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Agrobiodiversity Conservation in the Carpathian Mountains: Final Report – Phase II, 2005 - 2008

Review

Like the Alpine region, the Carpathian Mountains are home to numerous traditional agroecosystems in which old domestic breeds and cultivated plants have survived right up to today. This agrobiodiversity is however at risk – particularly since the fall of the Iron Curtain and the rapidly accelerating switch to western farming practices. Back in the 1990s, the SAVE Foundation and the Monitoring Institute for Rare Breeds and Seeds launched the first in a series of research tours to the various Carpathian states to gain an overview of the surviving traditional agrobiodiversity in the area. Backed by the Swiss Environment Office (BAFU, formerly BUWAL) and the Basel-based Gsell Foundation, this **first phase** of the Carpathians project was completed in 1999. It culminated with a three-day workshop in Suceava, Romania and the publication of a highly acclaimed report (Rare Breeds and Plant Varieties in the Carpathian Mountains – Monitoring and Conservation Strategies, ISBN 3-907866-60-6) containing the first available documentation on the need for action in the Carpathian region. At the workshop, some 30 experts from five nations discussed the problems of agrobiodiversity conservation in the Carpathian Mountains and agreed a list of priorities for the future. A small network of experts was formed which UNEP then used to involve the SAVE Foundation in drafting the Carpathian Convention signed in Kiev in May 2003. Its Article 11 on Cultural Heritage and Traditional Knowledge takes in agrobiodiversity conservation.

Given the success achieved in the first phase and to foster conservation of biodiversity in the Carpathians, BAFU pledged further funds at the end of 2004 to enable the **second phase** of the project to go ahead. Interim reports documented activities in 2005 and 2006. These largely involved:

- Identifying and contacting stakeholders and building a stakeholder network
- Conservation of neglected fruit and berry varieties
- Monitoring of lost livestock breeds

In cooperation with its Slovakian counterpart Agrogenofond and the International Plant Genetic Resources Institute (IPGRI)

in Macerese, Rome (now Bioversity International), the SAVE Foundation and the Monitoring Institute helped organise the international Traditional Agro-Ecosystems conference held in Nitra, Slovakia in September 2005. The conference provided key knowledge from a higher-level perspective and motivated stakeholders to take further action.



With regard to fruit and berry varieties, two pilot projects were launched which (to use a fitting idiom) are now beginning to bear fruit:

- A specimen collection of 50 old plum varieties and upwards of 150 berry and wild fruit varieties were planted (see photo) in the White Carpathians (South Moravia). This model project proved so successful (see below) that similar variety collections have since been planted in other Carpathian countries.
- Because the vast number of names and synonyms for fruit and berries obstructs effective project-based work, a multilingual register was created to aid cross-border cooperation and ease language barriers. Selected pomologists in the respective countries were commissioned to list the names and synonyms, group them and then enter them into a database which would be made freely accessible to interested parties via the internet. Both Bioersity International and the GFU for Underutilized Species showed great interest in this new approach. After much trial and error, a solution was eventually found to the technical problem of displaying Latin and Cyrillic characters on the same website.



In the case of livestock, the large work area involved was deliberately restricted to the endangered and 'lost' breeds identified in the first phase of the project. In particular, the situation concerning Hucul horses and Carpathian buffalo was revisited. In Carpatho-Ukraine and in Romania, subsequent research was stepped up on lost breeds of Stocli pigs and Mocanitsa dwarf cattle (*rasa de munte*).



missing Stocli pig in Romania

The search for surviving Valachian dwarf cattle (such as Tatra cattle) was halted when a visit to the area showed that the last surviving animals we had found in Slovakia's Osturna region in the 1990s had since disappeared. This situation again underlines the urgent need for action.

For language and logistical reasons, the Carpathian Mountains were divided into the Slavic-language northern region and the Romanian southern region, which in geographical terms constitutes almost half of the overall area. Given that the Ukraine is now the only Carpathian state that cannot rely on support from the EU, the work performed in the second phase of the project largely focused on Carpatho-Ukraine (particularly the Transcarpathian region to the south).

