

## Chapter 23. Ecological Restoration and Management of Habitats Suitable for Bird Species (A. Auniņš)

This chapter only describes aspects of restoration of grasslands that are directly relevant for bird habitat restoration. Various recommendations of habitat management are reviewed in detail in Chapters 22.2 and 22.3 and in Annex 2. Images and brief descriptions of bird species that use grasslands as significant habitats or feeding places are summarised in Annex 5.

### 23.1 Pre-requisites of Management

Rewetting of degraded, drained grasslands is one of the most significant measures for the restoration of the communities of bird species, because most of the rare and protected grassland bird species occur in moist and wet grasslands, as well as moist areas of other grassland types.

Construction of new drainage systems or restoration of the existing drainage systems in the grasslands is undesirable in terms of maintenance of the communities of bird species. The optimum solution in currently drained grasslands would be the removal of drainage systems by blocking and completely filling the ditches. It is recommended to restore regulated rivers to their previous course. If the restoration of a floodplain is not possible, any measures aimed at raising the water table are recommended (reduction of the depth of ditches, reduction of runoff, etc.), as well as removal of trees and shrubs from ditch edges.

Several aspects must be considered when planning the rewetting measures for habitat creation for rare bird species:

- Whether the total restored grassland area will be large enough to be populated by the target species. Expensive restoration works in the grasslands, which are smaller than the minimum area required for the target species, would be counterproductive. This area may differ depending on the landscape (for instance, a smaller area is required in a grassland located in an open landscape than in a grassland surrounded by forests), however, 10 ha is the minimum area required.
- Whether a sufficient number of feeding places required by the target species or a species complex will be established in the grassland as a result of restoration. By modelling groundwater table changes after rewetting, it is possible

to predict whether and where wet alternately flooded slacks will develop and how fast the soil will dry in different areas of the grassland. The potential influence of weather condition changes on the moisture in the grassland should also be considered – it must provide sufficient conditions in “dry”, as well as “wet” years, therefore it is recommended to create areas that are “too dry” and “too wet” for waders in “normal” years.

- Whether a grassland will lack other significant factors, or, on the contrary –undesirable elements will remain, due to which the restoration could fail. Investment in rewetting areas, where the return of target species is impossible due to other limiting factors (for instance, configuration of the landscape, terrain and interfering factors, etc.), is not rational. If there are other barriers for the target species, the package of restoration measures should also include the solutions for these problems.
- Upon the restoration of the grasslands, the communities of bird species will develop according to the changes in grassland area, configuration, moisture, as well as composition and structure. None of the grassland bird species occurring in Latvia require reintroduction, nor is it realistic. All species characteristic of grasslands (except for *Tetrao terix*) are migratory birds. They (except for the “lowland” population of *Gallinago media* and *Calidris alpina schinzii*) have relatively large global populations to settle in newly created suitable territories and develop local nesting populations during their return and spring migration period. If *Gallinago media*, *Calidris alpina schinzii* and *Philomachus pugnax* populations have disappeared from a formerly suitable grassland completely, the restoration of such populations can require a longer period of time.

### 23.2 Optimal Management for the most Significant Grassland Bird Species

When planning habitat management, it must be taken into consideration that the restoration of grasslands in small areas is generally ineffective from a bird population recovery perspective. Factors that affect habitat suitability for birds, operate on a larger scale than those that determine habitat suitability for plants or insects. Different species of birds can be influenced by different factors. Most grassland passerines (for instance, *Carpodacus erythrinus*, *Lanius collurio* or *Emberiza schoeniclus*) will find small areas of suitable grasslands sufficient, however, to

Table 23.2.1. Environmental conditions and preferred management necessary for the most significant grassland bird species and ecological groups.

