



## SAVE Dossier: Nature protection and agrobiodiversity

### Convention on Biological Diversity



At the Earth Summit in Rio de Janeiro 1992, the Convention on Biological Diversity (CBD) was negotiated. CBD and Agenda 21 present today the legal and social framework for sustainable use and conservation of biodiversity. Meanwhile, the international treaty has been signed by 187 countries and the EU. The term “biodiversity” relates both to “*wild and domesticated species*” (Art. 2, ff.). Thus,

not only the diversity between species and between ecosystems is relevant, but also the diversity within species, that is breeds and varieties. Agro-biodiversity is in integral part of the CBD. The Conference of the Parties (COP) has compiled a program of work on the topic “Conservation and sustainable use of agricultural biological diversity” (COP 3, decision III/11) in 1996, because agro-biodiversity is of special importance in the entire biological system: interaction between environmental factors, production methods and genetic resources that occur in agricultural ecosystems contribute to the conservation of a dynamic stock of biological diversity.

### Agro-biodiversity

Agro-biodiversity is understood as all components of biological diversity relevant for nutrition, agriculture and for the functioning of agro-ecosystems. They include all domesticated/cultivated forms of animals, plants, micro-organisms and fungi as well as their related wild forms. “Services” of agro-ecosystems also form part of agro-biodiversity: e. g. ecological processes to maintain soil fertility, regulation processes of pests and or pollination. Thus, agro-biodiversity is an essential part of biological diversity and inalienable basis for humans. (Source: CBD; BfN: [b 9n](#))



At international level, it has been agreed to reach a trend reversal until 2010 as regards endangering or rather a significant decrease of further losses of biological diversity. The realisation of corresponding measures requires knowledge about and monitoring of the status of agro-biodiversity, of factors of influence and the impacts of planned measures.

<http://www.cbd.int/decisions/default.shtml?m=COP-08&id=11037&lg=0>

# Nature protection by utilisation

## Diverse Cultural Landscapes

Traditional cultural landscapes are an integral part of European ecosystems. Variety and species richness of regional ecosystems has developed over centuries. Many of those worth protecting are products of the interaction between nature and culture, such as e.g. poor grassland and pastures, terrace landscapes, ravines, alps and meadows on very steep slopes - elements of cultural landscapes that developed through utilisation and whose conservation requires utilisation. Particularly in spacious and remote, inaccessible areas that are to be protected, nature reserves and nature parks, economically efficient use and management are often impossible. The expense of cutting and removing hay is too cost intensive. Fallow development, vegetation encroachment and thus undesirable decrease of species diversity are the result.



*Through extensive grazing, Rhodopian cattle in Bulgaria have kept the parkland of the Rhodopes clear for centuries*

## Traditional Agroecosystems

In richly chambered landscapes (e.g. mountain regions, island position) that are traditionally managed extensively, adapted use is essential for the conservation of agrobiodiversity. Traditional agro-ecosystems apply important standards in this context. Over centuries, production systems were developed and optimised according to a specific environment and culture. These systems are characterised by a regionally adapted mixture of wild flora and fauna and domesticated diversity. Without such an adapted and diverse management, natural biodiversity becomes poor in these regions. The natural environment provides, on the other hand, resources such as wood and the shade of natural forests, adaptation of cultural plants through cross-pollination by wild plants, use of wild plants, phytomedicine, etc. to the production system. These factors are integrated into a system and subject to the interactions that take place between nature and culture. Practices and techniques were developed for a sustainable production under difficult environmental conditions.



Successful realisation of nature protection objectives depends on a complex interplay of ecological, economic and social aims. Thus integrative strategies become increasingly important. The financial compensation paid to farmers for production obstacles or yield losses caused by nature protection measures has become an important nature protection instrument in Central Europe. But traditional ecological and agricultural knowledge and local names, classification, experiences and concepts of nature, its components and how to use them are just as threatened by extinction as many animal and plant species. Analogous to the extinction of species, this phenomenon can be described as "extinction of experience" (Wissenschaft und Umwelt, Nr. 9, 2005). Traditional culture should, in combination with modern scientific findings, be consulted to solve contemporary problems in nature and landscape protection (Holzner und Kriechbaum, 2001).

## Use of traditional Livestock Breeds in Nature Protection

Extensive pasture landscapes have – as embodiment of primary nature – early become subject to nature conservancy protection. Many of these areas (in Central Europe) are again densely wooded as they were not grazed so that they lost their original wood pasture character. The „New Forest“ in South England (County Hampshire) is often mentioned as “mother” of this grazing practice,. For more than thousand years, continuous grazing with different livestock species has been practised here. It is today the largest area in the whole of Western Europe where heathland, swamp and wood pasture habitats coexist in a functioning ecosystem. The application of traditional techniques such as grazing forest pastures is very important for the conservation of these landscapes.

Sometimes, however, animals were used in landscapes where they never occurred before (such as e.g. Scottish Highland Cattle in Southern Europe). These attempts are doomed to failure from the start as the animal species or breed is not adapted to the environment, thus causing numerous husbandry problems. Modern performance breeds can cause devastating trampling damage to farmland at sensitive sites.