Annual Reports 2007 and 2008

Stakeholder Network

To give stakeholders in the Carpathian Mountains an opportunity to meet each other and get to know NGO structures in the national organisations belonging to the SAVE network, SAVE chose to hold its annual meeting in 2008 in centrally located Kozard in the Hungarian Carpathians. The outcome of the meeting was as follows:

- The work performed to date was declared a success, as was the division of the region into two main working areas – the Northern Carpathians and the Southern Carpathians.
- For Phase 3 of the Carpathians project (from 2009), priority will be given to developing a Project 3a to cover the more advanced activities in the Northern Carpathians. The project proposal will then be submitted to the competent authorities together with an application to for cohesion funds. Drawing on the experience gained with the neighbouring project and in line with the country's specific needs, a Project 3b for Romania will be developed in parallel.
- To promote and secure the Carpathian network, SAVE Foundation will create a Carpathians Network as part of the Regional Networks section of the AgroBiodiversity.Net website (see www.agrobiodiversity.net/regional/). As with the existing Alpine and Balkans networks, Carpathian stakeholders will be able to use the website to announce events and news, upload conference outcomes and presentations, and publish information about their working groups and members. Working groups will feature in the site menu structure and will also have the opportunity to log into a secure, members only area of the website.
- As an overarching, sustainable conservation model for endangered domestic breeds and cultivated plants, a network of Arche (Ark) centres (Ark farms and variety collections) will be set up in the Carpathians.

Fruit and Berries

At the end of 2006, the register contained 10,000 names and synonyms for upwards of 2,500 apple varieties in six different languages. That figure has since risen to over 18,000 names and synonyms. Each name is supplemented by additional information and verified with a source reference. The register is currently being extended to include plums, damsons, greengages and mirabelle plums. It is already available in English, French, German, Czech, Polish and Russian, and work is now in progress to add Slovakian and Ukrainian sections. A Romanian version is also planned.

Thanks to the operator's huge efforts, the variety collection held in Bojkovice in Moravia's White Carpathians is proving highly successful. It comprises some 150 berry and wild fruit varieties, 50 plum varieties and a comparative collection of common medlar (*Mespilus germanica*, see photo). Drawing on the experience gained with the specimen collection funded by the project, the collection operator has used its own funds in the past two years to graft no less than 12,000 trees with old varieties and now supplies them to interested parties to trigger a very welcome snowball effect.



Encouraged by the successes achieved in Moravia, a collection of Transcarpathian fruit varieties is now being planted in Bakta (see below). Poland, Hungary and Slovakia are each to receive at least one further collection of regional varieties.

Focus on Ukraine

In the 1960s, the Agricultural Institute in Bakta (Beregovo District) inventoried the old, regional fruit varieties in the Transcarpathians. As a recently conducted fact-finding mission to the region revealed, only about 30 of the 80 apple varieties and 20 of the 30 pear varieties identified back then are still in existence. Urgent action is also needed in respect of plums, cherry plums and walnuts. Thanks to the Carpathians project, a specimen collection similar to the one in Moravia is now being established in Bakta, with old, Transcarpathian fruit varieties. Back-up duplicates of all the varieties will be kept in two other (satellite) collections. At least three specimens from each variety will be kept at each location. This sub-project runs from 2008 to 2010.



During a project and training tour of the Transcarpathians in June 2008, focus was placed on the development of Hucul horses and Carpathian buffaloes. Hucul horses originate from the Ukrainian Carpathians. In contrast to those in neighbouring countries, these horses have been neither cross-bred nor rebred. They represent the original typus, with partial Zebra-like markings on the legs and a dark dorsal stripe – both of which are signs of primeval horses. Our Ukrainian source, who in 1998 began buying up displaced Hucul horses to create a new nucleus stock, now has 32 breeding mares and one breeding stallion. In cooperation with three likeminded individuals, he has since founded a breeding association whose 120 animals can now be officially registered. He has set up his farm to serve agro-tourism and wants to make it into an Ark centre. Apart from his Hucul horses, he keeps a number of Carpathian buffalo and Carpathian mountain sheep, and plans to open a branch of the Bakta fruit varieties collection.



Numbers of Carpathian buffalo are on the decline although they are still being bred. While four breeding groups with some 65 animals existed ten years ago, today there are only three breeding groups comprising a total of 35 animals. New blood from neighbouring Romania is urgently needed. Interest in the buffalo is evident both among the local population and within the administration of the nearby biosphere reserve, which would like to set the buffalo out to graze on marginal areas. A breeding and replenishment plan has been developed in conjunction with a newly established association which

aims to promote breeding of Carpathian buffalo in the Transcarpathians. Clarification is still needed, however, regarding the importation of animals from Romania. Because Romania has crossed some of its Carpathian buffalo with Indian Murrah buffalo (via a Bulgarian breeding programme), care must be given to choosing only pure-bred Carpathian buffalo. The Transcarpathian breeding programme will be integrated into the new South-East European Water Buffalo Network, which is part of the SAVE-Monitoring Institute Balkan Project.

