

Chapter 4. Conservation of Semi-natural Grasslands in Latvia

4.1 Conservation of Semi-natural Grasslands in Latvia in the 20th and 21st Century (A. Auniņš, S. Rūsiņa)

Protection of semi-natural meadows and pastures was not adequately addressed until the late 20th century and the active protection of habitats only started in the late 20th century in preparation for accession to the EU. Until then, Latvian scientific literature of the 1970s and 1980s contained indications that semi-natural habitats should be conserved. For example, at the scientific conference of the USSR Academy of Sciences on the protection of plant life in specially protected nature areas that took place in Latvia in 1978, researchers referred to the decision of the 1975 International Congress of Botanists to create a network of protected areas for the conservation of semi-natural habitats (Дырников 1978; Лаасимер 1978). It was also stated in the legislation about botanical reserves: “botanical reserves are established for the conservation of sites, where rare and threatened plants and plant association types and complete ecosystems typical for the Latvian SSR occur” (quoting Anon. 1977, p. 120). However, in reality the emphasis was mainly placed on species conservation. Habitat ecology and the conditions necessary for species were often ignored or misunderstood. This is easily seen from researchers’ recommendations in publications. For example, to save the characteristic soil and plant communities of Randu meadows (coastal grasslands), it was recommended to prohibit any economic activity there (Эйдукс 1982). Decision No. 421 by the Latvian SSR Council of Ministers of 1977 stated that haymaking is banned in strict nature reserves. In ornithological reserves with substantial grassland areas (for example, on all islands and on the eastern shore of Lake Engure), haymaking was prohibited all year round. Such grassland management bans in ornithological reserves resulted in the reduction of bird species for the conservation of which these reserves were established (for example, waders in Vecdaugava and Daugavgrīva, Jelgava Pilssala and Lake Engure, where the primary target was the increase in duck population). The selected management was successful in the short term, but bird populations decreased in the long run, as the grasslands overgrew with shrubs.

These practices contributed to a significant reduction in the area of semi-natural grasslands in protected nature areas. Society began to falsely

believe that mowing and grazing was absolutely not allowed in protected nature areas. This history of negative experience still hinders the cooperation with landowners in Natura 2000 sites.

Active protection of semi-natural grasslands only began in the late 20th century, when the approach of nature conservation changed from absolute non-intervention to active nature conservation.

Floodplain grasslands are the most notable example. Although ornithological reserves for the protection of meadow waders were established in some floodplain grasslands (for example, the ornithological reserve “Lielupe coastal meadows” in Jelgava in 1991), the reduction of management intensity or abandonment made them gradually lose their importance, and their restoration was necessary later. The largest floodplain grasslands are among the areas in Latvia that are the most important for EU protected birds. These are Important Bird Areas that are established using standardised, internationally harmonised quantitative criteria. In Latvia it was carried out by the Latvian Ornithological Society. Most of these areas are now included in the Natura 2000 network (Račinskis 2004). Floodplain meadows have been recognised as important bird habitats since inventory of lekking sites of *Gallinago media* in 1999, finding that this is the only type of grassland habitat in Latvia that is suitable for Great Snipe in the long term. Therefore, special attention was paid to this habitat type during the inventory of specially protected areas of Latvia and creation of the Natura 2000 network. Many new protected areas for this habitat and the species related to them (Opermanis et al. 2008) were established. Monitoring of Great Snipe lekking revealed the dramatic decline in the population of the species and therefore targeted floodplain restoration was planned in several LIFE projects - with large-scale felling of shrubs, rewetting and recommencement of regular management. All of this promoted the restoration of Great Snipe population. With the launch of the Rural Development Programme in 2004, all valuable floodplain grasslands were included as target territories in the agro-environmental sub-measure *Maintenance of Biological Diversity in Grasslands*, thus ensuring regular management in the most of them. However, while the original goal was achieved, inappropriate management (grass mulching) left a negative impact on the biodiversity of these grasslands, therefore since 2015 the support conditions of the agro-environmental sub-measure *Maintenance of Biological Diversity in Grasslands* have been reviewed and grass mulching is no longer permitted.

Table 4.2.1 Conservation status of EU grassland habitats in Latvia in 2012 (Anon. 2013a).

