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Agricultural Genetic Resources of the Alps - Update -

synthesis report

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1. Preface

Since the first study on »Agricultural Genetic Resources of the Alps« (ISBN 3-905209-03-9) was published in 1995, fundamental changes have taken place with regard to the conservation of endangered livestock breeds and cultivated plant varieties. Important EU-programs such as, for example, the Decree 2078/92 with funding for animal keepers, only took effect after the publication of the study. A further important event was the passing of a global action plan in Leipzig to implement the »Convention on Biological Diversity« (Rio de Janeiro 1992) in the field of agriculture. All Alpine countries have, as a result, committed themselves to protect the genetic resources of the Alps and to elaborate so-called »National Action Plans«. New prerequisites for conservation work were thereby created.

The present study therefore attaches great importance to reconsidering the endangered status of cultivated plants and livestock breeds in individual countries. Priority was given to cultivated plants and to Italy. Neither topic could be conclusively dealt with in the first study in 1995.

The individual countries were scanned again in detail with regard to livestock breeds. In France, Italy, Austria, Switzerland and Slovenia, further breeds were found which had not been known before or which had been considered to be extinct. In Germany, Austria and Switzerland, the current state of affairs of conservation efforts is far advanced. The situation has improved since the first study. The situation in the French Alpine region has aggravated, especially with regard to sheep and goat breeds. In Italy, the state of conservation efforts is still unsatisfactory. Uncertainties are found, especially concerning sheep and goat breeds, and concrete conservation projects are missing. Slovenia is well organised at the governmental level. However, only *ex situ* conservation is covered.

Conservation efforts for cultivated plants from the Alpine region have made progress in Austria and Switzerland on both the private and the governmental level. In Germany, the Alpine region is still insufficiently taken into account. In Italy, numerous efforts are made, which are, however, not sufficiently coordinated. The situation in Slovenia and France has become worse in the 1990s.

The present study shows that a transfer of effort into developing a system for continuous monitoring, equipped with an efficient alarm system, is urgently needed. This seems at present the most efficient way of dealing with a situation which might change fast, and to react in time to negative trends.

2. Synthesis

2.1. Problem formulation and assignment

Today, not only the biodiversity of wild plants and animals is endangered, but also the formerly rich diversity of agriculturally utilised plants and animals which are directly used for human consumption. The diversity of breeds and varieties has suffered under the economically required orientation of breeding towards high-performing plants and animals. The breeds that did not comply with modern standards – more meat and milk from cattle, more ham than bacon from the pig – lost their breeding value, were dropped and disappeared. Some breeds have already died out, while only a few individuals of others have survived.

Even if yields of the old varieties remain unsatisfactory according to modern standards, they possess qualities such as high fertility, hardiness and resistance against cold and diseases. These might regain importance in an economically different environment. Traditional breeds and varieties were adapted to human needs as well as to the special conditions of their environment through a breeding process lasting over many generations. They are not only genetically interesting, but also represent a valuable cultural asset well worth being conserved.

For these reasons, at least remains of the still existing breeds and species should be kept to secure their *in situ* survival.

A broad diversity of breeds and varieties developed in the Alpine region with its very different landscape segments, and its somehow more difficult production conditions. Thus, they can be regarded as especially undemanding and hardy. They are particularly interesting because they are adapted to high altitude and the respective ground, strong solar radiation and short vegetation periods, differing thus very much from the current breeding lines. Because of that, the acknowledged scientist N.I.Vavilov describes the Alps as “secondary genetic centre”. Fortunately, the extrusion process through high-performing breeds has started much later in the Alps, thus increasing the chance for survival for some of the traditional animal breeds and plant varieties.

Still, robust animal and plants are important in the first line in the Alpine region. In order to be prepared for dry or wet, cold or warm years, a broad diversity, especially of cultivated plants, is still of importance today. Not only highest performance rates do count in the mountains, but also a good average yield. Most of the time, extensive production is also quality production. When qualities adapted to local conditions take effect, these forms are even today economically viable. In some cases, it is possible to market the products of these forms under a specific quality label. In any case, they add a special touch to the region which is reflected in typical regional products and menus. At present, these products are undergoing a renaissance in gastronomy and tourism. Should the agricultural production in the Alps undergo extensification systematically and on a larger scale, some of these old and robust species might gain importance.

This fact lead to the study „ Agricultural Genetic Resources of the Alps” (ISBN 3-905209-03-9), subsequently called “Alp study”, initiated by CIPRA and financed by the Bristol-Foundation. The study was elaborated between 1992 and 1995. This first and multilingual work covered the whole area between the French Maritime Alps and Slo-

venia. It was carried through by the Swiss foundation Pro Specie Rara. Its records include not only the endangered cultivated plants and livestock breeds, but also the initiatives working for their survival and the not covered need for action. Following the study, app. 40 of the barely hundred endangered breeds are not subject to conservation efforts. A number of projects were initiated following the results of the study:

- In Germany, Austria and Switzerland, already existing conservation projects were expanded, and new ones started. In Slovenia, a governmental funding program was initialised.
- The founding and set-up of a European umbrella organisation for the safeguard of agricultural diversity was accelerated. SAVE today coordinates the conservation of five border-crossly endangered breeds in the Alpine region. The results are published in the SAVE Focus every second year.
- Main consequence of the study was the founding of a “Monitoring Institute for Rare Breed and Seeds in Europe” in St.Gallen which deals with the recording and constant observation of endangered breeds and seeds. For that purpose, a warning system is set up.

The 1995 study was only a snapshot of the year 1993. The situation of endangered livestock breeds and cultivated plants changes continuously. Even then, a regular screening has been called for. The Monitoring Institute has now, by order of CIPRA and again financed by the Bristol Foundation, updated the study. The results are summed up shortly in the following, according to countries. Detailed information on endangering, the governmental and private conservation initiatives (actors) as well as on not covered additional need for action are found in the other chapters.

2.2. Plant Genetic Resources: Results summarised according to countries

2.2.1. France

Retrospect

In 1983, the BRG (Bureau des Ressources Genétiques) received the assignment to elaborate a program for the protection of genetic resources. Since then, especially *ex situ* conservation efforts have been extended and numerous collections emerged as result of the process. Unfortunately, the organisation “Groupement PAGE PACA”, very active in the 1980s, dissolved. Their collections were integrated into other already existing ones.

Situation

During the last 10 years, genetic erosion has proceeded. This development concerns the Alpine region as well as the other regions. Vegetables and vines are most affected. In France, numerous conservation initiatives exist which are supported both by private and public institutions. Fruit trees enjoy most of the attention. The BRG - Bureau de Ressources Génétiques (Office for Genetic Resources) – has taken over the task of coordinating conservation activities. Conservation measures in the French Alpine region are to the largest part coordinated by the ‘Conservatoire botanique alpin de Gap-

Charance'. Until now, no network exists which nation-wide coordinates the NGOs conservation work. NGOs are little known in the whole of France and cooperation with public institutions is only marginal. Besides, many of these organisations fight for their own survival.

