ELECTRONIC SUPPLEMENTARY MATERIAL

A negative association between bromadiolone exposure and nestling body condition in common kestrels: management implications for vole outbreaks. J, Martínez-Padilla, D, López-Idiáquez, J.J. López-Perea; R. Mateo, A. Paz, and J Viñuela.

Figure S1. Geographic location of the two study areas in Spain, Boada de Campos-Capillas (BC, as refereed in the main text) and Villalar de los Comuneros (VC in the main text of the manuscript) within the region Castilla y León in Spain.

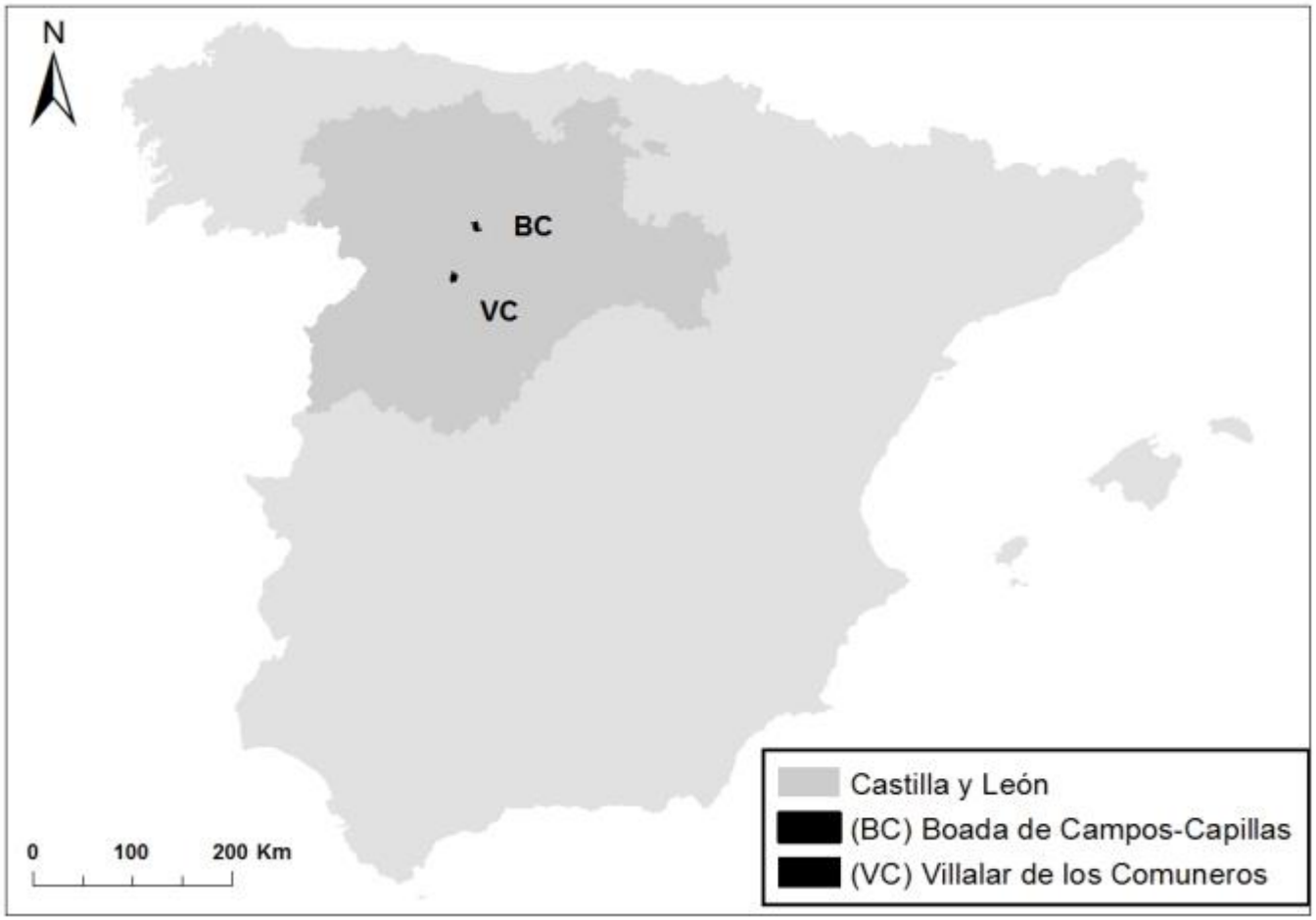
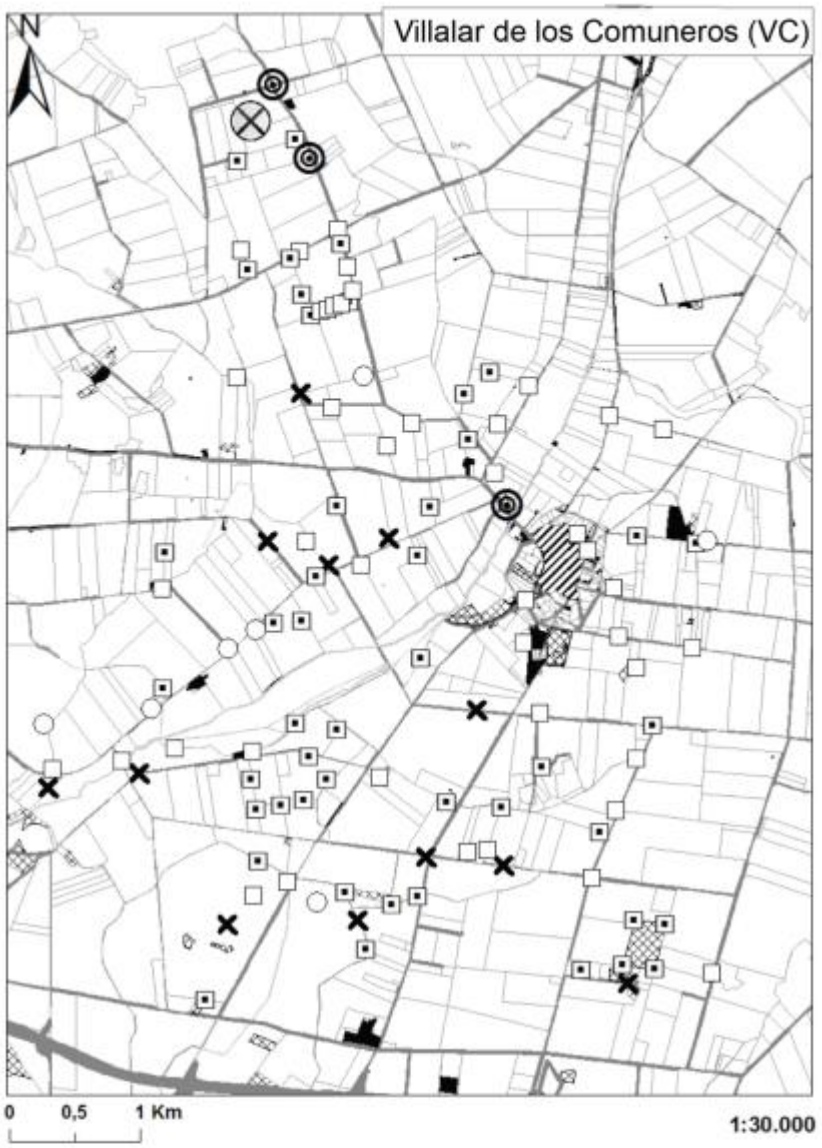


