Annex 2. Optimal, Suboptimal and Inappropriate Management of EU Protected Habitats (S. Rūsiņa, A. Auniņš, V. Lārmanis, V. Spuņģis)

The tables summarise recommendations for management to maintain the EU protected grassland habitats in favourable condition, as well as indicate the types of management that are inappropriate, because they can worsen the condition of habitats, or even destroy them.

The tables do not include recommendations for habitats under restoration, therefore they cannot be applied for restoration (for restoration recommendations see Chapters 20 – 21). When restoring EU protected grassland habitats, actions inappropriate for the management of the same type of habitat in a favourable condition might be necessary. For instance, grazing is inappropriate for the maintenance of habitat type 6510 *Lowland hay meadows*, however, it can be effectively used as a restoration method, if after restoration the habitat is managed by mowing.

None of the management methods included in the tables of this annex can be used in isolation from the others. To ensure the generally favourable management of a habitat, the manager must use all optimal (best) types of management, instead of implementing only a few of them. The same applies to suboptimal management. Only if optimal management or any of its components is not possible, may a suboptimal management method be used. None of the types of inappropriate management should be used for habitat management, as it can deteriorate the condition of the habitat, or even destroy it. For instance, if optimal types of management are used for the management of the entire habitat (correct choice of equipment, mowing direction, type of grass removal, etc.), but mowing is performed more than twice per season, the habitat will perish within a couple of years and a lawn will develop.

The chapter of this book providing comprehensive information on the particular management type has been indicated in the parentheses in the first column of the tables in this annex.

Optimal management	
	Optimal (preferred) management – a set of biotechnical measures, which completely suits the environmental requirements of the habitat and, provided that other conditions are favourable, ensures the composition, structure and functions of species characteristic of the habitat.
Suboptimal management	
	Permissible management that ensures the existence of the habitat, however, in the long run it may degrade the condition of the habitat or reduce the suitability of the habitat for characteristic species of the habitat type. This can adversely affect the composition or structure of habitat species, however, in general it is much more favourable for the conservation of the biodiversity than abandonment.
Inappropriate management	
	Management, which significantly reduces the natural assets of the habitat, or even destroys it.

Table 1. Management recommendations that apply to all types of EU protected habitats and protected bird habitats in a favourable condition.

Type of management
Mowing equipment (22.2.1.1)
Equipment that is suitable for the moisture conditions and mowing in a plant and animal-friendly manner with as narrow work area as possible, slow speed of operation and good manoeuvrability. It is recommended to change the direction of mowing by 90 degrees every year, thus reducing the risk of track development.
Use of heavy equipment or equipment unsuitable for the moisture conditions. When performing early mowing (before 10 July) usage of powerful equipment with a wide work area, which cannot ensure animal and plant-friendly mowing, should be avoided.
Wild animal and plant-friendly management (22.2.1.4)
Animal scaring devices must be used (requirement to use these devices does not apply to dry grassland habitats 6110, 6120, 6210 and 6430, if the average height of sward in these grasslands is less than 30 cm). Mowing direction: from the centre to the edges or from one edge to the other, toward the forest or other semi-natural habitat, where birds may find shelter. An alternative is to leave unmown plots or strips that are only mown in late summer or next year. For plants and grass layer invertebrates: unmown areas or strips, which are only mown late in autumn or next year must be left, and the location of unmown areas must be changed every year.
Mowing without bird repelling devices, from the centre of the field to the edges.
Mowing without bird scaring devices from the edges of the field to its centre or mowing of the entire meadow at once (except for situations where wild animal and plant-friendly management is impossible due to work safety considerations, for instance, in a very steeply sloping or fragmented terrain).
Removal of grass (22.2.1.6)
The hay is dried on the spot, put in stacks and transported away uncovered. No mulching or mulching only once every five years, when nutrient removal results in the reduction of species diversity.
Dry on the spot and roll up into bales. Every few years green, freshly mown grass, is rolled into plastic bales. Mulching is only permissible in the grasslands where the only natural asset is Corncrake. However, even in this case the development of grassland must be monitored, and mulching must be replaced with the removal of grass, if expansive plant species start dominating the sward.
Mulching the grass or leaving it on the field in windrows or scattered, mowing every year before the mass flowering and spreading of seeds, or removing it when green every year.
Supplementary feeding during the grazing season (22.3.1.6)
Supplementary feeding does not occur.
Supplementary feeding is performed in winter in the least biodiverse areas, or it is dispersed through the entire area of the grassland. Promotion of livestock concentration in one place and local overfertilisation should be avoided. Before selecting the site for supplementary feeding, it should be evaluated for the presence of protected plant or animal species. If they are present, supplementary feeding must be performed elsewhere.
Supplementary feeding may not be performed, if it causes undergrazing or overfertilisation, because biodiversity may be reduced and expansive species may be introduced as a result.
Mowing of pastures (22.3.2)
In the case of optimal grazing pressure, mowing is only required periodically (not every year), if the increased development of tussocks or ungrazed patches with shrub growth is observed. Mowing is required, if unpalatable species have spread (*Cirsium vulgare*, *Rumex* spp.) and started to suppress the diversity of other plant species. Small amounts of these species must be preserved until next spring, because they are usually taller than snow cover and serve as a food source for birds in snowy winters.

(continued)

Table 1 (continued)

	Method of management
😐	Annual mowing after the grazing season. Mowing in year-round pastures of semi-feral herbivores must be harmonised in a manner that ensures pasture animals with a food base in the autumn and spring season.
☹	Mowing during the bird breeding season.
	Care of pasture animals
☹	Synthetic medications used for animals may not exceed amounts permissible for organic agriculture, because they endanger pasture biodiversity through manure.
	Drainage (21.6)
☺	Retain shallow ditch draining systems, if they are required for the conservation of habitat diversity to avoid paludification. Shallow trenches usually have a positive effect on grassland biodiversity. They are also significant cultural heritage objects that need to be preserved and maintained.
😐	Maintain deep ditch systems in areas where the grass must be regularly mown and collected and filling of ditches should result in such a severe increase in moisture, that it will be impossible to mow the grassland and remove the grass even with specialised equipment.
☹	Creation of new ditch systems.
	Felling trees and shrubs (22.2.4, 22.3.4)
☺	For habitats 6530 * *Fennoscandian wooded meadows* and 9070 *Fennoscandian wooded pastures* see Table 11 of this annex. Trees and shrubs are felled in open grassland habitats, retaining the shrub layer in up to 10% of the grassland area, paying especial attention to the retaining of abundantly flowering trees and shrubs (this increases bird and insect diversity). If the grassland is significant for meadow waders, minimum amount of shrubs and trees is left and they should not be higher than 1.5 m to prevent them being used as "hunting towers" by raptors.
😐	The cover of trees and shrubs is retained in an area that is larger than 10%, but smaller than 30% of the grassland area.
☹	Cutting all trees and shrubs, as a result of which nothing is left. Abandoning the area to be overgrown by shrubs and trees.
	Prescribed burning (22.2.3, 22.3.3)
☺	Prescribed burning is not desirable as the only management method (it can only be used as the preferred method during restoration).
😐	Burning for management purposes should not occur more frequently than once every five years, but it must only be used in combination with mowing and/or grazing. This is only done, if undesirable growth or litter development, as well as flood sediment occurs. Burning does not replace regular management by means of mowing or grazing.
☹	Using prescribed burning as a permanent management method. If it is used in combination with mowing and/or grazing, burning may not be implemented more frequently than once every five years.
	Supplementary sowing of seeds (21.8)
☺	Supplementary sowing is not performed in grasslands of rich biodiversity. Supplementary sowing of seeds obtained from the same type of grassland habitat with high quality plant composition in terms of biodiversity and without undesirable plant species to restore or increase plant species diversity is permissible.
😐	Supplementary sowing of commercially produced seeds of grasses or legumes that occur in the wild in the grassland plant communities of the same habitat type for restoration purposes (for example, in the areas trampled by pasture animals or areas uprooted by wild boar, which have been smoothed).
☹	Sowing commercial seeds of cultivated grassland grasses or legumes, or mixtures.

