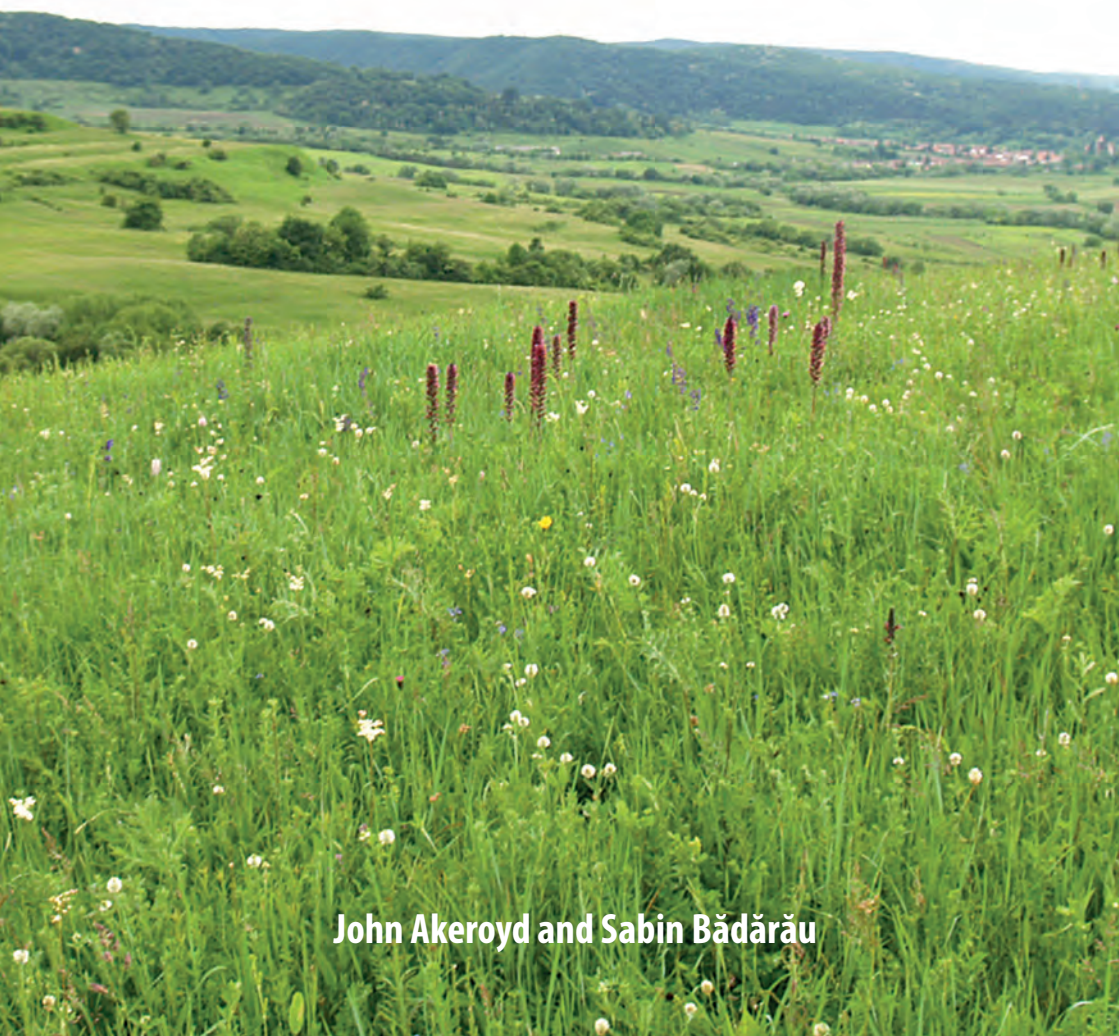


The High Nature Value dry grasslands of southern Transylvania

6210* Scrub habitats and semi-dry grassland over limestone or other calcareous substrates (*Festuco-Brometalia*), with important orchid sites

6240* Sub-Pannonic steppic grasslands



John Akeroyd and Sabin Bădăraș



The High Nature Value dry grasslands of southern Transylvania

Romania retains extensive tracts of traditionally farmed landscapes dominated by semi-natural grasslands. The meadows and pastures of southern Transylvania are some of last remaining ecologically-intact traditional grasslands in Europe, with extensive farmland, mixed arable and pastoral farming, non-intensive farming practices, minimum use of fertilizer (or even no use at all) and well-managed grazing. These factors have allowed the survival of an extraordinary diversity of wild plants and animals in one of Europe's last great High Nature Value (HNV) landscapes.

