



STIPA
Târnava Mare SCI: Saving Transylvania's Important
Pastoral Ecosystems

AFTER-LIFE
CONSERVATION PLAN



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Contents

1. Introduction	3
• The project.....	3
• The area.....	3
• Conservation management.....	3
• The target habitats	5
2. Overview of the project history	7
• Main threats	7
• Main achievements	8
3. Assessment of the situation at the end of the project	11
• Specific threats to the habitats.....	12
• SWOT analysis	13
4. Define the after-LIFE objectives and methodology	14
• Conservation priorities	14
○ Mapping and zonation	16
○ Management strategies	22
• Monitoring plan	26
• Capacity needs of the project team	27
• Institutional issues	27
• Political issues.....	27
5. Funding needs and the sources of funds	28
• Table of relevant Common Agriculture Policy payments	29

List of abbreviations

○ APM	Regional Environmental Protection Agency
○ CAP	Common Agricultural Policy
○ GAEC	Good Agricultural and Environmental Conditions
○ LAG	Local Action Group (under LEADER)
○ MARD	Ministry of Agriculture and Rural Development
○ MoE	Ministry of Environment
○ PB	Physical Block

1. Introduction

The project

This is the After-LIFE plan for the STIPA project: AIM: to improve the conservation status of two priority dry grassland habitats in the Sighișoara -Târnava Mare SCI

- 6210* Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites)
- 6240* Sub-pannonic steppic grasslands.

This plan should be read in connection with the Conservation Action Plan produced in December 2012, which was created based on dry grassland habitat inventories, field studies and consultation with the farmers and local authorities of the communes of the STIPA project area.

The After-LIFE Conservation Plan can only succeed with the active support of local authorities and farmers. We are pleased that the Conservation Action Plan was well received by stakeholders, since it will bring financial benefits to local people through increased productive grassland areas, and increased access to Common Agricultural Policy funding: both Direct Payments and agri-environment payments.

The area

Romania retains extensive contiguous traditionally farmed landscapes dominated by semi-natural grasslands. In particular, the dry grasslands are well-developed, large in area, and with a rich and varied plant species composition.

The dry grasslands comprise a complex mosaic in space and time of plant communities and species. The most important dry grassland habitats are 6210* Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites), 6240* Sub-Pannonic steppic grasslands, the object of the LIFE project and the main objects of this After-LIFE Conservation Plan. But a wide range of species-rich associations exists, that include many species Red-listed in Romania.

Even by Romanian standards, the Sighișoara-Târnava Mare SCI is extremely rich in dry grassland communities. This reflects an 800-year history of careful farming, allowing the survival of biodiversity, and will only be maintained by management along similar traditional lines.

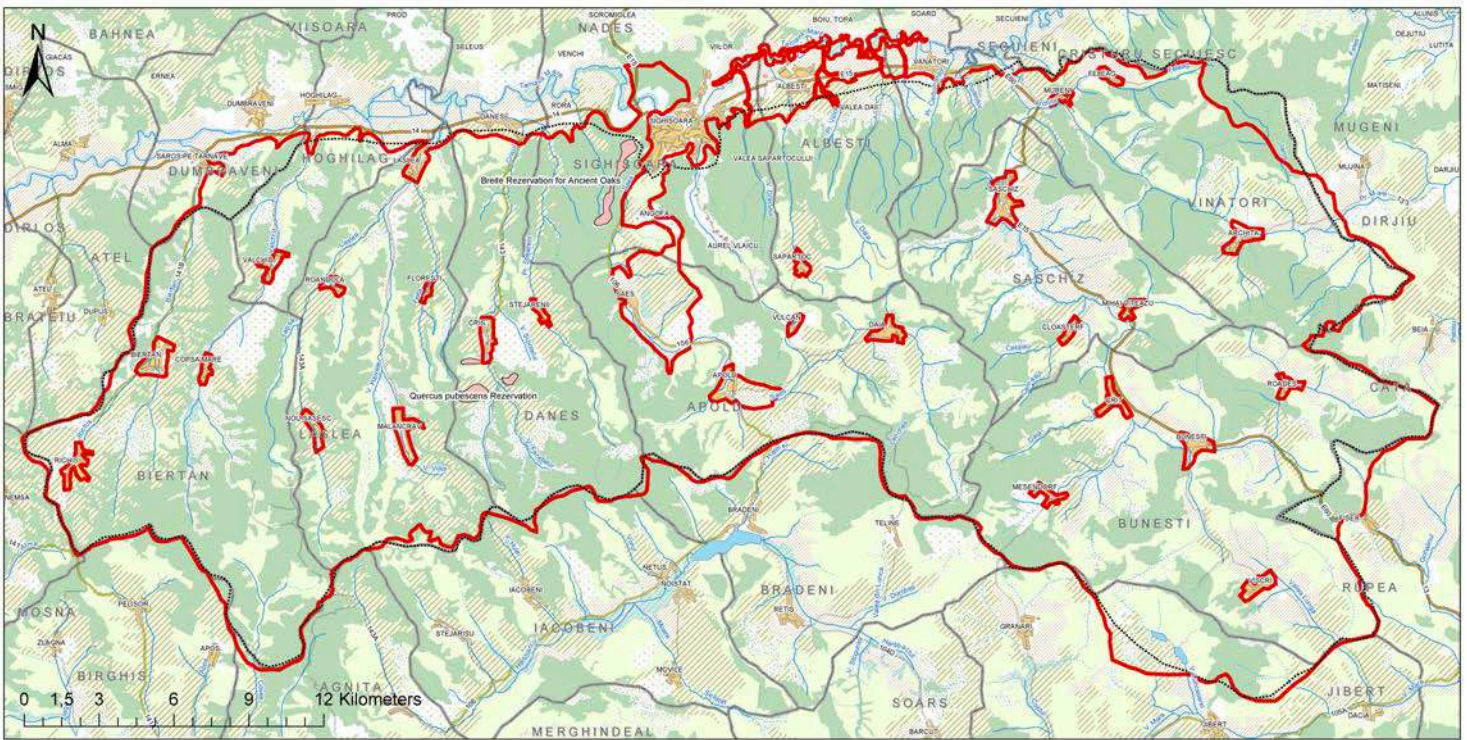
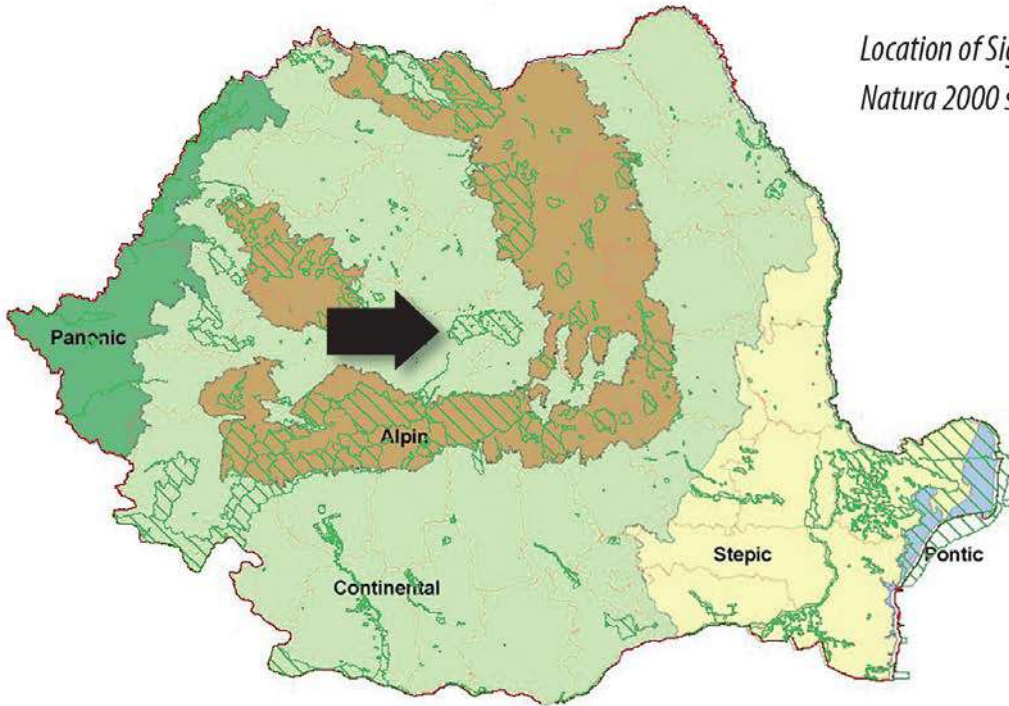
Conservation management

Protection of these special habitats involves not only creative design and application of traditional practices, but also conserving and buffering the habitats as part of the broader farmed landscape. It is not enough to protect fragments, even if they are linked by ecological corridors.

Some areas of particularly remarkable rarity and diversity, notably on *movile* and other steep and dry slopes, are suitable candidates for the establishment of micro-reserves.

The management of dry grassland for biodiversity need not conflict with farm grassland management and, indeed, will enhance pasture and hay-meadows managed for extensive agriculture and quality food production. Furthermore, the greatest concentration of rare plants – ‘biodiversity hotspots’ – is on marginal land such as the steepest slopes and eroding surfaces.