Table 2. Summary of management methods of the habitat type 1630* *Boreal Baltic coastal meadows* in a favourable condition.

	Method of management
Summary	
☺	Grazing is the most suitable, however, mowing with aftermath grazing is also recommended, especially in the areas where protected plant species occur.
😐	Mowing without grazing in the aftermath.
☹	Leaving the area without mowing or grazing, ploughing, draining with deep ditches. Actions that destroy the habitat may not be implemented.
Mowing frequency and time (22.2.1.2 – 22.2.1.3)	
☺	Mowing as the main management method is not recommended in coastal meadow wader grasslands. Grasslands significant for plant and grass-dwelling invertebrate diversity are mown once per season – in late June – mid-July, the aftermath is grazed in the second half of summer.
😐	Coastal meadow waders: mowing once per season starting from early July and aftermath grazing in the second half of summer, or mown twice per season (if grazing is not used), by mowing in early July for the first time and late August for the second time. The time of mowing is chosen to prevent too tall aftermath in autumn and ensure very low sward both for migratory birds and waders in spring. Plants and grass-dwelling invertebrates: mowing once every 1–2 years in late June – mid-July without grazing in the aftermath.
☹	Plants: mowing more frequently than twice per season or less frequently than once every 2 years or every year later than mid-July. Coastal meadow waders: mowing earlier than early July.
Mowing height (22.2.1.5)	
☺	Mowing at the height of 3–5 cm.
😐	Mowing at the height of 5–10 cm.
☹	Mowing lower than 3–5 cm or higher than 10 cm.
Aftermath grazing (22.2.2)	
☺	Grazing in aftermath is highly recommended in coastal meadow wader grasslands, while grazing in spring is impermissible, especially, if the grazing pressure is excessively high. Plants and birds: grazing in the aftermath is highly preferable.
😐	Grazing in the aftermath is not performed, however, repeated mowing is performed in order to ensure sufficiently low vegetation in spring.
☹	Too intense aftermath grazing (lower than 3 cm, signs of trampling) should be avoided.
Grazing season and 24-hour grazing (22.3.1.1, 22.3.1.5)	
☺	Grazing may be started in coastal meadow wader grasslands no earlier than in mid-June. Grazing until late autumn is very important to ensure low grass in spring. This helps coastal meadow birds in another sense – grazing can be started later in spring, thus causing less disturbance to bird nests. Grazing during the breeding season in coastal meadow wader grasslands (especially from mid-April to mid-June) should only be performed during the day, because night grazing significantly increases the risk of nest trampling.
😐	Waders: year-round grazing.
☹	Waders: pasturing in early spring and at night.
Stocking method (22.3.1.2)	
☺	Grazing is supervised by a shepherd or controlled with enclosures, while monitoring to ensure that all natural assets in the grassland are in a favourable condition. To ensure low grass on lagoon shores, which are especially significant feeding sites for waders, grazing must be managed with temporary enclosures.
😐	Plants and grass-dwelling invertebrates: tethering of pasture animals or continuous stocking. Coastal meadow waders: continuous stocking.
☹	Birds: grazing with tethered animals. The area of semi-natural grassland may not be situated in the same enclosure as an improved pasture.

(continued)

Table 2 (continued)

	Method of management
Grazing animals and pressure (22.3.1.3, 22.3.1.4)	
☺	Coastal meadow waders: a mixed herd or change of grazing animal species every few years, 0.3–2.0 LU ha^{-1}, depending on grassland productivity and grazing duration. In year-round pastures the grazing pressure is no higher than 0.6 LU ha^{-1}. Plants and grass-dwelling invertebrates: a mixed herd or change of grazing animal species every few years, 0.3–1.5 LU ha^{-1}. Beef cattle should be selected for grazing. They are hardier under adverse weather conditions. Beef cattle can be held in the pasture until late autumn, furthermore, they also browse shrubs and coarser grass, which is avoided in summer.
😐	Coastal meadow waders: a herd consisting of one species; lower grazing pressure than recommended is permissible, however, in this case mowing and removal of grass must be ensured in early autumn. Plants and grass-dwelling invertebrates: a herd of one species; overgrazing in some areas is permissible, if it is required for meadow waders. Once per 5 years grassland can be left unmown and ungrazed.
☹	Undergrazing in the entire area of the pasture (during the entire vegetation season the grass has not been grazed in more than a half of the pasture area) or overgrazing in the entire area of the pasture (signs of trampling and indicators of overgrazing, sward lower than 3 cm at the end of grazing season).
Height of pasture sward (22.3.1.4)	
☺	20% of the pasture area is covered by up to 3–5 cm high grass, 20% by more than 15 cm high grass, the sward in the remaining area is 3–15 cm high. During plant blooming time, at least 25% of the sward of plants in flower, distributed in a mosaic-like pattern during the entire grazing period, must be ensured. More intensive grazing is ensured closer to the coast (blooming plants may be absent there), maintaining low grass (3–5 cm).
☹	Sward below 3 cm or above 15 cm in the entire territory of the pasture.
Fertilisation (22.2.6, 22.3.6)	
☺	Not fertilised. Moderate fertilisation with solid manure of up to 25 kg of nitrogen per 1 ha annually, or up to 50 kg of nitrogen per 1 ha, if it is done once every 2–3 years, is preferable if, due to annual nutrient removal with hay or grazing, the soil becomes poorer and biodiversity decreases. If fertilisation is required in order to maintain biodiversity, it is done in spring to avoid nutrients draining into the sea as a result of autumn storms and wind gusts and, consequently, sea pollution. Excrement and urine that the animals leave in the pasture are very important for the diversity of invertebrates, because in such locations specific communities of insect species develop.
😐	Fertilisation with only solid manure not exceeding 50 kg of nitrogen ha^{-1} annually. The maximum permissible quantity is the amount produced by the optimum number of livestock during the particular time of pasture season without supplementary feeding.
☹	Using mineral fertilisers or liquid manure. Applying manure with more than 50 kg ha^{-1} of nitrogen per year.

Table 3. Summary of management methods of the habitat type 6120* *Xeric sand calcareous grasslands* in a favourable condition.

