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Transylvania: biodiversity, living tradition and future prosperity

John R. AKEROYD[1]

Transylvania was for centuries a cultured, influential and prosperous region. Today, after decades of poverty and depressed rural economy, it is best known for its rich heritage of traditional rural life and biodiversity. Conservationists, by protecting the natural environment and assisting the economic development of farming communities, are working to protect and enhance the natural wealth of plants and animals. This richness was the basis for much of the region's former prosperity, particularly in the Saxon Villages area of south-east Transylvania. Most Saxons have now left, but their agricultural heritage can be a sound basis for future economic growth. For both people and nature, this should combine the best of traditional farming practices and innovative technology to achieve an enhanced rural economy that can provide a good livelihood again for farming families.

Key-words: *Transylvania, biodiversity, conservation, grassland, farming communities*

1. Introduction

In the past, Transylvania was a cultured, influential and prosperous region. Today, following decades of poverty, emigration and a depressed rural economy, it is best known for its considerable heritage of history, traditional rural life and biodiversity. This heritage had been under threat for some time, but accession of Romania to the European Union and rapid social change has made its conservation a more complex and urgent task. Over recent years the culturally and ecologically rich landscapes of Transylvania have attracted much attention from the conservation community in Romania and abroad, and several projects now combine the skills of agronomists, architects, biologists, geographers, sociologists and tourism specialists. Although my theme is Transylvania in general, I shall concentrate on the Târnava Mare area, part of the Saxon Villages region of south-east Transylvania, which is long famous for its impressive fortified churches, villages of 18th century-style houses, and relatively unspoilt hilly countryside. This paper is based on the experience of frequent visits over 15 years to the area and other parts of Transylvania as conservation strategist, field botanist and tour guide, working with Fundația ADEPT and other colleagues.

[1] Fundația ADEPT, jrakeroyd@gmail.com

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It is increasingly apparent that nature conservation, certainly where there is farming, requires much more than a study of plant and animal biology and ecology, for it is the communities who created the farmed landscapes whom we must first protect (Oppermann et al., 2012). The mission of Fundația ADEPT, an Anglo-Romanian NGO established in 2004 (Akeroyd & Page 2006, 2011, Akeroyd *et al*. 2014), is to address problems of rural development in Transylvania, on the one hand to conserve the natural wealth of plants, animals, habitats and soils, and on the other to assist in ensuring the economic future of sometimes fragile farming communities within this natural resource-rich landscape – a richness that once provided much of the basis of the region's former prosperity.

Transylvania is a largely rural region where agriculture is dominated by small family farms and smallholdings, with mainly pastoral but also mixed farming. Much of the terrain is hilly or mountainous, including the high Transylvanian Alps in the most southern part, the western slopes and foothills of the Eastern Carpathians and, in the west, the Apuseni Mountains. Most of northern Transylvania (Câmpia Transilvaniei) is an undulating plateau, while to the south the rolling hills and steep valleys of the Saxon Villages, roughly an area south of the Târnava Mare river and bounded by the cities and hinterland of Sibiu, Sighişoara and Braşov, form part of the Carpathian foothills. Indeed, all southern Transylvania can be described as sub-Carpathian.

The Saxon Villages and several other sub-Carpathian districts of Romania and elsewhere in Eastern Europe are not mountainous as such, but share features with the adjacent mountains. All the way along the Carpathian range, traditional farming communities have preserved rural ways of life mostly lost elsewhere in Europe. As in the Appalachians and other mountains worldwide, much of the countryside is remote and often economically deprived, with small, scattered villages (although some valleys are densely populated), an ageing population, poor communications, older forms of agriculture and often unsightly or toxic relics of former large-scale mining or mineral extraction, as in the Jiu Valley of Hunedoara county. The human landscapes of the Carpathian Mountains, which retain substantial forest cover and extensive wood pastures, are concentrated in the foothills and lower slopes (montane zones), but extend up into the coniferous forest zone, timberline scrub, mountain heath and grassland, and extend down – as in southern Transylvania – well into the adjacent lowlands.

Elsewhere in Europe too, hilly districts, peninsulas and islands remote from cities exhibit many of the characteristic features of mountainous areas. These and the mountains themselves can be seen as refuges and repositories of 'seed corn,' from where the plant and animal diversity and human crafts and traditions they frequently retain can potentially diffuse into wider regions. At the same time, mountain and foothill areas, blessed with natural resources, extensive high quality environments and impressive scenery, have considerable potential for conservation, regeneration and sustainable development.

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1.1. The Saxon villages of southern Transylvania

Transylvania is a multi-cultural region, to which Romanians, Hungarians, Roma and Saxons have all made a substantial contribution. This most southern part of Transylvania was for eight centuries dominated by the Saxons, who gave it a distinct identity. The 'Saxons' (*Saşi*), who originated from Luxembourg, Flanders and the Moselle Valley, arrived here from the late 12th century, founding at least seven towns (the so-called *Siebenbürgen*, a name German-speakers still apply to this region) and some 200 planned villages. Invited in by the Arpad kings of Hungary, rulers of Transylvania since the 10th century, they came to farm, defend the region from invading Cumans, Tartars and Turks, and provide a 'middle class' of artisans and tradespeople.