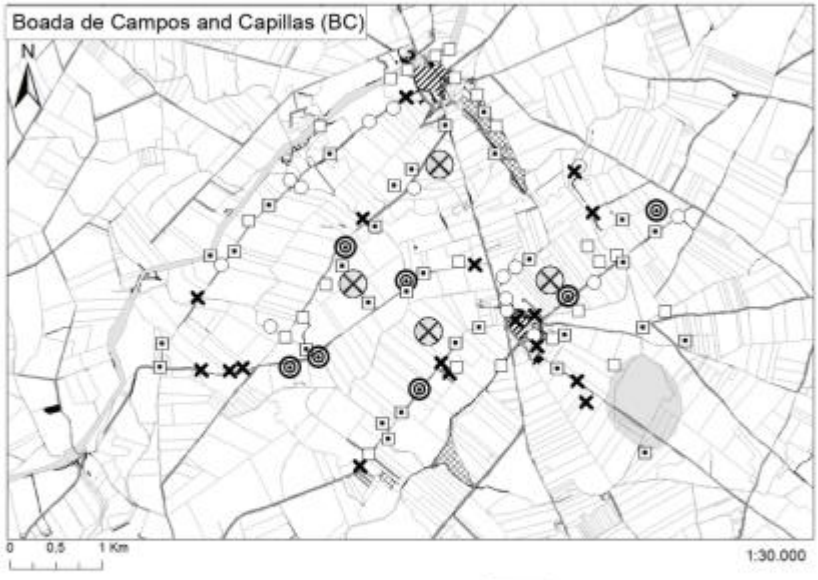
Table S1. ESI-MS parameters used for anticoagulant rodenticide analysis

Compound	Fragmentation Voltage (V)	Molecular Mass (Da)	Monitored Ions (Da)			
Brodifacoum	200	523.4	255.1	373	521.1	523.1
Bromadiolone	250	527.4	250	525	527	529
Chlorophacinone	400	374.8	145.1	201	373	375
Coumachlor	150	342.1	307.0	316.1	341.1	637.0
Diphacinone	350	340.4	116	167	339	340
Difenacoum	200	444.5	293.1	399.2	443	444
Flocoumafen	200	542.5	289	382.1	541	542
Warfarin	150	308.3	161	250	307	637.3

Figure S2. Detailed maps of the study areas of Villalar de los Comuneros (VC, upper panel) and Capillas-Boada de Campos (BC, lower panel). The map shows the location of all nest-boxes (unoccupied marked with empty squares). Among occupied nest-boxes, we show those occupied by species other than kestrels (barn owls and jackdaws, empty squares), the locations of kestrel nest-boxes that were not sampled (pointed squares), those that were sampled having at least one nestling with detectable levels of bromadiolone (black and white bullseyes) or where none of the nestlings had detectable levels of bromadiolone (black cross). We also show urban areas, human constructions (including farms, agricultural installations or roads) and cultivated croplands denoting the limits of individual parcels. The regional government distributed bromadiolone during April 2014 to farmers living in Capillas (the town in the north of BC area). Areas marked with a crossed circle in BC show the four agrarian parcels where we confirmed bromadiolone use (within burrows in three of them). Bromadiolone may have been used in more parcels than the ones highlighted here, particularly within burrows (less detectable than use in surface), but that could not be confirmed in this study. Instead, we are confident that several farmers in the area, managing a large number of parcels and involved in this project, did not use bromadiolone in both study areas (at least 50 % of the agrarian area), so the spatial extent of bromadiolone application was, presumably, relatively low. The area marked with broken lines in VC shows an agrarian parcel where we know that bromadiolone was used in previous years for corvid control (illegal use).

Nest-boxes of common kestrels





Kestrel nest-boxes

- Unoccupied
- Occupied other species
- Occupied - no blood drawn
- Negative in bromadiolone
- Positive in bromadiolone

Land uses

- Other uses
- Water - River
- Road or path
- Farm or agricultural installations
- Cropland
- Urban area
- Rodenticide baits