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GENERAL INFORMATION

Title of Dataset: No seasonal curtailment of the Eurasian Skylark's (*Alauda arvensis*) breeding season in German heterogeneous farmland, Dryad, Dataset

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Date of data collection: Between April and August from 2018 to 2019

Geographic location of data collection: south of Göttingen, Germany (N51° 29.631, E9° 56.595)

Information about funding sources that supported the collection of the data:

Deutsche Bundesstiftung Umwelt

Dick Potts Legacy Fund

Fazit-Stiftung

Naturschutzstiftung Papilio

Stiftung für Ornithologie und Naturschutz

Stöckmann-Stiftung zur Förderung von Umwelt- und Naturschutz

SHARING/ACCESS INFORMATION

Links to publications that cite or use the data:

Püttmanns, M., Lehmann, F., Willert, F., Heinz, J., Kieburg, A., Filla, T., Balkenhol, N., Waltert, M., Gottschalk, E. (2022). No seasonal curtailment of the Eurasian Skylark’s (*Alauda arvensis*) breeding season in German heterogeneous farmland. *Ecology and Evolution, 12,* e9267. https://doi.org/10.1002/ece3.9267

Recommended citation for this dataset: Püttmanns, Manuel et al. (2022), No seasonal curtailment of the Eurasian Skylark’s (*Alauda arvensis*) breeding season in German heterogeneous farmland, Dryad, Dataset, https://doi.org/10.5061/dryad.x69p8czmt

DATA & FILE OVERVIEW

The following table gives an overview on the provided datasets and R scripts that are required to reproduce the results presented in the study.

|  |  |  |  |
| --- | --- | --- | --- |
| **Section** | **Results** | **Required datasets** | **Required R scripts** |
| Results - 3.1. | GLMM | dataset\_individual\_breeding\_activity\_GLMM | analysis\_individual\_breeding\_activity\_ GLMM |
| Results - 3.2. | Home range shifts | dataset\_radio-tracking\_locations | --- |
| Results - 3.2. | Home range composition | dataset\_home\_range\_composition | --- |
| Results - 3.3. | Fisher’s exact test | dataset\_nesting\_habitats\_Fisher | analysis\_nesting\_habitats\_Fisher |
| Results - 3.4. | Mayfield logistic regressions | dataset\_nest\_success\_Mayfield | analysis\_nest\_success\_Mayfield |
| Appendix | Crop cover and crop height over time | dataset\_crop\_vegetation | --- |

**Abbreviations:** Fisher = Fisher’s exact test; GLMM = mixed effect logistic regression model; Mayfield = Mayfield logistic regression

METHODOLOGICAL INFORMATION

Detailed information on methods can be found in the publication that uses the data:

Püttmanns, M., Lehmann, F., Willert, F., Heinz, J., Kieburg, A., Filla, T., Balkenhol, N., Waltert, M., Gottschalk, E. (2022). No seasonal curtailment of the Eurasian Skylark’s (Alauda arvensis) breeding season in German heterogeneous farmland. Ecology and Evolution, 12, e9267. https://doi.org/10.1002/ece3.9267

Following descriptions may be identical or similar to the descriptions of the publication.

Description of methods used for collection/generation of data: 28 adult Skylarks (*Alauda arvensis*) in a German population were radio-tagged during April 2018 and 2019. We tracked half of them for more than 3 months, and measured their breeding success by monitoring their nests. Additionally, we monitored nests of untagged pairs, resulting in 96 nests found. To discuss potential territory abandonments or home range shifts in the context of crop development, we also collected vegetation data. Crop openness and height of seven winter wheat fields in 2018 and a maximum of eight fields in 2019 were measured in intervals of, on average, 10 days. Each field assessed was regularly used by one of the radio-tagged Skylarks during their first days of radio-tracking.

Methods for processing the data: We used a mixed-effect logistic regression model (GLMM) to test whether radio-tagged Skylarks were less likely to start a breeding attempt later in the breeding season. A Fisher’s exact test was conducted to test if the use of nesting habitats generally differed throughout the breeding season. We examined if successful nests of tagged individuals were more frequent in the early breeding season and evaluated our conclusions based on an analysis of the daily nest survival that considered the dataset of all nests found. The program *MARK* via the *RMark* package was used to perform Mayfield logistic regressions.

Instrument- or software-specific information needed to interpret the data: *R* (version 4.0.3) with the packages *lme4* and *RMark.*

Environmental/experimental conditions: Data collection took place in two years of extremely dry weather.

People involved with sample collection, processing, analysis and/or submission: Püttmanns, M., Lehmann, F., Willert, F., Heinz, J., Kieburg, A., Filla, T., Balkenhol, N., Waltert, M., Gottschalk, E.