In France, many hurdles still exist for the circulation of local varieties. Vegetables, which are most acutely endangered of all cultivated plants, have to be listed in the official catalogue. Until now, only few efforts were made to compare unofficial varieties. Only during the most recent past, evaluation work has received more attention.

Outlook

Because of economic pressure, many farmers are forced to replace old varieties by modern varieties. This tendency is not likely to change in the future. Therefore, especially home gardens which are not exposed to economic pressure are important for the conservation of old cultivated plants. Besides, consumers' demands for products from old cultivated plants are growing. Here, chances stand good to promote the old varieties by marketing their products.

In the sector of organic agriculture, an encouraging tendency is to be noticed: old cultivated plants are increasingly used.

Need for action

General:

In France, the political side needs more sensitisation for the topic of agricultural genetic resources. It is urgently required to loosen the Seed Decree, which has up to date obstructed the marketing of local varieties. A network uniting the actors does not exist at present in France. It is urgently necessary to increasingly integrate the NGOs into conservation work and to coordinate their activities with public conservation activities. Furthermore, a network should urgently be created which connects all actors. It would be desirable that the public side takes more notice of the NGOs and supports them financially. A cooperation between university institutions and private persons committed to the conservation of cultivated plants is imperatively required.

Need for action for different groups of cultivated plants:

- **Fruit:**

In the area of fruit, it is necessary to revive the overaged fruit tree plantations and to hand over cuttings to existing collections. In the departments Drôme and Var, inventories in cultural gardens should be taken. A systematic collection tour for nuts is urgently required in the French Alps. Furthermore, monocultures of walnuts are to be replaced by mixed cultures in order to reduce the risk of epidemics.

- **Vines:**

The need for action is reduced as these are nearly exclusively conserved in public collections, but barely by private persons.

However, it is required to set up variety gardens for vines from the Alpine region. The integration of private persons into conservation activities is also necessary.

- **Vegetables:**

Inventories and collection tours in the Alps should be taken up again. Furthermore, a loosening of the Seed Decree would facilitate the marketing of local vegetable varieties. Local vegetable and cereal varieties could additionally be promoted by specific marketing strategies. The documentation and evaluation of local varieties should have absolute priority in the future.

2.2.2. Italy

Retrospect

The need for action has not changed considerably during the 1990s. Now as ever, it is immense. Only in the area of fruit conservation, some competent actors have emerged, e.g. in the region of Piedmont. Lacking support for private efforts has in the past been the reason that initiatives came to nothing.

Situation

Numerous private initiatives exist, which, however, deal mostly with individual plant species and specific areas. According to region and species, efforts are often insufficient. Governmental activities concentrate mainly on *ex situ* conservation.

As governmental bodies receive the main support at present, the quality of conservation work depends immediately on the political and economic situation. The situation might therefore change dramatically from one day to the other.

The implementation of the National Plan for Action focuses mainly on taking inventories of the existing governmental collections. Private actors do not receive any governmental support.

Outlook

A change of the current situation from the governmental side is not visible in the near future. The private network 'Rete Semi Rurali' (Rete per la Conservazione Rurale delle Razze e Varietà Locali) wishes to extend its conservation efforts and the national coordination during the next years. The group will have a hard time as necessary support is insufficient.

Need for action

General:

The need for action is great for all species of cultivated plants. Both the active search for old varieties of vegetables, pulses and chestnuts and *in situ* conservation are classified as priority. Concrete conservation projects based on *in situ* conservation are missing. The specific set-up of private organisations for species and regions with large need for action is indispensable for any successful conservation work in Italy. Private actors should be included into the implementation of the national plan of action. The protection of governmental collections should urgently be improved.

Need for action for the single groups of cultivated plants:

- Fruit and further fruit varieties:
Although the fruit tree genus *Malus*, *Pyrus* and *Prunus* were subject to relatively intensive conservation activities when compared to others, the need for action is not covered. Further fruit species were only marginally subject to collection activities. Collection tours are of utmost importance.
- Citrus fruit:
There is an urgent need to secure the caretaking and conservation of existing collections in citrus gardens (so-called Limonaia). Such efforts are presently only made for the 'Limonaia di Gargano'.
- Chestnuts:
Despite the fact that a few chestnut collections have been set up, large gaps do remain. At present, only some actors are actively searching for old varieties. In the Northern Italian regions, an overall search should urgently be initiated.

- Olives:
In suitable locations, the cultivation of olives reached a certain importance in the Alpine regions, too. However, no concrete conservation efforts are made in the respective regions. Therefore, the elaboration of a conservation concept has become an urgent matter. Conservation activities of both the private and the governmental organisations are unsatisfactory.
- Walnut and hazelnut:
There are some larger collections run by the governmental side. However, the search for old breeds has to be continued with urgency.
- Vines:
A search for old wall vine varieties should especially be conducted in remote Alpine regions.
- Vegetables (incl. pulses):
The need for action concerning vegetables in the Italian Alpine region is huge. Conservation efforts are very poor! The need for action is not covered in the entire Alpine region.
- Cereals:
The collection of old varieties has only been sufficiently covered for wheat and maize. An active search is necessary for all other cereal species. However, it will be too late for most varieties.
- Medicinal plants, spice plants, ornamental plants:
An enormous need for action does exist with regard to their conservation. The collection of the governmental IRSA-Institutes shows big gaps – merely 26 collections do exist.

2.2.3. Switzerland

Retrospect

Gaps in conservation work (for example an overall stock-taking of Swiss fruit varieties) were found out in the 1990s and subject to specific measures. The dialogue between actors was strengthened. Thus, an urgently needed definition of positions and differentiation between actors was made possible. The coordination and cooperation between private and governmental bodies has clearly improved.

Situation

The need for action is well covered by the private organisations Pro Specie Rara and Fructus, both active at the national level. The public side guarantees especially *ex situ* conservation. In Switzerland, the implementation of the National Action Plan integrates private organisations in a singular way when compared to other Alpine countries. The coordination between the different actors is secured by the SKEK (Swiss Commission for the Conservation of Cultivated Plants), founded in 1991.

First attempts to take old varieties out of gene banks and variety gardens are presently made by Pro Specie Rara and the Society for Alpine Cultivated Plants (Verein für alpine Kulturpflanzen).

Outlook

Conservation work in the Alpine region will be stimulated by the set-up of variety gardens.

Well directed search for disappeared vegetable varieties will in future be made possible by the 'Historical Inventory for Swiss Cultivated Plants'. The inventory is presently being drawn up by the Monitoring Institute.

Need for action

General:

The efforts to get old varieties out of gene banks and variety gardens, to cultivate them in a larger extent and to offer them at the market are still in their infancy. In the first line, suitable marketing concepts are needed, e.g. product promotion by labels.

In order to be able to guarantee the conservation of Plant Genetic Resources in the long term, the activities of private organisations have to be integrated into a national concept on a long –term basis and to be acknowledged. Especially in the canton Ticino, gaps exist.