Their sturdy village houses, each one originally (and often still) a farmhouse, are built in neatly organised rows, often along a stream or several streams. Each house has, facing the street, an 18thcentury-style façade, often with stuccoed pilasters and other decorative motifs, and an arched gate large enough to admit a fully loaded hay-waggon into the cobbled yard. At the rear of the main house are outbuildings for animals and tools, and one or more capacious barns for the storage of hay. Behind the yard and buildings may be an orchard and tillage plots. These remarkable living units, survivals from the days of the earliest Saxon colonists, are themselves worthy of conservation, and comprise an integral element of sustainable rural development.

Traditionally the villages were self-contained communities, governed by a council not an overlord, and villagers would all join in tasks such as mending the cobbled sidewalks. At the heart of each village is a fortified church (*Kirchburg*), serving as spiritual centre, refuge and redoubt. Lutherans from the 16th century, the villagers put up with a religious and moral code that restricted personal freedoms, but remained relatively prosperous and safe, which was indeed rare for peasant communities in the rest of Europe. Trades flourished, such as those of the brewer, carpenter, miller, blacksmith and makers of wooden and metal tools. This well-ordered rural civilization has left a profound mark on the region (Akeroyd, 2006).

As well as village life, the urban culture of the Saxons was sophisticated, and Transylvania was certainly not the backwater it would become by the 20th century. In the 16th century, the region became a hotbed of religious discussion and diversity but also tolerance, since the people were by then under the jurisdiction of the Turkish Sultans, more liberal in matters of religion than the Catholic monarchs of Hungary. The Saxons adopted the Lutheran faith, and thus established Europe's most south-eastern Protestant community. A royal edict issued at the 1568 Diet of Turda guaranteed religious freedom for Saxons, Hungarians and Romanians, and during this period Ferenc Dávid founded Unitarianism (Christ without Trinity), still practiced in Transylvania.

In Sibiu, the fine town house and art collection of Baron Samuel von Bruckenthal (1721–1803), a native Saxon who became Governor of Transylvania on

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behalf of Empress Maria Teresa, bears witness to the wealth and high culture of the region during the 18th century. Bruckenthal's country house at Avrig, just south-east of Sibiu, has an Italian, French and even English Garden, the latter an informal park with trees and water features to mimic the Arcadian ideal, as was the fashion in English horticultural circles. It is remarkable to find such reminders of the Age of Enlightenment here in the foothills of the Carpathians, their backdrop the snowy peaks of the Transylvanian Alps. Another cultured nobleman and a protégé of Bruckenthal, Baron Sámuel Teléki de Szék (1739–1822), became Chancellor Transylvania and in 1802 passed his considerable library on to the city of Târgu-Mureş. A third distinguished Samuel, Samuel Hahnemann (1755–1843), met Bruckenthal at the royal Court in Vienna and accompanied him back to Sibiu as his secretary and physician. While in Transylvania, it appears he met a local physician who, in this biodiversity-rich region, was researching plant medicines. Following his return to his native Germany, Hahnemann developed homeopathy, in which so many remedies derive from plants.

The 19th century in Transylvania witnessed revolution, poverty and increasing emigration, a process that has continued to the present day. In 1920, under the Treaty of Trianon between Hungary and the Allied Powers, the region was united with Romania. At the end of World War II most Saxons were deported to Russia as part of war reparations and, although they did return after a few years, from then on many felt uneasy in Romania. During the 1980s financial incentives encouraged many to depart for Germany, an exodus that accelerated rapidly after the collapse of communism in 1990. Most of the Saxons have now left, shifting a once predominantly Saxon (90%) population to one in which typically Saxons make up 10%, Romanians 40% and Roma 50%. Much physical evidence of Saxon culture remains, but their real legacy is farmland nurtured for over 800 years.

1.2. The farmed landscape and semi-natural environment of southern Transylvania

Like the famous fortified churches, the Saxon Villages countryside is a significant element of the cultural identity of southern Transylvania and a major attraction for visitors (Akeroyd 2006). The area is, however, no rural museum but a dynamic landscape, in which farming communities live and contribute to the economy of the region. The topography comprises rolling hills and rather narrow valleys, the steeper slopes characteristically eroding and slumping. The underlying geology is unstable layers of marl or calcareous clay with some sandy strata and occasional volcanic ash or other deposits. The region is subject to earthquakes and domes of natural gas and salt pushing up from below ground add to land instability. Visitors comment not only on the picturesque villages – where farms, barns, yards and gardens blend into a tapestry of orchards, hop-fields, arable strips and grassland – but also the extensive woodlands, especially on higher slopes and ridges, and the copious wild flowers that

