, Hidalgo, Tlanchinol	MZFC-9878	20.99	-98.61	KX077548	KX077575	✓
Mexico, Hidalgo, Tlanchinol	MZFC-9943	20.99	-98.61	MH651127	-	
Mexico, Hidalgo, Tlanchinol	MZFC-10352	20.99	-98.61	KX077549	KX077576	
Mexico, Jalisco, El Tuito	MZFC-25272	20.35	-105.36	KX077561	KX077588	
Mexico, Jalisco, El Tuito	MZFC-25267	20.35	-105.36	MH651128	MH651066	

Mexico, Jalisco, El Tuito	MZFC-25269	20.35	-105.36	MH651129	MH651067	
Mexico, Jalisco, El Tuito	MZFC-25270	20.35	-105.36	-	MH651068	
Mexico, Jalisco, El Tuito	MZFC-25271	20.35	-105.36	MH651130	MH651069	
Mexico, Jalisco, El Tuito	MZFC-25268	20.35	-105.36	MH651131	MH651070	✓
Mexico, Nayarit, El Cuarenteño	MZFC-22829	21.48	-105.00	MH651132	MH651071	✓
Mexico, Nayarit, El Cuarenteño	MZFC-22830	21.48	-105.00	MH651133	MH651072	✓
Mexico, Nayarit, El Cuarenteño	MZFC-22831	21.48	-105.00	MH651134	MH651073	✓
Mexico, Nayarit, El Cuarenteño	MZFC-22832	21.48	-105.00	KX077564	KX077591	✓
Mexico, Nayarit, El Cuarenteño	MZFC-22834	21.48	-105.00	MH651135	MH651074	
Mexico, Nayarit, El Cuarenteño	MZFC-22835	21.48	-105.00	MH651136	MH651075	✓
Mexico, Nayarit, El Cuarenteño	MZFC-22836	21.48	-105.00	MH651137	MH651076	✓
Mexico, Oaxaca, Cerro Piedra Larga	MZFC-12260	16.61	-95.80	MH651138	MH651077	✓
Mexico, Oaxaca, Chalchijapa	MZFC-12268	17.07	-94.58	-	MH651078	✓
Mexico, Oaxaca, Chalchijapa	MZFC-12256	17.07	-94.58	-	MH651079	✓
Mexico, Oaxaca, El Portillo	MZFC-23128	16.22	-97.33	MH651139	MH651080	✓
Mexico, Oaxaca, El Venado	MZFC-12349	17.59	-97.00	MH651140	MH651081	✓
Mexico, Oaxaca, La Cabaña	MZFC-11761	17.07	-94.05	-	MH651082	✓
Mexico, Oaxaca, Pluma Hidalgo	MZFC-21179	15.93	-96.42	MH651141	MH651083	✓
Mexico, Oaxaca, Pluma Hidalgo	MZFC-21170	15.93	-96.42	MH651142	MH651084	✓
Mexico, Oaxaca, Pluma Hidalgo	MZFC-21171	15.93	-96.42	KX077565	KX077592	✓
Mexico, Oaxaca, Pluma Hidalgo	MZFC-21183	15.93	-96.42	MH651143	MH651085	✓
Mexico, Oaxaca, Pluma Hidalgo	MZFC-21174	15.93	-96.42	MH651144	MH651086	✓
Mexico, Oaxaca, Pluma Hidalgo	MZFC-21185	15.93	-96.42	-	MH651087	✓
Mexico, Oaxaca, Pluma Hidalgo	MZFC-21175	15.93	-96.42	MH651145	MH651088	✓
Mexico, Oaxaca, Pluma Hidalgo	MZFC-21176	15.93	-96.42	-	MH651089	✓
Mexico, Oaxaca, Pluma Hidalgo	MZFC-21177	15.93	-96.42	-	MH651090	✓
Mexico, Oaxaca, Pluma Hidalgo	MZFC-21186	15.93	-96.42	-	MH651091	✓
Mexico, Oaxaca, Pluma Hidalgo	MZFC-22070	15.93	-96.42	MH651146	MH651092	✓
Mexico, Oaxaca, Pluma Hidalgo	MZFC-18853	15.93	-96.42	MH651147	MH651093	
Mexico, Oaxaca, Pluma Hidalgo	MZFC-18925	15.93	-96.42	MH651148	MH651094	
Mexico, Oaxaca, Pluma Hidalgo	MZFC-22069	15.93	-96.42	MH651149	MH651095	✓
Mexico, Oaxaca, Pluma Hidalgo	MZFC-18855	15.93	-96.42	MH651150	MH651096	✓
Mexico, Oaxaca, San Martín Caballero	MZFC-11642	18.11	-96.64	MH651151	-	
Mexico, Oaxaca, San Juan Yagila	MZFC-21968	17.49	-96.38	MH651152	MH651097	✓
Mexico, Oaxaca, Yucunino	MZFC-25958	16.83	-97.88	MH651153	MH651098	
Mexico, Oaxaca, Yucunino	MZFC-12273	16.83	-97.88	MH651154	MH651099	✓
Mexico, Puebla, Carreragco	MZFC-26568	19.87	-97.70	MH651155	MH651100	✓
Mexico, Puebla, Cuitchat	MZFC-11361	20.09	-97.52	MH651156	MH651101	✓
Mexico, Puebla, Cuitchat	MZFC-11358	20.09	-97.52	MH651157	MH651102	✓
Mexico, Queretaro, El Pemoche	MZFC-13258	21.23	-99.11	MH651158	MH651103	✓
Mexico, San Luis de Potosi, San Nicolás de los Montes	MZFC-15071	22.12	-99.43	KX077550	KX077577	✓
Mexico, San Luis de Potosi, San Nicolás de los Montes	MZFC-15102	22.12	-99.43	KX077551	KX077578	
Mexico, San Luis de Potosi, San Nicolás de los Montes	MZFC-15919	22.12	-99.43	MH651159	MH651104	✓
Mexico, San Luis de Potosi, San Nicolás de los Montes	MZFC-15920	22.12	-99.43	MH651160	MH651105	✓
Mexico, San Luis de Potosi, San Nicolás de los Montes	MZFC-15923	22.12	-99.43	MH651161	MH651106	✓
Mexico, San Luis de Potosi, San Nicolás de los Montes	MZFC-15921	22.12	-99.43	MH651162	MH651107	✓