	Method of management
Summary	
	Extensive grazing is the most preferred type of management.
	Mowing is not preferred as the main type of management, it is only a suboptimal. It is difficult because the sward is very low and sparse. If mowing at a height of 5–7 cm is performed, the largest proportion of the green mass of the sward remains unmown, which contributes to eutrophication.Once every five years the grassland may be left unmown and ungrazed.
	Leaving without mowing or grazing, ploughing or improving.
Mowing frequency and time (22.2.1.2 – 22.2.1.3)	
	Mowing is not the most preferred type of management.
	Grasslands significant for plant diversity are mown once per season or once every two years in mid-June to mid-July (grazing in aftermath is recommended). In drier summers the grassland can dry out as early as by early July, therefore mowing in these grasslands may be commenced even earlier. Since the tawny pipit *Anthus campestris* nests from mid-May until July, the grasslands inhabited by the species may not be mown earlier than in July, when most chicks have left their nests.
	Mowing more frequently than once per season or less frequently than once every 2 years, performing annual mowing later than in mid-July.
Mowing height (22.2.1.5)	
	Mowing is not the most preferred type of management.
	Mowing is low (3–5 cm) to remove most of the biomass, otherwise the grassland will be eutrophicated with time and will no longer be suitable for sandy grassland species. In grasslands inhabited by *Anthus campestris*, low mowing is only permissible starting with July, or even mid-July, when most broods have hatched.
	Mowing high that results in eutrophication.
Aftermath grazing (22.2.2)	
	Aftermath grazing is highly favourable (helps to create open sand patches).
	Mowing without aftermath grazing is also permissible.
	Grazing the aftermath too intensively (lower than 3 cm, signs of trampling).
Stocking method (22.3.1.2)	
	Under the supervision of a shepherd or controlled stocking in enclosures.
	Continuous stocking in one enclosure; for plants: grazing with tethered animals.
	Pasturing tethered animals in pastures important for birds. The area of semi-natural grassland may not be situated in the same enclosure as improved pasture.

(continued)

Table 3 (continued)

	Method of management
Grazing animals and pressure (22.3.1.3, 22.3.1.4)	
☺	Sheep 0.05–0.3 LU ha^{-1}.
😐	Grazing with other species, the herd can be mixed. Intensive grazing pressure is permissible temporarily to create and maintain areas of bare sand. If the grassland is in a favourable condition and no signs of overfertilisation (eutrophication) are observed, grazing and mowing can be omitted once every 3–5 years (the grassland may be allowed a year of rest).
☹	Undergrazing in the entire area of the pasture (during the entire vegetation season the grass has not been grazed in more than a half of the pasture area) or overgrazing in the entire area of the pasture (grass at the end of the grazing season is lower than 3 cm, signs of trampling and indicators of overgrazing, areas free from vegetation exceed 30% of the area of the pasture).
Height of pasture sward (22.3.1.4)	
☺	20% lower than 3 cm, 20% higher than 10 cm, in autumn at least 3–5 cm, in blooming time, at least 25% of vegetation mosaic consists of blooming plants.
😐	During the rest period of the pasture, a mosaic by vegetation height may be absent.
☹	The height of sward below 3 cm or above 10 cm in the entire territory of the pasture at the end of the grazing season.
Fertilisation (22.2.6, 22.3.6)	
☺	Not fertilised. Excrement and urine that the livestock leaves in the pasture are very important for invertebrate diversity, because in such locations specific communities of insect species develop.
😐	Fertilisation with only solid manure not exceeding 10–20 kg of nitrogen ha^{-1} annually. The maximum permissible quantity is the amount produced by the optimum number of livestock during the particular time of pasture season without supplementary feeding.
☹	Using mineral fertilisers or liquid manure. Applying manure with more than 20 kg ha^{-1} of nitrogen per year.

Table 4. A summary of management methods of the habitat type 6210 *Semi-natural dry grasslands and scrubland facies on calcareous substrates* in a favourable condition.

	Method of management
Summary	
☺	Extensive grazing is the most preferred type of management. It can be combined with mowing both in alternating years, as well as the season, especially in the wettest years and areas with higher grass.
😐	Mowing as the main management type is suboptimal. Once every five years the grassland may be left ungrazed or unmown.
☹	Leaving without grazing or mowing, ploughing or improving.
Mowing frequency and time (22.2.1.2 – 22.2.1.3)	
☺	Mowing once per season from mid-June to mid-July with grazing in the aftermath (if sufficient aftermath regrowth occurs).
😐	Mowing without grazing in the aftermath. Once every five years the grassland may be left unmown and ungrazed.
☹	Mowing more than 2 times per season or less frequently than once every 3 years, or every year later than in mid-July.
Mowing height (22.2.1.5)	
☺	Low mowing (3–5 cm), in order to remove most of the biomass, otherwise the grassland will get overfertilised with time and will no longer be suitable for xeric grassland species.
☹	Mowing height above 10 cm.
Grazing in the aftermath (22.2.2)	
☺	Aftermath grazing is highly recommended.
😐	Mowing without aftermath grazing is also permissible.
☹	Grazing the aftermath too intensively (lower than 3 cm, signs of trampling).
Stocking method (22.3.1.2)	
☺	Under the supervision of shepherd or controlled stocking in enclosures.
😐	Continuous stocking in one enclosure. For plants: grazing with tethered animals.
☹	Birds: grazing with tethered animals. The area of semi-natural grassland may not be situated in the same enclosure as improved pasture.
Grazing animals and pressure (22.3.1.3, 22.3.1.4)	
☺	Sheep 0.1–0.3 LU ha^{-1}, grazing 1–2 times per season. Grazing pressure in continuous stocking areas should ensure the presence of abundantly blooming plants in at least 25 % of the area at the most intensive blooming time (approx. in early July).
😐	Grazing with other species, the herd can be mixed 0.1–0.3 LU ha^{-1}. Intensive grazing pressure is permissible temporarily to create and maintain free areas of bare soil. However, the disruption of the turf (creation of bare sand patches) must be avoided in more than a third of the grassland area. If the grassland is in a favourable condition and no signs of overfertilisation (eutrophication) are observed, grazing and mowing can be omitted once per 3–5 years (a year of rest).
☹	Undergrazing (during the entire vegetation season the grass has not been grazed in more than a half of the pasture area) or overgrazing in the entire area of the pasture (grass at the end of the grazing season is lower than 3 cm, signs of trampling and indicators of overgrazing, areas free from vegetation exceed 30% of the entire area of the pasture).

(continued)

Table 4 (continued)

	Method of management
Height of pasture sward (22.3.1.4)	
☺	20% lower than 3 cm, 20% higher than 10 cm, in autumn at least 5 cm, at least 25% of the sward should consist of a mosaic of blooming plants at the most intensive blooming time (approx. in early July).
☹	The height of sward below 3 cm or above 15 cm in the entire territory of the pasture at the end of the grazing season.
Fertilisation (22.2.6, 22.3.6)	
☺	Not fertilised. Excrements and urine that the livestock leaves in the pasture are very important for the diversity of invertebrates, because in such locations specific communities of insect species develop.
😐	Fertilisation with only solid manure with less than 15–30 kg of nitrogen ha^{-1} annually. The maximum permissible amount is that produced by the optimum number of animals during the particular time of pasture season without supplementary feeding.
☹	Using mineral fertilisers or liquid manure. Manuring of more than 30 kg of nitrogen ha^{-1} per year.