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conspicuously colour pastures (grazed) and hay-meadows (mown) from spring to autumn but especially at midsummer. The landscape retains an older land pattern of use: some 40% is deciduous woodland and wood pasture, mostly of oak and hornbeam, with some beech; 30% is grassland, both meadow and pasture; and 30% is arable tillage, although much of this has been allowed to return to fallow and may eventually revert to grass and, increasingly, scrub. This largely man-made mosaic of vegetation with varied management over space and time, with succession from old arable to grass, then to scrub and woods, has created ecological heterogeneity and gradients that have promoted the great richness of biodiversity (Dorresteijn et al., 2015). For example, the Saxon Villages countryside holds some 1200 species of flowering plant, a third of the total present in Romania, with about the same number of butterflies and moths (Laszlo Rákosy, pers. comm.).

Grassland lies at the heart of this farmed landscape. A long history and continuation of traditional, non-intensive management practices – mixed farming, little or no fertilizer input and low stocking densities – has allowed a great diversity of wildflowers and wildlife to survive, especially in the hay-meadows on the higher or steeper slopes, in one of the most extensive tracts left in Europe of High Nature Value (HNV) grassland (Akeroyd 2006, Akeroyd & Page 2011). These low-input, permanent grasslands still possess an abundance of wild plants and animals that have disappeared from much of the rest of Europe (Veen *et al.,* 2009). Grass remains the powerhouse of the rural economy, yielding meat, milk and cheese, and a range of other products such as honey, wild fruits for jam, and medicinal plants. The diversity of grasses and wildflowers in the sward, including orchids and especially 20–30 or more species of clover, dwarf broom, sainfoin, trefoil, vetch, and other legumes, provides quality feed for farm animals. The grassland is of enormous scientific interest, representing more or less intact traditionally managed ecosystems, including soils and soil micro-flora. Pockets of dry steppic grassland on south-facing slopes and steep hummocks or *movile* (Akeroyd and Badarau, 2012a,b), and damp grassland in valley bottoms, with relict mountain plants such as bistort (*Persicaria bistorta*) and globeflower (*Trollius europaeus*), are especially biodiversity-rich.

The diverse flora comprises a genetic treasure-trove for future breeding of fodder crops – some 60 of the plant species that occur in the Saxon Villages countryside are crop relatives (Akeroyd, 2003). The wildflowers are food and habitat for numerous insects and other invertebrates, birds and mammals, which contribute to the control of agricultural pests and maintain the ecological integrity of the landscape. Two birds of major international conservation interest, Lesser-spotted Eagle (*Aquila pomarina*) and the iconic corncrake (*Crex crex*) depend on this HNV grassland for survival. As well as their store of biodiversity, these traditionally managed permanent grasslands help maintain the ‘goods and services’ of a healthy and stable environment (Allen, 1995). They reduce or prevent soil erosion, especially in a geologically unstable area like the Saxon Villages, they lock up carbon, and they soak up rain and gradually release clean water into wells, streams

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and rivers, providing both flood prevention in wet periods and secure water supply in dryer periods. The wildflower-rich grasslands and the adjacent woodlands help generate income from tourism, as an ideal place for mountain bike trails, horse riding, walking, painting and natural history. Quality food products from such an obviously healthy environment and with a distinct regional identity are attractive to consumers able to pay premium prices.

While conservationists in Romania and elsewhere have tended to focus on areas away from human habitation, in Europe it has been found that traditionally managed, mixed farming landscapes may have higher levels of biodiversity than even wilderness (Hoogeveen et al., 2004). The Saxon Villages area is a remarkable example of such a landscape but retains as well, due to the low population density and plentiful woodland, brown bears and wolves, large carnivores usually associated with remote mountains. If farming communities can build a prosperous economy, combining tradition with innovation while maintaining substantial biodiversity, this landscape could be a model for sustainable rural development in Europe. Nature conservation must not be seen to conflict with the aspirations of local people and "misconstrued as a hindrance to economic prosperity, apparently disenfranchising the poor by denying them the right to improve their livelihoods" (Githiru, 2007). This is the difficult task that faces conservationists in Transylvania.

2. Materials and methods

Largely anecdotal evidence had indicated that the Saxon Villages possessed a considerable richness of biodiversity, much of which was not catalogued or studied, certainly in recent decades. To obtain the necessary data, in 2004–6 Fundația ADEPT contracted a group of researchers from Transylvanian universities, NGOs and independent scholars from Transylvania and the UK to record and assess vegetation, higher plants, freshwater fauna, birds, large and small mammals, reptiles and amphibians, and beetles, butterflies and moths, emphasizing those species and habitats listed on Annex I (habitats) and Annex II (species) of the European Union's Habitats Directive. These data were passed to the Romanian Government database for the EU Natura 2000 project to establish listed sites for biodiversity as part of an EU-wide network of Sites of Community Interest (SCIs).