Location of Sighisoara-Târnavă Mare Natura 2000 site (SCI and SPA)



Sighisoara Tarnava Mare pSCI (ROSCI0227)

Legend

- Temporary water course
- Permanent water course
- Local road
- County road
- National road
- Administrative border
- Project area (All actions)
- Tarnava Mare pSCI (ROSCI0227, 85,374 ha)
- Forest reservations
- Village/town
- Lake

Land cover

- Arable land
- Orchard and wood pastures
- Pastures and meadows significant expanses of 6210* and 6240* (Actions A2, A4, C1, C2, E2)
- Grassland/scrub significant expanses of 6210* and 6240* (Actions A2, A4, C1, C2, E2)
- Broadleaf forest
- Transitional woodland/scrub
- Inland marshes
- Water bodies

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The target habitats

In the Sighișoara-Târnava Mare SCI there are 3 priority dry grassland habitat types, and an additional priority scrub habitat. Although the target of the LIFE project was only two of these types, future management should take into consideration their co-existence with the other types, who share similar management requirements.

They are:

- 6210* Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites)
- 6240* Sub-pannonic steppic grasslands
- 62C0* Ponto-Sarmatic steppe
- On steep and dry slopes are dry grasslands occurring rarely with another priority habitat type - 40A0* Subcontinental peri-Pannonic scrub, which is low deciduous scrub vegetation.

These habitats are located within a matrix of mesic grasslands, intensive pastures and often also arable or fallow arable land, determined by location on slopes and geological land-slips, also small slumping hills. Dry grasslands on the slopes are always located in the mosaic. Habitat type 6210* is common in the area and other two types are much rarer, conditioned by location on steep slopes with shallow soil.

Three plant species present in dry grassland in the area, *Crambe tataria*, *Iris aphylla* and *Echium russicum* are listed on Annex II of the EU Habitats Directive. Together with Romanian endemic species such as *Cephalaria radiata* and *Salvia transsylvanica* those species are good indicators of quality of dry grasslands in the area. In addition to those species, significant from international point of view, there are many other threatened and important species from national point of view such as *Salvia nutans*, *Oxytropis pilosa*, *Astragalus exscapus*.

Some of the best xeric grassland sites in this area are on the small slumping hills, termed *movile* in Romanian. They are considered a unique botanical treasure of the project area, on a par with some of the best botanical sites in Europe, for their exceptional botanical diversity at both habitat and species level, which is packed into small areas, often 30 m or less across.

Dry grasslands in the Sighișoara-Târnava Mare SCI are impressive by their scale and relatively good status, as the area is still well maintained by traditional management measures, compared to the rest of the Europe. Grasslands of *Festuco-Brometalia* were once widespread in the hilly calcareous regions of Western Europe but due to changes in agricultural practices (either intensification or abandonment of grazing by sheep and cattle, and the consequent succession towards forest) their extent has decreased dramatically and the remaining areas have become extremely fragmented. The same trend is in Central Europe. Taking into account the dependency of agricultural habitats on certain management measures, it is generally recognized that agricultural habitats are amongst the most threatened.

The dry grasslands in the Sighișoara-Târnava Mare SCI represent an important example of high species richness which owes its existence to the fact that traditional and large-scale management practices are still carried out.

Description of habitats

6210* Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites)

Festuco-Brometalia grasslands, present in almost the entire European continent, are among the most species-rich plant communities in Europe and contain a large number of rare and endangered species. These communities are dominated by mixtures of grasses and herbs and can develop on different types of substrata. The habitat is considered a priority type (6210*) only if it is an important orchid site (EC 2007). Important orchid sites are sites that are important on the basis of one or more of the following three criteria:

- (a) the site hosts a rich suite of orchid species;
- (b) the site hosts an important population of at least one orchid species considered not very common on the national territory;
- (c) the site hosts one or several orchid species considered to be rare, very rare or exceptional on the national territory.

In the Târnava Mare site these species are usually *Orchis tridentata*, *Orchis coriophora*, *Orchis morio*, *Orchis ustulata*, *Orchis militaris*, sometimes *Orchis purpurea* and *Limodorum abortivum*.

6240* Sub-pannonic steppic grasslands

This habitat includes steppe grasslands, restricted to the dry and steep slopes, belonging to *Festucion valesiaca* alliance. This occurs on the steepest, mostly south-facing slopes. This alliance includes narrow-leaved continental steppe grasslands dominated by tussocky fescues (*Festuca valesiaca* and *F. rupicola*), *Carex humilis* and various species of *Stipa* - *S. pulcherrima*, *S. pennata*, *S. capillata*. Grasslands have typically a high cover of xerophytic grass species such as *Agropyron intermedium* and *Botriochloa ischaemum*. Typical species are: *Adonis vernalis*, *Astragalus danicus*, *Astragalus austriacus*, *A. onobrychis*, *Campanula sibirica*, *Potentilla arenaria*, *Scorzonera purpurea*, *Allium flavum*, *Iris pumila*, *Teucrium chamaedrys*, *Artemisia austriaca*, *Chrysopogon gryllus*.

This habitat hosts many rare and endangered species as *Crambe tataria*, *Iris aphylla*, *Oxytropis pilosa*, *Astragalus exscapus*, *A. monspessulanus*, *Salvia nutans*, *Serratula radiata*, *Cephalaria radiata*, *Dianthus giganteus*.

62C0* Ponto-Sarmatic steppe

This habitat is not in the Standard data form for Sighisoara-Tarnava Mare pSCI. However, according to opinion of some specialists and publications (Jones et al. 2010), it is occurring in the area. By species composition and ecological requirements it is very close to habitat 6240* Sub-pannonic steppic grasslands, as associations with dominance of *Stipa* spp. are sometimes classified within alliance *Festucion valesiaca* in Romania. Another sub-type is alliance *Stipion lessingiana* (Gafta, Mountford 2008), which is known from Transylvanian Lowland. It is a steppe-like grasslands dominated by feather grasses (*Stipa* spp.). Two associations occur in Transylvania: the *Stipetum lessingiana* Soó 1947 and the *Stipetum pulcherrimae* Soó 1942 (Ruprecht et al. 2009). Due to their high species richness and the occurrence of rare and endangered species grasslands dominated by *Stipa* spp. are a focus of conservation. They are very rare.

40A0* Subcontinental peri-Pannonic scrub

Low deciduous scrub communities of alliance *Prunion fruticosae* are located on steep slopes in mosaic with dry grasslands. It includes the subshrubs *Prunus tenella* (syn. *Amygdalus nana*) and *P. fruticosus*. They can be threatened by inappropriate management and lack of grazing. Habitat is relatively rare in the area.

2. Overview of the project history:

Main threats

The following threats were identified at the beginning of the STIPA project

Loss of grassland priority habitats 6210* and 6240* through poor agricultural management - intensification or abandonment.

Scrub and thorn spread quickly in abandoned grasslands and a thatch of dead grass develops on top of the hay meadows smothering the plants underneath. This leads to accumulation of dead grass, gradual growth of bushes/thorny shrubs, and a massive reduction in plant diversity to be replaced by a matted grass and thorn scrub of much lower biodiversity value.

How dealt with during the project:

- habitat conservation action plans, based on field assessments and existing management criteria for these habitats, taking into account generic guidelines developed at EU level, and also taking into account local concerns and regional/national factors.
- properly regulated grazing/mowing combined with one-off habitat restoration such as scrub clearance are necessary to maintain the 6210* and 6240* grasslands within the project area
- areas under model management
- demonstration areas.

Loss of priority habitats through lack of local support for conservation measures.

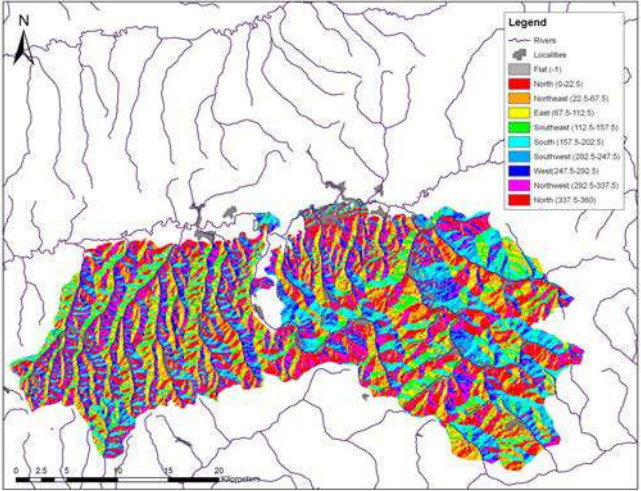


Lack of public knowledge and information about the economic, as well as ecological, value of the biodiversity of the region is one of the underlying causes of biodiversity loss. Inhabitants do not appreciate the potential international interest in the area, and the potential economic and quality of life advantages to themselves resulting from conservation, and therefore do not consider biodiversity loss to be an issue when they make land management choices.

This threat will have increasing impact over the next few years under EU pressured for competitiveness, causing intensification in more commercially viable area and abandonment of less accessible/commercially viable areas.

How dealt with during the project

- Establish incentives by linking good habitat management to agri-environment grants.
- Involve farmers, schools and general public in monitoring activities through innovative education and publications.
- Develop agri-environment packages (regional or national) that take account of specific requirements of habitats 6210* and 6240*, through consultation with MoE and MARD
- Agree management proposals with local people and other stakeholders to promote local support.
- Distribution of booklets flyers, posters and simple information leaflets to raise local and general awareness of importance of area
- Interpretation panels raise local awareness of the importance of the area.
- Website will lead to broader awareness locally, nationally, and internationally.