FV – favourable conservation status

U1 – unfavourable – inadequate conservation status with a negative trend

U2 – unfavourable – bad conservation status with a negative trend

XX – unknown

EU grassland habitat type	EU grassland habitat code	Parameters of conservation status assessment				
		Range in Latvia	Area of the habitat in the range	Structures and functions	Future prospects	Overall assessment
<i>Boreal Baltic coastal meadows</i>	1630*	FV	U2-	U2-	U2-	U2-
<i>Juniperus communis</i> formations on heaths and calcareous grasslands	5130	XX	U2-	U2-	U2-	U2-
<i>Rupicolous calcareous or basophilic grasslands of the Alyso-Sedion albi</i>	6110*	FV	U1-	U1-	U1-	U1-
<i>Xeric sand calcareous grasslands</i>	6120*	FV	U2-	U2-	U2-	U2-
<i>Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites)</i>	6210*	FV	U2-	U2-	U2-	U2-
<i>Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submontane areas, in Continental Europe)</i>	6230*	FV	U2-	U2-	U2-	U2-
<i>Fennoscandian lowland species-rich dry to mesic grasslands</i>	6270*	FV	U1-	U2-	U1-	U2-
<i>Molinia meadows on calcareous, peaty or clayey-silt-laden soils</i>	6410	FV	U2-	U2-	U2-	U2-
<i>Hydrophilous tall herb fringe communities of plain and of the montane to alpine levels</i>	6430	FV	FV	FV	FV	FV
<i>Northern boreal alluvial meadows</i>	6450	FV	U1-	U2-	U2-	U2-
<i>Lowland hay meadows</i>	6510	FV	U1-	U2-	U2-	U2-
<i>Fennoscandian wooded meadows</i>	6530*	XX	U2-	U2-	U2-	U2-

4.2 Conservation Status of Semi-natural Grasslands in Latvia (S. Rūsiņa)

The conservation status of EU protected grassland habitat types (situation as of 2012) was evaluated in a state report to the European Commission about the status of endangered and protected habitats, which, according to Article 17 of the Directive of the European Council of 21.05.1992 92/43/EEC on the conservation of natural habitats and of wild fauna

and flora, is drawn up every six years (Anon. 2013a). The conservation status of all EU protected grassland habitat types, which are completely dependent on agricultural activity (extensive mowing and grazing) in the country, is unfavourable with a negative trend (Table 4.2.1).

An unfavourable condition means that there are fewer plant and animal species in the grassland than there should be because excessive fertilisation, cultivation, drainage or abandonment has resulted in the introduction of expansive, non-typical plant species that suppress typical grassland species. Soil

properties have become unsuitable for semi-natural grassland plant species, typical insects no longer occur because there are fewer flowering plant species than there would be if all required grassland biodiversity conditions were met.

Even in mown and grazed semi-natural grasslands of Latvia the species diversity and vegetation structure has been poor in recent years. Under the Rural Development Programme continuous monitoring system, the Latvian State Institute of Agrarian Economics has carried out a study in semi-natural grasslands which in 2007-2013 received agro-environmental support for the measure *Maintenance of Biological Diversity in Grasslands*. According to the assessment of semi-natural grassland plant species diversity (number of semi-natural grassland indicator species, species richness), high diversity was only found in approximately 15% of all of the surveyed area, while 75% of the area had a low plant species diversity (Anon. 2013e).

The reasons probably lie in the history of semi-natural grassland management and modern management practices. Species and vegetation diversity of semi-natural grasslands has been adversely affected by cultivation, drainage and abandonment in previous decades, as well as late mowing and leaving of the grass and mulching that has been common in recent years. Consequently, the area of semi-natural grasslands in Latvia is currently very small, and most of these areas are in unfavourable (bad) condition.

Therefore, the principal target of the forthcoming years is the rehabilitation of semi-natural grasslands. This includes the restoration of required soil properties and hydrological conditions, reduction of the number of plant species not characteristic for semi-natural grasslands, re-introduction of plant and animal species that have become extinct and ensuring the management necessary for the biodiversity.

The most important is to restore habitats which are the rarest in Latvia (Fig. 4.2.1) although habitats which have wider distribution are also important for biodiversity conservation.