Mexico, San Luis de Potosi, San Nicolás de los Montes	MZFC-22697	22.12	-99.43	MH651163	MH651108	✓
Mexico, Sinaloa, El Palmito	MZFC-15354	23.56	-105.82	MH651164	MH651109	✓
Mexico, Sinaloa, Rancho Mojocoan	MZFC-15356	23.40	-105.90	MH651165	MH651110	✓
Mexico, Veracruz, Rancho el Riscal	MZFC-25550	19.48	-97.00	-	MH651111	✓
Mexico, Veracruz, Ejido Adolfo Ruiz Cortínez	MZFC-26931	18.54	-95.14	-	MH651112	✓
Panama, Veraguas, Cascajilloso	ANSP-20424	7.28	-80.72	KX077552	KX077579	
Panama, Veraguas, Cascajilloso	ANSP-20432	7.28	-80.72	-	MH651113	

Table A2. Variables used for ecological niche modeling and percent contribution to model construction. Dash denotes unused variables.

Limit:	Tehuantepec Itshmus		Mexican higher mountains	
	Western	Eastern	Western	Eastern
Variable				
Isothermality	2.3	-	-	4.2
Precipitation of Driest Month	0.7	6.4	2.1	1.1
Elevation	11.4	45.5	5.2	8
Maximum Temperature of Warmest Month	0.6		9	0.1
Mean Diurnal Range	11.6	1	7.9	2.8
Minimum Temperature of Coldest Month	5	-	2.4	9
Precipitation of Coldest Quarter	-	13.3	0.4	4.3
Precipitation of Warmest Quarter	2.3	2.5	4.2	0.4
Precipitation of Wettest Month	44	8	37.8	34.6
Precipitation Seasonality	2.4	0.1	9.1	10.3
Slope	14.7	10.2	9.1	23.3
Temperature Annual Range	-	5.2	-	-
Temperature Seasonality	-	3.1	7	1.4
Topographic index	5	4.9	5.8	0.4

Table A3. Genetic diversity parameters by gene. Number of individuals (N), length of sequence (bp), number of polymorphic sites (S), nucleotide diversity (π), haplotype diversity (Hd), number of haplotypes (H), and substitution Model (AICc)

	N	bp	S	π	Hd	h	
<i>T. assimilis</i> myt	69	2205	63	0.00281	0.956 (± 0.016)	45	TIM1+I
<i>T. assimilis</i> cyt B	89	1093	37	0.00322	0.931 (± 0.017)	40	TIM1+I
<i>T. assimilis</i> ND2	71	1112	29	0.00245	0.854 (± 0.03)	23	TrN+I

Table A4. Color parameter for each group measure in each plumage patch, Crown, Back, Rump, Throat, Breast, Belly. Parameters for hue components, Θ and ϕ hue, achieved chroma (a.chroma), color volume occupied in the visual space (volume) and color span as mean variance in distance in visual space within a group.

