Annex 14

Bird studies 2022-2024

LIFE-IP project

LIFE-IP ForEst&FarmLand/LIFE18IPE/EE/000007

Action A.4

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Summary

Action A.4 of the project LIFE-IP ForEst&FarmLand: Effectiveness of Common Agricultural Policy (CAP) support schemes for farmland biodiversity.

Estonian Birdlife (EOÜ) conducted a study of the habitat use of two farmland bird species—grey partridge and corncrake—using modern GPS-GSM tags.In addition to location information (GPS positions), EOÜ collected information on bird behaviour and activity patterns using a built-in accelerometer.

To evaluate the effectiveness of existing agri-environmental measures, bird surveys were conducted at selected sites to determine how grassland strips, different mowing regimes, and unshown plots in crop fields (so-called skylark plots) affect farmland birds.

The action is co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.

1. Corncrake, studies of habitat use

EOÜ investigated corncrake habitat use in Eastern Estonia based on GPS point locations on five GPS-tagged individuals. The study showed that corncrake habitat use is very flexible. All individuals used multiple habitats and changed them often. This was true based on data collected in the day-light time and also during the night-time. Home range sizes varied based on individuals: home range size was between 0.03 – 0.29 hectares in the night-time and 0.8–2.1 in the day-light time. Home ranges of different individuals were: 9.34, 9.65, 18.62, 30.33 and 58.05 hectares, on average 25.2 hectares. The study showed that corncrake prefers agricultural landscapes with diverse land use, which has diverse small habitat patches at the local scale because individuals change habitats often, and when one habitat disappears for a shorter period, for instance, due to mowing, the individuals move to a neighbouring habitat.

EOÜ also found that corncrake preferred grasslands that were mowed after July 10 or not managed at all, both in the dark- and in the day-light-time. In contrast, grasslands that were mowed before 10th July were non-preferred habitats. In addition, corncrake preferred winter cereal fields both in the night- and day-light-time, while woodland areas were avoided, regardless of the light conditions. The study results show that corncrakes highly likely prefer extensively managed grasslands. Winter cereals are likely alternative habitats, which are used in the absence of better habitats.

Riho Marja, Jaanus Elts, Liis Keerberg. 2022. Rukkiräägu (Crex crex) individuaalne elupaigakasutus [Individual habitat use of the corncrake (Crex crex)] Hirundo 2022 35 (1) 1-16.

This study investigates the habitat use of the corncrake in Eastern Estonia based on GPS point locations. The data was collected in June, July, and August in 2020–2021 based on five GPS-tagged individuals in Jõgeva and Tartu County. Since the study period lengths varied per individual and GPS data came from different time periods, EOÜ used an individual-based approach. The study showed that the corncrake habitat use is flexible. EOÜ investigated some individuals for a longer time and others for a shorter time, but all individuals used multiple habitats and changed them often. This was true based on data collected during the daytime and nighttime. Home range sizes varied based on individuals: home range size was between 0.03–0.29 hectares in the nighttime and 0.8–2.1 in the daytime. Based on the mixed model, home range size significantly correlated with the number of different habitats and light conditions. In the case of a large home range, more different habitats were used, and the home range was greater in the daytime than during the nighttime. Home ranges of different individuals were: 9.34, 9.65, 18.62, 30.33, and 58.05 hectares, on average 25.2 hectares. The study showed that the corncrake prefers an agricultural landscape with diverse land use, which has diverse small habitat patches at the local scale because individuals change habitats often, and when one habitat disappears for a shorter period, for instance, due to mowing, the individuals move to a neighbouring habitat. This phenomenon should be considered when planning the protection of corncrake or stabilising the species numbers through agri-environment schemes

Riho Marja, Liis Keerberg, Jaanus Elts. 2023. Rukkiräägu (Crex crex) elupaigavalik maastiku tasandil [Habitat selection of corncrake (Crex crex) at a landscape scale] Hirundo 2023 36 (1) 22-32.