Subsequent research in an 85,000 ha area within the Saxon Villages region, now known officially as Târnava Mare SCI, has involved the production of maps and databases of land use and habitats, rare animal and plant surveys, experimental mowing sites, designation of micro-reserves, gathering agricultural and sociological data from villages, and assembling information for farmers to assess HNV indicator plant species in their grassland.

From the start ADEPT has been unusual among most nature conservation organizations in putting farming families and communities at the heart of its

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activities. Biodiversity is but one facet of its holistic, landscape-scale conservation strategy. To address the social and economic problems faced by farming families in the Târnava Mare SCI, a range of practical projects has been initiated, and these continue to be developed: new or restored milk-collection points, building and equipping a demonstration 'food barn' in which local people can make cheese, jam and other products to EU standards, training in milk hygiene, promoting the marketing of food products, running courses on hospitality and tourism, providing signage and publicity leaflets for local people and visitors, involvement in local festivals, conferences and other events, and laying out cross-country cycle trails to encourage visitors. The ornithological and environmental NGO Milvus, based in Târgu-Mureş, has taken the conservation message into schools and arranged summer nature camps for children. The conservation programme is always linked to economic benefits and sustainable livelihoods.

Above all, ADEPT has helped farmers apply for and obtain funding from agri-environment schemes, both in the period leading up to Romania's EU accession and in subsequent years. More recently this has involved, foe example, mobile phone apps for farmers displaying information about when to submit paperwork. ADEPT's staff and collaborating NGOs have also worked with Transylvanian and national government agencies to adjust legislation affecting farmers and producers. The project has exchanged information and remained in close contact with other conservation and rural development projects in Romania, for example the mountain grasslands of the 'Pagan Snowcap' district near Miercurea Ciuc, east of the Saxon Villages, and in several European countries, especially Ireland, Spain and Slovakia.

3. Results and Discussion: addressing the conservation problems

Following Romania's accession to the EU, the Târnava Mare SCI, which includes a substantial portion of the Saxon Villages, was formally gazetted on 1 January 2007. The 85,000 ha area of the Târnava Mare SCI lies within the Continental climatic zone and is the largest Romanian SCI outside the high Carpathians. It is mainly farmland (with semi-natural managed forest) and includes 35 villages with some 21,000 human inhabitants. This is unusual in Romania, where most SCIs are in unpopulated wilderness areas or on small parcels of marginal land.

Considerable problems have beset the agricultural economy and society of the Saxon Villages since the final departure in the 1990s of almost all Saxon farmers. Their last major exodus coincided with the difficult social transition after the collapse of communism in Romania and the emergence of a market economy. The rapid economic transition of Romania following EU accession in January 2007 only added to the problems of semi-subsistence farming. For 25 years or more, the biodiversity landscape and biodiversity of Târnava Mare has faced a series of threats (Table 1), with knock-on effects on the farming communities. Farming traditions

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have been eroded without their being adequately replaced by any co-ordinated rural development strategy, and one that takes biodiversity into account.

The farming communities of Târnava Mare are the key to conserving this area and it is essential that biodiversity conservation does not impede sustainable rural development. Indeed it should be an essential part of an enhanced rural economy and the provision of a good livelihood for farming families. Although these communities are at some disadvantage in the modern commercial world, they provide valuable stewardship of the land, have considerable natural and human resources and skills, and are in a strong position to exploit market niches for good-quality food products. For both people and nature, it is important to combine the best of traditional and long-standing farming practices – building on centuries of careful husbandry by the Saxon people – with the latest and best available, innovative technological solutions. Some of these are outlined in Table 1.

• General collapse of the rural economy and of the traditional link between landscape and livelihood.
• Intensification of pasture management, with high sheep stocking rates, nutrient over-enrichment and over-grazing.
• Increase in sheep numbers at the expense of the communally grazed cattle herd, damaging hay-meadows by grazing and losing the incentive for maintaining them.
• Abandonment or reduction of established land management practices such as regular mowing of hay-meadows or cutting and burning of scrub encroaching on slopes.
• Limited public awareness of the rich ecological, cultural and potential economic value of the area and its special landscape.

Table 1. The main threats to biodiversity and rural development in the Saxon Villages resulting from changes in traditional farming practices.

3.1. Hay mowing

Traditionally hay has been cut by hand with long-bladed scythes. The scythe men and women of the villages are strong, skilled and efficient; they exhibit enormous stamina and, starting at dawn, can cut and rake large stands of mowing grass in a few hours. For small, steep or awkwardly placed patches, they do the job better than a machine. For larger and flatter surfaces, farmers increasingly use small tractors, also motorized Allen scythes, especially for cutting leys of lucerne (alfalfa) or, now much less frequent, domesticated red and alsike clover. Even where mechanization

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is limited and manual labour required, younger men increasingly seek work outside the villages, farm work of this kind being regarded as excessively hard labour in today's world. Those scythe men who remain command high wages unaffordable for small farmers. As a result, large areas of hay-meadow, especially at a distance from villages and on steeper slopes, are left uncut for one to several years. These can rapidly revert to dense scrub or, in the case of hay-meadow that has developed on former arable land, be colonized by coarse weeds such as reeds (*Phragmites australis*) and teasel (*Dipsacus laciniatus*), or invasive New World aliens such as golden-rod (*Solidago* spp.) and milkweed (*Asclepias syriaca*).

