Appendix A – Supporting Information

Vertebrate frugivory in blueberry crops: patterns across birds and mammals and consequences for yield

Table A.1. The number of consumption events of each species recorded during the frugivory observations, per cultivar (early and late ripening) and blueberry orchard (O1 to O11). The data from both methods (direct observation and camera trapping) and years (2022 and 2023) were pooled. Zeroes in the data indicate that the species was present in the orchard, but never observed consuming blueberry fruit.

	Early-ripening cultivar										Late-ripening cultivar								
	01	02	O3	O4	O5	O6	07	08	O9	O10	011	01	02	O3	04	08	O9	O10	011
Accipiter nisus																		0	
Buteo buteo				0															
Carduelis carduelis						0				0	0					0		0	0
Certhia brachydactyla	0																		
Chloris chloris					0					0							0	0	
Columba palumbus	0		3			0		0	1	5								0	
Corvus corax																			0
Corvus corone	6			3			2	9	4	0						0			
Cyanistes caeruleus																	0		
Dendrocopos major	0			1					0										
Erithacus rubecula	1	2	0	0	2		0		1	0	0	1	2	6			1	0	0
Ficedula hypoleuca									0			0							
Fringilla coelebs					0				0					0					0
Garrulus glandarius	13	1	0	2	5				8			1			4		0	0	
Motacilla alba										0								0	

Nannus troglodytes											0
Oriolus oriolus	0								1		
Parus major	1	0		0	0		2	0	2	1	1
Passer domesticus						2			0	0	
Phoenicurus ochruros											0
Phylloscopus ibericus	0									0	
Pica pica						0					
Picus sharpei	0							0			
Pyrrhula pyrrhula		1			0						1
Serinus serinus											
Sturnus unicolor								51	7	10	
Sturnus vulgaris								2			
Sylvia atricapilla	1	0		1			2	0	2	3	0
Turdus merula	176	0	43	37	9	1	11	24	110	55	14
Turdus philomelos	12	1	13	2	2		4	1	9	4	2
Capreolus capreolus							1			1	
Erinaceus europaeus										0	
Martes foina											
Meles meles	1							0	0		5
Sus scrofa	11	577							98		
Vulpes vulpes				0	0				0	0	0

Fixed effects	Estimate	SE	t	р	R²m	R²c
(Intercept)	6.924	0.232	29.833	< 0.001	0.396	0.645
Treatment: Excluded	0.258	0.080	3.187	< 0.001		
Cultivar: Late	-0.408	0.128	-3.185	0.001		
Fruit load	0.205	0.060	3.442	< 0.001		
Treatment: Excluded	-0.244	0.143	-1.703	0.090		
Cultivar: Late						
Random effects	Variance	SD				
Cultivar: Late Random effects Orchard	Variance 0.070	SD 0.264				
Cultivar: Late Random effects Orchard Residual	Variance 0.070 0.095	SD 0.264 0.309				
Cultivar: Late Random effects Orchard Residual <i>Tukey post hoc test</i>	Variance 0.070 0.095 Estimate	SD 0.264 0.309 SE	Z	p		
Cultivar: Late Random effects Orchard Residual <i>Tukey post hoc test</i> Early: Control - Excluded	Variance 0.070 0.095 Estimate -0.258	SD 0.264 0.309 SE 0.081	z -3.187	p 0.001		

Table A.2. Results of the generalized linear mixed model (GLMM), with gamma distribution and log link function, evaluating the effect of the exclusion experiment, the cultivar type, and the number of unripe fruits on blueberry yield in 2023.



Fig. A.1. (A) Location of the study sites in northern Spain. (B) Aerial view of orchard O11. (C) A camera trap placed in a blueberry orchard. (C) A cage placed over a blueberry plant to prevent access by vertebrates.



Fig. A.2. (A) Camera trap record of a wild boar (*Sus scrofa*) eating blueberries from a plant. (B) Picture of a juvenile blackbird (*Turdus merula*) picking a blueberry from a plant. (C) Camera trap record of a carrion crow (*Corvus corone*) eating a blueberry from the ground. (D) Camera trap record of a red fox (*Vulpes vulpes*) eating blueberries from a plant. (E) Picture of a song thrush (*Turdus philomelos*) standing under a blueberry plant. (F) Camera trap record of a European badger (*Meles meles*) eating blueberries from the ground.



Fig. A.3. Relationship between blueberry yield loss and number of consumption events recorded by camera trapping. Yield loss is defined as the open treatment yield expressed as a percentage of the excluded treatment. The number of consumption events is weighted by sampling effort (camera hours) and log-transformed to normalize the data.