Need for action for individual groups of cultivated plants:

- **Fruit:**
On the surface, arboreta are missing which specifically accommodate varieties from higher altitudes.
- **Nuts:**
Stock taking of walnuts has reached an advanced level only in Western Switzerland. Almonds had a certain tradition in the Valais and Ticino. There, search for old varieties should be conducted. The conservation of hazel nut varieties received no attention to date. An inventory should be taken in the whole of Switzerland. Old hazel hedges might house rare varieties.
- **Chestnuts:**
Inventories are completely missing for the cantons Vaud and Valais. Central Switzerland is covered only insufficiently.
- **Vines:**
It can be assumed, especially for wall vines, that old varieties may still be found. Stock taking, especially in remote valleys, would be worth the effort.
- **Vegetables, pulses and potatoes:**
Stock taking and setting up variety gardens is deficient or missing for the entire Alpine region.
- **Cereals:**
The search for buckwheat, foxtail millet and common millet might be worth the effort in the canton of Ticino and the Grisons (Puschlav and Misox). With regard to dinkel, Switzerland might miss the boat! Governmental dinkel programs were given up. The conservation of the genetic variation of dinkel is threatened.
- **Olives:** There is an urgent need for action to search for olive varieties in Ticino and to conserve the so-called olivettos.

2.2.4. Liechtenstein

Retrospect

During the 1990s, no efforts were made to conserve the still existing genetic resources. It therefore has to be assumed that a part of the varieties (especially fruit and vines) was thus lost.

Situation

Only the Rheintaler Ribelmais varieties receive a certain protection through the efforts of the association 'Rheintaler Ribelmais'.

Outlook

In 2001, the Board of Agriculture has initiated the project 'Genetic variety of cultivated plants in Liechtenstein'. Within the frame of this project, inventories are to be taken. The first results of the project are expected in 2002.

Need for action

General:

It is very important to take an inventory of old cultivated plants in Liechtenstein. Practical conservation measures for genetic resources should be integrated into the current project "Genetic Diversity of Cultivated Plants in Liechtenstein" as soon as possible.

Need for action for the individual groups of cultivated plants:

- **Fruit:**
Need for action concerning stock-taking and conservation of Liechtenstein fruit varieties is urgent. Governmental support is indispensable in this context.
- **Vines:**
The spectrum of Liechtenstein varieties and the old and small viniculture areas should urgently be screened for possible local varieties.
- **Garden and field plants:**
Direct need for action cannot be defined as purely Liechtenstein varieties never existed.
- **Ribelmais:**
The need for action is taken care of by Swiss organisations. Conservation measures should urgently be supported by the Liechtenstein side, too.

2.2.5. Germany

Retrospect

The Bavarian Alpine region has been neglected for a long time by official quarters. Only in the latest future, the attention has been directed to this region. It is difficult to demarcate the Alpine region from neighbouring areas. The spreading of cultivated plants took place across borders, many transitions to neighbouring regions are found. Especially cereals were collected systematically in the Alpine region.

In the area of fruit, many local varieties are still existent despite the high losses caused by climatic conditions. During the last years, a number of stocks has been secured. The chance to find more old varieties is low for other cultivated plants. However, the example of the Bavarian turnip shows that it is still possible to discover local breeds. Still, not many salvage collections have been carried out for horticultural plants.

The plant breeding organisations have recognised the value the indigenous adapted plants represent with regard to breeding. It is encouraging to find many breeding enterprises involved in the breeding of locally adapted seed.

Situation

Especially in the higher altitudes of the Bavarian Alps, field crops are suffering from fast genetic erosion. Horticultural crops are less affected. Field crop cultivation has since long been replaced by grassland farming. In gene banks, cereals form the largest part of the assortment. Three different gene banks (Braunschweig, Gatersleben and Tyrol/Austria) keep samples.

Other species such as e.g. legumes have been recorded, too. Vegetables, medicinal plants and herbs have to date never been collected systematically. Medicinal plants and herbs are still grown in many house and farm gardens. The situation for vegetables does not look better. No broadly laid out collecting activities have been conducted until now, as vegetables are not focused on by German gene banks.

The conservation of old cultivated plants has so far not been taken over by any institution or private organisation. Some conservation initiatives exist for individual plant groups. Conservation activities for fruit are the most advanced ones, the conservation of most species and varieties seems secured.

Outlook

In more recent times, a new conscience for the *in situ* conservation of individual cultivated plants has developed. After the storm "Lothar", an increased interest has been signalised by foresters to recolonise wild fruit which do not only deliver fruits but which are also valued because of their wood. *In situ* conservation is also recorded in the grassland belt. This type of conservation seems most useful for forage plants. In addition to that, the trade with local cultivated plants is supported by the governmental side. Quality and origin labels are used to promote local trade activities.

It is planned to unite both German gene banks, the future institution will be well equipped in personal as well as financial respect. Altogether, a tightening of activities and qualitative improvements in the area of collection management are planned for the next years in the field of *ex situ* conservation.

Need for action

General:

The legal framework of the Seed Traffic Act obstructs activities for an overall on farm conservation. It urgently requires revision.

Need for action for different groups of cultivated plants:

- Fruit:

In the Bavarian Alpine region, fruit receive most of the conservation efforts. The main attention is dedicated to the economically important apples, pears, plums and cherries. The situation is different for fruit planted for personal needs. It is necessary to integrate those representatives in conservation activities.

- Vegetables:

In the area of vegetables, there is an urgent need for action to conduct salvage collections in house and farm gardens. The valleys of the Central Alps and the Alpine upland should be included. Specific search tours should be carried out by means of search lists basing on historical data. An inventory of formerly cultivated plants could facilitate the search for old vegetable varieties. Today, no collection for vegetables from the Alpine region exists. The existing collections urgently need to be extended and complemented with variety gardens and on farm management. On farm conservation of vegetables is at present mainly carried out by private and non-governmental organisa-

tions. These organisations should be supported with the necessary funds and an intensified cooperation with public bodies.

- Potatoes:

Potatoes, too, were never subject to broad collection activities in the Alpine region. A specific salvage collection in the valleys of the Central Alps and in other remote areas in Bavaria would certainly be worth the effort. It is also necessary to set up variety gardens for potatoes.

2.2.6. Austria

Retrospect

Austria has already recognised the necessity to conserve old cultivated plants at the beginning of the 20th century and taken respective measures. Mountain farming was and still is an important branch of Austrian agriculture. Thus, the Alpine region was subject to specific collection activities.

Situation

Conservation measures have reached a very high standard in the Alpine region. In Austria, 5 federal and regional agencies maintain independently set up *ex situ* variety collections (gene banks). In 1992, the “Index Seminum Austriae” was elaborated as a first common paper on Austrian variety collections. It is today accessible to the public on a common platform in the Internet. The joint work is exemplary and singular in Alpine countries. The individual institutions have set up priorities for their collection activities. Main focus has up to date been laid on *ex situ* conservation. *In situ* conservation has reached a very high standard through the work of the private organisation “Arche Noah”. Old varieties (i. a. gardening plants) are being cultivated and propagated in a central variety garden close to Schiltern, and also decentralised by numerous active gardeners.

