

Supplementary material

Title of the manuscript:

The Soundscape of the Olive Grove: A Systematic Review

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1. Results

Table S1

Number of results obtained in each database after the sequential application of the selected methodological and search filters

Search equation: ALL=((“soundscape*” OR “sound mapping*” OR “acoustic*”) AND (“olive grove*” OR “olive farming*” OR “olive orchard*”))			
Filters	Databases consulted		
	Web of Science	Scopus	CAB Abstract
0. No. of results obtained without filters	8	277	15
1. Year (2014- June 2024)	6	236	11
2. Document type (<i>academic journal article</i>)	6	165	9
3. Language (<i>Spanish, English and French</i>)	6	162	9
4. Countries (<i>all Mediterranean countries according to FAO 1998</i>)	6	98	3
Total	107		

2. *Qualitative synthesis of the soundscape in Mediterranean olive groves*

Table S2

Extraction and coding of qualitative data for the analysis of the soundscape of the Mediterranean olive grove from the records included in the systematic review

Author(s) and year of publication	Article title	Period of data collection	Study Area ^a	Population ^b	Type of olive grove studied	Acoustic and complementary methods for the study of the soundscape
Abenavoli et al. (2019)	<i>The environmental noise level in the rejuvenation pruning on centuries-old olive tree</i>	Pruning phase and cross-sectional operations (n.d.)	Cosoleto (Calabria, Italy)	Olive grove workers	Traditional low-intensity centenary olive grove (73 plants per hectare)	Identification of acoustic levels (sound pressure in the ear, sound level and noise propagation) in the pruning and cross-sectional phases
Aihartza et al. (2023)	<i>Aerospace-foraging bats eat seasonably across varying habitats</i>	May–November 2018	Sierra de San Cristóbal (Andalusia, Spain)	Bats	Rainfed olive groves	Echolocation call recognisers and manual method of identifying ultrasound recordings
Alberti et al. (2023)	<i>Bioacoustic IoT Sensors as Next-Generation Tools for Monitoring: Counting Flying Insects through Buzz</i>	April–June 2023	Grezzana (Veneto, Italy), Medicina (Emilia-Romagna, Italy) and Viterbo (Lazio, Italy)	Flying insects	Olive grove in diversified agricultural landscape	IoT bioacoustic sensors; manually checking the event count and shuffling recordings
Amorim et al. (2018)	<i>Following the water? Landscape-scale temporal changes in bat spatial distribution in relation to Mediterranean summer drought</i>	July–October 2011 / May–September 2012	Baixo Sabor (Portugal)	Bats	Olive grove in agroforestry landscape	Echolocation call recognisers and acoustic walking sampling
Ancillotto et al. (2023)	<i>Organic farming sustains bats in Mediterranean farmland</i>	June–September 2021	Italy	Bats	Organic and conventional olive groves	Echolocation call recognisers and manual method of identifying ultrasound recordings
Avosani et al. (2020)	<i>Vibrational communication and mating behavior of the meadow spittlebug <i>Philaenus spumarius</i></i>	April 2017–May 2018	Riva Del Garda and San Michele all'Adige (Trentino, Italy)	Meadow spittlebug (<i>Philaenus spumarius</i>)	Indefinite	Vibration signal recordings
Avosani et al. (2022)	<i>Application of vibrational signals to study and manipulate an insect vector: the case of <i>Philaenus spumarius</i> (Hemiptera: Aphrophoridae)</i>	Mayo de 2019	Riva Del Garda and San Michele all'Adige (Trentino, Italy)	Meadow spittlebug (<i>Philaenus spumarius</i>)	Indefinite	Vibration signal recordings

