
Article

Breeding Season Habitat Selection of the Eurasian Collared Dove in a Dry Mediterranean Landscape

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SUPPLEMENTARY MATERIAL (SEE FOLLOWING PAGES)

Table S1. Environmental variables (Division I) related to the surface area (ha) of habitats and land uses, obtained from the Crop and Land Use Map of Spain (2000-2010) at a scale of 1:50,000 from López-Iborra et al. [34]. Variables derived from shrubland and shrub-pine forest are named by combining the initial of these vegetation formations with identifying letters of ombrotype, thermotype, and orientation. For example, SCSaTmeS means semi-arid thermo-Mediterranean shrubland on a south-facing slope.

DIVISION I	
Variable	Description
<i><u>Detailed land cover and use</u></i>	
AlmondT	Almond trees
AlmoOC	Almond trees and Other Crops
AlmoVi	Almond trees and Vineyards
Reedbed	Reedbed, digitized directly from aerial images of wetlands
CherryT	Cherry trees
CitrusT	Citrus tress
ForcedCrops	Forced Crops, including sand-covered crops, crops under plastic, and greenhouse crops
HerbCropOC	Herbaceous Crops and Other Crops
IrrHerbCrop	Irrigated Herbaceous Crops, differentiated from the garden/vegetables crops, includes forage crops, meadow crops, tubers, vegetables in extensive regime, industrial crops
PomegrFigT	Pomegranates and Fig trees
VegetablePatch	Area usually irrigated and highly parceled, where vegetables, other herbaceous crops, and often isolated fruit trees are intensively cultivated.
Unproductive	Non-productive areas of infrastructure, urban areas
Water	Water body
IntFarm	Intensive Dryland Farming, including fallow land, biennial cropping, and triennial cropping.
IntCropTC	Intensive Crops with Tree Crops
IntCropVi	Intensive Crops with Vineyards
Scrub	Scrubland
Scrub-Pines	Scrubland and Pine Forest
OliveT	Olive Grove
OliveOC	Olive Groves and Other Crops
OthFrut	Other Fruit Trees
PalmT	Palm Trees
Pines-TreeC	Pine Forest with Tree Crops
PinesRefor	Reforested Pine Forest: Reforestation + Wild Forest
YoungPines	Young Pine Forest: Sapling < 50
IntermPines	Intermediate Pine Forest: Timber < 50 + Sapling ≥ 50 + Pine Forest without specified structure
MatPines	Mature Pine Forest: Timber ≥ 50
SaltMarsh	Salt Marsh, digitized directly from aerial images of wetlands
Vineyard	Vineyard
VineyardOC	Vineyard with Other Crops
<i><u>Summary variables of habitats and soil use</u></i>	
TotForest	Total Forestal Cover
TotCultAr	Total Cultivated Area
TotTreeCropAr	Total Area of Tree Crops

TotHerbCropAr Total Area of Herbaceous Crops

Subclasses of pinewood

PinIntS, PinIntU, PinMat Resulting from crossing the coverage of intermediate (Int) and mature (Mat) pine forests with sunny
PinMatU, Pintmat (S) and shady (U) orientations
PintmatU, PintMatTot

Subclasses of scrubs

SCSaMmeS, SCSaMmeU, Resulting from crossing the coverage of scrubland with orientation, ombrotypes, and thermotypes.
SCSaTmeS, SCSaTmeU, Ombrotypes: Sa = semi-arid; Se = dry; Su = sub-humid Thermotypes: Tme = thermomediterranean;
SCSeMmeS, SCSeMmeU, Mme = mesomediterranean; Sme = supramediterranean
SCSeSmeS, SCSeSmeU,
SCSeTmeS, SCSeTmeU,
SCSuTmeS, SCSuTmeU

Subclasses of scrub-pinewood mixtures

SPSaMmeS, SPSaMmeU, Resulting from crossing the coverage of scrubland-pine forest with orientation, ombrotypes, and
SPSaTmeS, SPSaTmeU, thermotypes
SPSeMmeS, SPSeMmeU,
SPSeSmeS, SPSeSmeU,
SPSeTmeS, SPSeTmeU

Diversity of land cover and use categories

TotCropDiv Shannon Index of Total Crop Diversity
TotTreeDiv Shannon Index of Tree Crop Diversity
HerCropDiv Shannon Index of Herbaceous Crop Diversity
ForestDiv Shannon Index of Pine Forest Type Diversity
ShrubDiv Shannon Index of Scrubland Type Diversity

Table S2. Environmental variables (Division II) related to topography, natural and artificial hydrographic network, urbanization, communication routes, and climate.