Outlook

The conservation of old breeds by the 5 governmental gene banks and “Arche Noah” is secured for the time being. The gene banks, whose collection activities focus very specifically on certain breeds, are planning conservation measures in different areas for the future.

Need for action

General:

The conservation of the existing collections is very important. It is, however, endangered by staff shortage. It is therefore necessary to continue documentation, characterisation and evaluation of varieties by additional staff. Well directed collection tours should be conducted with search lists based on historical data. It would be very valuable for the completion of the Index Seminum Austriae if Arche Noah as additional partner could contribute its data.

Need for action for the individual groups of cultivated plants:

- Fruit:

In the area of fruit, especially pome fruit were collected in Upper and Lower Austria and in Styria. Need for action exists with regard to collection activities in other states and for

the systematic collection of stone fruit, nuts, berries and rare fruit which have up to date been neglected.

- Vines:

Only few investigations were made with regard to the conservation of old vine varieties. Need for action does also exist for investigations concerning the to date neglected fruit and for collection tours outside Styria.

- Vegetables:

Need for action is considerable for vegetables. A historical inventory of cultivated plants could be of use for well directed collection tours, as a large part of vegetables formerly cultivated in Austria is already lost. It is also necessary to set up variety gardens. The governmental side should support vegetable breeding in order to put locally adapted vegetables increasingly back into circulation.

Collection of pulses was mainly carried out in Styria and Burgenland. Need for action exists for collection tours in the other Federal states.

- Cereals:

Cereals were collected to a satisfactory extent by the gene banks. It has to be assumed that, especially in the mountainous region, wheat, rye and emmer can still be found. Useful on farm cultivation as a means of promoting old cereal varieties could be furthermore supported by marketing rare cereal varieties and special bread, cakes and pastries.

- Medicinal plants, spices and forage plants:

In the area of medicinal plants, future collection tours should increasingly keep an eye on spice plants and tea plants. A collection tour for forage plants does not seem urgent at present, as other questions have to be clarified before, such as e.g. the extent of gene flow between modern cultivars and local varieties.

2.2.7. Slovenia

Retrospect

In Slovenia, the conditions for agriculture have considerably altered since the introduction of a market economy. The political aim to become a member of the EU adds to the aggravation of the situation. The need for action in Slovenia has increased since the publication of the last Alp study. As before conservation work is institutionalised in 3 public institutes.

Situation

The genetic erosion of local breeds in Slovenia is alarming. Only a few local varieties are still conserved by local farmers, the knowledge about the subject is disappearing. Mainly 3 public institutions are responsible for the conservation of old cultivated plants in Slovenia. Their focus is on *ex situ* conservation. However, storage conditions do not meet modern requirements. Usability and utilisation possibilities are given special emphasis in collection activities. Private persons and NGO's are only poorly integrated. Information on the conservation situation are very hard to obtain. On farm conservation is only practised in the organic or biodynamic agricultural sector. Many farmers linked up to a network via their respective federations.

Outlook

It has to be reckoned with a further proceeding gene erosion and with the introduction of foreign varieties. It is thus very urgent, especially in Slovenia, to initiate respective conservation measures.

Need for action

A very big need for action exists for entire Slovenia, not only the Alpine region, in the area of plant genetic resources. It is urgently required to integrate private persons and NGO's into conservation work. All actors working for the protection of cultivated plants should be more efficiently connected in a network and cooperation between them should be intensified. More efforts in conservation work as well as creation of awareness are absolutely needed. Political decision-makers should be better informed about and sensitised for the subject. The largest problem obstructing the implementation of conserving genetic resources is the lack of financial means. Here and also with regard to the cooperation, Slovenia depends strongly on the support of foreign countries.

Certain plant groups were recorded very well during collection tours, e.g. forage plants (grass and grass-clover), buckwheat, certain cereals, beans, cabbage, apples, desert pears, and vines. Not all areas of the Alpine region were included. These left-out regions should have unconditional priority during the next annual collection tour. Tours should focus on the respective above mentioned plant groups.

2.3. Animal Genetic Resources: Results summarised according to countries

2.3.1. France

Comparison with and retrospect to the 1993 study

The situation for breeds in the Alpine region has deteriorated during the last years. The dissolution of the groupings 'PAGE PACA' and 'Association GEYSER' in the region of Paca has left a gap. In the region Rhône-Alpes, regional attempts are still missing.

In the present study, the following changes with respect to the portrayed breeds in the first Alp study (1995) have been found:

Risk status:

- Cattle: The Swiss stock of the breed French Herens (*Hérens*) has increased. The risk status for the breed 'Villard de Lans' has not changed (it keeps on being classified as 'Endangered').
- Goats: The situation for the breeds *Alpine Polychrome* and for the pure-bred Provençal (*Provençale*) has deteriorated. For that, both must be put into the risk status 'Critical'. The situation for the *Chèvre de la Roya* remains unclear, presumably, the breed can not be saved any more.

- Sheep: The situation of the Brigasca (*Brigasque*) sheep deteriorated – they are not classified as ‘Vulnerable’ any more but as ‘Endangered’. However, Brigasca (*Bri-gasque*) sheep are also kept in Italy. The type ‘Mouton Noir de Fumex’ of the breed Thones-Mathod (*Thônes et Marthod*) which was not mentioned in the first study is classified as ‘Critical’.
- Donkeys: The situation of the ‘*Âne gris de Provence*’ has slightly improved, it now has the risk status ‘Endangered’ and not ‘Critical’.
- Dogs: the situation for the dog breed ‘*Berger de Savoie*’ remains crucial.

Additionally breeds portrayed:

- The dog breeds ‘*Patous des Pyrénées*’ and ‘*Berger de Crau*’ are described for the first time, both having a certain importance for the French Alpine region. The situation is classified as crucial for both of them.

Situation

Conservation in France is to a great extent linked to governmental bodies (Institut de l’Elevage) and thus dependent on political decisions. From the governmental side, different conservation programmes are available for cattle and horse breeds. Goat, sheep and dog breeds are insufficiently supported on the other hand. For breeds from the French Alpine region, virtually no conservation projects were implemented in the last years. In France, private conservation efforts exist only for individual breeds – in the Alpine region for 6 of 15 endangered breeds. There is no national organisation at the private level which currently takes care of the conservation of endangered French breeds.

Outlook

A change of the current situation does not appear likely in the near future..

Need for action

General:

The set-up of private conservation efforts and networking of the same ones is to be striven for and to be supported. The elaboration of a conservation concept for goats, sheep and dogs should be started in the coming years.