Focus on Romania

Despite an intensive search for primeval Stocli pigs, no remaining population has been found to date. The competent authorities assume they have become extinct. But we refuse to give up our search for a relic population, especially as a few specimens of the Moganitsa dwarf cattle which were also officially declared extinct have since been found in the south-western Carpathian region. The adjacent photo shows one of the animals, a small, robust bull.



Romania possesses comprehensive documentation (pomologies) on fruit and berries. The issue at hand, however, is the extent to which the old varieties are still in existence. An ethnic German Romanian is currently working on inventorying at least partial areas of the region and on identifying the need for action. In cooperation with this individual, a specimen collection will be established similar to the one kept in Bojkovice.

Ark Centre Network

A network of Ark centres is currently being created, whose northern section includes at least one animal Ark and one cultivated plant Ark in each Carpathian state (CZ, PL, SK, HU and UA). These publicly accessible centres are already included in the European Arca-Net, an open access web portal operated by SAVE which lists institutions that keep endangered livestock breeds or rare cultivated plants (see: <http://www.arca-net.info>).

The creation of a rescue station network was excluded from the Carpathians project. Instead, it will be included in the ELBARN (European Livestock Breeds Ark and Rescue Net) project which is largely funded by the EU Commission as Project No. 66 in the AGRI GEN RES programme (with cofinancing from Switzerland for non-EU member states). ELBARN will provide rescue centres to allow the emergency relocation of genetically important stocks of endangered livestock breeds (e.g. upon the death of an owner or in the event of an outbreak of animal disease).

Outlook / Sustainability

The now completed Phase II of the Carpathians project was successful in establishing a sustainable stakeholder network at all three levels: breeders, universities and administrations. Ideally, the network will be expanded and intensified in a third project phase. Great potential is seen in this regard in the Ark network, which is to be expanded and integrated into breeding strategy planning. The network website will go online as part of the Agrobiodiversity.Net portal in spring 2009.

In the fruit and berry sector, the pilot specimen collection project in the Moravian Carpathians has proven successful. Its existence is secured for the longer term through the combination of set-up aid provided via the SAVE-Monitoring Institute Carpathians Project and the operator's

own activities. Set-up aid provided over a period of two to three years will allow the creation of self-reliant logistical strategies for the conservation of endangered regional species. The specimen collection in the Ukraine (Transcarpathians) will be supplemented over the same period. The model will also be used in other fruit-related projects.

The register of variety names which was devised to assist cross-border cooperation activities is more or less complete as regards apple varieties and North Carpathian (Slavic) languages and provides users with a good working tool. Unfortunately, www.fruit-net.info/synonym, the web-based database had to be taken offline in autumn 2008 following an attack by hackers. The portal is currently being redesigned by UK-based G.E.T. Internet Services and is expected to go online on a secure platform in late spring 2009. Interested parties may request temporary access to the website in the interim. The project has been well received in specialist circles: in a similar way to the Wikipedia system, we have been given free access to valuable data collections and must now set about the task of preparing the information for online publication and use.

Coverage of the livestock sector proved more difficult than expected. While the logistics involved in establishing the Ark network helped improve conservation work, the search for lost breeds was less than successful (with the exception of the Mocanitsa cattle). This work must be intensified in future project phases and will require relatively expensive search tours with specially trained individuals.

Despite the limited funds available, much was achieved in Phase II of the project. Because many activities were performed by local stakeholders free of charge or could be charged against their organisational budgets, the costs incurred in the Carpathians project were largely coordination costs.

Phase III will be used to lend more weight to the holistic nature of the project. Focus will be placed on rural regions and on halting rural exodus in remote areas. Two statements to this end have already been made at international conferences, Traditional Agro-Eco Systems and Historical Cultural Landscapes as a Factor of Regional Development – Conservation of Agrobiodiversity in the Carpathians (see the Annex for the conference proceedings).

St.Gallen, February 2009

Annexes:

- Statement Regional Development
- Statement Traditional Agro-Ecosystems

Annexe I

Historical Cultural Landscapes as a Factor of Regional Development – Conservation of Agrobiodiversity in the Carpathians

The Carpathians - the longest mountain chain within Europe besides the Alps - comprise unique ecosystems and an extraordinarily high biological diversity. About 16 to 18 Mio people live in the region and it is a refuge for endangered species like bears, wolves, lynxes and prey birds. On the plant side there are about 4000 endemic and partly heavily endangered species existing in the Carpathians. The Carpathian Convention which stands for a balance between economic and social development and the preservation of the local ecosystems was signed by all 7 bordering nations in May 2003.