Even by Romanian standards, the Sighișoara-Târnava Mare area is extremely rich in dry HNV grassland. This reflects over 800 years of careful farming since the arrival of the 'Saxon' immigrants from Flanders, Luxembourg and NW Germany, which has allowed the survival of rich biodiversity. The grasslands are not only the habitat for many species of plants and animals that have disappeared from other parts of Europe, but also provide a great visual spectacle, especially in summer. Like the famous fortified Saxon churches, these grassland landscapes are a significant element of the cultural identity of southern Transylvania and a major attraction for visitors. The area is, however, no rural museum but a dynamic landscape, in which farming communities live and contribute to the economic development of the region.

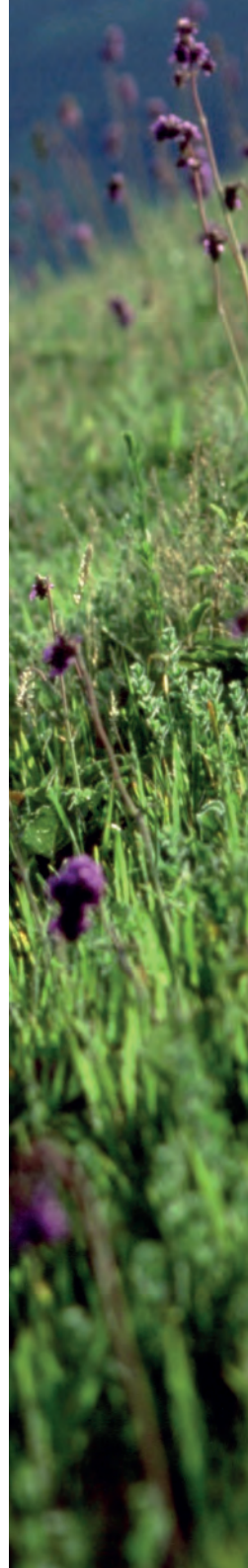
The diversity of grasses and wild flowers, especially clovers, vetches and other legumes (in the same family as peas and beans) provides an invaluable source of feed for farm animals. The plants provide valuable habitats for insects and other invertebrates, birds and mammals, which all contribute to the ecological structure essential to the landscape. Many of these wild species help to control agricultural pests. Since the biodiversity in these grasslands is an important, irreplaceable natural resource, their conservation is a high priority for European agriculture. The biodiversity will only be maintained by retaining some of the processes of traditional management, albeit in a modern context.

These grasslands with their rich biodiversity demonstrate how mixed farming, once common across Europe can be a model for diversity conservation policies necessary for the conservation and restoration of High Nature Value farmland habitats in Europe. Protection of these special habitats will involve creative design, enhancement and application of traditional practices, alongside conserving and buffering plant- and animal-rich habitats as part of the broader farmed landscape. It is vital that habitats do not become fragmented as in so much of the rest of Europe.

The future of these grasslands requires careful strategic planning to avoid the effects of negative economic pressures and to emphasize their importance for European biodiversity. Although traditional farmers have not consciously maintained their grasslands for the beauty of their wild flowers or to protect biodiversity, ecologists have long recognized that their agricultural practices have preserved the impressive floristic diversity of HNV grasslands. Above all, these grasslands are highly sensitive to chemical fertilizers, which not only replace ecologically important plants with a few vigorous grass species, but also release nitrates and other pollutants into nearby waters.

The STIPA project

The Sighișoara-Târnava Mare area has been selected as a Site of Community Interest (SCI) under the EU Habitats Directive. In the area, Fundația ADEPT has been working on several projects to conserve farm grassland and to help farming communities with rural development. The goal of the STIPA project, a mixture of scientific and practical studies funded by the European Union's LIFE division, is to protect two specific dry grassland habitats of high European importance. Both are species-rich and support several characteristic plant and butterfly species listed on the EU Habitats Directive or Red-listed in Romania.



Minois dryas



Coenonympha glycerion



Glaucopsyche alexis



Echium maculatum



Jurinea mollis



Orchis tridentata



6210 scrub habitats and semi-dry grassland over limestone or other calcareous substrates (*Festuco-Brometalia*), with important orchid sites

Covering about 8% of the Sighișoara-Târnava Mare area

In the project area, the calcareous substrate is largely marl or lime-rich clay. This type of grassland, dominated by Upright Brome (*Bromopsis erecta*) and fescues (*Festuca* species), is widespread on south- and west-facing slopes, both steep and gentle, with few or no trees. On deeper, slightly less dry soils of higher nutrient levels, it grades into another type of dry grassland dominated by Tor-grass (*Brachypodium pinnatum*).

These grasslands are often a rich carpet of wild orchids and other wild flowers, including Red Viper's-bugloss (*Echium maculatum*), Jurinea (*Jurinea mollis*) and Three-toothed Orchid (*Orchis tridentata*). Characteristic butterfly species include the Dryad (*Minois dryas*), Hermit (*Chazara briseis*), Green-underside Blue (*Glaucopsyche alexis*) and Chestnut Heath (*Coenonympha glycerion*).