Breeds and types with acute need for action:

- Goats: *Alpine Polychrome*, *Chèvre de la Roya*
- Sheep: Brigasca (*Brigasque*), French Alpine (*Commune des Alpes*) (pure-bred animals), *Mouton Noir de Fumex* (type of the breed Thones-Marthod (Thônes et Marthod))
- Dogs: *Berger de Savoie*, *Patous des Pyrénées*, *Berger de Crau*

Breeds and types classified with risk status ‘Critical’

Species	Breed	Stock**	Trend	Initiative*
Goat	<i>Chèvre de la Roya</i>	?	?	-
Goat	<i>Alpine Polychrome</i>	Ca. 100f/m OP (2000)	?	-
Goat	Provençal / <i>Provençale</i>	Ca. 100f/m OP (1999)	↑	+
Sheep	<i>Mouton Noir de Fumex</i>	?	?	-
Dog	<i>Berger de Crau</i>	?	?	-
Dog	<i>Berger de Savoie</i>	?	?	+
Dog	<i>Patous des Pyrénées</i>	?	?	+

Breeds and types classified with risk status 'Endangered'

Species	Breed	Stock**	Trend	Initiative*
Cattle	French Herens / <i>Hérens</i>	591f/m OP (1999)	↑	-
Cattle	Villard de Lans	593f/m OP (1999)	↑	++
Cattle	Brigasca / <i>Brigasque</i>	646f/m OP (1999)	↓	+
Donkey	<i>Âne gris de Provence</i>	112f OP (1999)	↑	++

* ++ (existing, with success), + (existing), - (not existing)

** f = female animals, m = male animals, HB = Herdbook, OP = Overall Population

2.3.2. Italy

Comparison and Retrospect to the first Alp study

As already emphasised in the first Alp study, non-governmental organisations are still missing in Italy. The conservation work of governmental bodies is today still strongly dependent on economic trends and politics.

Comparison of the present study with the first Alp study of 1995:

- Cattle: The breed Red Mountain (*Montana*) is additionally being portrayed. The breed Grey Adige (*Grigia di Val d'Adige*) is meanwhile regarded as extinct. The breeds Evolene (*Evolenarde*) and French Herens (*Hérens*) (conserved in Switzerland) are not mentioned any more. In fact, small stocks are kept in the Valley of Aosta, however, these are neither pure-bred nor looked after by any breeding association. The risk status for the breeds Oropa (*Pezzata Rosso d'Oropa*) (new: Vulnerable) and Rendena (*Rendena*) (new: Rare) has been redefined.
- Sheep: The breeds *Plezzana*, *Rosset* and *Merinizzata Italiana* are additionally being portrayed. The breeds *Ciuta*, Friuli (*Friuliana*) and *Livo* are meanwhile regarded as extinct. The names *Pusterese* and *Val Badia* are synonyms. For 6 breeds/types, the risk status has improved (*Frabosa (Frabosana)*, *Lamon*, *Tacola*, *Villnösser*, *Pusterese*, *Varese (Varesina)*) and for two further breeds, it has deteriorated (*Di Corteno*, *Saltasassi*).
- Goats: The breeds *Verzasca (Verzaschese)* and *Passeier Gebirgsziege* have additionally been portrayed. The breeds *Valdostana*, *Grigio Alpina* and *Tibetana* are not listed any more because no unambiguous indications of occurrence could be established. Meanwhile, the breed '*Locale di Corna*' is regarded as extinct. A population of more than 1000 animals of the *Livo*, described as presumably extinct, was discovered. The situation of the breed *Bionda dell'Adamello* has been clarified.
- Horses: The breed *Sella Italiano* is additionally described. The situation of the Noric (*Norico*) horses has improved (new: Endangered), that of the Hafling (*Haflinger*) in Italy deteriorated (new: Rare). The *Samolaca (Samolaco)* must presumably be considered as extinct since no pure-bred stallions are available any more.
- Poultry: 6 poultry breeds are portrayed for the first time in this study – 3 of those are put into the risk status 'Critical' !

Situation

The promotion of endangered breeds and the implementation of the Nation Plan of Action is carried out only at the governmental level. At present, private breeder organisations are not supported by the governmental side. A national coordination of private actors is lacking. Breeds which are listed in the 'anagraphical register animal populations with limited population size' often show decreasing population numbers.

The situation of sheep breeds in the Alpine region is very diffuse. An unclear abundance of local types and varieties exists. Need for action is especially not covered for those sheep and goat populations which are neither officially acknowledged nor contained in the register for endangered autochthone sheep and goat populations.

Outlook

Riccardo Fortina of WWF Piemonte intends to built up a national coordination for conservationists of endangered breeds, the organisation "R.A.R.E. (Razze Autoctona a Rischio di Estinzione)". Relief with foreign know-how is planned (promised by SAVE Foundation).

Need for action

General:

Concrete conservation projects must urgently be set up. For breeds which are neither officially recognised nor contained in one of the anagraphical registers, the situation has urgently to be clarified. A best, a concrete promotion should take place. The set up of further private organisations should be supported in future.

The need for action is especially acute for the following populations and breeds:

- Cattle breeds: Red Mountain (*Montana*, *Tortonese*)
- Sheep breeds: *Bellunese*, *Garessina*, *Plezzana*, Steinschaf
- Goat breeds: *Bormina*, *Livo*, *Sempione*
- Horses: Samolaca (*Samolaco*)
- Chicken: *Bianca di Saluzzo*, *Bionda Piemonese*, *Millefiori*
- Dogs: *Pastore Bergamasca*

Breeds and types classified with risk status 'Critical'

Species	Breed	Stock**	Trend	Initiative*
Cattle	Red Mountain / <i>Montana</i> , <i>Tortonese</i>	31w HB (1999)	↓	+
Sheep	<i>Ciavenasca</i>	Extinct?	?	-
Sheep	<i>Bellunese</i>	130f/m OP (2000)	↑	+
Sheep	<i>Brianzola</i>	150f/m OP (2001)	↑	++
Sheep	<i>Garessina</i>	80f/m OP (1998)	→	+
Sheep	<i>Plezzana</i>	40-50f/m OP (2000)	?	+
Sheep	<i>Rosset</i>	Several animals (1998)	?	+
Sheep	<i>Saltasassi</i>	3? f/m OP (1998)	↓	(+)
Sheep	<i>Savoy / Savoirda</i>	65f/m OP (1998)	→	+
Sheep	Steinschaf	40f/m OP (1993)	?	-
Goat	<i>Bormina</i>	Few animals (2001)	↓	-
Goat	Istrian/ <i>Istriana</i>	<100f/m OP (1998)	→	-
Goat	<i>Sempione</i>	10-15f/m OP (2000)	↓	-
Horse	Samolaca / <i>Samolaco</i>	Few mares (2000)	↓	-

Chicken	<i>Bianca di Saluzzo</i>	<100f/m OP (2001)	↑	(+)
Chicken	<i>Bionda Piemontese</i>	<100f/m OP (2001)	?	(+)
Chicken	<i>Millefiori</i>	<100f/m OP (2001)	?	(+)
Dog	<i>Bergamasca</i>	>100 (1992)	?	+
Rabbit	<i>Grigio di Carmagnola</i>	70f (1999) – OP?	?	(+)

Breeds and types classified with risk status 'Endangered'