The main achievements of the STIPA project were:

<p>Innovative GIS mapping for large-scale conservation.</p> <p>Allowed mapping of large area, and can be replicated more widely by similar landscape-scale projects</p>	
<p>Conservation action plans for 6210* and 6240* habitats (5895 ha) in the area, developed in a participatory manner with farmers/land users – see Conservation Action Plan under this project</p> <p>Conservation Action Plan agreed by Town halls, farmers</p>	
<p>Conservation priority zonation in the area, giving additional protection to more important / more threatened areas of these habitats.</p> <p>Recorded in Conservation Action Plan.</p>	

Demonstration activities promoting the use of innovative mowers in the area, which will help to the mowing of sloping dry grasslands in the future: annual mowing is essential to maintain meadow habitats

Innovative mowers demonstrated and contractors trained in future use



Habitat restoration by scrub clearance of 320 ha.

Over 900 ha of dry grassland returned to good condition



Over 3,800 ha of dry grasslands maintained through sympathetic management by helping farmers to get improved access to agri-environment schemes



Six micro-reserves in hotspots that include simple and practical management agreements with three Town Halls, the lands owners



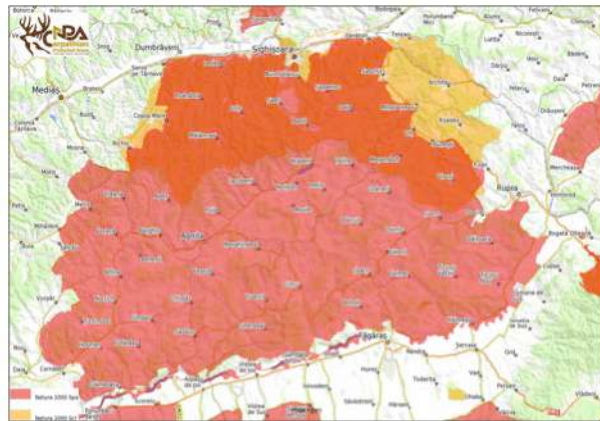
Community awareness-raising, including nature classes in schools.

8 schools, 280 children per year in nature classes



Inputs into the design of national agri-environment schemes, and into the management plan for the broader combined SPA/SCI which is being prepared by 2015

New agri-environment measures designed and accepted so farmers in other areas of Romania are supported to maintain their grasslands



Regional, national and EU-wide media actions

High-profile visits have raised awareness further, among policy-makers as well as locally.

Over 1 million TV viewers in Romania have seen films dedicated to the project. Dozens of newspaper and radio reports



Habitat, flower and butterfly identification manuals for schools and farmers, and for long-term use in the area and more widely



3. Assessment of the situation at the end of the project

The habitats as part of a man-made landscape

Traditional agricultural practices that have mostly been lost in Western Europe, such as common grazing and hand scything of meadows, are still part of everyday farming life in SCI Târnavă Mare.

These habitats can only be maintained by farmers: their scale dictates that conservation bodies cannot carry out the management themselves, as is possible when the protected habitats are much smaller in area (typical in western Europe).

Therefore, the successful long-term protection of these habitats requires an integrated approach to the support of the entire landscape and community.

The situation at project end is

- lower immediate level of threat. The access of farmers to agri-environment payments; the interest of farmers in innovative mowing equipment to replace increasing scarce hand-mowing possibilities; the level of knowledge locally (schools, Town Halls, farmers, general public) as to the European importance of their grasslands and the links between them and CAP payments and added value on local goods and services, all add up to a more favourable immediate threat level.
- however, the source of these threats is socio-economic, and can be solved only by longer-term solutions. Economic pressures will continue to provoke land use change through conversion into arable fields in more productive areas, abandonment of more distant pastures or meadows, falling cattle numbers and rising sheep numbers, leading to over-grazing of grassland and abandonment of mowing (conversion of meadow into pasture), leading to a monotonous landscape.

But if this traditional management is to continue, it is necessary to support small scale farming communities by helping them

- to combine innovation with tradition: mechanisation of grassland management (for example using the equipment demonstrated through the project)
- to improve their marketing of local products
- to diversify into agro-tourism and other services linked to the characteristics of the area
- to gain access to suitable designed agri-environment and other rural development measures.

This is a complex task.

Specific threats to habitats

Meanwhile, the following specific threats persist, and a long term management will be required to monitor and mitigate their effects.

Undergrazing:

Traditional management of those dry to mesophytic grassland habitats is low intensity grazing and/or mowing. The expansion of highly competitive grass species (both native and non-native ones) into grassland ecosystems represents a threat to diverse grassland vegetation. Where grazing levels are reduced, *Festuco-Brometalia* swards typically become dominated by dominant coarse grasses (in particular, tor-grass *Brachypodium pinnatum* and upright brome *Bromus erectus*), and smaller plants become correspondingly scarcer. On drier parts is spreading *Elytrigia intermedia* and *Bromus inermis*..

Invading scrub:

In the advanced succession stages, woody species gradually enter grassland communities and force profound and fast changes to the vegetation by shading and producing a large amount of litter. Scrub encroachment is the most frequently documented cause of change in 6210* sites. Scrub invasion is considered to be an acute threat because it can result in an increase in soil nutrients and a decline of richness in grassland species. Native scrub species overgrowing dry grasslands are *Ligustrum vulgare*, *Cornus mas*, *Crataegus* sp. div., *Rosa* sp. div. etc. The most serious threat to dry grassland habitats is the invasion of the allochthonous, strongly aggressive tree *Robinia pseudacacia* (black locust). An intensive vegetative spread as well as production of a large quantity of seeds makes this species a superior competitor in secondary succession.

Overgrazing:

overgrazing by sheep is also a significant threat in the area. This leads to the spread of ruderal and invasive plant species that respond positively to high fertility, and loss of less competitive species.

Loss of mosaic and mixed farming:

Mosaic management, with small parcels of 0.3-1.0 ha cut for hay at any one time owing to small-scale ownership, is ideal for biodiversity but under threat from consolidation of ownership. Grazing is changing from well-regulated mixed grazing by cows and sheep, to less well-regulated and monotonous grazing by sheep, as sheep numbers increase and cow numbers decrease, which is also a threat to biodiversity-friendly land management.

SWOT analysis

Strengths	Weaknesses
Large size of landscape, still intact, no fragmentation	Conservation problems at large scale more difficult to solve
Continued traditional farm management including hand scything, common grazing	Poor economic viability of traditional small-scale farms
Strong local identity	Poor economic viability of communities who manage the farmland
Increased awareness of importance of dry grassland habitats	Poor economic return
Large number of farmers managing landscape	Ageing population
Opportunities	Threats
CAP agri-environment payments targeted at dry grasslands	Abandonment of more distant grasslands (scrub/deterioration). Intensification of more accessible grasslands (loss of diversity). Loss of mosaic and mixed farming
Value added products for increased local incomes	Global/European competition, unsuitable hygiene rules
Natural landscape offers diversification potential	Damage to area from unsustainable tourism
CAP rural development payments targeted at young farmers, semi-subsistence farmers	Depopulation, loss of young people from area
CAP rural development payments targeted at capacity-building farmers	Low capacity of the rural population to meet modern expectations (communication, etc.
CAP rural development payments targeted at infrastructure	Poor infrastructure reduces viability and attractiveness for young people

4. Define the after-LIFE objectives and methodology

Ideal (long-term) objectives for the site

The vision of protected site is to protect, preserve and enhance the natural values of the Târnava Mare SCI and to raise awareness to those who reside in or visit the site. The purpose of protection is to keep favourable conservation status of Annex I habitats and Annex II species.

Conservation priorities

Summary of actions:

1. Incorporate the Conservation Action Plan for the target dry grassland habitats, developed under the STIPA project, into the overall management plan for the SCI/SPA to be finalised in 2015
2. Cooperate with the MARD to develop better-targeted agri-environment schemes for dry grasslands
3. Provide wider farm advisory services to promote economic viability of the broader landscape of which the target habitats are an integral part.
4. Continue awareness-raising actions with local community as far as funding allows
5. Continue to monitor micro-reserves and monitoring points established under the STIPA project, as far as funding allows

Specific management requirements

The characteristics and requirements of the target habitats can be summarised as follows:

EU Code	Habitat	Distribution	Interaction with farming
6210*	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco Brometalia</i>)	Most common in the region, located on steep to shallow slopes. Ecological gradient is wide, from xeric to mesoxeric types.	The structural and floristic characteristics of the habitat are strongly influenced by management practices, in particular the intensity of grazing/or less frequent mowing.
6240*	Sub-continental steppic grasslands	Dry xeric grasslands located on steep slopes. Rare in the region.	Low-intensity grazing is required to maintain the grassland habitat.
62C0*	Ponto-Sarmatic steppe	Dry xeric grasslands located on steep slopes. Very rare in the region.	Low-intensity grazing is required to maintain the grassland habitat.
40A0*	Subcontinental peri-Pannonic scrub	Low deciduous scrub communities. Rare in the region.	Grazing by goats should not be allowed.

Traditional management of these open and unfenced steppe-like grasslands was

- grazing by sheep or cattle from spring to autumn on pastures
- summer hay-making and autumn grazing of meadows – floristically more diverse than the pastures
- occasional burning to control scrub.