Table 5. A summary of management methods of the habitat type 6230* *Species-rich Nardus grasslands* in a favourable condition.

	Method of management
Summary	
☺	Grazing is the most preferred type of management.
😐	Mowing as the main type of management is permissible, in order to preserve all natural assets. Once every five years the grassland may be left ungrazed or unmown.
☹	Leaving without grazing or mowing, ploughing, improving (fertilisation, drainage).
Mowing frequency and time (22.2.1.2 – 22.2.1.3)	
☺	Mowing is not the most preferred type of management.
😐	Mow once per season from mid-June to mid-July with aftermath grazing. If aftermath is not grazed, repeated mowing in late summer, when the aftermath has grown tall and capable of creating a homogeneous litter layer, must be implemented. Once every five years the grassland may be left unmown and ungrazed.
☹	Mowing more than twice per season in seasonal pastures or less than once every 2 years; mowing annually later than mid-July.
Mowing height (22.2.1.5)	
☺	Mowing is not the most preferred type of management.
😐	Plants: mowing is low (3–5 cm), in order to remove most of the biomass, otherwise the grassland will be eutrophicated with time and no longer suitable for the species characteristic of species-rich *Nardus* grasslands.
☹	Mowing higher than at a height of 5 cm.
Grazing in the aftermath (22.2.2)	
☺	Mowing is not the most preferred type of management. If it is still used, aftermath grazing is highly recommended.
😐	Mowing without aftermath grazing is also permissible.
☹	Grazing the aftermath too intensively (lower than 3 cm, signs of trampling).
Grazing system (22.3.1.2)	
☺	Under the supervision of a shepherd or controlled stocking in enclosures.
😐	Continuous stocking in one enclosure. For plants: grazing by tethered animals.
☹	The area of semi-natural grassland may not be situated in the same enclosure as improved pasture.

(continued)

Table 5 (continued)

	Method of management
Grazing animals and pressure (22.3.1.3, 22.3.1.4)	
☺	Cattle, goats 0.1–0.3 LU ha^{-1}, grazing 1–2 times during the season. Grazing pressure in continuous stocking areas should ensure the presence of abundantly blooming plants in at least 25 % of the area at the most intensive blooming time (approx. in early July).
😐	With other species of grazing animals, the herd can be mixed 0.1–0.3 LU ha^{-1}. Intensive grazing pressure is permissible temporarily in dry sandy *Nardus* grasslands to create and maintain free areas of bare soil. Undergrazing is permissible in up to 25% of the entire pasture area, but the ungrazed areas must be grazed sufficiently during the next season. If the grassland is in a favourable condition and no signs of eutrophication are observed, grazing and mowing can be omitted for one year every 3–5 years (the grassland may be allowed a year of rest).
☹	Undergrazing (during the entire vegetation season the grass has not been grazed in more than a half of the pasture area) or overgrazing (grass at the end of the grazing season is lower than 3 cm, signs of trampling and indicators of overgrazing, areas free from vegetation exceed 30% of the entire area of the pasture) in the entire area of the pasture. Grazing less frequently than once per two years.
Height of pasture sward (22.3.1.4)	
☺	20% lower than 3 cm, 20% higher than 10 cm, in autumn at least 5 cm, ensure the presence of abundantly blooming plants in at least 25 % of the area at the most intensive blooming time (approx. in early July).
☹	The height of sward below 3 cm or above 15 cm in the entire territory of the pasture at the end of the grazing season.
Fertilisation (22.2.6, 22.3.6)	
☺	Not fertilised. Excrements and urine that the livestock leaves in the pasture are very important for the diversity of invertebrates, because in such locations specific communities of insect species develop.
😐	Fertilisation with only solid manure not exceeding 10 kg ha^{-1} of nitrogen annually. The maximum permissible quantity, is the amount produced by the optimum number of animals during the particular time of pasture season without supplementary feeding.
☹	Using mineral fertilisers or liquid manure. Applying manure with more than 10 kg ha^{-1} of nitrogen per year.

Table 6. A summary of management methods of the habitat type 6270* *Fennoscandian lowland species rich grasslands* in a favourable condition.

	Method of management
Summary	
	Grazing or mowing with grazing in aftermath is the only preferred type of management.
	Mowing without grazing in aftermath as the principal type of management is permissible, however, it must be taken into consideration that in the long run this type of management will transform this type of habitat into a different habitat – 6510 *Lowland hay meadows*. Once every five years the grassland may be left ungrazed or unmown.
	Leaving without mowing or grazing, ploughing or improving (drainage, fertilisation), change of the land-use type.
Mowing frequency and time (22.2.1.2 – 22.2.1.3)	
	Mowing once per season with grazing in aftermath.
	Plants: the grassland is mown once per season from mid-June to mid-July and, if tall aftermath regrows, it is mown again and removed. Corncrake: mowing once per season after 10 July. Once every five years the grassland may be left unmown and ungrazed.
	Mowing more frequently than 2 times per season or less frequently than once every 2 years or every year, later than in mid-July.
Mowing height (22.2.1.5)	
	Only mowing with grazing in the aftermath is recommended. Corncrake: mowing not lower than 20 cm (aftermath grazing). For plants: low mowing (3–5 cm), in order to remove most of the plant biomass.
	Mowing higher than 20 cm.
Grazing in the aftermath (22.2.2)	
	Required, if the main type of management is mowing
	Mowing without grazing in the aftermath is permissible. However, it must be considered that in the long run this type of management will transform this type of habitat into a different habitat – 6510 *Lowland hay meadows*.
	The aftermath grazed too intensively (lower than 3 cm, signs of trampling).
Grazing season and 24-hour grazing (22.3.1.1, 22.3.1.5)	
	In wader grasslands grazing may be started no earlier than in mid-June. It is important to graze until the late autumn to ensure that the grass is low in next spring. It helps waders also in the way that grazing in spring may be commenced later and nests are disturbed less. Grazing during the nesting season in wader grasslands (especially from mid-April to mid-June) should only be performed during the day, because night grazing significantly increases the risk of nest trampling.
	Waders: year-round grazing.
Stocking method (22.3.1.2)	
	Under the supervision of a shepherd or controlled stocking. Monitor to ensure the development of a vegetation mosaic.
	Continuous stocking in one enclosure. For plants: grazing of tethered animals.
	The area of semi-natural grassland may not be situated in the same enclosure as improved pasture. For birds: pasturing tethered animals.