Species	Breed	Stock**	Trend	Initiative*
Cattle	<i>Burlina</i>	209f HB (1999)	→	+
Cattle	<i>Pusteria /Pustertaler Sprinzen</i>	128w OP (2000)	↑	++
Sheep	<i>Alpago /Alpagota</i>	1400f/m OP (1998)	→	+
Sheep	<i>Brogna</i>	1200f/m OP (2000)	↓	+
Sheep	<i>Corteno</i>	500f/m OP (2000)	↓	+
Sheep	<i>Istrian / Istriana</i>	300f/m OP (2000)	↑	+
Sheep	<i>Lamon</i>	<400f/m OP (2000)	↓	+
Sheep	<i>Pusterese</i>	250f/m OP (1998)	↓	-
Sheep	<i>Tacola</i>	633f/m HB (1998)	↑	++
Sheep	<i>Sampeirina</i>	<500f/m OP (1998)	→	-
Sheep	<i>Val Senales / Val d'Ultimo</i>	970f/m HB (1998)	↑	++
Sheep	<i>Villnösser</i>	900f/m HB (2000)	↑	++
Goat	<i>Roccaverano</i>	630f/m OP (1998)	↑	++
Goat	<i>Vallesana</i>	200f/m OP (2000)	→	+
Horse	<i>Noric / Norico</i>	142f HB (2000)	↑	++
Chicken	<i>Padovana</i>	<1000f/m OP (1994)	→	+
Chicken	<i>Polverara-Schiatta</i>	<1000f/m OP (1994)	↑	+

* ++ (existing, with success), + (existing), - (not existing)

** f = female animals, m = male animals, HB = Herdbook, OP = Overall Population

2.3.3. Switzerland

Comparison and Retrospect to the first Alp study

Unlike the beginning of the 90s, work is honoured today by private organisations and keeping old breeds is financially supported. An important aim was reached by the official acknowledgement of the endangered breeds. Out of some conservation projects realised by Pro Specie Rara, own breeding organisations developed.

In comparison to the first Alp study from 1995, the situation has changed as follows:

Breeds additionally portrayed:

- *Capra Grigia*: Conservation activities were started only in the 1990s.
- Skudde (*Skudden*) : This heavily endangered breed is lately also conserved in Switzerland.
- Original Freiberg (*Original Freiburger Pferde*): In this study the ,*Original Freiburger Pferde*' are separately portrayed besides the ,*Freiburger Pferde*' .

Not considered as an individual breed:

- White Swiss Improved (*Zürcherziege*): Is no longer listed as individual breed, belongs today to the Saanen (*Saanenziege*), as it shows close to 100% Saanen blood.

Extinct sheep breeds:

- *Luzeiner Schaf*: The few remaining animals can today only be conserved within the Spiegel (*Spiegelschafe*).
- *Roux de Bagnes*: Proved to be extinct as already assumed in the first Alp study.

The situation concerning the risk status changed as follows:

- Cattle: The breeds Raetian Grey (*Rätisches Grauvieh*) and Hinterwald (*Hinterwälder*) are newly put into the status 'Vulnerable' (both formerly 'Endangered'). The situation of the Original Brown Cattle (*Original Braunvieh*) has deteriorated (formerly not endangered), it is today being classified as 'Rare'.
- Sheep: The Engadine Red (*Fuchsfarbiges Engadiner Schaf*) is not classified any more as 'Endangered'. Its situation has improved, it is today put into the status 'Vulnerable'. For the remaining 3 acknowledged endangered breeds, the risk status has not changed. The situation of the *Elbschafe* remains unclear.
- Goats: The Peacock Goat (*Pfauenziege*) is no more classified as, 'Critical' but as 'Endangered'. A deterioration of the situation resulted for the Valais Blackneck (*Walliser Ziegen*), they are today classified as 'Endangered' (beginning of the 90s: Vulnerable).

Situation

The state of conservation efforts has advanced very far in Switzerland. The need for action in Switzerland is taken care of sufficiently, both at the national and the private level, with some exceptions (see below). An own breeding organisations exists for most breeds which explicitly looks after their conservation. At the private level, the organisation Pro Specie Rara is active in the field of conserving endangered livestock breeds. All endangered breeds which are connected to the breeders association of Pro Specie Rara are acknowledged officially today by the Federal government as being endangered.

The governmental side supports the conservation activities of breeders and breeders' associations financially.

Outlook

Within the frame of the National Plan of Action, specific measures are planned for especially endangered breeds.

Need for action

General:

Due to an urgently needed international cooperation for the conservation of endangered livestock breeds, endangered foreign breeds (*Hinterwald (Hinterwälder Rind)*, *Mangalitsa (Wollschweine)*, *Skudde (Skuddenschafe)* and *Grey Cattle (Grauvieh)* with a population in Switzerland should profit from Swiss support measures. This goes especially for the Grey Cattle, which was indigenous in Switzerland and had survived directly behind the border.

Breeds with acute need for action:

Capra Grigia, Original Freiberg (*Original Freiburger Pferde*), *Elbschaf*, Spitzhauben and *Zwergschweizerhuhn*.

Breeds and types classified with risk status 'Critical'

Species	Breed	Stock**	Trend	Initiative*
Cattle	Evolene (<i>Evolenarde</i>)	117f/m HB (2000)	↑	+
Sheep	<i>Elbschaf</i>	?	?	-
Goat	<i>Capra Grigia</i>	app. 100f/m OP (2001)	?	++
Chicken	Spitzhauben / <i>Appenzeller Spitzhauben</i>	179f OP (2000)	?	++

Breeds and types classified with risk status 'Endangered'

Species	Breed	Stock**	Trend	Initiative*
Sheep	Bündner Oberland / <i>Bündner Oberländer Schaf</i>	394f HB (2000)	↑	++
Sheep	Skudde / <i>Skudden Schaf</i>	430f HB (2000)	↑	++
Sheep	Spiegel / <i>Spiegelschaf</i>	650f HB (2000)	↑	++
Sheep	Valais Red / <i>Walliser Landschaft</i>	328f HB (2000)	↑	++
Goat	Appenzell / <i>Appenzellerziege</i>	828f HB (2001)	↑	++
Goat	Grisons Striped / <i>Bündner Strahlenziege</i>	931f HB (2001)	↑	++
Goat	Peacock Goat / <i>Pfauenziege</i>	502f HB (2001)	↑	++
Goat	Booted goat / <i>Stiefelgeiss</i>	429f HB (2001)	↑	++
Goat	Valais Blackneck / <i>Walliser Schwarzhals Ziege</i>	502f HB (2001)	↑	++
Horse	Original Freiberg / <i>Original Freiburger</i>	300f OP (1999)	↓	+
Horse	Hafling / <i>Haflinger</i>	506f HB (1999)	↓	+
Dog	Bernese Mountain / <i>Dog Berner Sennenhund</i>	<5000f/m OP (2000)	?	++
Dog	St. Bernhard / <i>Bernhardiner</i>	800f/m OP (2100)	↓	++
Dog	Entlebuch Mountain Dog / <i>Entlebucher Sennenhund</i>	Several hundred animals (2001)	↑	++
Dog	Large Swiss Mountain Dog / <i>Grosser Schweizer Sennenhund</i>	500f/m OP (1999)	↑	++
Pig	Swallow-bellied Mangalitsa / <i>Schwalbenbäuchiges Wollschwein</i>	243f HB (2000)	→	++
Chicken	<i>Appenzeller Barthuhn</i>	308w OP (2000)	↑	++
Chicken	<i>Schweizerhuhn</i>	261w OP (2000)	↑	++
Chicken	<i>Zwergschweizerhuhn</i>	?	→	-

* ++ (existing, with success), + (existing), - (not existing)

** f = female animals, m = male animals, HB = Herdbook, OP = Overall Population

2.3.4. Liechtenstein

Comparison and retrospect to the first Alp study

The situation in Liechtenstein did not change in comparison to the first Alp study. A participation in the conservation of breeds from the Greater Rhine Valley ('Swiss Breeds') is not included.