DATA-SPECIFIC INFORMATION FOR: dataset\_individual\_breeding\_activity\_GLMM

Number of variables: 6

Number of cases/rows: 77

Variable List:

Bird\_ID: name of the radio-tagged Skylark

Year: year of radio-tracking

Documentation\_breeding\_activity: indication, whether the breeding activity of a radio-tagged Skylark could be documented until the end of the breeding season (season\_end), whether documentation stopped before the end of the breeding season (incomplete) or whether the radio-tagged Skylark abandonend its breeding territory (territory\_abandonment)

Phase: period of breeding season; 1 = April 14th to May 5th, 2 = May 6th to May 27th, 3 = May 28th to June 18th, 4 = June 19th to July 10th

Onset\_breeding: indication, whether the radio-tagged Skylark started a breeding attempt during the respective phase (1) or not (0)

Weighting\_factor\_analysis: weighting factor to weigh individual Skylarks equally in the analysis

DATA-SPECIFIC INFORMATION FOR: analysis\_individual\_breeding\_activity\_GLMM

Required R script to run the GLMM based on the dataset: dataset\_individual\_breeding\_activity\_GLMM

DATA-SPECIFIC INFORMATION FOR: dataset\_radio-tracking\_locations

Number of variables: 5

Number of cases/rows: 1549

Variable List:

Bird\_ID: name of the radio-tagged Skylark

Date: date of tracking location

Time: time of tracking location

Easting: easting coordinate of tracking location (UTM WGS84)

Northing: northing coordinate of tracking location (UTM WGS84)

DATA-SPECIFIC INFORMATION FOR: dataset\_home\_range\_composition

Number of variables: 18

Number of cases/rows: 16

Variable List:

Bird\_ID: name of the radio-tagged Skylark

Year: year of radio-tracking

MCP95\_ha: size of the minimum convex polygon 95 in hectare

Winter\_wheat\_%: proportion of winter wheat in the MCP95 expressed as percentage

Winter\_barley\_%: proportion of winter barley in the MCP95 expressed as percentage

Winter\_rape\_%: proportion of winter rape in the MCP95 expressed as percentage

Sugar\_beet\_%: proportion of sugar beet in the MCP95 expressed as percentage

Corn\_%: proportion of corn in the MCP95 expressed as percentage

Clover\_%: proportion of clover in the MCP95 expressed as percentage

Strawberry\_%: proportion of strawberry in the MCP95 expressed as percentage

Broad\_bean\_%: proportion of broad bean in the MCP95 expressed as percentage

Asparagus\_%: proportion of asparagus in the MCP95 expressed as percentage

Summer\_barley\_%: proportion of summer barley in the MCP95 expressed as percentage

Trial\_plot\_%: proportion of agricultural trial plots in the MCP95 expressed as percentage

Fallow\_land\_%: proportion of fallow land in the MCP95 expressed as percentage

Flower\_strip\_%: proportion of flower strips in the MCP95 expressed as percentage

Field\_path\_%: proportion of field paths in the MCP95 expressed as percentage

Unsuitable\_area\_%: proportion of unsuitable area like buildings in the MCP95 expressed as percentage

Abbreviations used:

\_E: MCP95 of the early home range

\_L: MCP95 of the late home range

DATA-SPECIFIC INFORMATION FOR: dataset\_nesting\_habitats\_Fisher

Number of variables: 8

Number of cases/rows: 7

Variable List:

Habitat: habitat where Skylark nests were found

April\_1: number of Skylark nests found with first-egg dates between April 1st and April 15th in 2018 and 2019

April\_2: number of Skylark nests found with first-egg dates between April 16th and April 30th in 2018 and 2019

May\_1: number of Skylark nests found with first-egg dates between May 1st and May 15th in 2018 and 2019

May\_2: number of Skylark nests found with first-egg dates between May 16th and May 31st in 2018 and 2019

June\_1: number of Skylark nests found with first-egg dates between June 1st and June 15th in 2018 and 2019

June\_2: number of Skylark nests found with first-egg dates between June 16th and June 30th in 2018 and 2019

July\_1: number of Skylark nests found with first-egg dates between Jul 1st and Jul 15th in 2018 and 2019

DATA-SPECIFIC INFORMATION FOR: analysis\_nesting\_habitats\_Fisher

Required R script to run the Fisher’s exact test based on the dataset: dataset\_nesting\_habitats\_Fisher

DATA-SPECIFIC INFORMATION FOR: dataset\_nest\_success\_Mayfield

Number of variables: 12

Number of cases/rows: 96

Variable List:

Nest\_id: name of the Skylark nest

Nesting\_habitat: habitat where the nest was found

Year: year the nest was found

Radio\_tagged: indication, whether at least one of the nest parents was radio-tagged

Outcome: outcome of the nest

First\_egg: day of the first laid egg with day one as April 11th

FirstFound: day of finding the nest with day one as April 11th

LastPresent: day of last nest activity with day one as April 11th

LastChecked: day of last nest control with day one as April 11th

Fate: outcome of the nest in binary coding with 0 = successful and 1 = predated

Freq: frequency of nests with this data

Comment\_analysis: comment that help to explain why some data might be missing

Abbreviations used: NA = not applicable

DATA-SPECIFIC INFORMATION FOR: analysis\_nest\_success\_Mayfield

Required R script to run the Mayfield logistic regressions based on the dataset: dataset\_nest\_success\_Mayfield

DATA-SPECIFIC INFORMATION FOR: dataset\_crop\_vegetation

Number of variables: 5

Number of cases/rows: 130

Variable List:

Field\_ID: name of the field where vegetation data was collected

Year: year when vegetation data was collected

Date: date when vegetation data was collected

Crop\_cover\_%: crop cover expressed as percentage

Crop\_height\_cm: crop height in cm