(continued)

Table 6 (continued)

	Method of management
Grazing animals and pressure (22.3.1.3, 22.3.1.4)	
☺	Plants: mixed flock, for invertebrates: cattle. The load depends on grassland productivity, it could be 0.1–0.3–0.8–1.0 LU ha^{-1}, however, most commonly the optimum pressure ranges from 0.3 to 0.5 LU ha^{-1}. Grazing is performed 1–2–3 times per season. Grazing pressure in continuous stocking areas should ensure the presence of abundantly blooming plants in at least 25 % of the area at the most intensive blooming time (approx. in early July). Waders: a mixed herd or change of grazing animal species every few years, 0.8-2.5 LU ha^{-1} depending on the productivity of grassland and duration of grazing. Intensive grazing pressure is preferred temporarily to create and maintain free areas of open soil. It is recommended to leave up to 10% of the grassland area ungrazed every year. This is required in order to maintain the diversity of grass-dwelling invertebrates. The best option is leaving the ungrazed portion of the grassland as a belt along the edge of the grassland, however, the ungrazed areas must be changed every year.
😐	Other species of grazing animals or a flock consisting of a single species. If the grassland is in a favourable condition, it is managed and no signs of eutrophication are observed, grazing and mowing can be omitted during one year every 5 years (the grassland may be allowed a year of rest). Overgrazing may be permissible for a short period of time (one year every 5 years), however, without permitting the disruption of the turf in more than one third of the grassland area.
☹	Undergrazing (during the entire vegetation season the grass has not been grazed in more than a half of the pasture area) or overgrazing in the entire area of the pasture (grass at the end of the grazing season is lower than 3 cm, signs of trampling and indicators of overgrazing, areas free from vegetation exceed 30% of the pasture area). Grazing less frequently than once per two years.
Height of pasture sward (22.3.1.4)	
☺	While grazing, the vegetation must be heterogeneous – the vegetation in approximately 20% of the area must be lower than 5 cm and in 20% – higher than 15 cm, in autumn the sward must be at least 5–15 cm high, monitoring must be performed to ensure the presence of abundantly blooming plants in at least 25 % of the area at the most intensive blooming time (approx. in early July). To preserve the diversity of invertebrates, up to 10% of the area must be left ungrazed.
😐	In controlled stocking areas, where animals graze in enclosure for a couple of days only, but with comparatively high pressure, the mosaic of vegetation height may be absent. During the rest period of the pasture the mosaic of vegetation height does not exist.
☹	The height of sward below 3 cm or above 15 cm in the entire territory of the pasture at the end of the grazing season.
Fertilisation (22.2.6, 22.3.6)	
☺	Not fertilised. Fertilisation with solid manure is recommended in very nutrient-poor soils in an amount of up to 25 kg N ha^{-1} per year or up to 50 kg N ha^{-1}, if it is done once every 2-3 years. Excrement and urine that the livestock leaves in the pasture are very important for the diversity of invertebrates, because in such locations specific communities of insect species develop.
😐	Fertilisation with only solid manure not exceeding 25 kg of nitrogen ha^{-1} annually. The maximum permissible quantity, is the amount produced by the optimum number of animals during the particular time of pasture season without supplementary feeding.
☹	Using mineral fertilisers or liquid manure. Applying manure with more than 25 kg ha^{-1} of nitrogen per year.

Table 7. A summary of management methods of the habitat type 6410 *Molinia meadows on calcareous, peaty or clayey-silt-laden soils* (*Molinion caeruleae)* in a favourable condition.

	Method of management
Summary	
☺	Both mowing and grazing is recommended for the conservation of the habitat. Plants, Corncrake and grass-dwelling invertebrates: mowing. Epigeic and soil invertebrates, especially *Vertigo* spp.: extensive grazing. Waders: grazing. If grazing is implemented, monitoring must be performed to ensure that it does not affect the populations of orchid and *Vertigo* species, does not cause the compacting of soil and risk of turf trampling in excessively wet periods.
😐	Plants, Corncrake and grass-dwelling invertebrates: extensive grazing. Epigeic and soil invertebrates, especially *Vertigo* spp.: mowing. Waders: mowing. Once every five years the grassland may be left ungrazed or unmown.
☹	Leaving without mowing or grazing, ploughing or improving (drainage, fertilisation).
Mowing frequency and time (22.2.1.2 – 22.2.1.3)	
☺	Corncrake and grass-dwelling invertebrates: mowing once per season starting from 10 July. Plants: mowing once per season – in mid-July and late July – with grazing in the aftermath. In the places with populations of late flowering plant species or plant species that are significant for butterflies like *Gentiana pneumonanthe*, *Sanguisorba officinalis*, *Serratula tinctoria*, mowing is performed after the flowering and shedding of seeds of these species, or patches of grassland are left unmown. If no grazing in the aftermath is performed, repeated mowing in the second half of the summer must be implemented in the cases where the aftermath has grown tall and can develop a homogeneous layer of litter. Waders and *Vertigo* spp.: mowing is not a preferable type of management.
😐	Plants: mowing once per season by performing late mowing (August) or mowing every 2 years. Corncrake: grazing in aftermath. Waders: mowing is permissible starting from mid-June. *Vertigo* spp.: mowing, but ensuring that tussocks are retained (preferable method of mowing is mowing by hand). Once every five years the grassland may be left unmown and ungrazed.
☹	Mowing more than 2 times per season or less than once every 2 years or every year, mowing after late August.
Mowing height (22.2.1.5)	
☺	Corncrake: mowing no lower than 20 cm. Plants and grass-dwelling invertebrates: mowing 5–7 cm high. Waders and *Vertigo* spp.: mowing is not a preferable type of management (see information on grazing), however, mowing by hand is suitable, if tussocks and 30–70 cm high grass on them are preserved.
☹	Corncrake: mowing lower than 20 cm. Plants: mowing higher than 20 cm. *Vertigo* spp.: mowing and smoothing the tussocks.
Grazing in the aftermath (22.2.2)	
☺	Grazing in the aftermath is highly recommended.
😐	Only mowing, without grazing in the aftermath, is also permissible.
☹	Overgrazing the aftermath (lower than 3 cm, signs of trampling).
Grazing season and 24-hour grazing (22.3.1.1, 22.3.1.5)	
☺	In wader grasslands grazing may be started no earlier than in mid-June. It is important to graze until the late autumn to ensure that the grass is low in next spring. It helps waders also in the way that grazing in spring may be commenced later and nests are disturbed less. Grazing during the nesting season in wader grasslands (especially from mid-April to mid-June) should only be performed during the day, because night grazing significantly increases the risk of nest trampling.
😐	Waders: year-round grazing.