Situation

None of the still known livestock breeds originated in Liechtenstein. Swiss or international breeds are kept exclusively. Animal breeding is strongly orientated on the Swiss development. Funding for keepers of endangered Swiss breeds is not allocated.

Outlook

A change of the current situation does not show in the near future.

Need for action

The need for action for Swiss breeds is covered by Switzerland. It is, however, necessary that Liechtenstein participates in conservation programmes for breeds from the Greater Rhine valley. A participation in the conservation of the Booted Goat (*Stiefelgeiss*) and the Spiegel (*Spiegelschaf*) should be started as fast as possible, within the frame of the ratification of the Rio Convention on Biological Diversity.

2.3.5. Germany

Retrospect

In the 1990s, one of the most important steps in Germany was that data on endangered livestock breeds were made publicly accessible. Within the project TGRDEU – Development of the Central Documentation of Animal Genetic Resources in Germany – the available data were summarised and made available for consulting and coordination measures. The Bavaria free state built up gene reserve herds of selected breeds in the 1990s.

In the present study, no changes with respect to the portrayed breeds in the first Alp study (1995) have been found. The situation concerning the risk status changed as follows:

- Of the 4 portrayed cattle breeds, 3 are still classified as 'Critical' and one as 'Endangered'. Stock numbers, however, have slightly improved in comparison with 1993.
- All of the 5 old sheep breeds had to list increasing stock numbers, too. In the first Alp study 4 were classified as 'Critical' and one as 'Endangered'. Today only two have to be put in the stage 'Critical', further two apply to the stage 'Endangered' and one is classified as 'Vulnerable'.
- The Carinthian bee which was classified as not being endangered in the first study is today threatened in its pure-bred stock by the Buckfast bee.

Situation

The need for action in Germany is attended to to a large extent both by private and national organisations. The financial support in the Alpine region is guaranteed by the Federal state of Bavaria. On private level, the GEH - society for the conservation of old and endangered livestock breeds – supports endangered livestock breeds. For most breeds, an own breeding organisation exists which explicitly looks after their conservation.

Outlook

The implementation of the national plan of action will take place on the basis of the 'National Special Program Animal Genetic Resources'. The program is supposed to be drawn up until March 2002.

Need for action

General:

The state of conservation efforts has advanced very far in Germany, the need for action is generally being attended to.

Breeds with acute action requirement:

For the cattle breeds Murnau-Werdenfels (*Murnau-Werdenfelser*) and Pinzgau Old Type' (*Pinzgauer alter Zuchtichtung*) a well-directed support of the breeding of pure-bred animals is urgently needed.

Breeds and types classified with risk status 'Critical'

Species	Breed	Stock**	Trend	Initiative*
Cattle	Pusteria / <i>Pustertaler Schecken</i>	123 f/m OP (2000)	↑	++
Sheep	Alpine (<i>Alpines</i>) Steinschaf	117f/m OP (2000)	↑	++
Sheep	Bovec Sheep / <i>Krainer Steinschaf</i>	65f/m OP (2000)	↑	++

Breeds and types classified with risk status 'Endangered'

Species	Breed	Stock**	Trend	Initiative*
Cattle	Murnau-Werdenfels / <i>Murnau-Werdenfelser</i>	<550f/m OP (2001)	↓	+
Cattle	Original German Brown Cattle / <i>Orig. Dt. Braunvieh</i>	559f/m OP (1999)	↑	++
Cattle	Pinzgau Old Type / <i>Pinzgauer Rind - alte Zuchtichtung</i>	2800f/m OP (1999)	→	+
Sheep	Carinthian / <i>Kärntner Brillenschaf</i>	348w HB (2000)	↑	++
Sheep	<i>Waldschaf</i>	app. 800f/m OP (2000)	↑	++
Pigeon	Bohemian Pigeon / <i>Böhmentauben</i>	800f/m Op (1993)	?	++

* ++ (existing, with success), + (existing), - (not existing)

** f = female animals, m = male animals, HB = Herdbook, OP = Overall Population

2.3.6. Austria

Comparison and Retrospect to the first Alp study

The financial situation of the conservation of endangered breeds has improved. Because a breed receives only governmental support when being represented by a breeders association, the situation has clarified during the last years in Austria.

Compared to the first Alp study in 1995, the situation has changed as follows:

Breeds additionally portrayed:

- Cattle: Pusteria (*Pustertaler Schecken*) (breeding group existing since 1998)
- Pigs: Turopolje (*Turopolje Schweine*) (Croatian Breed)
- Sheep: Alpine (*Alpines*) Steinschaf, *Original* Steinschaf, Zackel (Ungarisches Zackschaf)
- Goats: *Salzburger Strahlenziege*, *Vierhornziege*, *Steirische Scheckenziege*, Peacock Goat (*Pfauenziege*).

Risk status:

- Cattle: The status has improved for 5 cattle breeds: Carinthian Blond (*Kärntner Blondvieh*), Murboden (*Murbodner Rind*), pure-bred Pinzgau (reingezüchtete Pinzgauer), Waldviertel (*Waldviertler Blondvieh*), Tux-Zillertal (*Tuxer-Zillertaler*).
- Horses: Lipitsa (*Lippizaner*) horses are newly classified 'Critical' (formerly: 'Endangered'), Hafling (*Haflinger*) are classified currently as 'Rare' (formerly: 'Vulnerable').
- Sheep: The risk status has improved for 4 sheep breeds Bovec Sheep /*Krainer* Steinschaf, *Waldschaf*, Carinthian (*Kärntner Brillenschaf*), Tirolyan (*Tiroler* Steinschaf).
- Goats: The status of the Pinzgau (*Pinzgauer Ziege*) and the *Scheckige Tauernziege* has improved from 'Critical' to 'Endangered'.
- Chicken: The status of the *Sulmtaler* and the *Wildfarbigen Altsteirer* has improved.
- The situation of dogs, pigeons and rabbits has been rolled up again.