In the Carpathian Arc a massive and very fast migration from the mountainous regions is taking place. The uncontrolled migration of the younger and more educated part of the rural population leads to a depopulation of whole villages and the loss of traditions and abilities which are typical for the very regions. Therefore massive landscape management problems come into existence, for example the brushwood growing of meadows and pastures and the woodland growing of fruit and berry groves. Within the cities the migration leads to excess human labour which can hardly be dealt with. So an increased unemployment in the cities with all its socio-economic consequences is opposite to a depopulated rural area. Here the proposed project intervenes: In different countries and regions of the Carpathians tourism in the rural areas is increasing. Traditional livestock breeds and groves with the fruit and berry varieties which are typical for the Carpathians do not only help to protect biodiversity but are also a target for tourists, promote regional existing ways of marketing and with this the sale of regionally adapted products. The agricultural use and conservation of local breeds and plant varieties and the marketing of their special products are therefore economic low-input systems and a suitable measure in a biologically and economically sensible region.

Spatial concepts with emphasis on regionally typical features, for example traditional cultivation of cereals, low-input breeding systems, etc. can be directly utilised in the Carpathian Arc: by evaluating traditional breeds and seeds the vicious circle above mentioned can be intervened sustainably and already in the beginning.

=> Especially the traditional agricultural breeds, which are always kept in an extensive way can be used to keep landscapes with poor meadows and pastures open. On the other hand they stand for special products for the specific regions and their product marketing and a sustainable, for example touristic, concept can be implemented. The *in situ* conservation of locally adapted agricultural plants in small scale in the Carpathian Arc has a multiple spatial relevant use in traditional low-input farming:

- through economical measures an alternative to migration from the countryside can be offered to the people and villages and landscapes can be kept alive.
- A sustainable tourism offers possibilities for additional income and can serve as a basis for a smooth development of remote areas
- Regionally typical products and technologies must be put into value by new marketing paths to increase basic income
- The claim of the Carpathian Convention to conserve the cultural heritage and the traditional knowledge in this ecologically sensible region is fully accomplished.
- The obligation included in the Convention on Biodiversity to pursue the conservation and promotion of the diversity also in the domestic sector, to evaluate agrobiodiversity, to preserve local breeds and seeds *in situ* and to promote the co-operation between the governmental and the private sector is being committed to.

Annexe II

Traditional Agro-Ecosystems

Over the last century in Europe, farming and farming communities have changed beyond recognition. Where, formerly, agriculture employed a high percentage of the European population, farming has now become socially marginal and it has become an industry driven by economics. This process has led to many changes for the humans in rural areas but has also meant changes have occurred in the regional biodiversity. Some of these changes have been catastrophic, as some species have become extinct. Other species are endangered and are in need of conservation measures to protect them. A move towards more traditional farming methods can be seen as a positive move for the conservation of European Agrobiodiversity.

What are Traditional Agro-Ecosystems?

A traditional agro-ecosystem [TAES] is characterised by a regional blend of wild and domesticated plants and animals. Over hundreds of years these have been cultivated and managed in a way that makes them perfect for the landscape they inhabit and the culture they provide for. A wide-ranging mix of differing crops and animals provides genetic diversity, in the event of extreme weather conditions or crop failures this diversity existed to provide the farming communities with food security. Not only the animals and plants on the farm are included in these systems, they also include the wildlife, wild plants, forests and waterways close to the farmstead as well as external factors. Wildlife and waterways can provide extra sources of food, wild plants aid the adaptation of domesticated plants as cross-pollination occurs, forests provide firewood and wood for building, as well as nuts and berries and wild plants are used in traditional medicine. External factors can include factors such as extra space. Using mountain pastures in summer to allow the recovery of valley pastures, is an example of this.

- * A TAES has developed over centuries
- * A TAES is a locally adapted farming system
- * A TAES includes a wide diversity of animals and plants
- * A TAES functions in harmony with local wildlife habitats
- * A TAES promotes natural genetic adaptation
- * A TAES facilitates local, seasonal specialities.

A TAES provides little in the way of surplus, the harvest of crops and slaughter of animals would be enough to sustain the rural population. Any surplus provided by the TAES would be sold at local, seasonal markets, creating niches of regional products and specialities.