This study investigates corncrake (Crex crex) habitat selection in Eastern Estonia based on GPS point locations. The data was collected from June to August in 2020 and 2021, focusing on five GPS-tagged individuals in Jõgeva and Tartu County. The dataset was divided into two parts: night-time points and daylight-time points. Logistic regression models were employed to analyse habitat selection during these periods. The results indicate that corncrakes preferred grasslands that were either mowed after July 10 or left unmanaged, both during the day and at night. Conversely, grasslands that were mowed before July 10 were considered non-preferred habitats. Additionally, corncrakes showed a preference for winter cereal fields during both day and night, while woodland areas were consistently avoided regardless of lighting conditions. These findings suggest that corncrakes are likely to favor extensively managed grasslands with moderately dense vegetation. Winter cereal fields serve as viable alternative habitats when better options are not available.

2. Grey partridge, studies of habitat use

EOÜ investigated grey partridge movements during the night-time (roosting habitat) and day-light time (habitat use). EOÜ used GSM-GPS transmitters in total of 24 individuals tagged grey partridges. The species mostly preferred winter cereal fields and grass meadows as roosting habitats. To a lesser extent, summer cereals, leguminous grasses, and winter oilseed-rape were also used as night-time roosting sites. There were seasonal differences in the habitats of the roosts.

During day-light time, our results indicated that grey partridges predominantly utilized various edge habitats (farmyard and field edges, shrub and field edges, or road and field edges). However, they did not prefer or significantly avoid forest and field edges. According to the analysis, grey partridges avoided areas of spring oilseed rape, unmanaged fallow areas, forests, wastelands or quarries, and wetlands. Based on the results, EOÜ can conclude that the field edge habitats are crucial for grey partridges during the breeding period and should be considered in efforts to promote the species' population.

Riho Marja, Liis Keerberg, Jaanus Elts. 2024. Servaalade roll nurmkana (Perdix perdix) elupaigakasutuses [The role of the edges of grey partridge habitat use] Hirundo 2024 37 (2) 25-32.

This study investigates the habitat use of the grey partridge (Perdix perdix) in the agricultural landscapes of Estonia, utilizing GPS location data. Data from 14 individuals were collected during the breeding seasons from 2021 to 2023, focusing exclusively on daytime activity. To analyse habitat use, a logistic regression model was employed. The results indicate that grey partridges predominantly utilized various edge habitats, such as farmland and field edges, shrub and field edges, and road and field edges. However, they exhibited neither a preference for nor significant avoidance of forest and field edges. According to the model, grey partridges avoided areas of spring oilseed rape, unmanaged fallow areas, forests, wastelands or quarries, and wetlands. No clear preference or avoidance patterns were observed for the remaining habitats studied. Therefore, edge habitats are crucial for grey partridges during the breeding period and should be considered in conservation efforts to promote the species' populations.

Riho Marja, Liis Keerberg, Jaanus Elts. Night-time movements and habitat distribution of roosting sites of grey partridges (*Perdix perdix*). Submitted, March 2025

The study investigates the movements of the grey partridge (Perdix perdix) during the night-time, including the length of the movement gradient (distance between roosting sites), if for some reason, the individual moved either voluntarily or fled from the original roosting site to another site (1), distances between roosting sites of consecutive nights (2) and habitat use of roosting sites and its temporal variability (3). EOÜ used GSM-GPS transmitters to collect data on night-time movement parameters and roost habitat use of grey partridges. EOÜ used the data of 24 individuals tagged in the years 2021–2022 (14 females and 10 males, 927 roosts). The results showed that on 422 nights (45.5% of cases), grey partridges moved from their original roosting site to another site during the nighttime. They did not move far based on the average movement distance: males average 108 m and females average 70.4 m. The nocturnal movement of grey partridges did not depend on their gender. However, there was a statistically significant difference in the study periods, as night-time movement gradients from January to March were longer than night-time movement gradients from April to June and July to August. In addition, the nocturnal movements made in July-August and October-November were also statistically different. The distance of the roosting site from the previous roosting site did not depend on sex, study individual, and movement during the previous night (whether the individual was stationary or not). Grey partridges mostly preferred winter cereal fields and grass meadows as roosting habitats. To a lesser extent, summer cereals, leguminous grasses, and winter oilseed rape were also used as night-time roosting sites. The number of roosting sites in the other studied habitats was considerably less and somewhat random. There were seasonal differences in the habitats of the roosts.