(continued)

Table 7 (continued)

	Method of management
Stocking method (22.3.1.2)	
☺	Corncrake, plants and grass-dwelling invertebrates: grazing is not recommended as the main method of use. Epigeic and soil invertebrates: continuous or controlled stocking which maintains the tussocky terrain of the pasture and creates a pronounced mosaic of vegetation, leaving 30–70 cm tall grass. Waders: grazing under the supervision of a shepherd, controlled stocking in enclosures, or continuous stocking.
😐	Plants and grass-dwelling invertebrates: grazing tethered animals. Corncrake: continuous stocking by ensuring a grazing pressure that maintains patches of at least 30 cm tall grass throughout the entire area of the pasture.
☹	Birds: pasturing tethered animals. The area of semi-natural grassland may not be situated in the same enclosure as improved pasture.
Grazing animals and pressure (22.3.1.3, 22.3.1.4)	
☺	Corncrake, plants and grass-dwelling invertebrates: grazing is not an appropriate type of management, only grazing in the aftermath is recommended. *Vertigo* spp.: a horse herd with the pressure that maintains the herb layer at least 30–70 cm high. Waders: a mixed flock 0.4–1.2 LU ha^{-1} depending on grassland productivity, in late summer and autumn the grazing intensity must be relatively high to ensure low vegetation in spring.
😐	Plants and grass-dwelling invertebrates: a mixed flock or single-species flock 0.2–0.9 LU ha^{-1} depending on grassland productivity (monitoring for overgrazing or undergrazing indicators must be performed); in some areas it may be overgrazed, if required for meadow waders. Corncrake: year-round or seasonal grazing, but extensive pressure must be ensured leaving at least 30 cm tall grass throughout the entire area of the pasture. *Vertigo* spp.: mixed or single-species herd. Waders: single species flock, intensively grazed pastures (the average sward height – 5 cm) all season
☹	Grass-dwelling invertebrates: grazing sheep. All groups of organisms: undergrazing (during the entire vegetation season the grass has not been grazed in more than a half of the pasture area) or overgrazing (grass at the end of the grazing season is lower than 3 cm, signs of trampling and indicators of overgrazing) in the entire area of the pasture. Grazing less frequently than once per two years.
Height of pasture sward (22.3.1.4)	
☺	20% lower than 3 cm, 20% taller than 15 cm, in autumn at least 5–15 cm, monitoring must be performed ensuring the presence of abundantly blooming plants in at least 25 % of the area at the most intensive blooming time (approx. in early July).
☹	The height of sward below 3 cm or above 15 cm in the entire territory of the pasture at the end of the grazing season.
Fertilisation (22.2.6, 22.3.6)	
☺	Not fertilised. Excrement and urine that the livestock leaves in the pasture are very important for the diversity of invertebrates, because in such locations specific communities of insect species develop.
😐	Fertilisation with only solid manure not exceeding 25 kg of nitrogen ha^{-1} annually. The maximum permissible quantity is the amount produced by the optimum number of livestock during the particular time of pasture season without supplementary feeding.
☹	Using mineral fertilisers or liquid manure. Applying manure with more than 25 kg ha^{-1} of nitrogen per year.

Table 8. A summary of management methods of the habitat 6430 *Hydrophilous tall herb fringe communities of plain and of montane to alpine levels* in a favourable condition.

	Method of management
Summary	
☺	No management is required for a high quality habitat, while the habitats with constant negative external influences require management to maintain the habitat.
☹	Hydrological drainage, annual mowing or grazing, fertilisation.
Non-intervention management	
☺	Recommended for high-quality habitats that exist under the influence of natural conditions.
😐	Permissible in a partially affected habitat, where the improvement in quality is expected under the influence of natural conditions, or under the influence of surrounding habitat restoration, for instance, restoration of natural river flow, reduction of pollution.
☹	Not suitable for severely affected habitats and in the areas of invasive species proliferation.
Mowing frequency and time (22.2.1.2 – 22.2.1.3)	
☺	Not required in a high quality habitat. Affected areas are mown or grazed once every 2–5 years (the frequency depends on the degree of impact).
☹	Mowing more than once every 3–5 years.
Stocking method (22.3.1.2)	
☺	Either grazing under the supervision of a shepherd or controlled stocking in enclosures.
😐	Continuous grazing in one enclosure.
☹	Birds: pasturing tethered animals.
Height of pasture sward (22.3.1.4)	
☺	20% lower than 5 cm, 20% above 15 cm, in autumn at least 5–15 cm, monitoring must be performed to ensure that at least 25% of the area contains plants in flower.
😐	If relatively intensive grazing is implemented for a few days, the mosaic of vegetation may be absent and the grass may be eaten equally low throughout the area.
☹	Intensive grazing that creates vegetation resembling a lawn.

Table 9. A summary of management methods of the habitat 6450 *Northern Boreal alluvial meadows* in a favourable condition.

	Method of management
Summary	
☺	Corncrake, Great snipe, plants and grass-dwelling invertebrates: mowing is the principal type of management. Waders, epigeic and soil invertebrates, especially *Vertigo* spp.: grazing is the principal type of use.
😐	Corncrake, Great snipe, plants and grass-dwelling invertebrates: mowing is replaced with grazing. Waders, epigeic and soil invertebrates: grazing is replaced by mowing. Once every five years the grassland may be left ungrazed or unmown.
☹	Leaving without mowing or grazing, ploughing or improving (hydrological drainage, fertilisation).
Mowing frequency and time (22.2.1.2 – 22.2.1.3)	
☺	Birds and grass-dwelling invertebrates: mowing once per season starting from early July (Corncrake and Great snipe: mowing from 10 July); Plants: mowing once per season with grazing in aftermath, or mown 1– 2 times per season (if the grassland is very productive or a high aftermath has regrown in the second half of the summer), the first mowing should be implemented in mid-June to mid-July.
😐	Plants and grass-dwelling invertebrates: mowing is replaced by grazing. Birds and invertebrates: mowing is performed before early July. Plants: mowing once every 2 years in mid-June to mid-July. Waders: mowing once per season, without waiting for the end of the nesting season.
☹	Birds and invertebrates: mowing more than once per season or less than once every 2 years. Plants: mowing less than once every 2 years, mowing later than in mid-July every year.
Mowing height (22.2.1.5)	
☺	Corncrake: mowing no lower than 20 cm high. Plants: mowing at a height of 3–7 cm.
☹	Mowing at a height of less than 3–7 cm or more than 20 cm.
Grazing in the aftermath (22.2.2)	
☺	Waders: grazing in the aftermath is highly recommended, however, grazing in spring is impermissible, especially if the grazing pressure is excessively high. Corncrake: not recommended. Plants: grazing in the aftermath is highly preferable.
☹	Overgrazing the aftermath (lower than 3 cm, signs of trampling).
Grazing season and 24-hour grazing (22.3.1.1, 22.3.1.5)	
☺	In wader grasslands grazing may be started no earlier than in mid-June. It is important to graze until the late autumn to ensure that the grass is low in next spring. It helps waders also in the way that grazing in spring may be commenced later and nests are disturbed less. Grazing during the nesting season in wader grasslands (especially from mid-April to mid-June) should only be performed during the day, because night grazing significantly increases the risk of nest trampling.
😐	Waders: year-round grazing.