DIVISION II	
Variable	Description
<u><i>Topographic variables</i></u>	
MeanAlt	Mean altitude
MinAlt	Minimum altitude
MaxAlt	Maximum altitude
RangAlt	Altitudinal range
Slope	Mean slope
ArSlope4560	Area with slope between 45% and 60%
ArSlope6080	Area with slope between 60% and 80%
Slope45	Area with slope > 45%
Slope60	Area with slope > 60%
Slope80	Area with slope > 80%
<u><i>Natural hydrographic network (rivers)</i></u>	
River	Total length of rivers
Riverbed	Total length of dry riverbeds
Ravine	Total length of ravines
Gullie	Total length of gullies
RavinRiverbed	Total length of ravines and dry riverbeds
<u><i>Artificial hydrographic network and water bodies</i></u>	
Ditches	Length of irrigation ditches
Ditches2m	Length of irrigation ditches < 2 m
ToDitches	Total length of irrigation ditches
Canal	Length of canals
ArLargePonds	Area of large ponds > 500 m ²
ArMedPonds	Area of medium ponds 150-500 m ²
ArSmallPonds	Area of small ponds 70-150 m ²
ArPools	Area of swimming pools
NLargePonds	Number of large ponds
NMedPonds	Number of medium ponds
NSmallPonds	Number of small ponds
NPools	Number of swimming pools
<u><i>Urbanization</i></u>	
ArIsolBuild	Area of isolated buildings
ArParkGard	Area of parks and gardens
ArUrbaniz	Area of urbanizations
ArUrban	Area of urban zone
NIsolBuild	Number of isolated buildings
<u><i>Transportation networks</i></u>	
LHighMotorways	Length of highways and motorways
Road	Length of roads

Path	Length of paths
Trail	Length of trails
Railway	Length of railway tracks
TotalRoutes	Total length of routes
TotalPavRoutes	Total length of paved routes
TotalDirtRoutes	Total length of dirt routes (path + trail)
<u>Bioclimatic variables</u>	
OmbrotIndex	Ombrothermic index
ThermicIndex	Thermicity index
CoastDist	Minimum distance to the coast

Table S3. Variables identified by the initial Hierarchical Partitioning (HP) analyses for both divisions (Division I: i-vi and Division II: vii-xii) as key for the occurrence (left) and abundance (right) of the Eurasian collared dove in SE Spain (Alicante province). The percentage of deviance (% D) of the whole group is shown. The explanatory power of each variable is segregated into the independent effect (I) and the effects caused jointly with other variables (J). Model outputs also provide the percentage (I%) of the total group I counted in each variable. Significant variables are marked (*p < 0.05; **p < 0.01; *** p < 0.001 (Sig.)) while the +/- shows if the variable increases (+) or reduces (-) the probability of finding the species or its abundance. Note that selected variables for further analyses, marked in bold, are significant (*) and >%10. Several variables were previously deleted due to VIF >5 (see Material and Methods).