3. Some preliminary results from 2024

3.1. Bird censuses in grassland strips and control areas in 2024

In grassland strips (n=6) and their control areas (n=6), EOÜ conducted triple bird censuses. EOÜ used the transect census method, where each area had one 400 m census transect in the grassland strip and another at least 300 m away, as well as a 400 m long transect without a grass strip. The censuses were conducted on a 12 m main strip (on both sides of the census transect) and an additional 22 m strip (on both sides of the census transect). This summary considers the combined bird data from the main and additional strips for nesting bird species.

In addition to the six previously mentioned study areas, EOÜ conducted partial censuses in two other areas, which were excluded from the final selection. The Taikse study area had to be excluded because the study area was plowed, and only the first census was conducted. The Nava study area was also excluded, although two censuses were conducted there, because by the third census, both the grass strip and the control area had been mowed and harvested.

Based on the triple censuses, EOÜ encountered a total of 20 bird species and 71 nesting pairs. The number of nesting species did not differ statistically significantly between grass strips and control areas (t-statistic -0.97, p=0.38, Figure 1). Similarly, the number of nesting individuals did not differ between grass strips and control areas (t-statistic 0.24, p=0.82, Figure 2). Therefore, based on these data, no clear positive effect of grass strips on bird populations was detected. However, the result is influenced by the outcome in one control area. In Keskvere near Matsalu Bay, the control area had significantly higher values than the grass strip.

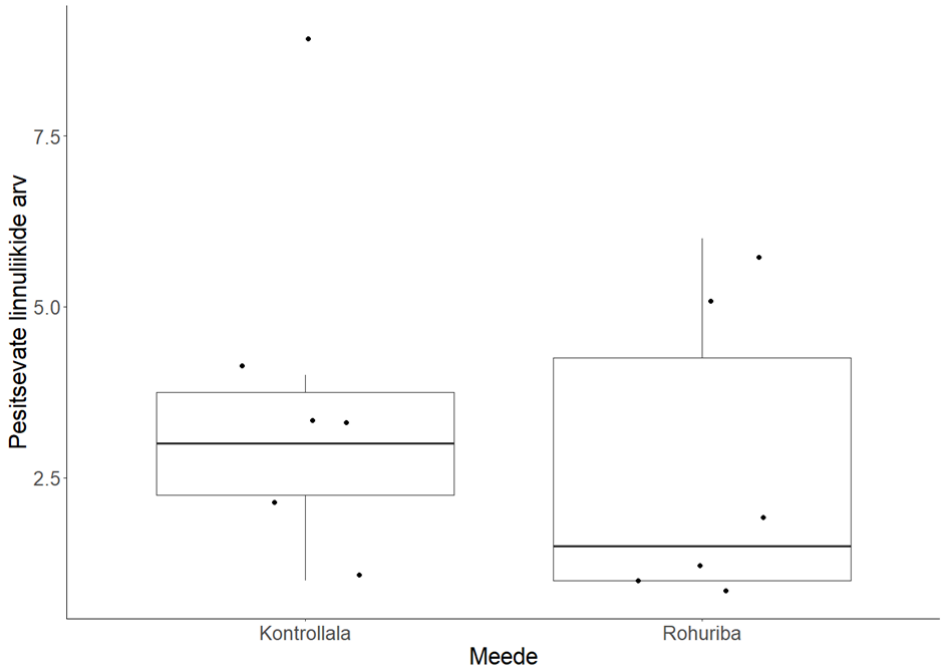

Figure 1. *The number of nesting bird species (median and raw data) on grassland strips and control area on the 12 m main strip and 22 m additional strip combined.*