6240* Sub-Pannonic steppic grasslands

Covering about 4% of the Sighișoara-Târnava Mare area

These steppic-type grasslands occur on the steepest sunny slopes and are dominated by various grasses, especially feather-grasses (*Stipa* species) as well as *Chrysopogon gryllus*, *Dichanthium ischaemum* and the small sedge *Carex humilis*.

In this habitat we find several rare plant species including the showy Steppe Sea-kale (*Crambe tataria*), Burning Bush (*Dictamnus albus*) and Nodding Sage (*Salvia nutans*), and the dwarf flowering shrub Steppe Almond (*Prunus tenella*). Butterflies found here include Large Blue (*Maculinea arion*), Chalkhill Blue (*Polyommatus coridon*), Yellow Banded Skipper (*Pyrgus sidae*), Eastern Baton Blue (*Pseudophilotes schiffermuelleri*) and Red-band Fritillary (*Melitaea didyma*).

For further information on the plant and butterfly species linked to these habitats, see two other booklets in this series, 'Indicator butterflies and moths of the High Nature Value dry grasslands of Transylvania' and 'Indicator plants of the High Nature Value dry grasslands of Transylvania' (available from the Fundația ADEPT Office, Saschiz, details below).

Polyommatus coridon



Pyrgus sidae



Maculinea arion



Salvia nutans



Dictamnus albus



Crambe tataria



Grassland management

Intensive grassland management practices throughout Europe, including increased use of fertilizers and excessive grazing, have damaged and destroyed grassland biodiversity. This type of management is expensive, and often requires the introduction of special animal breeds with resulting high feed and veterinary costs. Intensive agriculture has a high ecological cost, whereas, by comparison, traditionally managed grasslands perform multiple functions in addition to the protection of biodiversity.

A major consequence of the healthy, beautiful and stable environment of semi-natural grasslands is the provision of a range of 'public goods and services'.

These include:

- Reduction or prevention of soil erosion, especially in geologically un-stable areas with slumping slopes, as occur in the Saxon Villages area;
- Storage and purification of rainwater for a gradual supply to local rivers;
- Trapping of carbon that might otherwise contribute to climate change;
- A gene-bank of plants of agricultural, medicinal and horticultural value;
- Meadows rich in wild flowers help to generate revenues from tourism, providing a space for walking, riding, painting, bird-watching and other branches of natural history.
- The healthy, quality foods of the area reflect their regional identity, and are popular with consumers so can be sold at high prices.

Thus management of dry grassland for biodiversity conservation does not conflict with farm economic activity and, indeed, will enhance pasture and hay-meadows managed for quality food production. Also, the greatest concentration of rare plants and animals is on marginal land such as steep, dry or unstable slopes that are difficult to form in the conventional way.

Threats to these grasslands

Maintaining the good condition of these two habitats is important for farmers to remain eligible for European Union agri-environment payments.

These factors have a negative impact upon dry grasslands, especially those of steep, sunny slopes:

- Overgrazing by sheep
- Invasion by scrub
- Uncontrolled burning
- Invasion by weed and alien species
- Excessive soil erosion

Overgrazing by sheep

Sheep grazing, which has an ancient history among the Romanian population of the region, has had long-term effects on vegetation. A major consequence has been damage to populations of some rare steppic species, including *Cephalaria uralensis*, *Crambe tataria*, *Echium maculatum* and *Iris aphylla*, and the Romanian endemics *Calamintha nepeta* subsp. *transsilvanica* and *Cephalaria radiata*. Over 94% of dry steppic grasslands in the Sighișoara-Târnava Mare area have been degraded through overgrazing by sheep, more rarely goats.

Invasion by scrub

The decline in the number of farmers in the Saxon Villages since the departure of most of the Saxon population in the 1980s and 1990s has led to the abandonment or reduction of grassland management over substantial areas. Some 25 % of the dry steppic grasslands in the Sighișoara-Târnava Mare region are affected by scrub invasion.

Uncontrolled burning

Excessive and uncontrolled burning of pastures in autumn and early spring, regarded by local people as a means to improve the quantity of soil nutrients and thus grass quality, may promote invasion by shrubs such as Hawthorn (*Crataegus monogyna*) and Blackthorn (*Prunus spinosa*). Burning in spring, once growth has begun, can damage emerging flowering shoots.

Invasion by weed and alien species

Sheep overgrazing also promotes invasion by weeds and ruderals such as thistles (e.g. *Carduus acanthoides*, *Cirsium lanceolatum*), Wild Carrot (*Daucus carota*), and *Salvia verticillata*; it also favours tough fibrous grassland species such as *Eryngium campestre*. By contrast, when steep sunny slopes are used as cattle pasture the dry steppic grasslands are well preserved – but these cases are now rare.