Costa et al. (2020)	<i>Structural simplification compromises the potential of common insectivorous bats to provide biocontrol services against the major olive pest Prays oleae</i>	15 days in April, 15 days in June and 15 days in September (n.d.)	Alentejo (Portugal)	Insectivorous bats and olive moth (<i>Prays oleae</i>)	60 sampling points with 38 olive farms of high, medium and low structural complexity	Echolocation call recognisers and manual method of identifying ultrasound recordings
Dbiba et al. (2023)	<i>Bats of the Safi-Essaouira Provinces (Morocco): New Inputs to the Knowledge of Bat Populations of the Atlantic Littoral</i>	September 2020 – August 2022	Safi-Essaouira Provinces: Tangier, Agadir and Casa Blanca (Morocco)	Bats	Olive grove near a pine forest	Echolocation call recognisers and manual method of identifying echolocations
Douini et al. (2024)	<i>Comparison of avian diversity, breeding communities, and nesting habitats between urban and peri-urban ecosystems of Fez (Central Morocco)</i>	March -August 2017, 2018 and 2019	Fez-Meknes Region (Morocco)	Birds	Peri-urban olive groves	Visual and acoustic identification for bird registration
Farina et al. (2023)	<i>Sonotopes reveal dynamic spatio-temporal patterns in a rural landscape of Northern Italy</i>	March – November 2021	Fivizzano Commune (Tuscany, Italy)	Sound species (birds and insects)	Cultivated olive groves and abandoned olive groves	Acoustic Complexity Index (ACI _r)
Georgiakakis et al. (2023)	<i>The Bats of Greece: An Updated Review of Their Distribution, Ecology and Conservation</i>	Indefinite	Greece	Bats	Indefinite	Echolocation call recognisers
Herrera et al. (2015)	<i>Community composition and activity of insectivorous bats in Mediterranean olive farms</i>	July - September 2010	Alentejo (Portugal)	Insectivorous bats	Monoculture of 13 traditional, 13 semi-intensive and 13 intensive olive groves	Echolocation call recognisers and manual method of identifying ultrasound recordings
Herrera et al. (2024)	<i>Temporal mismatches in flight activity patterns between <i>Pipistrellus kuhlii</i> and <i>Prays oleae</i> in olive farms: Implications for biocontrol services potential</i>	Spring, Summer and Fall 2017, 2018 and 2019	Alentejo (Portugal)	Common bat (<i>Pipistrellus kuhlii</i>) and olive moth (<i>Prays oleae</i>)	60 sampling points with 38 olive farms of high (n=27) (structurally simplified), medium (n=18) (intermediate structural complexity) and low (n=15) (structurally complex) intensity	Echolocation call recognisers and manual method of identifying ultrasound recordings

Milone y Camarda (2017)	<i>Modeling Knowledge in Environmental Analysis: A New Approach to Soundscape Ecology</i>	Indefinite	Lama Balice (Italy)	None in particular	Olive grove in natural landscape	Unidirectional sound level meters and spectrographic analysis
Minoti et al. (2022)	<i>The Sound of Drystones: A Novel Hot-Spot of Ecoacoustics Research</i>	April 10-20, 2019	Lesvos (Grecia)	Birds	Olive groves with high and low maintenance drystone terraces	Acoustic Diversity Index (ADI) and Acoustic Complexity Index (ACI)
Morgado et al. (2020)	<i>A Mediterranean silent spring? The effects of olive farming intensification on breeding bird communities</i>	April – June 2014	Alentejo (Portugal)	Birds	78 olive groves with different structural complexity (traditional, intensive and super-intensive)	Fixed-point counting sampling (visual observation and auditory detection of bird songs and sounds)
Myers et al. (2019)	<i>Comparing the soundscapes of organic and conventional olive groves: A potential method for bird diversity monitoring</i>	January - February 2018	Region of Messinia (Greece)	Birds	11 organic and 11 conventional olive groves	Acoustic Diversity Index (ADI); Acoustic Complexity Index (ACI); Bioacoustic Index (BIO); Manual method of identifying recordings
Proto et al. (2020)	<i>A sonic root detector for revealing tree coarse root distribution</i>	Indefinite	Satriano (Calabria, Italy)	Olive trees	Organic olive grove (two 22-year-old adult olive trees)	Sonic tomography of trees
Puig-Montserrat et al. (2021)	<i>Benefits of organic olive farming for the conservation of gleaning bats</i>	October 2014	Montgrí massif, Parc Natural del Montgrí, les Illes Medes i el Baix Ter (Catalonia, Spain)	Bats and olive fly (<i>Bactrocera oleae</i>)	20 plots of olive groves: 10 organic and 10 conventional.	Echolocation call recognisers and manual method of identifying ultrasound recordings

Note: ^a Geographic area in which the research was conducted. ^b Living things studied