(continued)

Table 9 (continued)

	Method of management
Stocking method (22.3.1.2)	
☺	Corncrake, Great snipe, plants and grass-dwelling invertebrates: grazing is not recommended as the main method of use. Epigeic and soil invertebrates: continuous or controlled stocking, which maintains the tussocky terrain of the pasture and creates a pronounced mosaic of vegetation, leaving 30–70 cm tall grass. Waders: continuous or controlled stocking.
😐	Plants and grass-dwelling invertebrates: grazing tethered livestock. Corncrake: continuous stocking by ensuring a grazing pressure that maintains patches of at least 30 cm tall grass throughout the entire area of the pasture.
☹	Birds: pasturing tethered animals. The area of semi-natural grassland may not be situated in the same enclosure as improved pasture.
Grazing animals and pressure (22.3.1.3, 22.3.1.4)	
☺	Corncrake, Great snipe, plants and grass-dwelling invertebrates: grazing is not the main type of management, only grazing in aftermath is performed. Epigeic and soil invertebrates: mixed herd 0.2–1.2 LU ha^{-1}. *Vertigo* spp.: a horse herd with the pressure that maintains a herb layer at least 30–70 cm high. Waders: a mixed flock 0.4–1.2 LU ha^{-1}, in late summer and autumn the grazing intensity must be high to ensure low vegetation in spring.
😐	Plants and grass-dwelling invertebrates: a mixed flock or single-species flock 0.2–1.2 LU ha^{-1} depending on grassland productivity (monitoring for the indicators of overgrazing or insufficient grazing must be performed); in some areas it may be overgrazed, if required for meadow waders. Corncrake, Great snipe: continuous stocking or year-round grazing, while ensuring extensive pressure (approximately 0.3–0.4 LU ha^{-1}) that maintains patches of at least 30 cm tall grass throughout the entire area of the pasture. *Vertigo* spp.: a mixed or single-species herd with a pressure that maintains a herb layer at least 30–70 cm high. Waders: single species flock, intensively grazed pastures (the average height of grass 5 cm high) all season.
☹	Grass-dwelling invertebrates: grazing sheep. All groups of organisms: undergrazing (during the entire vegetation season the grass has not been grazed in more than a half of the pasture area) or overgrazing in the entire area of the pasture (grass at the end of the grazing season is lower than 3 cm, signs of trampling and indicators of overgrazing). Grazing less frequently than once per two years.
Height of pasture sward (22.3.1.4)	
☺	Corncrake, Great snipe, plants and grass-dwelling invertebrates: grazing is not recommended as the main method of use. Birds: 20% lower than 5 cm, 20% more than 15 cm, in autumn 5–15 cm.
😐	Plants: 20% lower than 5 cm, 20% taller than 15 cm, in autumn at least 5–15 cm. Monitoring must be performed to ensure the presence of abundantly blooming plants in at least 25 % of the area at the most intensive blooming time (approx. in early July).
☹	The height of sward below 3 cm or above 15 cm in the entire territory of the pasture at the end of the grazing season.
Fertilisation (22.2.6, 22.3.6)	
☺	Fertilisation is unfavourable, because a sufficient amount of nutrients are brought in by floods. If fertilisation is necessary to maintain biodiversity, it is performed in spring after floods to prevent flood water pollution with the dispersed manure. Excrement and urine that the animals leave in the pasture are very important for the diversity of invertebrates, because in such locations specific communities of insect species develop.
😐	Fertilisation with only solid manure not exceeding 50 kg of nitrogen ha^{-1} annually. The maximum permissible quantity, is that produced by the optimum number of animals during the particular time of the pasture season without supplementary feeding.
☹	Using mineral fertilisers or liquid manure. Applying manure with more than 50 kg ha^{-1} of nitrogen per year.

Table 10. A summary of management methods of the habitat type 6510 *Lowland hay meadows* in a favourable condition.

	Method of management
Summary	
☺	Mowing is the only preferred type of management.
😐	Grazing as the principal type of management is permissible, however, it must be taken into consideration that in the long run this type of management will transform this type of habitat into a different habitat – 6270* *Fennoscandian lowland species-rich dry to mesic grasslands*. Once every five years the grassland may be left ungrazed or unmown.
☹	Leaving without mowing or grazing, ploughing or improving (hydrological drainage, fertilisation).
Mowing frequency and time (22.2.1.2 – 22.2.1.3)	
☺	Plants: mow once per season from mid-June to mid-July with grazing in aftermath. If no grazing in aftermath is performed, repeated mowing in late summer must be performed in the cases where the aftermath has grown tall and capable of creating a homogeneous litter layer. Invertebrates: mowing from mid-July. Corncrake: mowing once per season not earlier than in mid-July.
😐	Approximately once every five years the grassland may be left unmown and ungrazed.
☹	Mowing more than 2 times per season or less than once every 2 years, or every year later than in mid-July or earlier than 20 June.
Mowing height (22.2.1.5)	
☺	Corncrake: mowing not lower than 20 cm. Plants and grass-dwelling invertebrates: low mowing (5–7 cm), to remove most of the plant biomass.
☹	Corncrake: mowing lower than 20 cm. Plants: mowing higher than 20 cm.
Grazing in aftermath (22.2.2)	
☺	Grazing is not the preferred type of management.
😐	Only mowing without grazing in aftermath is also permissible.
☹	Grazing the aftermath too intensively (lower than 3 cm, signs of trampling).
Grazing season and 24-hour grazing (22.3.1.1, 22.3.1.5)	
☺	Grazing is not the preferred type of management.
😐	Corncrake: grazing is commenced in July. Grass-dwelling invertebrates: grazing is commenced when at least some of the plants have flowered, or the territory is divided into at least three parts, and one of the parts is permitted to flower every year.

(continued)

Table 10 (continued)

	Method of management
Stocking method (22.3.1.2)	
☺	Grazing is not the preferred type of management.
😐	Plants and grass-dwelling invertebrates: controlled stocking in enclosures to keep animals in one place for 2–3 days only, as well as intensive grazing of the grass at uniform height – to achieve a mowing effect. Grazing of tethered animals is also permissible.
☹	Continuous stocking in one enclosure. Corncrake: avoid any type of intensive grazing. The area of semi-natural grassland may not be situated in the same enclosure as improved pasture.
Grazing animals and pressure (22.3.1.3, 22.3.1.4)	
☺	Grazing is not the preferred type of management.
😐	The herd can be either single-species or mixed. High pressure is permissible temporarily to create a uniform height of vegetation. The pressure depends on the productivity of the grassland, it could be 0.3–0.8–1.0 LU ha^{-1}, however, most commonly the optimum load is from 0.3 to 0.5 LU ha^{-1}.
☹	All groups of organisms: undergrazing (during the entire vegetation season the grass has not been grazed in more than a half of the pasture area) or overgrazing in the entire area of the pasture (grass at the end of the grazing season is lower than 3 cm, signs of trampling and indicators of overgrazing, areas free from vegetation exceed 30% of the entire pasture area). Grazing less frequently than once per two years.
Height of pasture sward (22.3.1.4)	
☺	Grazing is not the preferred type of management.
😐	If grazed, the grazing intensity must be high to ensure uniform height of the vegetation.
☹	The height of sward below 3 cm or above 15 cm in the entire territory of the pasture at the end of the grazing season.
Fertilisation (22.2.6, 22.3.6)	
☺	Fertilisation with solid manure is recommended in nutrient-poor soils in an amount of up to 25 kg of nitrogen ha^{-1} per year or up to 50 kg of nitrogen ha^{-1}, if it is done once every 2–3 years.
😐	Fertilisation with only solid manure not exceeding 50 kg of nitrogen ha^{-1} annually. The maximum permissible quantity, is the amount produced by the optimum number of livestock during the particular time of pasture season without supplementary feeding.
☹	Using mineral fertilisers or liquid manure. Applying manure with more than 50 kg ha^{-1} of nitrogen per year.