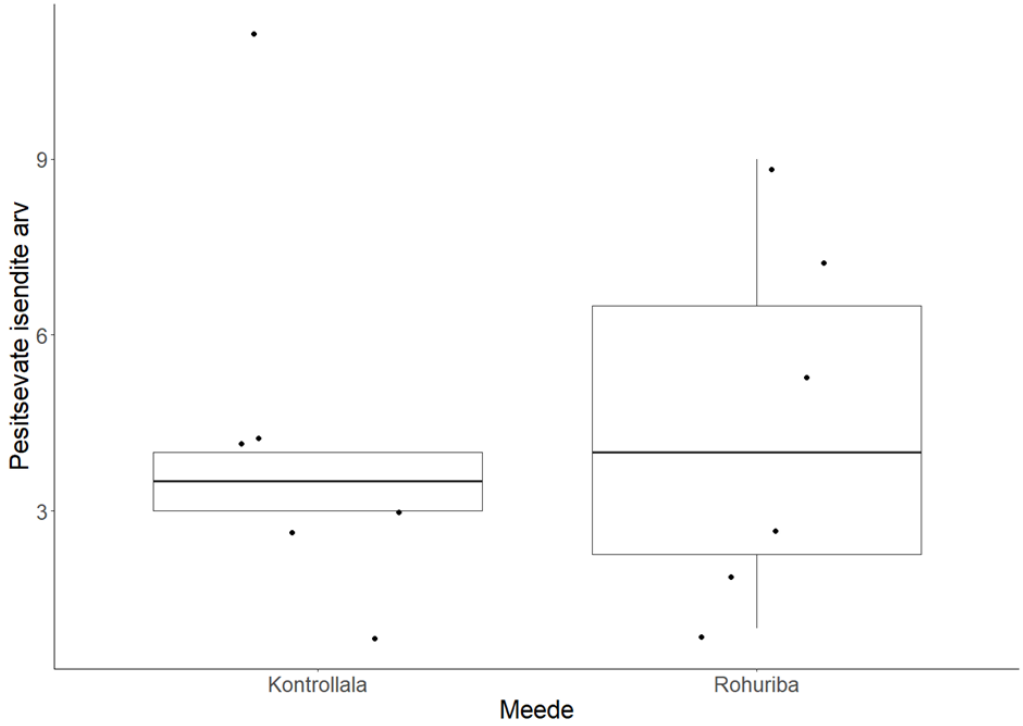

Figure 2. *The number of nesting individuals (median and raw data) on grassland strips and control area on the 12 m main strip and 22 m additional strip combined.*

Table 1*. Summary table of bird species encountered in 6 grass strips and control area in 2024.*

Ala ID	Meede	Aed-põõsalind	Aed-roolind	Hall-kärbsenäpp	Kadakatäks	Kiivitaja	Linavästrik	Metskiur	Mets-lehelind	Metsvint	Mustpea-põõsalind	Passeriformes	Põldlõoke	Pruunselg-põõsalind	Rasvatihane	Rootsiitsitaja	Sookiur	Soo-roolind	Talvike	Väike-lehelind	Väiketüll	Liigirikkus	Isenite arv
3	**Kontroll**	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	3	3
9	**Kontroll**	1	1	0	0	0	0	1	0	0	1	1	0	1	0	1	0	1	3	0	0	9	11
10	**Kontroll**	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1
12	**Kontroll**	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	2	3
13	**Kontroll**	0	1	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	4	4
14	**Kontroll**	0	0	1	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	3	4
3	**Rohuriba**	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	2
9	**Rohuriba**	0	0	0	0	0	1	0	0	0	1	0	0	3	0	2	0	0	2	0	0	5	9
10	**Rohuriba**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
12	**Rohuriba**	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	0	2	3
13	**Rohuriba**	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	1	5
14	**Rohuriba**	0	0	0	0	0	0	0	1	1	0	0	1	2	1	0	0	0	0	1	0	6	7

3.2. Bird censuses on grasslands mowed every other year (so-called intermediate year grasslands in 2024)

On 20 grasslands mowed every other year (so-called intermediate year grasslands), EOÜ conducted double bird censuses. EOÜ used a five-minute point count method, where each grassland had two census points at least 200 m apart. The area of the grasslands varied between 6-23.2 ha.