i) Detailed Land cover and use		PRESENCE						ABUNDANCE					
		I	J	I%	Z.Score	Sig.	+/-	I	J	I%	Z.Score	Sig.	+/-
Subgroup 1	%D 13.7						%D 27.7						
	SpatialTerm	26.29	0.55	67.14	35.59	***		-9.43	0.25	86.61	18.96	***	
	AlmondT	2.35	-1.13	6.01	2.55	***	+	-0.16	-0.11	1.47	-0.32		-
	CherryT	1.34	0.53	3.42	0.73		-						
	CitrusT	7.61	0.62	19.44	10.11	***	+	-0.23	0.23	2.12	-0.18		+
	PomegrFigT	0.07	-0.03	0.17	-0.61		-	-0.59	-0.07	5.39	0.39		+
	OliveT	0.42	-0.06	1.06	-0.16		+	-0.46	0.34	4.24	0.35		+
	PalmT	1.08	-0.02	2.76	0.38		-	-0.02	0.00	0.18	-0.42		+
Subgroup 2	%D 10.77						%D 26.4						
	SpatialTerm	26.44	0.41	85.59	34.00	***		-9.05	-0.13	92.49	19.84	***	
	AlmoOC	0.36	-0.23	1.17	-0.19		+	-0.07	-0.04	0.67	-0.53		-
	AlmoVi	0.96	0.45	3.09	0.39		+	-0.28	-0.03	2.87	-0.07		-
	Vineyard	0.14	0.08	0.44	-0.53		+	-0.09	-0.08	0.97	-0.36		-
	VineyardOC	1.16	-0.20	3.75	0.75		+	-0.04	0.03	0.46	-0.45		+
	OliveOC	0.64	0.63	2.08	0.20		+	-0.02	-0.00	0.19	-0.54		+
	OthFrut	1.19	-0.05	3.87	0.79		+	-0.23	-0.04	2.35	-0.13		-
Subgroup 3	%D 13.5						%D 26.9						
	SpatialTerm	24.34	2.50	62.90	36.90	***		-9.00	-0.18	90.75	18.72	***	
	ForcedCrops	3.89	1.04	10.05	3.62	***	+	-0.22	-0.09	2.24	-0.18		-
	HerbCropOC	1.54	0.00	3.98	1.09		+	-0.22	0.03	2.25	-0.16		-
	IrrHerbCrop	1.49	0.64	3.84	1.42		+	-0.11	0.04	1.14	-0.39		+
	IntFarm	1.39	1.34	3.58	1.16		-	-0.18	-0.08	1.81	-0.24		-
	IntCropTC	4.18	-1.10	10.81	4.74	***	+	-0.01	0.01	0.08	-0.65		+
	IntCropVi	0.15	-0.15	0.38	-0.66		+	-0.11	-0.04	1.11	-0.30		-
	VegetablePatch	1.72	0.06	4.44	1.18		+	-0.06	-0.07	0.60	-0.47		+
Subgroup 4	%D 19.3						%D 27.3						
	SpatialTerm	21.75	5.09	39.27	29.77	***		-6.33	-2.84	61.35	13.54	***	
	Scrub	10.95	1.11	19.76	13.14	***	-	-0.26	-0.21	2.49	-0.06		-
	Scrub-Pines	5.75	1.07	10.39	6.88	***	-	-0.03	-0.06	0.34	-0.59		-
	Unproductive	13.15	8.30	23.75	16.80	***	+	-3.42	-2.99	33.15	6.26	***	+
	Water	0.75	-0.67	1.35	0.22		-	-0.17	-0.08	1.64	-0.29		-
	SaltMarsh	0.77	0.05	1.39	0.09		-	-0.11	-0.04	1.03	-0.26		-
	Reedbed	2.26	0.16	4.09	1.65	*	-						
Subgroup 5	%D 12.4						%D 24.8						

	SpatialTerm	24.62	2.23	69.19	36.09	***		-9.00	-0.18	95.89	17.72	***	
	Pines-TreeC	1.20	0.40	3.38	0.56		-						
	PineRefor	2.22	-0.05	6.24	1.93	*	-	-0.09	-0.08	0.92	-0.38		-
	YoungPines	1.75	0.26	4.91	1.49		-	-0.00	0.00	0.06	-0.52		+
	IntermPines	1.05	-0.55	2.95	0.71		-	-0.29	-0.21	3.09	-0.02		-
	MatPines	4.74	1.51	13.33	5.44	***	-	-0.00	0.00	0.03	-0.52		+
ii) Summary variables of habitats and soil use		I	J	I%	Z.Score	Sig.	+/-	I	J	I%	Z.Score	Sig.	+/-
	%D 17.2							%D 24.8					
	SpatialTerm	30.28	-3.44	61.50	39.64	*		-8.84	-0.34	93.76	17.70	***	
	TotForest	2.07	2.43	4.20	2.43	**	-	-0.36	-0.17	3.83	0.16		-
	TotCultAr	10.48	5.11	21.29	14.13	***	+						
	TotTreeCropAr	5.01	3.71	10.18	6.15	***	+	-0.20	0.03	2.14	-0.24		+
	TotHerbCropAr	1.40	0.51	2.83	1.28		+	-0.03	0.02	0.26	-0.58		-
iii) Subclasses of pinewood		I	J	I%	Z.Score	Sig.	+/-	I	J	I%	Z.Score	Sig.	+/-
	%D 11.6							%D 26.5					
	SpatialTerm	24.21	2.63	72.63	34.71	***	-	-8.95	-0.22	90.70	16.86	***	
	Pin_IntS	0.28	-0.27	0.84	-0.35		-	-0.15	-0.23	1.52	-0.31		-
	Pin_MadS	1.76	3.56	5.29	1.64		-	-0.09	0.05	0.92	-0.34		+
	Pin_MadU	2.11	3.76	6.33	1.99	*	-	-0.26	-0.04	2.66	-0.05		-
	PintmadU	4.97	3.31	14.92	6.37	***	-	-0.41	-0.28	4.20	0.24		-
iv) Subclasses of scrubs		I	J	I%	Z.Score	Sig.	+/-	I	J	I%	Z.Score	Sig.	+/-
	%D 14.1							%D 26.6					
	SpatialTerm	21.82	5.02	53.94	29.81	***		-9.02	-0.16	92.50	16.65	***	
	SCSaMmeS	0.99	0.66	2.46	0.63		-	-0.03	0.02	0.32	-0.50		+
	SCSaMmeU	0.82	0.64	2.03	0.44		-	-0.04	0.01	0.42	-0.53		+
	SCSaTmeS	0.18	0.21	0.45	-0.47		+	-0.16	-0.12	1.62	-0.32		-
	SCSaTmeU	0.48	0.17	1.19	-0.09		+	-0.17	-0.10	1.73	-0.27		-
	SCSeMmeS	5.75	6.95	14.21	7.03	***	-	-0.18	-0.18	1.83	-0.18		-
	SCSeMmeU	10.40	6.78	25.71	13.60	***	-	-0.15	-0.17	1.58	-0.26		-
	%D 12.5							%D 24.1					
	SpatialTerm	27.05	-0.21	75.42	38.74	***		-9.08	-0.10	97.97	17.36	***	
	SCSeSmeS	3.45	2.81	9.61	3.84	***	-						
	SCSeSmeU	1.76	2.28	4.92	1.18		-						
	SCSeTmeS	1.49	-1.47	4.15	1.19		-	-0.13	-0.10	1.36	-0.34		-
	SCSeTmeU	0.49	-0.42	1.38	-0.19		-	-0.04	-0.05	0.42	-0.47		-
	SCSuTmeS	0.56	0.68	1.57	-0.02		-	-0.02	-0.01	0.19	-0.48		-
	SCSuTmeU	1.06	0.78	2.96	0.49			-0.01	-0.01	0.07	-0.45		-
v) Subclasses of scrub-pinewood mixtures		I	J	I%	Z.Score	Sig.	+/-	I	J	I%	Z.Score	Sig.	+/-
	%D 13.4							%D 24.7					
	SpatialTerm	23.88	2.97	62.11	32.44	***		-9.16	-0.01	98.56	19.56	***	
	SPSaMmeS	2.40	2.27	6.24	2.44	**	-	-0.02	-0.01	0.20	-0.54		-
	SPSaMmeU	2.63	1.95	6.83	2.72	**	-	-0.04	0.02	0.41	-0.41		+
	SPSaTmeS	0.04	0.02	0.11	-0.66		-	-0.04	-0.02	0.40	-0.51		-