To address the shortage of traditional mowers and the problem of uncut hay-meadows, ADEPT has purchased or received on loan from the manufacturer four Breilmaier hand-mowing machines of advanced design. The rollers on which these machines move do not compact the soil, and their rubber spikes help hold the machine to the ground even on a steep slope. A low centre of gravity also prevents the machine from tipping over; and the long cutting bar can be extended further. Unfortunately this equipment is expensive, but when shared and used communally is already having a major impact in some localities, with hay-meadows that had been partly abandoned now being cut again and restored to favourable condition. This both yields a high quality agricultural product and conserves the diverse flora and fauna of the hay-meadows.

3.2. Cow milk collection

Cattle have always been central to the economy of the villages, but in recent years numbers have fallen, their place taken by substantially increased numbers of sheep. A grant from Innovation Norway has made possible the establishment or renovation of milk-collection points in several villages. This has not only encouraged milk company tanker lorries to make regular collections but has also empowered farmers to obtain a fairer price for their milk. At the same time, the smallest producers (sometimes the milk from one or few cows may be a household's only income) are able too to sell their milk at the collection point. A small laboratory facility at each collection point allows for the testing of milk samples for cells or bacteria. Also incorporated is a tank and apparatus for cheese-making to absorb any excess milk production. In Saschiz the milk-collection point further benefits the local community by being sited in a restored historic building on the high street, adding to village pride and enhancing tourism potential.

New milk-collection points have already proved their value. In Daia, south of Sighisoara, the old collection point had closed, farmers were selling their cows and the village economy had more or less collapsed. After the new collection point was installed, cows began to return. The milk-collection initiative helps this small farming community, and gives farmers an incentive to maintain extensive dry grassland hay-meadows in the parish. These are of particular scientific importance,

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especially steep marl hummocks or *movile* where the flora includes several orchids and a large population of red viper's-bugloss (*Echium maculatum*), listed on Annexe II of the EU Habitats Directive.

As well as conventional cattle, water buffalo – present in Transylvania since the late medieval period – were once a major element in the economy of the Saxon villages. At least two commercial farming projects, including one at Messendorf near Saschiz, have brought these animals back into the rural economy, expanding buffalo numbers for the production of mozzarella-type cheese, which has considerable and increasing commercial potential.

3.3. Sheep milk production

Sheep are grazed on the extensive pastures on the hills, perhaps the most ancient way of life to survive in this countryside. Even the shepherds' sticks are themselves a relic from antiquity, made in the traditional manner from the wood of cornelian cherry (*Cornus mas*), hardened and straightened over a fire – a link with the heroes of ancient Greece, whom Homer describes as having spears with cornelian cherry shafts. Groups of shepherds live from April to October outside the village in a *stâna* or encampment, with sheepfolds and huts for milking and cheese production. Pigs too are raised at the *stâna*, fattened on whey from the milk. These temporary settlements are moved each year to avoid damaging the pastures, a rotation that also enhances biodiversity. Some plant species such as Deptford pink (*Dianthus armeria*) benefit from regeneration of pastures after temporary over-grazing and enrichment.

This traditional way of life and food production was threatened by the Romanian government's insensitive application of EU food hygiene rules. However, ADEPT was able to lobby the Ministry of Agriculture for less stringent control procedures for traditional methods of cheese preparation. A current project is to modernize, but not replace, the *stâna* by the provision of small solar panels to generate electricity and hot water, encouraging survival of a traditional but still valuable element of farming practice.

3.4. Excessive sheep numbers

Efforts are underway by ADEPT and other parties to modify some of the agri-environment payments to farmers that promote excessive numbers of sheep. Grassland payments have caused an expansion of pasture at the expense of meadow, and sheep numbers have increased greatly at the expense of cows. Sheep are cheaper to raise and maintain in large numbers, their cheese and meat fetch high market prices and, more significantly, EU agri-environment grants are now available from the Ministry of Agriculture to support grazing. Some shepherds now earn a substantial income from these subsidies alone. The number of farmers with sheep has risen, leading to overgrazed and damaged grasslands, and there is also a trend to

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erect permanent buildings on pastures, breaking the old grassland regeneration cycles that kept the land in good heart. As well as damaging the character of the landscape, these structures are often associated with resown grass and introduced weeds, a threat to the long-term survival of a habitat that is not only ecologically balanced and sustainable but an economic asset for the farming communities.

Until recent years, villages and farmers always kept pasture (which was, and largely remains, communal, allocated by the mayor) and hay-meadow firmly separate. Although cattle were pastured on some meadows in late summer, grazing sheep were always restricted to the pastures and arable fallow. With the rise in sheep numbers, this grassland designation has broken down in many localities and, especially by the end of a dry summer and early autumn, large tracts of countryside, pasture and meadow look 'chewed'. The land can recover in the short term but if this trend continues grasslands will permanently damaged.