Where did the Traditional Agro-Ecosystems go?

In the 20th Century, the choice was made!

- * Agriculture as industry rather than way of life
- * Monocultures rather than wide Agro-biodiversity
- * Adaptation through science (GM) rather than through natural processes
- * Empty landscapes rather than species rich biodiversity
- * Unemployment and migration rather than work and stability
- * Standardised produce rather than seasonal, local specialities

The changes that have occurred in agriculture are due to a move towards a more profit-orientated farming practice. Farmers are encouraged through policies and subsidies to move towards a more technological and monocultural method. This move produces surplus, which can then be sold for profit. In most of Europe, the 20th Century saw ancient rural landscapes being destroyed as wetland was drained, hedges and woods ripped up to make way for bigger machines and heavier animals. Principles that had been used to build up the manufacturing industry in the 19th Century such as economies of scale were being used in food production. The need of the urban population for more and more food was put before the need for conservation. These changes in method changed the rural communities beyond recognition, underemployment, poverty and displacement became reality.

Not only people were affected by these changes. The changes first became apparent in the wildlife. The early mornings were no longer greeted by bird song, as the habitats for the song-birds were destroyed, they were becoming rare. Likewise, the animals which had populated forests, moors and wetlands were also disappearing. Rivers and lakes were empty of fish and the rural landscape was changing from an idealistic paradise to an unending, monotonous monoculture.

The changes in agro-biodiversity were only noticed when it was already too late for some species. Animals were being bred for their milk and meat production, high yield crops were taking over from locally adapted species. Any genetic adaptations were taking place in a scientific surrounding as hybrids were created, these days genetic modification (GM) is also being used to generate adaptations that had previously occurred on the farm. Any animals or crops that did not fit the new standards of productivity or did not have a place in the wider market were neglected, forgotten and, finally, extinct. Many regional specialities became lost and seasons also became blurred as improved transportation satisfied consumer demand for standardisation in the supermarkets.



Traditional Agro-Ecosystems and Conservation: What does the future hold?

- * *Re-establishment of TAESs in order to conserve agro-biodiversity*
- * *Conservation of gene reserves important for future food security*
- * *On farm conservation promotes locally relevant genetic adaptation*
- * *Locally adapted species are hardy, fertile and resistant*
- * *Regeneration of rural economy and landscape*

The future may well be required to hold two contrasting agricultural systems. On the one hand, there is the economics orientated modern farming practice, which will be used to provide the vast quantities of food required to feed a growing global population. On the other hand, traditional agro-ecosystems will be re-established in order to conserve agro-biodiversity. The conservation of traditional farm breeds and species is very important. These animals and plants are uniquely adapted to the regions they are found in. Although they may not be as productive as the new breeds and species, they often possess qualities

such as hardiness, high fertility and resistance, qualities that are often lacking in new breeds. Not only are these breeds and species genetically interesting, their conservation through traditional farming methods also promotes a healthy regeneration of rural areas. Regional specialities will be produced again promoting rural incomes. Traditional landscape management methods will encourage the reinstatement of forest and waterways, flower meadows and wetland, all of which will provide habitats for wildlife. A more species rich countryside with a beautiful, managed landscape will encourage tourists to spend leisure time in rural areas, a further assistance to rural incomes.

A landscape which includes the traditional animal breeds and crop species, is a rich and interesting environment. It is also an environment that is storing important genetic material for future generations. The two farming systems can exist, side-by-side. Indeed, they will have a symbiotic relationship as a flow of money and genetic material moves from one to another. In order to conserve old breeds and species, it is important to act before it is too late.

In many countries in Europe, there are organisations supporting and promoting the conservation of Agro-Biodiversity. The SAVE Foundation, founded in 1993, acts as a European umbrella organisation for these organisations. It promotes and coordinates activities to conserve endangered breeds of domestic animals and cultivated plant varieties. The SAVE Foundation does not work with a romantic ideal of how it once was, rather the SAVE Foundation undertakes practical work to ensure a sustainable future for the diverse genetic material stored within the traditional breeds and species of Europe. The SAVE Foundation supports, plans and realises on-farm conservation projects alongside collecting and disseminating information about the traditional and endangered European Agro-Biodiversity. This work is undertaken in conjunction with the SAVE Partner Organisations. The European Monitoring Institute for Rare Breeds and Seeds in St.Gallen-Switzerland is the scientific research unit of the SAVE Foundation.