Through the last 50 years, land-use has changed in this region, greatly influencing several dry grassland sites. Cattle numbers have decreased due to the low profitability, and because these dry grasslands have the lowest productivity among the region's grasslands, they are the first to be abandoned.

Hence it is important to control scrub and provide appropriate levels of grazing/cutting as grassland soil seed banks under long-term scrub cover may not be long-lived.

Farmers should be encouraged to carry out the following, especially through well-designed agri-environment measures

Cutting of scrub:

Scrub and trees should be cut during late summer or early autumn (second half of August, beginning of September), so that the shoots freeze and die during winter in the case of black locust. This method can be more efficient, if the freshly cut trunks surface is painted by herbicide. The shoots appearing will be cut in July of the second year. Follow-up treatment is needed up to 3 years to achieve suppression of the alien species and rehabilitation of targeted habitats.

Mowing:

Annual mowing or grazing is obligatory under current grassland agri-environment schemes, which cover 24,505 ha out of a total eligible area of approximately 34,000 ha. Under the future management plan, we will try to make the agri-environment measure better designed for the dry grasslands

1. allow flexibility of first mowing date, from the current 1 July, which is later than necessary in many years.
2. offer higher payments for mowing than for grazing, under the non-mechanised grassland package
3. allow use of walk-behind mowers such as Brielmaier in the non-mechanised scheme.

Burning:

Burning is currently not permitted. We will work with Environment Protection Agencies to:

1. permit controlled burning, in limited problem areas, as early in the year as the disappearance of snow cover allows (late February/early March, ideally) as a one-off action not repeated at all or at least for several years
2. Permit controlled burning of the heaps of cleared scrub that are having a negative impact on habitat condition.

Reducing stocking rates:

Sheep overgrazing either due to excessive stocking rates over a large area, or by failure to move flocks frequently, should be prevented by establishing proper flock management with shepherds. Dry grasslands in particular can tolerate a stocking rate of 0.3-0.8 L.U./ha, compared with the 1 or 1.2 L.U./ha currently permitted under grassland agri-environment measures. Revised a-e proposals especially suited to these habitats could offer higher payment for stocking rates below current levels.

Mapping of target habitats and zonation for conservation priorities

As mentioned above, in the Sighișoara-Târnava Mare SCI there are 3 priority dry grassland habitat types, and an additional priority scrub habitat. Although the target of the LIFE project was only two of these types, future management should take into consideration their co-existence with the other types, who share similar management requirements. In addition, these habitats are located within a matrix of mesic grasslands, intensive pastures and often also arable or fallow arable land, determined by location on slopes and geological land-slips, also small slumping hills. Dry grasslands on the slopes are always located in the mosaic.

Therefore, to protect these target habitats, not only is continuation of traditional practices required, but also conserving and buffering the habitats as part of the broader farmed landscape.

For this reason, during the project period, we mapped all major habitats the Târnava Mare area, in order to allow and integrated approach to the conservation of the landscape as a whole. See Figures 1a, 1b and 1c below.

Identification of dry grassland habitat types *6210 and *6240 as key indicator of biodiversity value of site

Most of dry grassland communities inhabit slopes and plateau that differ in local climatic conditions from the regional climate. For identification of slopes we used a digital terrain model (DTM), with spatial resolution 5 m. First classification of slopes was tested in the field on occurrence of target habitats. After field tests a new classification of slopes was elaborated.

Figure 2 below shows the result of identification of dry grasslands. Total estimated area is 5,895 ha. We can see that western part of project area has much higher occurrence of dry grassland habitats. This estimation may have missed target habitats on very small slopes, and on flat parts of hills which have have dry grasslands. However, from the perspective of the project area, such minor errors are acceptable: more precise mapping was not possible in the project period.

Based on the habitat map (Fig. 1) combined with the dry grasslands/slopes layer (Fig. 2), we prepared a map of non-forest habitat quality – Figure 3. There are basically 3 groups of habitat types with different biodiversity values: arable field lowest, dry grasslands highest and other grasslands medium quality.

We used as the indicator quality of particular polygons percentage of cover by priority dry grasslands:

- (a) very low quality less than 2%
- (d) low quality (2 – 5%)
- (e) medium quality (5 – 10%)
- (f) high quality (10 – 20%)
- (g) very high quality more than 20% (Fig. 6).

The western part of the site has significantly higher level of grassland biodiversity, resulting from the different character of area: narrow valleys and steeper slopes, less arable fields. The eastern part of the site is used for more intensive agricultural production, but still contains important areas with high biodiversity value.

Fig. 1a

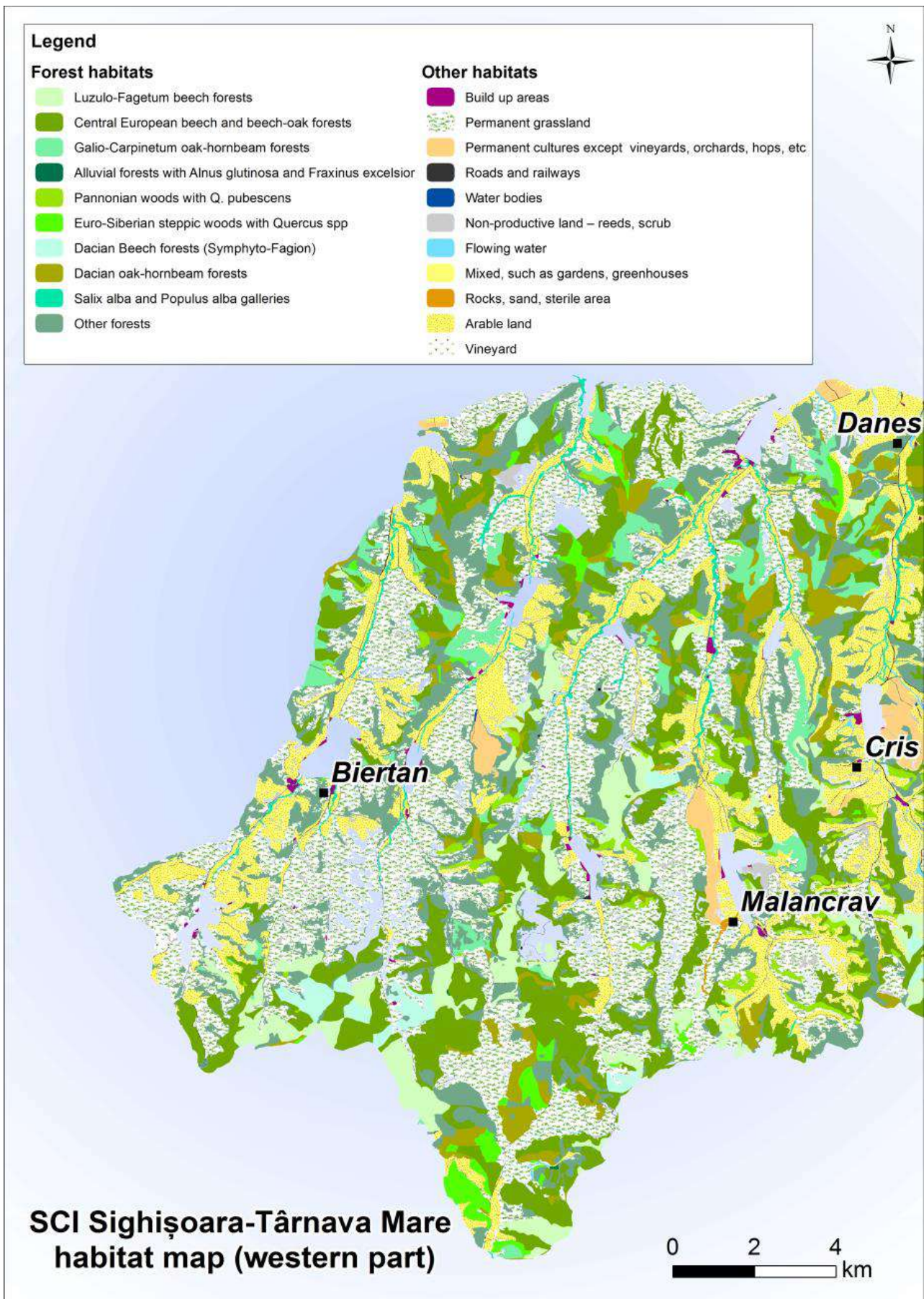


Fig. 1b.