Species and groups of species	Requirements	Preferred management
<b><i>Gallinago media</i></b>	Moist, periodically flooded soil, rich in worms, which is not covered by litter or plant remains.	Regular mowing to prevent the development of litter. It is best to mow the grass once a year after the breeding season, however, less frequent mowing is also possible, provided that the grassland remains open and a dense layer of partially decomposed litter does not develop. Mulching of the grass is extremely undesirable, because the plant remains of the grass cover the soil and render the territory unusable for Great snipe. Grazing may be appropriate, but there is little documented evidence of the impact of grazing on Great snipe. Prescribed burning is a suitable method of grassland restoration that allows one to eliminate the layer of old grass. See also Chapter 17.
<b><i>Crex crex</i></b>	Relatively high vegetation already at the beginning of the breeding season (late May), which remains for the entire breeding season of the species.	Regular mowing to prevent overgrowth of the grassland. The best method of mowing is to mow once a year after the breeding season, however, less frequent mowing is also possible, provided that the grassland remains open. Grazing is less appropriate than mowing, but permissible, if the grazing is extensive and a sufficient quantity of areas with high grass (> 30 cm) is retained. Mowing not earlier than the first brood is able fly and only by using the method that reduces the risk of death (from the centre to the edges, preferably with repellent devices) (see Chapter 22.2.1.4).
<b>Meadow waders</b>	Low, but diverse (5–20 cm) vegetation during the breeding season (April – May), availability of wet slacks with low-sloped, grassy banks or water bodies or water edges with low sloped banks.	Regular grazing with animal density that ensures the mosaic of low and non-homogeneous vegetation dominated by grasses and sedges. Stands of taller vegetation of expansive species in large areas do not develop (but they are allowed in a mosaic-like pattern in small patches). It is recommended to only start the grazing after most of the wader chicks have hatched (from early June, but even better – from mid-June). Mowing is permissible, but mowing twice per season is preferable, including mowing at the end of the vegetation season, in order to ensure low vegetation at the beginning of the following year's breeding season. Mowing with the gathering of hay, to avoid the development of litter. Prescribed burning is a suitable method of grassland restoration, which allows the elimination of the layer of litter.
<b>Meadow ducks</b>	Relatively long vegetation at the water's edge or near it, preferably with the presence of a small amount of litter.	Regular grazing or mowing to prevent overgrowth of the grassland in an effort to ensure comparatively high vegetation, including the presence of litter in individual patches, especially along the water's edge. These conditions can contradict the requirements of meadow waders, therefore in the places which are suitable both for waders and ducks, a water's edge that suits the needs of both groups of species should be ensured.
<b>Meadow passerines</b>	A small density mosaic of different sizes of shrubs and their clusters.	Regular mowing or grazing to prevent the overgrowth of the grassland, but maintaining the optimum mosaic of shrubs and open grassland. Mowing and grazing conditions are relatively less significant than for the species listed above. (For information on <i>Anthus campestris</i> see Chapter 11).
<b>Other species (only feed in the grassland)</b>	Diverse vegetation – from low to relatively high – during the breeding season, without additional requirements.	Regular mowing or grazing, to prevent the overgrowth of the grassland. The presence of suitable breeding habitats near the grassland is even more important than the grassland management methods.



Fig. 23.2.1. A feeding place of *Gallinago media*. The footprints of *Gallinago media* and holes left by the birds as they probe the soil. Photo: A. Auniņš.



Fig. 23.2.2. Floodplain grassland with a high groundwater table during the bird breeding season in the floodplains of the rivers of Sita and Pededze. *Gallinago media* and *Gallinago gallinago*, as well as *Crex crex* and in some years *Vanellus vanellus* and other waders occur in the grassland. Photo: A. Auniņš.



Fig. 23.2.3. A floodplain grassland suitable for waders with natural micro-terrain (both shallow depressions and small mounds are visible). Photo: A. Auniņš.



Fig. 23.2.4. A floodplain grassland in the floodplain of the River Rūja, where a large lek of *Gallinago media* is located. The water table in the grassland is high. Water stands in the lower areas of the grassland until early May. Later during the season they get filled with water irregularly after rainfall. This provides moist, "currently drying" areas, which can provide *Gallinago media* and other waders with food. Photo: A. Auniņš.

host the leks of *Gallinago media*, very large areas of suitable habitat are required. However, there are situations, where the restoration of grassland habitat in small areas can be effective; for example, continuous grassland area is increased by connecting two adjacent grasslands and removing shrub bands or grassland parts overgrown with shrubs. The preferred management favourable for grassland bird species must be selected depending on the ecological requirements of these species (Table 23.2.1; Fig. 23.2.1 – 23.2.8).