	SPSaTmeU	0.12	-0.07	0.32	-0.61	-		-0.04	0.02	0.42	-0.42		+
	SPSeMmeS	9.37	1.15	24.37	11.34	***	-						
	%D 12.1							%D 25.2					
	SpatialTerm	24.93	1.92	71.90	35.49	***		-9.14	-0.03	95.87	16.22	***	
	SPSeMmeU	6.58	1.37	18.97	7.11	***	-						
	SPSeSmeS	1.49	1.74	4.29	0.86		-						
	SPSeSmeU	1.32	1.64	3.79	0.69		-						
	SPSeTmeS	0.11	-0.05	0.31	-0.62		-	-0.28	0.04	2.96	-0.04		-
	SPSeTmeU	0.25	-0.10	0.74	-0.4		-	-0.11	0.07	1.17	-0.31		-
vi) Diversity of Land cover and use categories		I	J	I%	Z.Score	Sig.	+/-	I	J	I%	Z.Score	Sig.	+/-
	%D 13.8							%D 25.5					
	SpatialTerm	28.59	-1.75	72.15	37.78	***		-8.94	-0.24	91.79	18.51	***	
	TotTreeDiv	3.77	-1.32	9.50	4.44	***	+	-0.04	0.02	0.45	-0.65		+
	HerCropDiv	3.17	0.22	8.00	3.51	***	+	-0.28	0.07	2.85	-0.03		-
	ForestDiv	0.04	-0.02	0.11	-0.66		+	-0.02	0.01	0.19	-0.61		+
	ShrubDiv	4.06	1.81	10.24	5.05	***	-	-0.46	-0.15	4.73	0.35		-
vii) Topographic variables		I	J	I%	Z.Score	Sig.	+/-	I	J	I%	Z.Score	Sig.	+/-
	%D 17.4							%D 26.2					
	SpatialTerm	12.32	14.52	24.67	17.35	***		-8.58	-0.60	86.96	17.25	***	
	MeanAlt	16.66	22.68	33.34	22.31	***	-	-0.13	-0.23	1.31	-0.41		-
	Slope	9.88	19.04	19.77	13.13	***	-	-0.77	-0.38	7.77	0.99		-
	Slope60							-0.14	-0.04	1.46	-0.32		-
	Slope80	3.43	6.68	6.87	3.95	***	-	-0.01	-0.01	0.07	-0.42		-
	ArSlope4560	4.87	12.76	9.74	5.93	***	-	-0.24	0.21	2.43	-0.12		+
	ArSlope6080	2.80	8.85	5.60	3.36	***	-						
viii) Natural hydrographic network (rivers)		I	J	I%	Z.Score	Sig.	+/-	I	J	I%	Z.Score	Sig.	+/-
	%D 12.6							%D 26.6					
	SpatialTerm	22.93	3.91	63.58	31.21	***	-	-8.77	-0.41	81.82	16.72	***	
	River	0.01	0.00	0.04	-0.64		-	-0.37	-0.16	3.73	0.20		-
	Riverbed	2.20	0.43	6.12	2.20	*	-	-0.04	0.01	0.41	-0.44		-
	Ravine	0.49	-0.22	1.35	-0.01		+	-0.23	-0.30	2.31	-0.15		-
	Gullie	10.43	2.68	28.90	14.42	***	-	-0.47	-0.25	4.74	0.31		-
ix) Artificial hydrologic network and water bodies		I	J	I%	Z.Score	Sig.	+/-	I	J	I%	Z.Score	Sig.	+/-
	%D 23.7							%D 35.8					
	SpatialTerm	15.73	11.12	23.20	22.40	***		-9.30	0.12	67.03	17.81	***	
	Ditches	0.70	0.86	1.04	0.23		-	-0.45	0.19	3.27	0.23		-
	Ditches2m	0.48	0.01	0.71	-0.06		-	-0.32	0.13	2.30	-0.03		+
	Canal	4.70	4.95	6.93	5.64	***	+	-1.26	0.24	9.08	2.43	**	+
	ArLargePonds	1.58	1.58	2.33	1.39		+	-0.32	0.20	2.29	0.02		+
	ArSmallPonds	13.76	11.63	20.30	17.88	***	+						+