The other effect of over-grazing is excessive enrichment by dung, coupled with trampling and soil-disturbance, leading to the spread of coarse or invasive weeds. One of the main threats identified in the early stages of research in the area was the possibility of loss of grassland plant diversity through over-enrichment by fertilizers. In practice, however, fertilizers are too expensive for almost all the local farmers, but the enrichment by sheep is likely to have a similar effect on wildflower-rich hay-meadows.

3.5. Quality food products

The economy of the Saxon Villages is still largely dependent on agriculture, and sheep and goat milk are made into plentiful cheese for local consumption (Akeroyd, 2006). This and pork products are the characteristic foods of the farming communities and continue to be manufacured in the traditional manner, with several types of soft cheese (*telemea*, *caş*, *brânză de burduf* and *urdă*) made at the *stâna*. To increase the range of cheeses and to attract more consumers, some producers add herbs and other flavourings to the cheese. The other village staple foods, pork and pork products – *slănină* (smoked fat bacon), *şuncă* (smoked ham) and *caltaboşi* (liver-sausage) – are also popular with visitors, and have a ready market in towns in Romania.

Farmers' wives and the other village ladies have always made jam in their kitchens for themselves, family, neighbours and friends, but now many make jam (and pickles) for cash, which is then available for them to improve their daily domestic lives. Fruits collected from the wild include blackberries, sour and cornelian cherries, cherry plums, raspberries, rose hips and 'forest' strawberries. Walnut jam is also made, and rhubarb jam from the Saxon Villages has won a Slow Food award in Italy. Rhubarb, not a fruit as such but the leaf-stalk of a plant in the dock family (*Polygonaceae*) that favours cold winters and clay soils and is mostly grown in Britain, Germany and the USA, is a Saxon speciality and most village

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gardens have one or more clumps. Walnuts are widely grown in the villages, often as belt of trees at the top of the land behind the house, and the fruits are widely eaten raw, or chopped or ground and used in baking. A neglected product today is walnut oil, which fetches high prices and was formerly produced in the villages.

Another important food product is honey, especially 'polyflora' honey from the meadows, with their scores of different nectar-rich wildflowers, including clovers, wild mints, woundworts and sages, and other plants. The great potential of this resource, an international food commodity of which there are periodic regional or global shortages, has not so far been fully realised, although importers of luxury goods now sell Transylvanian honey in small quantities in the UK.

Medicinal plants are another important grassland product. Many are used by local people: for example bunches of St John's-wort or Johanniskraut (*Hypericum perforatum*), as a remedy for stomach ailments (rather than depression, as in Western Europe and elsewhere), and centaury (*Centaurium erythraea*), a general tonic mentioned by Chaucer in the 14th century, can be seen in village houses. A refreshing 'Saxon tea' of infused St John's-wort sprigs, lime flowers and mint is widely drunk. In the mountains, Arnica (*Arnica montana*), which grows in lime-poor meadows and is used to treat muscle pain, has long been gathered – and often over-collected – for the national and international trade in medicinal plants. An on-going project has investigated the sustainable use and cultivation of this plant in the Apuseni Mountains (Michler, 2007). Autumn crocus or meadow saffron (*Colchicum autumnale*), a widespread medicinal plant that tints damp meadows with lilac in the autumn, is not gathered, perhaps because it is so poisonous. First mentioned in ancient Greek texts, the active principal colchicine is still employed to treat gout, and feasibility of its collection might repay future study.

ADEPT has published and distributed a booklet, available in Romanian, Hungarian and English, to show and encourage rural food producers how to work within EU guidelines; and, equally important, to show food hygiene inspectors that more flexible rules for small-scale producers have been agreed by the authorities. This booklet is available in Transylvania and elsewhere in the country.

3.6. Building up agro- or eco-tourism

Transylvania is attracting increasing numbers of visitors who come to experience the region's unspoilt countryside, traditional villages and historical heritage. Cities such as Sibiu, Brasov and Cluj, more recently Sighişoara, and more rural districts such as Bran and Poiana Brasov, have a long tradition of tourism, but less developed parts such as the Saxon Villages are only beginning to realise the potential of this source of income. Tourism, especially agro- or ecotourism, can bring considerable benefits to these rural communities, as long as visitor numbers are not excessive and tourism is organized at a local level, making full use of town and village guest houses, cafés and restaurants, tour guides, and bus and taxi companies. Tourism is a valuable

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adjunct to other conservation initiatives but cannot by itself be the motor for an adequate level of economic growth: there has to be viable economic life based on farming, trade or other commercial activity. Nevertheless, in the Saxon villages especially, renting rooms to visitors, and feeding them, is fast becoming a more important aspect of village life, not least as an outlet and 'shop window' for locally sourced food and drink.