Connectivity of habitats in the landscape is one of the most significant factors for the long-term existence of a habitat. Recent decades have been characterised by an opposite process – habitat fragmentation. It means the fragmentation of large grassland areas with clusters of forest, arable fields and settlements. Due to fragmentation, plant and animal species cannot move between different grasslands and are unable to reproduce. This leads to the extinction of species on a local scale (within

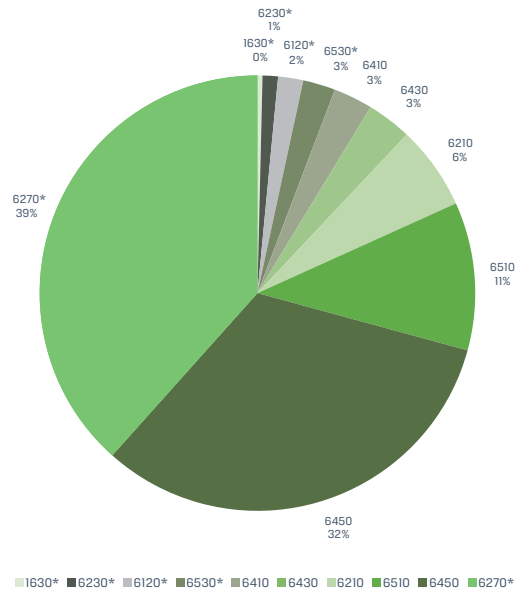


Fig. 4.2.1. The proportion of the area of EU protected habitats from the total area of the EU protected grassland habitats in Latvia (data of 2013).

one grassland) caused by gradual degeneration as a result of inbreeding. The species become more prone to diseases and less resistant to adverse environmental conditions (e.g., wintering or drought). Fragmentation causes the local extinction of species, even with appropriate management measures.

Consequently, one of the aims of conservation and management is to create semi-natural grasslands that are sufficiently large to provide the resources and living environment for a number of individuals that is sufficient to ensure sustainable populations of each species. It is still possible in Latvia, since the total grassland area still permits expansion of the area of semi-natural grasslands. It has been estimated that the development or relatively quick restoration of EU protected grasslands is possible in up to 25% of the current permanent grassland areas (Anon. 2014b).

4.3 The Amount of Semi-natural Grassland Area that should be Protected (S. Rūsiņa)

To stop grassland habitat reduction and increase its area up to the minimum favourable conservation area, it is necessary to answer the following question: what is the minimum required area to preserve grassland biodiversity and the benefits it provides to humans in Latvia?

The maximum area of semi-natural grasslands in Latvia was in the late 19th and early 20th century. Then the total area of semi-natural grasslands reached 31% of the area of Latvia, or approximately 1.9 million ha (Boruks 2004). This was a result of rapid population growth and the development of new farms that required new meadow and pasture areas. Town residents kept livestock as well and hay was in demand around towns. For example, Vārsbergs wrote in 1923: “With appropriate land use rights, successful farming is possible near convenient roads and large cities by converting all fields into meadows because the hay can be easily transported to the city to find buyers.” (Vārsbergs 1923, p. 21).

After both world wars the area of semi-natural grasslands began to decrease both because of the abandonment of agricultural land and first grassland improvement measures. In 1930, their area was 1.7 million ha (Maldups 1938), whereas in the mid-20th century they only occupied 1.3 million ha (Tērauds 1955). In 2014, the area of semi-natural grasslands was 47,600 ha. This means that currently only 4% of the semi-natural grassland area of the mid-20th century has been preserved. The estimates of EU protected habitats 6530* *Fennoscandian wooded meadows* and 9070 *Fennoscandian wooded pastures* also show that only 0.7–1.6% of the original area of these habitats in the early 20th century have survived to date (Bāra et al. 2014).

The decline in the area significantly impairs the life of grassland plants and animals because their living space is reduced. Landscape ecological studies show that local extinction of species starts when the remaining area of the habitat is less than 10–30% of the original area (Andren 1994; Cousins et al. 2003; Helm et al. 2006; Hanski 2011).

To assess the reduction of the area and threats to semi-natural grasslands, the initial area sufficient for their long-term preservation in Latvia has to be determined. The maximum area of semi-natural grasslands in Latvia has been 1.9 million ha or 31% of the current area of the country. Such a large area is most likely not necessary because Latvia is located in a forest zone where grasslands are not the main type of ecosystem.

As a reference area, the area in the mid-20th century before intensive cultivation, abandonment and improvement of semi-natural grasslands can be used. At that time, the area of grasslands had decreased substantially in comparison with the early 20th century, but, according to publications of the 1980s about the protected nature areas (e.g., Табака, Клявиня 1981; Фатаре 1989) and geobotanical regions (Табака (ред.) 1979; 1982; 1985 and other

editions in this series), plant communities and protected species populations were still quite stable.