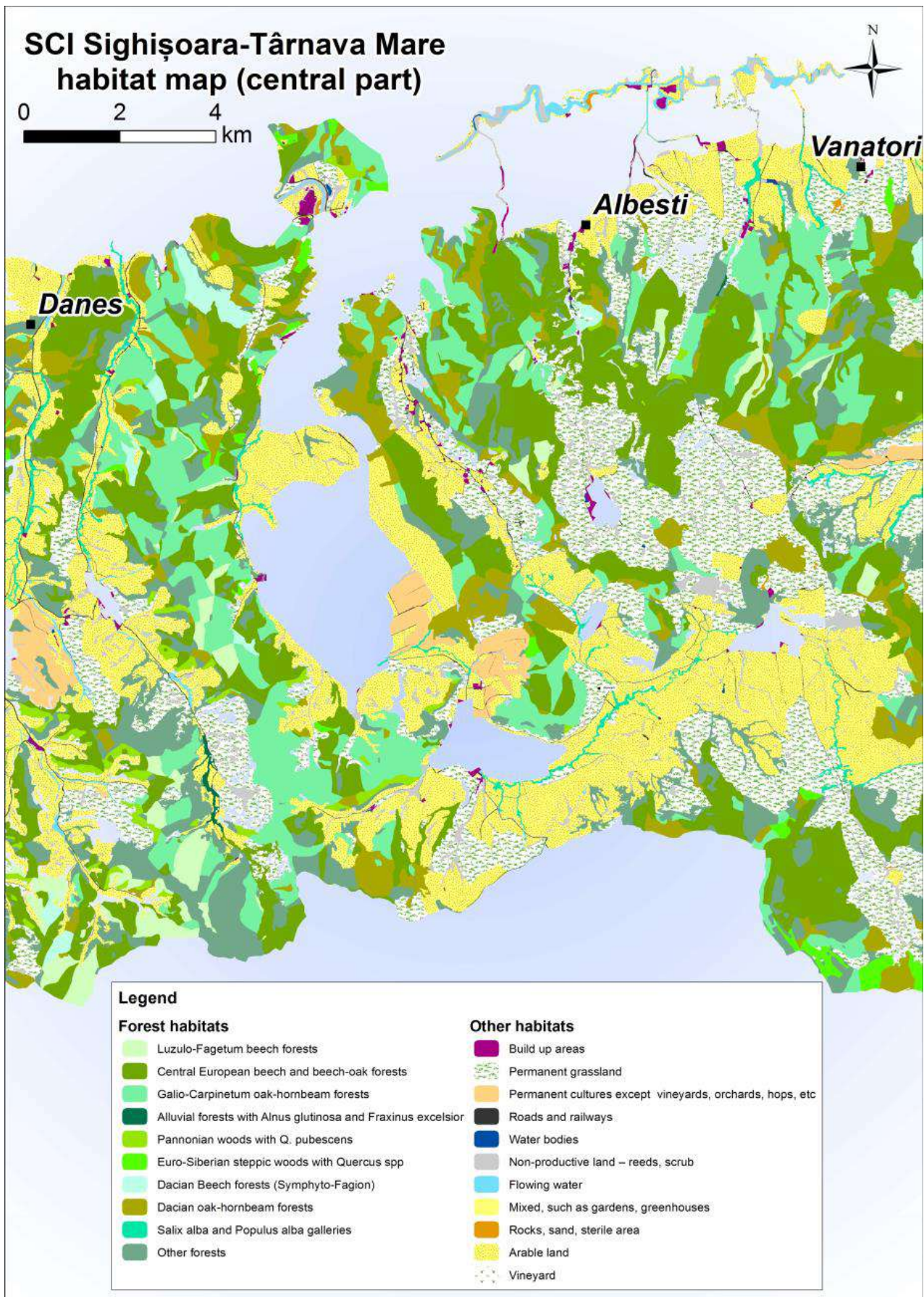


Fig. 1c.

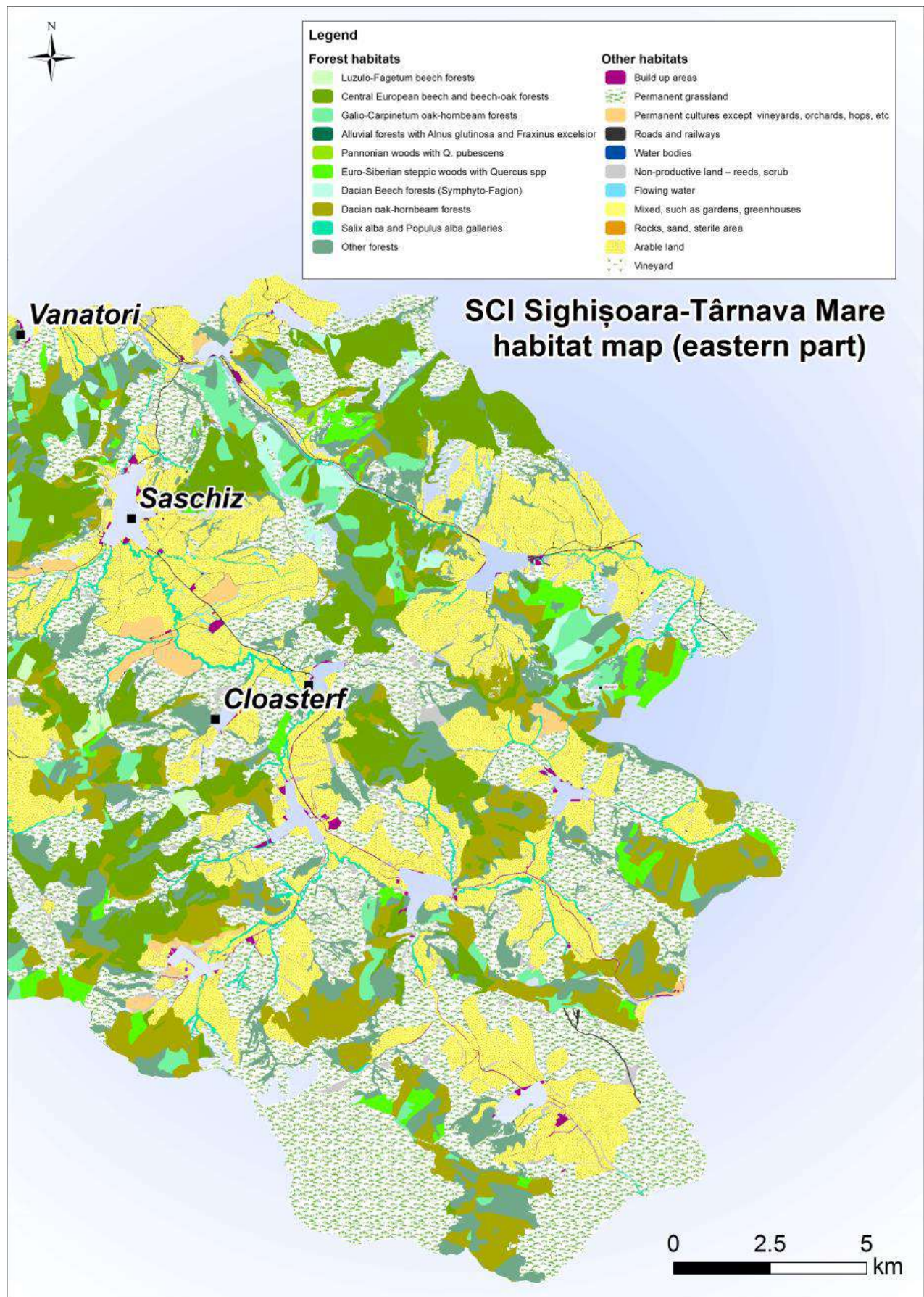


Fig. 2.