Patch	Group	Color parameters				
		Θ hue	ϕ hue	a.chroma	volume	color span
Crown	<i>T. a. leucachen</i>	0.017	-1.04	0.79	1.37E-07	0.017
	<i>T. a. assimilis</i>	0.03	-0.92	0.82	1.75E-07	0.025
	<i>T. a. lygrus</i>	0.04	-0.9	0.85	6.34E-06	0.026
	North	0.04	-0.91	0.83	4.36E-05	0.03
	South	0.019	-1.04	0.79	1.37E-07	0.02
	East	0.05	-0.9	0.82	5.88E-06	0.03
	West	0.018	-0.91	0.84	2.46E-05	0.03
Back	<i>T. a. leucachen</i>	0.04	-1.05	0.79	7.98E-07	0.022
	<i>T. a. assimilis</i>	0.06	-0.91	0.84	1.75E-07	0.028
	<i>T. a. lygrus</i>	0.08	-0.91	0.85	5.17E-06	0.019
	North	0.06	-0.92	0.83	1.49E-05	0.02
	South	0.04	-1.05	0.79	7.98E-07	0.02
	East	0.076	-0.92	0.84	8.40E-06	0.04
	West	0.09	-0.91	0.85	1.18E-05	0.02
Rump	<i>T. a. leucachen</i>	0.07	-1.08	0.79	6.18E-07	0.024
	<i>T. a. assimilis</i>	0.09	-0.96	0.83	1.59E-07	0.021
	<i>T. a. lygrus</i>	0.1	-0.96	0.84	3.23E-06	0.023
	North	0.09	-0.95	0.83	6.92E-07	0.02
	South	0.07	-1.07	0.79	6.18E-07	0.02
	East	0.1	-0.95	0.83	5.01E-07	0.03
	West	0.1	-0.96	0.83	6.13E-06	0.02
Throat	<i>T. a. leucachen</i>	0.24	-1.23	0.81	1.03E-07	0.016
	<i>T. a. assimilis</i>	0.29	-1.24	0.77	9.23E-08	0.02
	<i>T. a. lygrus</i>	0.22	-1.15	0.83	7.51E-08	0.018

	North	0.22	-1.15	0.82	4.03E-06	0.02
	South	0.24	-1.23	0.81	1.03E-07	0.02
	East	0.22	-1.23	0.79	2.09E-06	0.03
	West	0.24	-1.19	0.81	1.50E-06	0.02
	<i>T. a. leucachen</i>	0.11	-1.04	0.84	1.89E-07	0.02
	<i>T. a. assimilis</i>	0.17	-0.99	0.85	1.24E-08	0.019
Breast	<i>T. a. lygrus</i>	0.12	-0.98	0.86	6.68E-08	0.016
	North	0.12	-0.97	0.85	2.52E-06	0.02
	South	0.11	-1.04	0.84	1.89E-07	0.02
	East	0.13	-0.99	0.86	2.42E-06	0.03
	West	0.14	-0.98	0.85	1.24E-06	0.017
	<i>T. a. leucachen</i>	0.18	-1.13	0.83	1.96E-06	0.02
	<i>T. a. assimilis</i>	0.29	-1.24	0.8	1.65E-06	0.019
Belly	<i>T. a. lygrus</i>	0.2	-1.12	0.84	1.35E-06	0.03
	North	0.2	-1.13	0.83	1.39E-05	0.036
	South	0.19	-1.13	0.83	1.96E-06	0.02
	East	0.18	-1.1	0.86	6.40E-06	0.029
	West	0.2	-1.12	0.83	1.26E-05	0.04

Table A5. Explanatory variables for color variation used for the mixed effects models between east and west of the Isthmus of Tehuantepec and east-west Mexico.

Response variable	Explanatory variables	Description	Effect
Coloration	Genetic difference	Color variation is explained by genetic differences between groups	Fixed
	Environmental differences	Color variation is explained by environmental differences between groups	Fixed
	Genetic and environment	Color variation is explained by both the environmental and the genetic differences between groups	Fixed
	Interaction of genetic and environment	Color variation is explained by the interaction of environmental and genetic differences between groups	Fixed
	East-West Isthmus	Color variation is explained by geographic grouping	Random
	East-West Mexico	Color variation is explained by geographic grouping	Random