Thus, the minimum area that could provide the long-term existence of semi-natural grassland biodiversity in Latvia is 130,000–390,000 ha (10–30% of the total area of semi-natural grasslands in the mid-20th century). A similar minimum area – 100,000 ha – has been given in estimates by V. Lārmanis (Lārmanis 2008) in the evaluation of the semi-natural grassland area required for conservation of the *Crex crex* population.

Assuming that the current semi-natural grassland area will not decrease, the total area to be restored is at least 82,400 ha (if 10% of the initial area in the mid-20th century is taken as the threshold of the area to be restored) or 342,400 ha (if 30% of the initial area is taken as the threshold).

To determine the minimum area of each grassland habitat type, the changes in its area since the mid-20th century by habitat type should be known, but such information is unavailable. Therefore it should be assumed that the proportion of different grassland habitats today is similar to that of the mid-20th century and, accordingly, the reduction of all grassland habitat types has been similar – nowadays 4% of the total area of the habitat type in the mid-20th century has been preserved.

4.4 Protected Grasslands in Natura 2000 Areas (S. Rūsiņa)

Out of all Latvian Natura 2000 areas in Latvia (333 in 2016), protected grassland habitats are found in 153 sites, but their total area exceeds 20 ha at half of the sites only. Only 40–45% (approximately 20,000–23,000 ha) of protected grassland habitat areas are included in the Natura 2000 network, the other 60% are located outside the protected areas. One of the reasons is that the grasslands are usually private properties. Another reason is the conditions under which the Natura 2000 area network was created. The Natura 2000 network was largely based on the existing protected nature areas that existed before the accession of Latvia to the EU. Until the late 20th century, due to the prevailing nature conservation approach emphasising the conservation of only natural ecosystems, the area of grasslands in the protected nature areas (established in the Soviet period) was very small. From 1999 to 2004, new Natura 2000 sites for the conservation of protected grasslands were established, but these were mostly for floodplain bird habitats and EU habitat 6450 *Northern boreal alluvial meadows*

(for example, Dviete floodplain, Burga meadows, Lielupe floodplain). Other protected grassland habitats mostly occur in a mosaic with forests and other types of agricultural land and are largely fragmented, therefore it is administratively complicated to establish protected nature areas for them. They were also poorly studied. In 2003, only 30% of the protected grassland habitat area known in 2015 was identified. In later years, hardly any protected nature areas were established due to the prevalent approach in the nature conservation sector and public resistance.

Therefore, the cooperation of nature conservation institutions with land owners and the motivation of land owners to also preserve nature values outside protected nature areas are very important today and will be in the future.

4.5 Grassland Biodiversity Management (S. Rūsiņa)

Regular mowing or grazing is required to ensure the conservation of semi-natural grasslands, therefore these habitats are regarded in an agricultural context in EU nature conservation planning. Since the mid-20th century, the economic value of semi-natural grasslands in the supply of animal feed in Latvia was negligible. Due to collectivisation, semi-natural grasslands only retained importance for private use and smallholders. Nowadays, the provision of nature values and ecosystem services is an important function of agriculture and food production (Dale, Polasky 2007; Anon. 2012b). To maintain the grassland biodiversity, many European countries support grassland management financially. The only permanent EU financial instrument for grassland support is the agro-environmental measures of the Rural Development Programme.

By 2016, only one agro-environmental measure of the Rural Development Programme directly aimed at biodiversity had been introduced in Latvia – *Maintenance of Biological Diversity in Grasslands*.

4.6 Restoration of Protected Grassland Habitats (S. Rūsiņa)

Considering the history of grassland protection, the conservation of grasslands in the early 21st century requires not only the management of existing grassland habitats, but also the restoration of overgrown or otherwise changed ones. Latvia has accumulated extensive experience in the restoration of grassland habitats – more than 7,200 ha of grasslands have been restored since 2000. Out of the 41 projects funded by the LIFE programme implemented in Latvia since 2000, 15 were dealing with the restoration of grassland habitats. Grasslands have also been restored in several projects financed from other funds, such as the Latvian Environmental Protection Fund, the European Neighbourhood and Partnership Instrument and others. Experience of grassland habitat restoration has been summarised in four compilations of articles dedicated to habitat restoration (Opermanis (ed.) 2002; Auniņš (ed.) 2008; Reihmanis (ed.) 2011; Priedniece, Račinskis (ed.) 2015).

The most commonly used grassland habitat restoration activities in Latvia are: land purchase for conservation purposes, rewetting (filling ditches, restoration of natural river stream and spring flood action), felling of trees and shrubs, grinding of shrub roots, restorative mowing, establishment of pastures and purchasing of grazing animals.