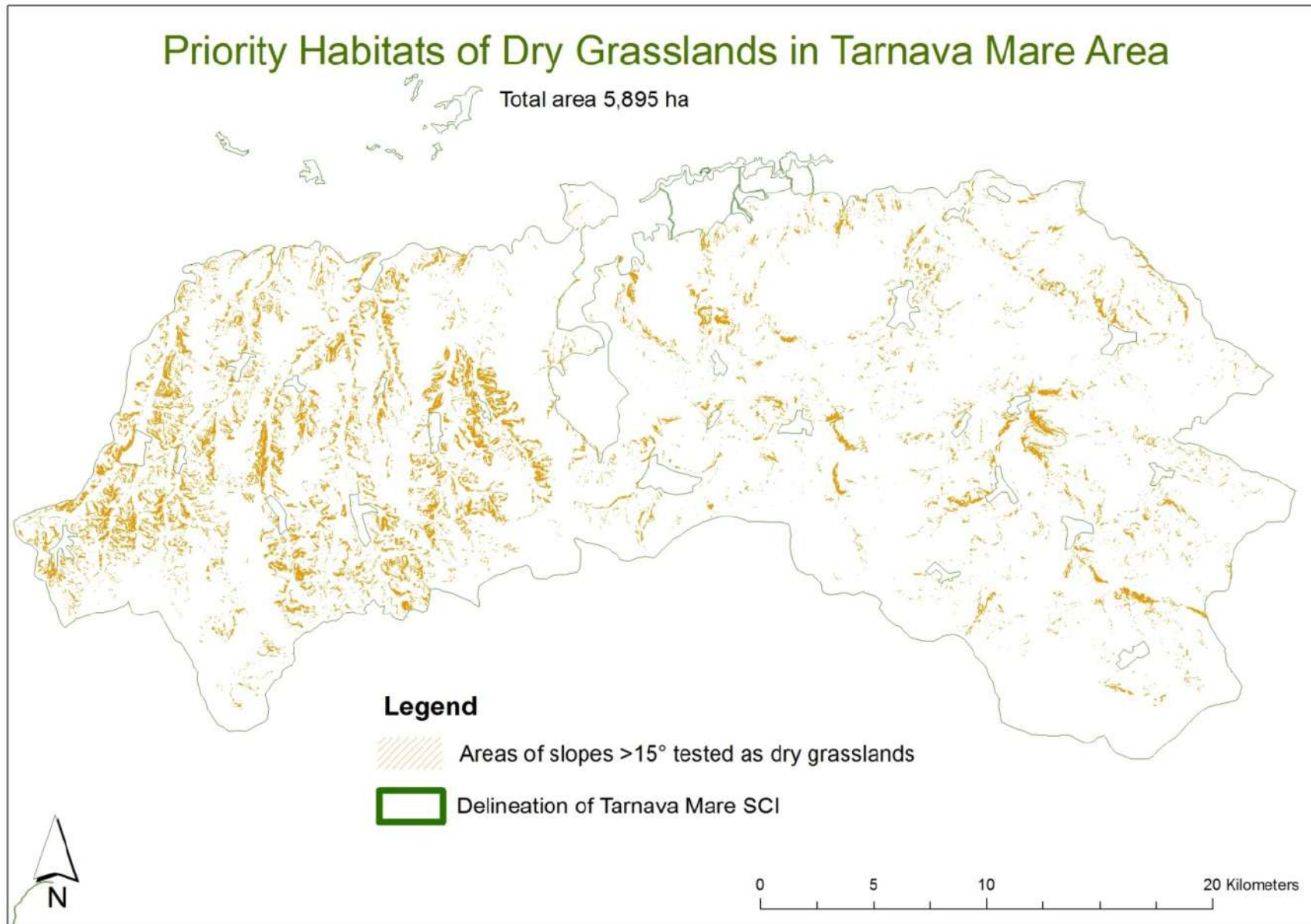
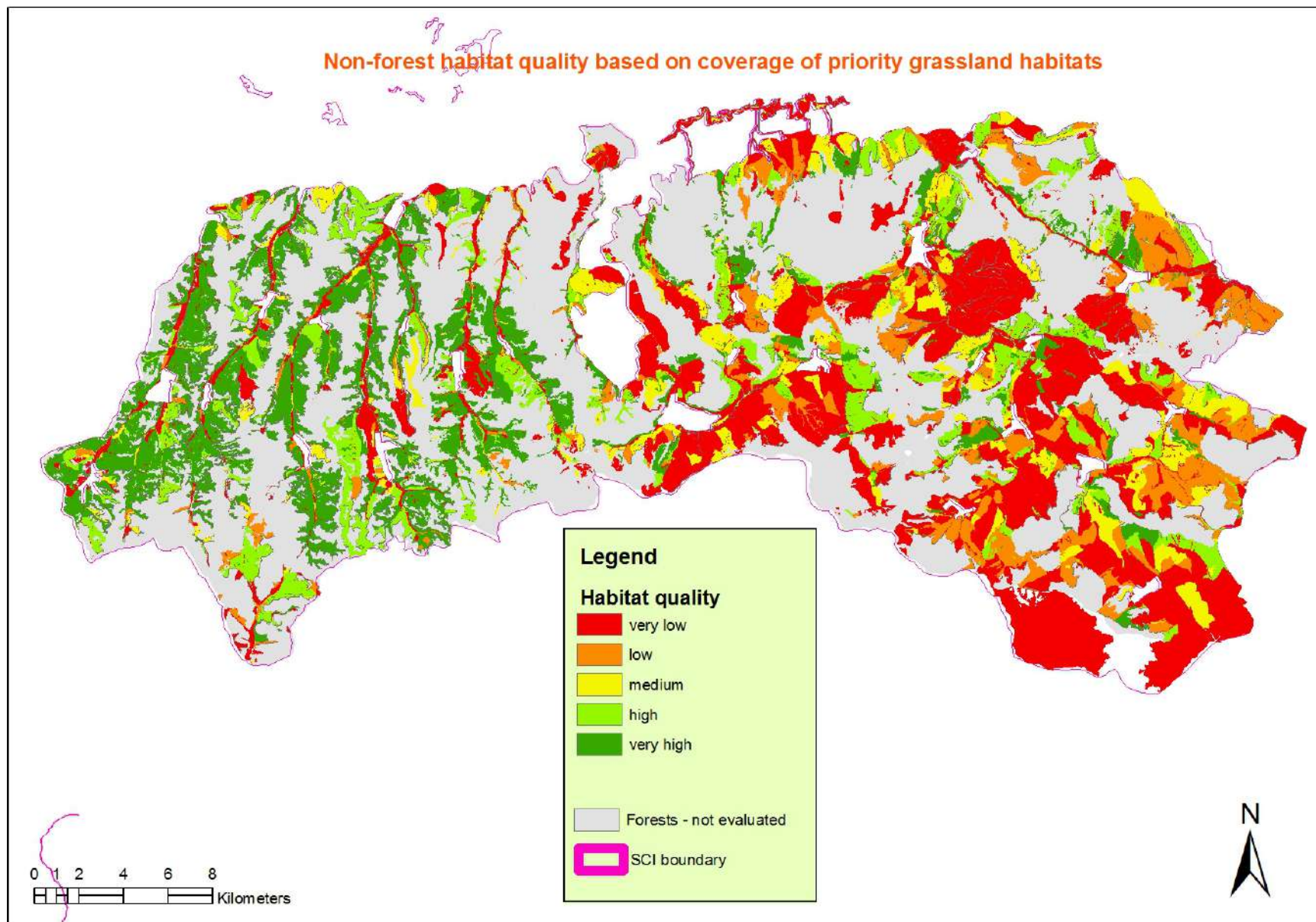


Fig. 3



Management strategies

Management strategies will be included within the future management plan for the SCI, which is being developed and is due in 2015. ADEPT is responsible for the grassland management proposals within the plan.

Zoning

Zones are defined based on habitat quality and habitat types layers: see figure 4.

- A. Priority grassland conservation – more than 20% of dry grasslands present in PB
- B. Sustainable grassland management – PB with grasslands and non-productive land and less than 20% of dry grasslands
- C. Low input farming – arable land and others PBs
- D. Forest management – forest PBs

Management of zones

1. Low input sustainable farming

The key to maintaining low input sustainable farming is to use as much as possible the agri-environment grassland payments available in the area, in addition to developing marketing to create economic incentives linked to landscape quality.

Measures available are:

- 214/1: To maintain high nature value grassland. Payment is €120/ha. This requires no mowing until after 1 July: no use of artificial fertilisers and limited use of farm yard manure, sticking rates between 0.8 L.U/ha and 1.2 L.U/ha
- 214/2: To maintain wildlife by applying traditional farming practices. Payment €180/ha. Same conditions as 214/1 but no mechanized management allowed.

The Romanian National Rural Development Programme (NRDP) identifies some plant species as indicators for this package: *Ononis spinosa*, *Pimpinella saxifraga*, *Knautia arvensis*, *Leontodon hispidus*, *Plantago media*, *Briza media*, *Thymus serpyllum*, *Veronica austriaca*, *Leucanthemum vulgare*, *Dianthis carthusianorum*, *Trifolium montanum*, *Polygala major*, *Linum catharticum*, *Primula veris*, *Origanum vulgare*, *Prunella grandiflora*, *Viola hirta*, *Lathyrus pratensis*, *Succisa pratensis*, *Sanguisorba officinalis*, *Serratula tinctoria*, *Clinopodium vulgare*.

However, this species list is not used to judge eligibility of parcels, but as a means of monitoring impact of the measure on biodiversity. The target is to avoid the decline of these species. This list may be upgraded by adding other relevant plant species, if this will be considered necessary during the monitoring project. NRDP states that these will be annually monitored on some parcels under commitment on a sample basis.

In 2012, 24,505 ha were receiving payments across the area for these schemes, out of a total eligible area of approximately 34,000 ha (this includes some former arable land that is become permanent grassland, although registered as arable in Fig. 3 above). The

measures 214/1 and 214/2 are therefore significant factors in maintaining low input sustainable farming.

In addition to these grant incentives, local markets, branding, promotion of direct sales, and promotion of agro-tourism will also play a role in maintaining low input sustainable farming.

As regards arable systems, not eligible for grassland support payments, the following guidelines are recommended for good arable farming practice that might exceed management obligatory under GAEC (Good Agricultural and Environmental Conditions, requirement to receive direct payments) might include:

- a. nitrogen applications of maximum 175kg/ha, carefully applied in dry weather to avoid runoff.
- b. field margin strips of 2-3m remain uncultivated to minimise run off and to sustain some ground nesting birds
- c. restrictions on crops or cropping systems that are harvested before July.
- d. prescribed patterns of harvesting of crop (i.e. not in decreasing circles), allowing late-nesting birds to escape
- e. only EU approved pesticides should be used.

