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SUPPLEMENTARY MATERIAL

Land-cover patterns surrounding Caucasian grouse leks in Arasbaran region, East Azerbaijan, Iran

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Table S1. Edge weights used in FRAGSTATS weighted edge calculations

Habitat types**	111	112	121	122	131	132	141	142	200	300	400	500
111	0.0	0.3	0.6	0.9	0.05	0.3	0.1	0.4	1.0	1.0	1.0	1.0
112		0.0	0.3	0.6	0.3	0.05	0.5	0.2	0.9	1.0	1.0	1.0
121			0.0	0.3	0.6	0.3	0.2	0.3	1.0	1.0	1.0	1.0
122				0.0	0.9	0.2	0.5	0.2	0.7	1.0	1.0	1.0
131					0.0	0.3	0.2	0.5	1.0	1.0	1.0	1.0
132						0.0	0.5	0.2	0.7	1.0	1.0	1.0
141							0.0	0.3	1.0	1.0	1.0	1.0
142								0.0	0.7	1.0	1.0	1.0
200									0.0	1.0	1.0	1.0
300										0.0	1.0	1.0
400											0.0	1.0
500												0.0

** 111= Deciduous tree stand with canopy closure ≥50%; 112= Deciduous tree stand with canopy closure <50%; 121= Deciduous shrub stand with canopy closure ≥50%; 122=Deciduous shrub stand with canopy closure <50%; 131= Deciduous tree/shrub stand with canopy closure ≥50%; 132= Deciduous tree/shrub stand with canopy closure <50%; 141= Mixed conifer/deciduous stand with canopy closure ≥50%; 142= Mixed conifer/deciduous stand with canopy closure <50%; 200= Rangeland; 300= Agriculture; 400=Settlements; 500=Bare lands

Table S2. ***A priori*** **candidate habitat models and null model estimating the effect of variables on the probability of Caucasian lek occurrence in its recorded geographic extent in East Azerbaijan, Iran**

Parameter descriptions are provided in the article (Table 1).

Verbal Hypothesis	Candidate Model
1. Null hypothesis: (No effect due to landscape variables)	$M_1 = \pi(.)$
2. Habitat amount models: (Caucasian grouse (CG) select areas based on the amount of a particular habitat type or types)	
Effect of amount of CG habitat	$M_2 = \pi(CA_{131+200})$; $M_3 = \pi(CA_{132+200})$; $M_4 = \pi(CA_{131+132+200})$; $M_5 = \pi(CA_{121+200})$; $M_6 = \pi(CA_{122+200})$; $M_7 = \pi(CA_{121+122+200})$; $M_8 = \pi(CA_{121+122+131+132+200})$
3. Patch size, shape and patch density models (CG select areas based on the size, shape and number of suitable habitat patches)	
Effect of amount habitat, patch size and shape:	$M_9 = \pi(CA_{131+132+200} + SHAP\_AM_{131+132+200} + LPI_{131+132+200})$; $M_{10} = \pi(CA_{121+122+200} + SHAP\_AM_{121+122+200} + LPI_{121+122+200})$; $M_{11} = \pi(CA_{121+122+131+132+200} + SHAP\_AM_{131+132+121+122+200} + LPI_{121+122+131+132+200})$
4. Canopy cover models: (CG select areas based on a proportion of habitat canopy cover)	
a) Effect of amount, size and shape of habitat having high canopy cover (≥50%)	$M_{12} = \pi(CA_{121+131+200} + LPI_{121+131+200} + SHAP\_AM_{121+131+200})$
b) Effect of amount of habitat and having low canopy cover (<50%)	$M_{13} = \pi(CA_{122+132+200} + LPI_{122+132+200} + SHAP\_AM_{122+132+200}$
c) Effect of ratio of amount of high/low canopy cover habitat	$M_{14} = \pi(CA_{121+131+200} / CA_{122+132+200})$
5. Edge effect models: (CG select areas based on amounts of edge between habitat types)	
a) Effect of amount of habitat and effect of edge	$M_{15} = \pi(CA_{131+132+200} + TECI_{121+122+131+132+200})$; $M_{16} = \pi(CA_{121+122+200} + TECI_{121+122+131+132+200})$;
b) Effect of habitat patch size and shape, and effect of edge	$M_{17} = \pi(LPI_{131+132+200} + SHAP\_AM_{131+132+200} + TECI_{121+122+131+132+200})$; $M_{18} = \pi(LPI_{121+122+200} + SHAP\_AM_{121+122+200} + TECI_{121+122+131+132+200})$; $M_{19} = \pi(LPI_{121+122+131+132+200} + SHAP\_AM_{131+132+121+122+200} + TECI_{121+122+131+132+200})$
6. Habitat diversity models: (CG select areas based on habitat heterogeneity)	
Effect of amount of habitat, amount of canopy cover, and effect of habitat diversity	$M_{20} = \pi(CA_{131+132+200} + PR)$; $M_{21} = \pi(CA_{121+122+200} + PR)$; $M_{22} = \pi(CA_{121+131+200} + PR)$; $M_{23} = \pi(CA_{122+132+200} + PR)$; $M_{24} = \pi(CA_{121+131+200} + CA_{132+122+200} + CA_{121+122+200} + CA_{131+132+200} + PR)$; $M_{25} = \pi(CA_{121+122+200} + CA_{131+132+200}) + PR)$; $M_{26} = \pi(CA_{121+131+200} + CA_{122+132+200} + PR)$;
7. Habitat isolation models: (CG select areas based on isolation of patch types)	
Effect of amount of habitat, amount and effect of habitat Isolation	$M_{27} = \pi(CA_{131+132+200} + ENN\text{-}MN_{131+132+200})$; $M_{28} = \pi(CA_{121+122+200} + ENN\text{-}MN_{121+122+200})$