**Pastures.** Grasslands, which are constantly used for grazing, suit meadow waders best (almost all of them fall within the criteria of a EU protected habitat 6270 \* *Fennoscandian lowland species rich dry to mesic grasslands*, as well as 6450 *Northern boreal alluvial meadows*, however, in the grasslands situat-

ed in wide open landscapes with watercourses and water bodies, they can also belong to other EU protected habitats, for instance, 6210 *Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia)*, as well as regular perennial grasslands), therefore restoration measures of such grasslands must be primarily targeted at their suitability for these bird species. Other species characteristic of pasture grasslands (for instance, "Meadow ducks", passerines) will also benefit from habitat restoration measures implemented for the benefit of waders. To ensure the suitability of the pasture for meadow waders, including *Gallinago media*, restoration of various structures characteristic of pastures listed in the text below, is necessary.

- Heterogeneous, mosaic-like pasture vegetation with tussocks and low vegetation (< 20 cm) pat-



Fig. 23.2.5. Wet pastures with mud and low grass on the bank of Lake Engure are suitable for waders. East coast of Lake Engure, 30 August 2013. Photo: A. Priede.



Fig. 23.2.6. A pasture structure suitable for waders. Grazing to a lower height would not be desirable. East coast pastures of Lake Engure, 30 August 2013. Photo: A. Priede.

ches. Vegetation that is suitable for nesting must be present not only in places that are flooded first, but also in places where the risk of flooding is lower (if tussocks and high grass is left only in wet slacks, then these are the only sites suitable for nesting, but nests can be flooded there, thus reducing breeding success). This result is best achieved by grazing, if a high grazing density is ensured during the post-breeding period (aimed at ensuring generally low spring vegetation without much litter) and low density of grazing or total absence of grazing until early June. Since different species of waders prefer different heights of vegetation, it is impossible to predict the necessary height of grass. It is very significant to ensure vegetation of differing height, because this provides suitable nesting sites for different bird species at small distances to each

other (Fig. 23.2.6, 23.2.7).

- Free access to the water's edge, if present.
- Sufficient area of open continuous grassland (at least 10 ha, preferably more), which contains sufficiently large areas (a few hectares at least) located at a distance of at least 200 m away from the nearest vertical elements (forest edges, rows of trees, solitary trees or poles), which can be used by corvids as observation posts.

**Mown grasslands suitable for Corncrake *Crex crex*.** Although floodplain grasslands are the most suitable for Corncrake, they inhabit other types of grasslands as well, preferring mown grasslands with vegetation that is on average higher than the vegetation necessary for waders. Grassland managers should use their experience of where (which grasslands) Corncrake like to settle in spring (where the calling of Corncrake is heard in late May). These



Fig. 23.2.7. Not only different species but also the same bird species can choose vegetation of differing height for nesting. Therefore, it is not possible to give precise guidelines for suitable vegetation height for the species habitat. *Vanellus vanellus* can choose both sites with (a) very low and sparse vegetation, and (b) grasslands with comparatively high vegetation. Photo: A. Auniņš.

areas should be left for late mowing. The places in which Corncrake reside are easy to identify: the characteristic voice of Corncrake can be heard in the evenings and early mornings, but preferably at night. Grasslands, where Corncrake do not call in May can be mown in early June; these areas will be appropriate for repeated breeding later, when the grass has regrown.

To make the grassland suitable for Corncrake the following should be restored:

- sufficient area of continuous open grassland (at least 10 ha, preferably larger) and the highest possible proportion of similar habitats in the nearest vicinity;
- relatively high vegetation (at least 30 cm) at the beginning of the breeding season (late May); this is best achieved by avoiding mowing the

grassland after the end of the vegetation season, but allowing the aftermath to grow, which will ensure hiding places in the following spring.

**Other grasslands.** In the grasslands where the objective of management is not the conservation of grassland bird species, the diversity of bird species can also be increased as follows:

- preserving solitary shrubs and clusters of shrubs; it is significant to ensure that the shrubs do not develop homogeneous vegetation but are scattered, and open areas dominate in the grassland;
- preserving solitary trees or groups of trees;
- preserving wet depressions, where water accumulates in spring;
- ensuring the presence of other landscape elements (for instance, fences, hay stacks).