Table 11. A summary of management and restoration methods of habitat types 5130 *Juniperus communis formations on heaths and calcareous grasslands*, 6530* *Fennoscandian wooded meadows* and 9070 *Fennoscandian wooded pastures*

Habitat type		Method of management
Summary		
5130 6530* 9070		A combination of grazing and mowing in landscapes which include open grassland areas to ensure that the landscape contains both meadows grazed in the aftermath, and permanent pastures; In the habitat 9070 *Fennoscandian wooded pastures* – only grazing. If the area contains only wooded grasslands (all grasslands are below the tree crowns) than only grazing is permissible. In the case of mowing, at least aftermath grazing should be performed.
5130 6530* 9070		If landscape contains both open and wooded parts, mowing in open parts and grazing in wooded parts. Only mowing.
5130 6530* 9070		Leaving without mowing or grazing; ploughing or improving (drainage, fertilisation), afforestation (except for the development of wooded pasture tree stands). Burning of litter under trees.
Mowing		
5130 6530* 9070		If wooded grassland habitat fully or partially overlaps with only one open grassland habitat, then – in accordance with the recommendations regarding the respective habitat. If it overlaps with several open grassland habitats, the following general recommendations must be followed: mowing once per season; aftermath grazing is recommended. If no open grasslands are present in the landscape and mowing is performed – then aftermath grazing is recommended.
5130 6530* 9070		Mowing without aftermath grazing. In the habitat type 9070 *Fennoscandian wooded pastures* – continuous grazing below the tree crowns is mandatory but aftermath grazing only is permissible in open grasslands.
5130 6530* 9070		Mowing more frequently than once per season, except if the second time occurs in late summer, late autumn, or it is required for the open grassland habitat maintenance. Mowing very low (3–5 cm), mulching the grass and leaving it on the site, except for the mown grass in pastures after grazing. Only mowing in the habitat type 9070 *Fennoscandian wooded pastures*.
Grazing		
5130 6530* 9070		If the wooded grassland fully or partially overlaps with open grassland habitat, then – in accordance with the recommendations regarding the respective habitat type. If it overlaps with several habitats, the following general recommendations must be followed: continuous grazing is required (for at least 100 days a year) with the intensity of 0.2–0.8 LU ha^{-1}; preventing of secondary woody plant layer development, smoothing and mowing of pastures, in the open parts at least once every 3 years, but no more frequently than once per season. In the parts covered with trees, where the use of tractor equipment is impossible, this is not mandatory. Stable herb layer or at least the presence of grassland species must develop in the parts covered with trees.
5130 6530* 9070		Continuous grazing for less than 100 days a year preventing secondary woody plant layer development. In the habitats 9070 and 6530* in wet, paludified or very infertile sites some patches of tree stands with groundcover typical for forests are permissible. In pastures of semi-feral herbivores, where the landscape maintenance is planned by animal resources only, the open areas of pastures may be left unmown. Separate sectors dominated by forest groundcover are permissible if the forest habitat fragments included in pastures are muddy or very infertile areas. In the first 5 years after deforestation, in order to combat shrub regrowth and reduce excessive fertility of substrate, the herd may be concentrated for 1–2 weeks in smaller areas where overgrazing is permissible. After deforestation the damage of the herb layer up to the bare soil is permissible during stump grinding. Upon the mowing of pastures, starting from August, the mulching of grass and leaving it on the ground or leaving of cut grass on the ground is permissible.

(continued)

Table 11 (continued)

Habitat type	Method of management
5130 6530* 9070	Overgrazing in the meaning as described in the case of open grassland habitats. However, up to 10% of the total pasture area may consist of areas that are overgrazed and excessively trampled, because in permanent pastures of wooded grassland landscapes it is especially habitual for the animals to concentrate in certain spots, where they trample the groundcover – forest edges, groups of trees, where they seek shade, feeders, drinking areas at the water's edge, etc. Intensive supplementary feeding during the grazing period (this introduces additional nutrients into the area). Small amounts of supplementary feed in order to organise the behaviour of the herd is permissible. Using of synthetic medications for animals in amounts that exceed the amounts provided for by the conditions regulating organic agriculture, because through manure they endanger the biodiversity in the pastures. Pastures may be mown no more than once per season.
Tree layer management	
5130	Cover of secondary woody plants should not increase. In places where it is too dense initially, the habitat must be restored to create the characteristic structure of tree stand, including the prevention of the development of too dense juniper stands (*Juniperus communis* cover should not exceed 25% of the habitat area). It is recommended to include the use of junipers in the daily management of the farm, because this will facilitate easier maintenance of the appropriate habitat structure. Oldest and largest *Juniperus communis* must always be preserved.
5130	The use of *Juniperus communis* for economic purposes is not mandatory. Complete or partial retaining of secondary woody plants is permissible during the process of gradual restoration of the area, however, in the long run (within less than 15 years) it must be removed.
6530*	Secondary cover of woody plants should not increase. The tree stands must have structure of wooded meadow or sparse forest. The ancient wide-crownedtrees must be freed from shrubs and suppressing secondary forest trees. In the grazed pastures the characteristic shape of trees and shrubs must be created by animals. It is recommended to provide space for the development of fruit trees and to use them for the needs of people and animals in the logistics of area management, branch removal of some trees for livestock feed or for aesthetic purposes, development of nectar producing trees for the purposes of biodiversity and apiculture. Creation of artificial hollows and dead wood in priority class A habitats scheduled for deforestation must be ensured, if necessary. Particularly important trees or potential wide-crowned trees must be protected from beaver or pasture animal damage by fencing or with net.
6530*	Complete or partial retaining of secondary tree and shrub vegetation is permissible during the process of gradual restoration of the area, however, in the long run (within less than 20 years) they must be removed.
5130 6530*	Overgrazing to the degree that the total quantity of live wood pasture trees and shrubs is decreased (presence of some dead trees and shrubs is not only permissible, but even favourable). Undergrazing that leads to an increase in secondary wooded plants cover (introduction of individual groups of trees and shrubs may be permitted, but their total cover in the area should not increase) or the increase in density of *Juniperus communis* in the habitat type 5130 *Juniperus communis formations on heaths and calcareous grasslands*, which exceeds 25% of habitat area. Failure to restore the habitat type 6530* *Fennoscandian wooded meadows* that is located in the area of pastures and overgrown with forest in the long run, failure to manage the elements in the pastures that require clearing from being overgrown (for instance, crabapples) (management may be performed gradually).
9070	Secondary cover of woody plants is not increasing. A layer free from shrubs and foliage develops below the canopy layer under the continuous grazing pressure. Typical wooded pasture elements are present: trees damaged by grazing animals; branchy shrubs and trees developed under the influence of grazing etc. Competitive and suppressing trees and shrubs are felled to facilitate growing of ancient trees and potential wide-crowned trees.
9070	The optimal management is implemented but competitive trees and shrubs which suppress growing of ancient trees or potential wide-crowned or nectar or fruit producing trees are cut only gradually in the period of 10 years.
9070	Grazing intensity is too low resulting in increase of the layer of secondary trees and shrubs. Trees characteristic for pastures disappear. Grazing intensity is too high resulting in decrease of tree and shrub layer. Nothing is done to facilitate growth of wide-crowned, potential fruiting trees or nectar producing trees.