Based on the double censuses, EOÜ encountered a total of 39 bird species and 399 nesting pairs.

The most abundant species was the whinchat, which accounted for 17.3% of the entire community. It was followed (in descending order) by the skylark (10.5% of the community), the red-backed shrike (9.5% of the community), the meadow pipit (6.8% of the community), and the reed bunting (6% of the community). Surprisingly, the protected bird species corncrake (III protection category) was abundant in such grasslands. EOÜ encountered 10 individuals in 9 areas during the first census and 14 individuals in 13 areas during the second census (5.8% of the community).

Next year, EOÜ plan to conduct a repeat census in the same areas to compare the impact of mowing and not mowing on the bird populations of the grasslands.

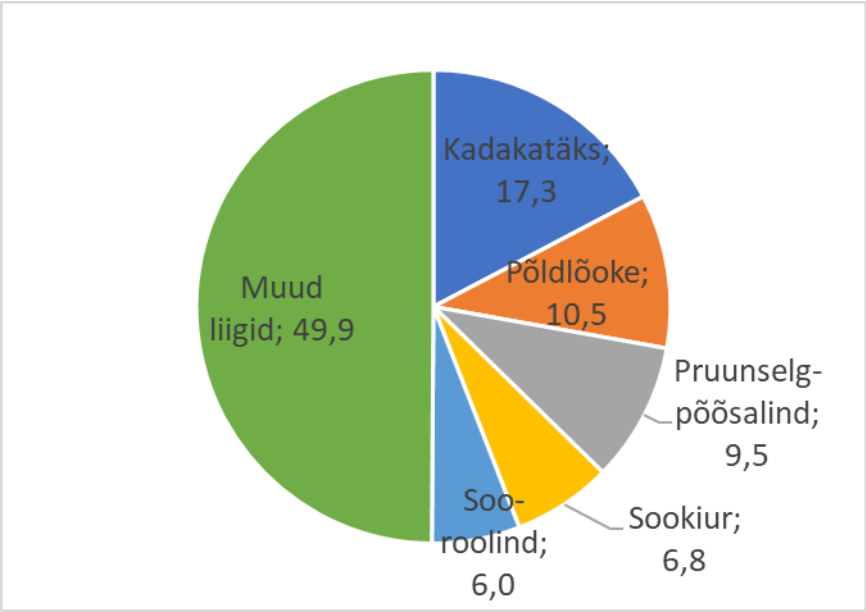

***Figure 3**. Proportion of different species in bird community of unmown grasslands in 2024.*

***Table 2**. Birds counted on unmown grasslands, n=20.*

Species	Number of breeding pairs	Dominants
Kadakatäks	69	17,3
Põldlõoke	42	10,5
Pruunselg-põõsalind	38	9,5
Sookiur	27	6,8
Soo-roolind	24	6,0
Rukkirääk	23	5,8
Metskiur	14	3,5
Ööbik	13	3,3
Karmiinleevike	12	3,0
Võsa-ritsiklind	12	3,0
Jõgi-ritsiklind	11	2,8
Kõrkja-roolind	9	2,3
Metsvint	9	2,3
Talvike	9	2,3
Väike-lehelind	9	2,3
Hänilane	8	2,0
Laulurästas	8	2,0
Aed-põõsalind	7	1,8
Rootsiitsitaja	7	1,8
Käblik	6	1,5
Peoleo	6	1,5
Aed-roolind	5	1,3
Musträstas	5	1,3
Salu-lehelind	4	1,0
Põldvutt	3	0,8

Hall-kärbsenäpp	2	0,5
Kägu	2	0,5
Kiivitaja	2	0,5
Mustpea-põõsalind	2	0,5
Punarind	2	0,5
Hallõgija	1	0,3
Harakas	1	0,3
Mets-lehelind	1	0,3
Nõmmelõoke	1	0,3
Nurmkana	1	0,3
Pasknäär	1	0,3
Rasvatihane	1	0,3
Sinitihane	1	0,3
väike-põõsalind	1	0,3