In general, literature for visitors is scanty, although a number of publications exist on the Saxon fortified churches, including maps and illustrated guidebooks. Sibiu-based architect Hermann Fabini, who has made a life-long study of these churches, has published an authoritative summary, with drawings and plans, in both Romanian (Fabini, 2009) and English (Fabini, 2010). A short, illustrated book to introduce *The Historic Countryside of the Saxon Villages* (Akeroyd 2006) has sold more than 4000 copies in English, and more than 2000 copies in Romanian have been distributed free. ADEPT has also made available to visitors free leaflets and booklets on grassland habitats and grassland wildflowers, butterflies and birds. A step forward has been the publication of an illustrated field guide to the wildflowers of Transylvania, available at present only in German (Speta and Rákosy, 2010).

ADEPT introduced a simple means to attract visitors to Saschiz, by erecting signs at the village entrances on the main road with symbols denoting the presence of historic monuments (including designation of the Saxon church and citadel as a UNESCO World Heritage Site), accommodation, and food and visitor information. Data recorded at the information centre (a joint venture of Pro Patrimonio and ADEPT) and Saxon church show visitor numbers to have risen from a few hundred in 2004 to over 9,000 today, with a sharp rise after the signs were erected in 2007.

Cycling, in the guise of mountain biking, has recently become a major element in attracting visitors to the Saxon Villages. Funded by Innovation Norway, ADEPT's Cornel Stanciu organized the construction of *c*.100 km of cycle paths linking villages, often across valleys and through woodland, taking more direct routes than provided by the existing minor road network, which tends to follow the main valleys. This has attracted cyclists from Romania and further afield in Europe to races and rallies, based in villages such as Viscri. Interpretation boards on cycle routes alert riders to biodiversity and other features of the countryside, and a mobile phone app provides details of village accommodation and facilities. The result has been an increase in visitor numbers, especially those staying in village guesthouses and other rooms to rent, with extra trade for bars, cafés, craft shops and other small businesses. In several villages younger entrepeneurs have established guest-houses that incorporate traditional materials and styles into practical modern architecture and serve good quality local food. These increasingly attract Romanian as well as foreign visitors.

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4. What might be the future for these landscapes?

We need to continue to address how best to conserve the remarkable HNV grasslands and farmed landscapes of southern Transylvania, and the farming communities that support them, in the face of profound economic and social change. Conservation in Târnava Mare and elsewhere needs to be directed across the wider countryside rather than within strict nature reserves. Not only might these be perceived unfavourably by local people, but also much of the biological richness of the area derives directly from and depends upon continuing non-intensive farming (Akeroyd and Page, 2006; 2011). Contrary to much accepted nature conservation practice, it is becoming clear that rather than protecting a few sites of particularly rich or semi-pristine biodiversity as islands in a farmed landscape, it may be better to encourage more extensive habitats of moderate to good conservation status to buffer the landscape. For example, particular rare species such as corncrake survive equally well if vegetation is not particularly plant species-rich, provided their habitat is sufficiently large and varied – as it still is over much of Transylvania. They do not require, as some ecologists have suggested recently, special agri-environment measures that might restrict or impede long-established farming practices.

In the Saxon Villages, the whole social fabric is changing, with larger farms emerging, often situated outside villages, perhaps developed around an existing sheepfold complex or other farming facility. Mechanization is spreading and many farmers now own or have access to tractors and other machinery. Some maintain private rather than the traditional communal herds of cattle, and, as noted above, sheep numbers have often increased dramatically, frequently to the detriment of the countryside. Some of the villages are much altered, becoming pockets of affluence where old rhythms of country life have moved into a quite different gear.

For example, the last 15 years have witnessed profound change in Viscri, a village of some 400 inhabitants, now well known nationally and internationally. Even 10 years ago there were few motor vehicles; now one sees plenty of cars, even sports cars, and large tour buses. Few local people today keep the poultry that used to graze the greens along the village streets (the grass is now strimmed!), and ruderal weeds such as stinking goosefoot (*Chenopodium vulvaria*) and old medicinal herbs such as motherwort (*Leonurus cardiaca*) that must have been a feature of waysides for centuries, have all but disappeared. The new, tidy Viscri is starting to resemble a village in England such as Broadway in the Cotswold Hills, a district of rolling limestone hills, farms and beech woodland superficially similar to the Saxon Villages. Here roadside greens are neatly clipped, the inns are smart, and wealthy incomers and weekenders have replaced indigenous farmers and farm labourers.

The poet Laurie Lee (1914–97) grew up in that area a century ago, in the small village of Slad. As he recalled in *Cider with Rosie* (Lee, 1959): “I belonged to that generation which saw, by chance, the end of a thousand year’s life. The change came late to our Cotswold valley, didn’t really show itself till the late 1920s; I was

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twelve by then, but during that handful of years I witnessed the whole thing happen. Myself, my family, my generation, were born in a world of silence; a world of hard work and necessary patience, of backs bent to the ground, hands massaging the crops, of waiting on weather and growth; of villages like ships in the empty landscapes and the long walking distances between them; of white narrow roads, rutted by hooves and cartwheels, innocent of oil or petrol, down which people passed rarely, and almost never for pleasure, and the horse was the fastest thing moving."