2. Sustainable grassland management

Habitat 6510 management measures:

- A. Traditional grazing according to local custom
 - Early spring and autumn grazing
 - Communal grazing, based on traditional procedures organized through the town halls; stocking rate for cattle should be ≤ 1 animal per hectare.
 - Grazing throughout growing season, with rotation of stock
 - June-July aftermath grazing
- B. Habitat restoration by grazing
 - Increased stocking where undergrazed
 - Decreased stocking where overgrazed
 - Maintaining the balance of cattle against sheep; aiming to keep appropriate breeds of cattle, i.e. those not bred for intensive feeding.
- C. Rotational grazing control across the habitat.
- D. Traditional mowing
 - mowing 2-3 times/year
 - mowing after maturity/seeding of the majority of flowers; in practice this should be after c.20 June.
- E. Machine mowing: although the use of scythes is preferred, small cutting machines do little or no harm to species-rich grassland.
- F. Restricted use of fertilisers/pesticides
- G. Restricted use of minerals

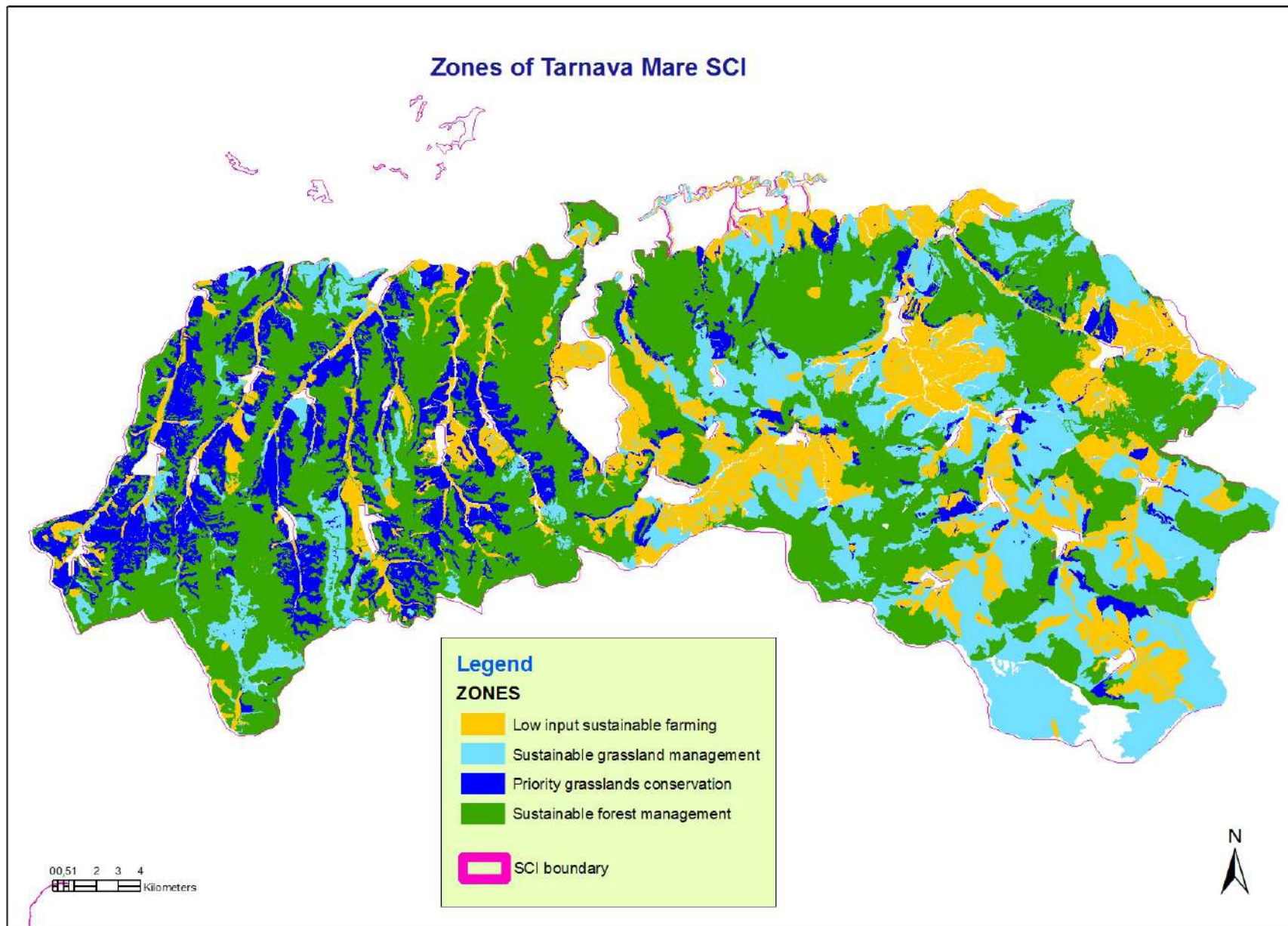
3. Priority grassland conservation

Dry and semi-dry grasslands in mosaic with mesic and other types of grasslands in the Sighișoara-Târnava Mare SCI represent important example of high species richness due to still preserved traditional and big scale management practices.

Dry grassland habitats 40A0*, 6210*, 6210, 6240* management measures:

- A. Maintain traditional grazing according to local custom
 - Early spring and autumn grazing.
 - Communal grazing, based on traditional procedures organized through the town halls; stocking rate for cattle should be ≤ 1 animal per hectare.
 - Grazing throughout growing season, with rotation of stock.
- B. Habitat restoration by grazing
 - Increased stocking where undergrazed
 - Decreased stocking where overgrazed.
 - Maintaining the balance of cattle against sheep; aiming to keep appropriate breeds of cattle, i.e. those not bred for intensive feeding.
- C. Rotational grazing control across the habitat, especially the placing of sheepfolds.
- D. Traditional mowing – mowing after maturity/seeding of the majority of flowers; in practice this should be after c. 20 June.
- E. Machine mowing: although the use of scythes is preferred, small cutting machines do little or no harm to species-rich grassland.
- F. Restricted use of fertilisers/pesticides.
- G. Restoration management implemented – removal of secondary succession scrubs and trees.

Fig. 4.



Monitoring plan

Monitoring of habitats is continuous or repeated measurement of biological indicators (e.g. species richness, representativity, conservation status). Monitoring has been identified as the critical link in adaptive management processes for dealing with uncertainty in the management of large-scale systems.

Monitoring methodology should focus on changes in habitat structural characteristics and species composition at large scale (hectares) and small scale (meters) in order to be capable to significantly detect trends after restoration action.

Data sampling

The large scale monitoring of habitats will focus on target habitat types (6210* and 6240*). Proposed methodology for data sampling on large scale is to repeat the inventory by using the methodology for dry grassland habitat mapping in Târnavă Mare SCI, developed under the STIPA project. Description of baseline situation of grassland habitats is found in the inventory on large scale in 2011.

The difference will be localisation of monitoring sites (normally linked to physical blocks), which will be linked to homogeneous dry grasslands areas.

The proposed methodology for **small scale monitoring** is sampling of permanent plots. Permanent quadrat 4x4 m have been established in each monitoring site. Monitoring plots for small scale monitoring were established before realization of restoration management, to be able to evaluate impact of realised measures on priority habitats, in 2012.

Corners of quadrats have been marked by iron or tubes of size about 20 cm, hammered into the soil so that only 2-3 cm stays above the surface. Localisation of permanent plots can be repeated by GPS, and then corners can be found by metal detector.

Data sampling will start by recording of releve (Braun-Blaquet approach) in 4x4 m quadrat. It will follow by recording of species lists in grid of 8 quadrates 0,5x0,5 m. The reason is to objectively monitor changes in small scale species diversity.

Monitoring period

The periodicity of monitoring depends on the dynamics and variations in species composition of particular habitat types. For more dynamic habitat types such as grasslands under restoration, the monitoring period should be shorter i.e. one year.

Data evaluation

Evaluation of the large scale data will be based on a rapid assessment of area, representativity and conservation status. Further evaluation of monitoring results should be based on the evaluation of species composition changes. Different techniques could be used taking into account variety of ordination and classification methods widely used in vegetation science.

Capacity needs of the project team

The NGO Fundația ADEPT Transilvania, the sole beneficiary of the project, has its head office and a tourist information centre within the area, at Saschiz. ADEPT works with local farmers and farmer associations to assist participation in grassland agri-environment schemes, in order to maintain as much as possible the biodiversity-friendly extensive management of the area. ADEPT is active throughout the area in grassland habitat assessments and in designing a management plan for which will be incorporated into the final legal management plan in 2015.

The ADEPT team has the capacity to continue its farm advisory services and direct conservation, monitoring and policy activities, as long as funding can be found.

Institutional issues

The management of the site is the responsibility of the administrator, Progresul Silvic SRL.

Key to the long term maintenance of the target habitats, is the fact that recommendations from the Conservation Action Plan, developed under STIPA, will be incorporated into the final management plan for the SCI and SPA, due in 2015.

ADEPT is working with the Local Action Group of the site to develop a vision for the area.

Political issues

Through Law 462/2001, the EU Birds and Habitats directives were fully transposed into Romanian law. All species and habitats found in Romania and which are listed into the directives can be found in Appendices 2 - 5 of Law 462/2001.

The Sighișoara-Târnava Mare Site of Community Interest (ROSCI0227) was legally established as a Natura 2000 site by Ministerial Order nr. 1964 of 2007. A SPA, Podișul Hârtibaciului, ROSPA0099, 246.357 ha, has been declared over an area that overlaps most of the site. Thus bird species mentioned in the Standard Data Form are also protected. The management of both sites is the responsibility of the administrator, Progresul Silvic SRL.

The Environmental Protection Agencies of the three counties of Mureș, Brașov and Sibiu are responsible for monitoring the proper management of the site, under which damage must be avoided to any habitats and species mentioned in the Standard Data Form for the site.

1. Funding needs and the sources of funds

Natura 2000 management funding

As already stated, the management strategies and monitoring mentioned above will be included within the future management plan for the SCI (ROSCI0227). The plan for the combine SCI and overlapping SPA (ROSPA0099) is being developed under SOP funding, and is due in 2015. ADEPT is responsible for the grassland management proposals within the plan.