	NLargePonds	8.21	7.75	12.10	10.69	***	+		-0.07	0.07	0.50	-0.24		+
	NMedPonds	15.65	10.98	23.08	20.66	***	+		-1.23	-0.15	8.83	2.06	*	+
	NSmallPonds								-0.12	-0.00	0.85	-0.38		+
	NPools	6.99	10.63	10.31	8.75	***	+		-0.81	0.15	5.85	1.04		+
x) Urbanization		I	J	I%	Z.Score	Sig.	+/-		I	J	I%	Z.Score	Sig.	+/-
	%D 24.1							%D 28.8						
	SpatialTerm	18.10	8.74	26.17	25.73	***			-6.50	-2.68	60.57	12.10	***	
	ArParkGard	1.34	2.05	1.93	0.61		+							
	ArUrbaniz	13.31	8.00	19.25	15.77	***	+		-3.07	-2.77	28.58	5.48	***	+
	ArUrban	0.92	1.53	1.33	0.39		+		-0.38	-0.08	3.58	0.20		-
	NIsolBuild	22.81	12.65	32.98	32.13	***	+		-0.64	0.55	5.95	0.71		+
	ArIsolBuild	12.68	13.00	18.33	14.89	***	+		-0.14	0.14	1.31	-0.30		+
xi) Transportation networks		I	J	I%	Z.Score	Sig.	+/-		I	J	I%	Z.Score	Sig.	+/-
	%D 18.9							%D 27.7						
	SpatialTerm	16.80	10.04	30.94	24.04	***			-9.72	0.55	91.71	17.72	***	
	LHighMotorways	1.44	0.77	2.66	1.33		+		-0.13	0.02	1.29	-0.38		+
	Road	19.60	8.26	36.09	26.18	***	+		-0.07	0.01	0.67	-0.52		+
	Path	15.02	4.33	27.66	20.35	***	+		-0.63	0.47	5.90	0.60		+
	Trail	1.21	1.20	2.23	0.80		-		0.00	-0.00	-0.01	-0.60		+
	Railway	0.23	0.46	0.42	-0.40		+		-0.05	-0.02	0.43	-0.60		+
xii) Bioclimatic variables		I	J	I%	Z.Score	Sig.	+/-		I	J	I%	Z.Score	Sig.	+/-
	%D 16.0							%D 24.0						
	SpatialTerm	13.13	13.72	28.65	17.23	***			-8.84	-0.35	95.55	18.56	***	
	OmbrotIndex	2.30	3.13	5.02	2.70	**	-		-0.38	-0.35	4.10	0.21		-
	ThermicIndex	23.96	13.74	52.30	35.55	***	+		-0.03	-0.01	0.35	-0.59		-
	CoastDist	6.43	7.22	14.03	9.41	***	-							