Visitors to the Saxon Villages over the last 15 years or so will recognize this evocation of a way of life changing substantially in a short period. Some things remain the same: despite everything, the economy of the Saxon Villages still depends almost entirely upon agriculture, although only dairy farming is at all commercially developed. Country skills such as those of the blacksmith and basket weaver remain, but lack of capital investment and poor marketing hampers the development and threatens the survival of small craft-related enterprises.

Social change is inevitable, but the *direction* of rural development is the key to the future. With this in mind, and looking ahead, a research group led by ecologist Joern Fischer has assessed the landscape of Târnava Mare as it is today and might be in the future. This international, multi-disciplinary group has postulated four very different scenarios for rural development and economic growth (Hanspach et al., 2014). To summarize (Table 2):

1.	**'Our land, their wealth'** *Policy*: pro-economy but low emphasis on the environment Low ability of local people to capitalise on opportunities
2.	**'Prosperity through growth'** *Policy*: pro-economy but low emphasis on the environment High ability of local people to capitalise on opportunities
3.	**'Balance brings Beauty'** *Policy*: equal emphasis on both the environment and economy High ability of local people to capitalise on opportunities
4.	**'Missed Opportunity'** *Policy*: pro-environment but low emphasis on the economy Low ability of local people to capitalise on opportunities

Table 2. Four hypothetical scenarios suggested for potential future direction of rural development in southern Transylvania (after Hanspach *et al.,* 2014).

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It is hoped that, for Târnava Mare and for Transylvania an enhanced rural economy will again be able to provide a good livelihood for farming families and a sound basis for future economic growth, in whichever way development moves. However, it would be tragic, and in the long-term a badly missed opportunity, to lose that which is unique and special in rural Transylvania. It should be possible to rebuild strong links between landscape and livelihood, nature and society, not by trying to preserve or recreate the past but by emphasizing ecosystem 'goods and services' as direct benefits to be derived from farmland (Dorresteijn et al., 2015).

Option 1 is similar to what we have seen in an emerging nation such as China. There economic growth has indeed been spectacular but at terrible cost to the environment and, although many once poor people have benefitted in the short term, it is ultimately a relatively small section of the population that will reap most reward. Thus Option 2, which one can call the 'West European' model, is an improvement but again the environment has suffered, its bounty and benefits perhaps lost for all time. Option 4 is an almost militantly Green, 'hippy' model, which some conservationists have supported. Alas, nobody gains if there is no viable economy – as has been the case over much of rural Transylvania in recent years.

Option 3 – that of sensitive, sustainable rural development – provides an ideal situation, but one that will be hard indeed to achieve, requiring considerable effort, determination and creative thinking from the Romanian government and other decision-makers. Nevertheless, it is what we conservationists need to strive towards in Transylvania if we are to save at least part of its remarkable landscape, biodiversity, cultural treasures, skills of local people and intangible sense of place.

At least one rural area not far from Târnava Mare has had a glimpse of what might happen if the needs of the environment and sustainable development for local people are ignored completely. Roşia Montana, a village and district of the Apuseni Mountains of western Transylvania, has seen extensive gold mining from pre-Roman until modern times. In recent years a plan to excavate a huge new open-cast mine, fill a lake held back by a tall dam for extraction tailings (a similar structure in northern Romania collapsed and polluted down into the Danube), destroy complete mountains, historic villages, churches and cemeteries, and effectively eliminate a whole rural society, provoked widespread controversy and protest by local people, students and conservationists locally, nationally and internationally. Described by the mining company and their consultants, including biologists, as a 'destroyed landscape', the area was perhaps the most interesting landscape I myself have visited in Transylvania, with rare flora and vegetation, alongside rare ores and minerals, ancient buildings (both vernacular and classical), remarkable Roman industrial archaeology, a combination of forestry, farming and mining as found in Bronze Age SW Ireland, and, most of all, a profound sense of place (Akeroyd, 2012). After years of bitter dispute, the mining company having spent a fortune on media publicity about an improved future for local people (many of whom were never convinced), only in 2015 did the project collapse, rejected by the Romanian courts and government.

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Clearly, Roşia Montană was an extreme example, but it would be tragic if the ancient heritage of biodiversity and landscapes that have survived in Transylvania until the 21st century were to be swept away or irreparably damaged with consequent loss of the region's precious, unique cultural identity. The Saxons' impressive agricultural legacy should form part of a sound basis for future economic growth, and conservationists can help both people and nature by demonstrating the need to combine the best of traditional farming with innovative technology. In this way, sustainable development and an enhanced rural economy may again provide a good livelihood, once again linked to the landscape, for farming families in Transylvania.

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