It is hoped that funding will be available to support a management body, to secure future management of the Natura 2000 according to the management plan. However, this is not clear. Thus far, in Romania, Protected Area management authorities had had to rely on commercial operations within the areas to support their management budget, which is not ideal.

Other sources of funding

As already stated, this is not a conventional Protected Area conservation problem. These habitats can only be maintained by farmers. The scale of this man-made landscape scale dictates that conservation bodies cannot carry out the management themselves.

Therefore, the successful long-term protection of these habitats requires an integrated approach to the support of the entire landscape and community.

To protect these target habitats, we need

1. financial support for continuation of traditional practices
2. financial and other rural development support to conserve the broader farmed landscape, buffering the habitats
3. financial and other rural development support for the continued economic viability of the small-scale farming communities who alone can maintain the landscape of this scale and complexity .

• Common Agricultural Policy

These objectives will be assisted in future by CAP payments, which will provide grants and other economic incentives after the end of the project. The design of future agri-environment payments should in the future be better linked to conservation demands of specific habitats, in order to offer a long term incentive for continued good management of these target habitats. The CAP payments include :

- Agri-environment
- Natura 2000 (not yet being paid in Romania)
- LFA or Areas of Natural Constraint payments
- a range of other payments are available – see Table 1 below

In addition, training / capacity building of local farmers, farm associations, and broader community, is an essential part of building future viability of these traditional management systems. Local NGOs could play an important role, but funding sources for NGOs to carry out such activities are not so clear. In future, the Cooperation Measure under the new CAP could be relevant to this.

• LIFE

Further LIFE projects in the area could also make a significant contribution, in spearheading policy as well as carrying out more immediate protection and awareness-raising actions, as did the STIPA project.

Table 1: Common Agriculture Policy payments which could support economic viability of Târnava Mare area

Measure under	Eligibility	Exclusions	Specific farm level actions required	Support provided
SAPS	Excluded from eligibility for any area payments if: holding under 1 ha (in parcels of over 0.3 ha)	More than 80% (about 2.5 m) of holdings, about 38% of RO's UAA, are under 5 ha in size. Holdings under 1 ha include about half of these: that is 1.2m holdings and 10% of UAA. These are potentially excluded from SAPS, unless they form into an association with a single claimant.	GAEC	Training in farm management, organic farming, farm accounting, farm diversification of activities, EU standards (environment, health, animal welfare, hygiene and eco-conditionality)
Training	Directed at semi-subsistence farmers (and young farmers). Extra points in selection for being in LFA, having low level of education, and receiving Axis 2 support.	Holdings under 2 ESU are excluded. 45% of UAA is in holdings under 2 ESU.	Nothing beyond GAEC	<ul style="list-style-type: none"> a) Diversification of activities in agricultural holdings, improvement of production quality, hygiene and food safety, b) Business improvement and encouragement; c) Improvement of knowledge on the environment protection; d) Technical training e) Sustainable management of farming and forestry lands; f) Developing innovative approaches in the agri-food chain; g) production methods compatible with preserving / improving the landscape and with environment protection.
Young Farmers	Recipient under 40 y.o., with high school/vocational training, farm 6-40 ESU	Yes - 6 ESU minimum size will prevent many potential applicants from participating. 45% of UAA is in holdings under 2 ESU, 16% of UAA by holdings 2-8 ESU (350,000 holdings)	Nothing beyond GAEC	

Farm modernisation	50% co-funding required	Smaller farms will not be able to provide co-funding	Nothing beyond GAEC	Introduction and development of new technologies and procedures; diversification, adjusting the profile, level and quality of production to market requirements, adjusting the quality of production to market requirements; organic production
Infrastructure	Open only to organisations/federations of land owners which are registered in the National Register of organisations for land improvements, and Town Halls and their associations	Yes - unless the Town halls or other organisations are sensitive to HNV farmers' requirements, the HNV farmers cannot take advantage of this measure	Nothing beyond GAEC	Road infrastructure agricultural - building and/or modernization of access roads, bridges and footbridges, exploiting agricultural roads; irrigation systems – modernization and/or re-technologisation including works for protecting the pumping and metering stations; drain and drainage works and other land improvement works
semi-subsistence farmers	Holdings 2-8 ESU (350,000 holdings) included.	Yes - 2 ESU minimum size will prevent many potential applicants from participating. 45% of UAA is in holdings under 2 ESU,	Nothing beyond GAEC	The support granted through this measure has the purpose of ensuring the necessary incomes, during the restructuring and transformation period, of the semi-subsistence farms in market oriented holdings, by a sustainable use of the production factors, the improvement of management by diversification of agricultural production, as well as by the introduction of performance technologies adapted to the local conditions. Consequently, implementing this measure will lead to an increase of the incomes for these farms and at the same time the reduction of the production costs
Producer groups	Producer groups to include a minimum number of 5 members; to market at least 75% of its own output, through the producers' group; to proof by his accounting	Smaller groups/potential groups with less than 5 members, less than 75% of product sold through the group, and less than 10,000 Euro sales through the group are excluded,	Nothing beyond GAEC	All agricultural sectors: livestock, vegetable, fruit, vineyards, orchards, etc.

	system a minimum value of the marketed production, for the product's group to be recognised, of minimum 10,000 Euro, RON equivalent;			
Consultancy services for agriculture	Those targeted are semi-subsistence farmers; young farmers and their setting up, farmers applying for measure "Agri-environment payments"; farmers applying for "First afforestation of agricultural land"; other farmers, producer groups or associations for the general advisory/extension services actions mentioned at points within the measure.	Yes - 2 ESU minimum size will prevent many potential applicants from participating. 45% of UAA is in holdings under 2 ESU, 16% of UAA by holdings 2-8 ESU (350,000 holdings)	Nothing beyond GAEC	Training in GAEC, food processing regulations, completing agri-environment payment forms. Advisory and extension services will include farm visits, support to obtain the credit (for example: participation at meetings with potential creditors), assistance for drawing up the documentation, monitoring the business plan implementation etc
Less favoured Areas	Any farmland in IACS in a designated Mountain LFA area (over 600m, or between 400-600 m with slope of over 15%)	Excluded if below 400 m, or below 600 m and average slope in commune is under 15%. 30% (1 m ha) of HNV grassland area (defined by Measure 214/1) is excluded in this way. Also excluded from eligibility for any area payments if: holding under 1 ha (in parcels of over 0.3 ha). More than 25% of parcels have scrub or rocks. More than 50 trees per ha in parcel.	Nothing beyond GAEC	
Non-mountain LFA	Any farmland in IACS in a designated Non-mountain LFA area (soil quality, agricultural handicap areas)	Excluded from eligibility for any area payments if: holding under 1 ha (in parcels of over 0.3 ha). More than 25% of parcels have scrub or rocks. More than 50 trees per ha in parcel.	Nothing beyond GAEC	

Natura 2000 payments	Any farmland in IACS in a designated Natura 2000	Excluded from eligibility for any area payments if: holding under 1 ha (in parcels of over 0.3 ha). More than 25% of parcels have scrub or rocks. More than 50 trees per ha in parcel.	Nothing beyond GAEC	
HNV grasslands	Any farmland in IACS in a designated grassland HNV area (Town Hall land-use records) must show more than 50% of the UAA in the commune registered as permanent grassland)		No artificial fertilisers. FYM under 30 kg N s.a./ha. Meadows: must be mown at least one per year, mowing after 1 July. Pasture: grazing under 1 l/u. / ha. No ploughing, rolling, reseeding.	
HNV grasslands non-mechanised	Any farmland in IACS in a designated grassland HNV area (Town Hall land-use records) must show more than 50% of the UAA in the commune registered as permanent grassland)	Excluded from eligibility for any area payments if: holding under 1 ha (in parcels of over 0.3 ha). More than 25% of parcels have scrub or rocks. More than 50 trees per ha in parcel.	No artificial fertilisers. FYM under 30 kg N s.a./ha. Meadows: must be mown at least one per year, mowing after 1 July. Pasture: grazing under 1 l/u. / ha. No ploughing, rolling, reseeding.	
Organic	Organic or in organic conversion, but not for grassland (vines, orchards, arable are eligible)	Excluded from eligibility for any area payments if: holding under 1 ha (in parcels of over 0.3 ha). More than 25% of parcels have scrub or rocks. More than 50 trees per ha in parcel.		
Diversification			Up to 70% funding for micro-enterprises in the non-agricultural sector in rural areas; Encouraging business initiatives especially by young people and women; Encouraging crafts and other traditional activities; Reducing level of dependence on agriculture	

Agro-tourism	Maximum 200.000 Euro/project. For non-profit public interest investments, 100% funding. 70% support for agro-tourism projects. 50% for other investments in rural tourism.	Requirements for 30-50% co-finance will prohibit small farmers from taking advantage of the measure.	To increase and improve the small scale tourism accommodation facilities; To develop the information and promotion tourism centres; To create leisure facilities in order to ensure the access to the tourism natural areas	
LEADER	Priority in selection should be given to: Territories with a population between 30.000 and 70.000 inhabitants; with a population density less than 75 inhabitants/km. sq., less favoured areas, Nature 2000 areas, High Nature Value areas (HNV)		innovative and cooperation actions, combining the objectives of several axes of NERD, addressing semi-subsistence farmers, young people, integrating environmental concerns, benefitting producer groups, associations, partnerships	