SUPPLEMENTARY ELECTRONIC MATERIAL

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NESTING AND INCUBATION BEHAVIOUR OF THE LITTLE BUSTARD *TETRAX TETRAX* AND ITS RELATION TO HATCHING SUCCESS

COMPORTAMIENTO DE NIDIFICACIÓN E INCUBACIÓN DEL SISÓN COMÚN *TETRAX TETRAX* Y SU RELACIÓN CON EL ÉXITO DE ECLOSIÓN

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APPENDIX 2

Compositional analysis methodology

To evaluate habitat selection and habitat preferences of hens in off-nest bouts during the laying and the incubation, a compositional analysis (Aebischer *et al.*, 1993) was performed. This method highlights whether the use of habitat types is disproportionate in relation to its availability or whether habitat is used randomly. For this, the method compares log-ratios between the used and the available habitats, measuring the disproportionality between them at individual level. In our study, habitat use and its availability was calculated for each of the clutches. Habitat was grouped into three categories: cereals, herbaceous vegetation (HVF, Field edges and other natural herbaceous vegetation) and other land-uses (ploughed land, roads and other minor habitat unsuitable for the species). We performed a third-order habitat selection analyses where fixes were used to determine the utilisation of different habitat types and the proportional areas of each habitat within the home range (TOT_MCP) as a measure of habitat availability (Johnson, 1980). In a third-order habitat selection, zero values could be found in the matrix of available habitats. So, in some clutches, some habitat types could not be used by the hens. Under these conditions, a randomisation test, which compares a matrix containing the mean difference between the used and available log-ratios, is needed. In this procedure, weighted mean lambda (λ) is used instead of the usual Wilk's λ. If a habitat type was available but not used by the hen, we replaced these 0 values in the utilisation matrix by a small positive value (0.01%) in order to obtain a valid log-ratio transformation (Aebischer *et al.*, 1993). Fixes located less than four metres from a field edge were assigned to be in the field edge, since edges act as a source of weed propagules, exerting a greater influence within the first few metres of their vicinity, both at abundance level and number of species (Wilson and Aebischer, 1995).

Considering that home range size commonly increases with number of fixes before reaching an asymptote (Powell, 2000; Seaman *et al.*, 1999), that some clutches failed prematurely and that an asymptote was not always reached, certain biases related to sampling effort may occur. In order to avoid these possible biases, we estimated the number of fixes for which most of home ranges reached an asymptote (Harris *et al.*, 1990). Thus, we selected only home ranges (TOT_MCP) with a minimum of 20 off-nest fixes for the compositional analysis (n = 22). Additionally, to test differences in habitat selection related to the environment this analysis was also only performed for clutches in dryland (n = 16) and in cereal (n = 13).

References

Aebischer, N.J., Robertson, P.A., Kenward, R.E., 1993. Compositional analysis of habitat use from animal radio tracking data. Ecology 74, 1313–1325.

Harris, S., Cresswell, W.J., Forde, P.G., Trewhella, W.J., Woollard, T., Wray, S., 1990. Home-range analysis using radio-tracking data–a review of problems and techniques particularly as applied to the study of mammals. Mamm. Rev. 20, 97–123.

Johnson, D.H., 1980. The comparison of usage and availability measurements for evaluating resource preference. Ecology 61, 65–71. https://doi.org/10.2307/1937156

Powell, R.A., 2000. Animal home ranges and territories and home range estimators, in: Boitoni, L., Fuller, T.K. (Eds.), Research techniques in animal ecology: controversies and consequences. Columbia University Press, New York, pp. 65–110.

Seaman, D.E., Millspaugh, J.J., Kernohan, B.J., Brundige, G.C., Raedeke, K.J., Gitzen, R.A., 1999. Effects of sample size on kernel home range estimates. J. Wildl. Manage. 63, 739–747.

Wilson, P.J., Aebischer, N.J., 1995. The distribution of dicotyledonous arable weeds in relation to distance from the field Edge. J. Appl. Ecol. 32, 295–310.

Figure B1. Overall percentages of nests (N = 28) occurring in different substrates and the availability of these substrates, measured within a 300m buffer zone around each nest, in dry land and irrigated areas.

[*Porcentaje de nidos (N = 28) en función de los distintos tipos de sustrato y la disponibilidad de los mismos, en un búfer de 300 m alrededor de cada uno de los nidos, tanto en secano como en regadío.*]