Autochthonous traditional livestock breeds have, if managed correctly with traditional techniques, many advantages:

- They are adapted to the regional climate and protected by their fur, subcutaneous tissue or fat from effects of the weather.
- Hooves and claws are adapted to local conditions: hard hooves and claws in stony mountain regions, resistance against foot rot or scald in humid areas or swamps
- They are smaller and lighter than modern performance breeds. Trampling damage is seldom, animals are exceptionally agile.
- They are frugal as regards feed supply, use rushes and poor grasses as they have been adapted to regional sites for centuries
- They easily give birth, but reach maturity late
- They are robust and tough through the sum of above listed characteristics
- Being kept outside throughout the whole year, they only need a shelter yet not necessarily a barn
- The quality of their meat often exceeds the one of performance breeds as regards taste and aroma because slow growth produces fibrous meat.

In most traditional husbandry systems, different animal species are managed together on a relatively large area: on traditional alps, cattle and goats grazed together. Pigs were fed with whey from cheese production, but also grazed. In South-West Europe (forest pasture in Albania), it is common in many remote areas to graze animals together. Park-like landscapes including a mosaic of different habitats develop that way.



## Recording, Conservation and Utilisation

There is a danger that the skill and knowledge needed to select the best adapted autochthonous breed for the conservation of a certain habitat is being forgotten breed diversity decreases continuously. In the upcoming countries of South and South Eastern Europe, modern performance breeds are increasingly crossbred with regional breeds. In most of these countries, neither breeds nor their characteristics and traditions linked to them have to date been recorded. As long as complex information is not available, the direct influence of a breed on natural biodiversity can barely be estimated. Traditional and sustainable utilisation systems are sometimes irreversibly weakened through social- economic change. This has diverse impacts on nature or the entity of natural resources, respectively. Well-directed recording and documentation can counteract the above described “extinction of experience”.

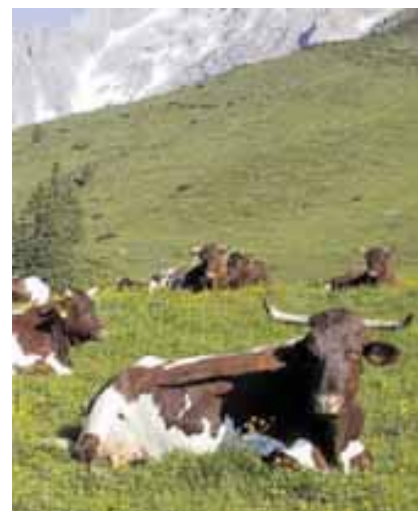


*Turopolje pigs in Lonjsko Polje Nature Park in Croatia*

Despite being mostly very undemanding and robust, the conservation of pure breeds of traditional livestock breeds requires a certain effort, especially because of the danger of crossbreeding: breeding organisations have to be established, herd books have to be introduced, and the awareness for this type of biodiversity has to be developed. Instruments of nature protection in agriculture and tourism should mesh to conserve the diversity of our environment in a sustainable system. An integrative approach is therefore very important

Many examples for such integrative overall concepts do already exist:

- Turopolje pigs keep the swamp areas of the Sava Plains in Croatia open. Many bird species, insects and small mammals benefit from its activities.
- Podgorska Red Cattle is well adapted to the mat-grass (*Nardus Stricta*) in the Polish Beskids. Grazing helps to maintain this rare type of cultural landscape.
- Water buffalo at Lake Prespa (and at other sites) in Greece act like natural lawnmowers in swamp areas and keep the shore vegetation open for wild animals.
- The small and agile Prespa cattle prevent the area at Lake Prespa from vegetation encroachment, dreaded in many nature protection areas.
- Karachan sheep conserve the open park landscape in the Bulgarian Rhodopen.
- Karachan horses are „ecological“ draught animals in Rila National Park in Bulgaria.
- Rhoen sheep conserve pastures at higher altitudes and semi-dry grassland with unique plant communities in German low mountain ranges.
- Original Pinzgau cattle has been nominated breed of the Austrian National Park “Hohe Tauern”. Its “work” can be admired at many sites of the park and its meat is offered in restaurants.



*Pinzgau cattle: the breed of the National Park “Hohe Tauern” in Austria*

## Traditional Cultivated Plants in Nature Protection

The interaction between wild biodiversity and cultivated plants becomes apparent through the fact that more than a third of all cultivated plants are reliant on pollination by animals. Fruit groves are of special importance for nature and landscape protection. Their usefulness for insects and birds is widely known. Traditional fruit groves, particularly standard trees, fulfil many demands and miscellaneous functions in a landscape: nesting sites, food basis, raised stands, etc. are some of the relevant aspects. Wild fruit species and varieties serve also as hideout for mammals and structure the landscape.



*Van Gogh's "Wheatfield with a Lark" illustrates the connection between plant and nature*



Regional typical cultivated plant varieties such as different cereal varieties, flax, lentils, buckwheat and sorghum play particularly an important role in large protection areas with limited agricultural production. In nature parks and biosphere reserves traditional cultivated plants can contribute considerably to a sustainable and environmentally friendly management without use of pesticides.

*Small scale farming in mountain region*

## Integrative Nature Protection

Nature protection that tries for new approaches, more communication and the support of quality of life for animals, plants **and** humans becomes more and more important as "Integrative Nature Protection". Quality characteristics of integrative nature protection include the following aspects:

- **socio-economic** integration: the realisation of nature protection objectives with other land users and the population
- **time** integration: the search for long-term sustainable solutions
- **functional** integration: the consideration of aspects of abiotic resource protection
- **spatial** integration: sustainable and environmentally friendly development of entire spatial entities (Natur und Landschaft, Nr. 75 (1), pp. 10-16).