Excessive soil erosion

The Saxon Villages region is well-known for its unstable, slumping slopes and hillocks. However, on the most damaged overgrazed slopes, where the vegetation has been badly degraded, erosion may increase, with excessive slumping of soil.

Management solutions

To alleviate these threats, the best management solution is to maintain traditional sheep grazing but with monitoring that the grass cover is not seriously affected and soil erosion avoided. Also the regular movement of the sheep-folds, where milk is collected and cheese is made, should be encouraged, to prevent the establishment of stands of ruderal nitrophilous plants dominated by unpalatable or poisonous species such as *Conium maculatum*, *Sambucus ebulus* and nettles (*Urtica dioica*). Above all, cattle grazing needs to be encouraged and, where possible, the numbers of cattle increased relative to the numbers of sheep. ADEPT has been involved in restoring or building milk collection points for cow milk in some villages, making these traditional village grazers once more an economic reality in farming communities where they were being replaced completely by sheep.

Rather than using fire as a management tool, dry grasslands are best cut with efficient mechanical tools. ADEPT has been carrying out successful trials of innovative Brielmeier mowers with long cutting bars and, instead of wheels, large spiked rollers that put less pressure on soil than a human footprint. They can even be used on steep or uneven slopes, making them particularly useful for dry grassland.

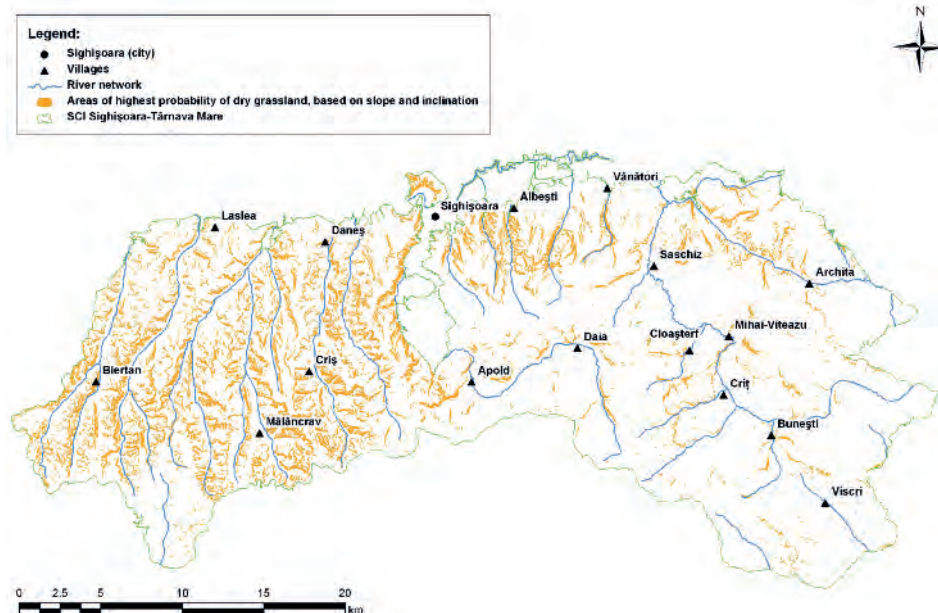
At the same time, fire may be useful in some circumstances for clearing scrub or accumulated grass. It is important that fires be rapid, limited in extent, well controlled and never too late in the spring.

Agri-environment HNV grassland incentive payments

Since 2008, farmers have been rewarded for maintaining HNV grasslands if their management practices protect and maintain grasslands rich in wild flowers and animals. European Union agri-environment measures allow grazing and mowing of pastures and meadows, but limit the amount of natural fertilizer used and forbid the use of chemical fertilizers, excessive grazing and mowing too early in the season.

The general requirements for this type of management, based on traditional practices, are:

- The use of natural fertilizers such as farmyard manure;
- Avoidance of over-grazing, with low stocking rates (no more than 1 cow or 5 sheep per hectare);
- Beginning mowing at a later date to allow plants to seed, butterflies to emerge, and ground-nesting birds to fledge;
- Encouraging mowing by scythe or the use of small machines (with higher rates paid to farmers), rather than by heavy tractors that damage soil structure and kill young animals unable to escape.





The aim of the STIPA project is to improve the conservation of two dry grassland habitats in the Sighișoara-Târnava Mare Natura 2000 site which are of European priority importance under the EU Habitats Directive:

- 6210*** Scrub habitats and semi-dry grassland over limestone or other calcareous substrates (*Festuco-Brometalia*), with important orchid sites
- 6240*** Sub-Pannonic steppe grasslands

The habitats described in this booklet are a significant indication of the presence of rare dry grasslands, whose conservation is of European importance.

We hope that this booklet will encourage local people, including the farmers who manage these grasslands, schoolchildren, students and others, to take an active part in the STIPA project.

We can all help to preserve this natural heritage by working together.

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