Situation

Conservation efforts are well organised at private and national level. A majority of the endangered breeds is represented by an own organisation – governmental funding is only allocated if a responsible organisation exists.

Despite of that, the need for action is not covered for a number of breeds and types.

The ÖNGENE – National Union for Gene Reserves- makes, in cooperation with governmental bodies, an reinforced effort to receive more scientific care for old livestock breeds.

The private VEGH – Association for the Conservation of Endangered Livestock Breeds – accomplishes a valuable task by coordinating activities in the area of *in situ* conservation in the agricultural environment.

Outlook

A change of the current situation does not show in the near future.

Need for action

General:

The state of conservation efforts in Austria has proceeded far and the need for action is generally being attended to. In spite of that, the situation is unsatisfactory for a large number of breeds (see below).

The need for action and/ or necessity of clarification is especially acute for the following breeds:

- Cattle: Original Brown Cattle (*Original Braunvieh*), *Zillertaler Ruckerl* (type of Pusteria (*Pustertaler Sprinzen*), Zillertal (red type of Tux-Zillertal), Waldviertel (*Waldviertler Blondvieh*)
- Sheep: Montafon (*Montafoner*) Steinschaf, Salzburg (*Salzburger*) Steinschaf, Alpine (*Alpines*) Steinschaf,
- Goats: *Steirische Scheckenziege*, *Vierhornziege*, *Salzburger Strahlenziege*
- Horses: Hafling old type (Haflinger alter Zuchtrichtung)
- Chicken: Weisse Altsteirer Hühner
- Pigeons: *Waldviertler Kröpfer*, *Österreichischer Ganselkröpfer*, *Alt. Österreichischer Tümmeler*, *Wiener Kurze*, *Wiener Gansl*
- Rabbit types: Original type of *Blaue Wiener*, dark type of the *Graue Wiener*, *Schwarze Wiener*

Breeds and types classified with risk status 'Critical'

Species	Breed	Stock**	Trend	Initiative*
Cattle	Bergscheck (<i>Ennstaler Bergschecken</i>)	43f OP (1999)	?	+
Cattle	Jochberg Hummel (<i>Jochberger Hummeln</i>)	20f/m OP (2000)	↓	+
Cattle	Original Brown (<i>Original Braunvieh</i>)	56f OP (1999)	?	+
Cattle	Pusteria (<i>Pustertaler Schecken</i>)	25f/m OP (2000)	?	++
Cattle	Zillertal (<i>Zillertaler</i>)	?	?	-
Cattle	Hungarian Grey (<i>Ungarisches Steppenvieh</i>)	15f OP (1999)	?	(+)
Sheep	Black Mountain (Schwarzes Bergschaf)	?	?	?
Sheep	Alpine <i>Alpines</i> Steinschaf	30f/m OP (2000)	?	(+)
Sheep	Montafon <i>Montafoner</i> Steinschaf	70f OP (1999)	↑	+
Sheep	Original Steinschaf	40f OP (2000)	?	(+)
Goat	Peacock Goat (<i>Pfauenziege</i>)	50f/m OP (2000)	?	+
Goat	<i>Salzburger Strahlenziege</i>	?	?	-
Goat	<i>Steirische Scheckenziege</i>	50-100f/m (2000)s	?	(+)
Goat	<i>Vierhornziege</i>	50f/m OP (2000)	?	-
Horse	Old Austrian Warmblood / <i>Alt-österreichisches Warmblut</i>	40f OP (1999)	↓	+
Horse	Lipitsa / <i>Lippizzaner</i>	83f OP (1999)	↓	+
Donkey	<i>Österreichisch-Ungarischer Albinoesel</i>	20f/m OP (1997)	?	+
Pig	<i>Swabian-Hall (Schwäbisch-Hällisches Schwein)</i>	3 breeders (2000)	?	-

Pig	Swallow-bellied Mangalitza / <i>Schwalbenbäuchiges Mangalitza</i>	100f OP (2000)	↓	++
Pig	Turopolje / <i>Turopolje Schwein</i>	40f/m OP (2000)	↑	++
Chicken	<i>Altsteirer Wildfarbige</i>	20 breeders (2000)	?	++
Chicken	<i>Weisse Altsteirer</i>	10 breeders (2000)	?	(+)

Breeds and types classified with risk status 'Endangered'

Species	Breed	Stock**	Trend	Initiative*
Cattle	Carinthian Blond / <i>Kärntner Blondvieh</i>	800f OP (1999)	↑	++
Cattle	Murboden / <i>Murbodner Rind</i>	624f HB (2000)	↑	++
Cattle	Tux / <i>Tuxer</i>	392f OP (1999)	↑	++
Cattle	Waldviertel / <i>Waldviertler Blondvieh</i>	161f OP (1999)	↓	+
Sheep	Brown Mountain / <i>Braunes Bergschaf</i>	464f OP (1999)	→	++
Sheep	Carinthian / <i>Kärntner Brillenschaf</i>	900f OP (2000)	↑	++
Sheep	Bovec Sheep / <i>Krainer Steinschaf</i>	250f/m OP (2000)	↑	++
Sheep	<i>Waldschaf</i>	495f OP (2000)	?	++
Sheep	Zackel / <i>Ungarisches Zackelschaf</i>	150f/m OP (2000)	↑	++
Goat	Pinzgau / <i>Pinzgauerziege</i>	400f/m GO (2000)	↑	++
Goat	<i>Scheckige Tauernziege</i>	200f/m OP (2000)	→	++

* ++ (existing, with success), + (existing), - (not existing)

** f = female animals, m = male animals, HB = Herdbook, OP = Overall Population

2.3.7. Slovenia

Comparison and Retrospect to the first Alp study

Conservation work is still in governmental hands. A large part of the endangered breeds have been included into the program 'Slovenian Gene Bank'.

In comparison to the first Alp study of 1995, the situation has changed as follows:

Breeds additionally portrayed:

- *Posavski* (horse breed), Slovenian White (*Slovenska Bela Zlahtna Pasma*) (pig breed), *Bela Krajina Pramenka* (sheep breed), *Bovcka Koza* (goat breed)
- The situation for dogs, pigeons and rabbits was rolled up again. Additionally, a local trout breed was portrayed.

The situation has changed as follows with regard to the risk status:

- The situation of the horse breed Lipitsa (*Lipicanski*) and the sheep breed *Istrska Pramenka* has improved, they are now classified as 'Endangered'.

Situation

Conservation efforts are exclusively in governmental hands in Slovenia. For most of the breeds, funding for keepers is allocated when governmental conservation programs exist. Private actors are missing completely. Therefore, conservation work is on the one hand dependent on the political and economic situation and on the other hand on the question whether the persons in whose hands the task is put will raise the necessary commitment. At present, mainly *ex situ* conservation is promoted in Slovenia. An *in situ* conservation system has not yet been implemented.

Outlook

A long-term program (2001-2010) for the conservation of endangered livestock breeds in Slovenia at the national level is in its initial stages.

Need for action

General:

As a next step, the governmental side should tackle the set up of an *in situ* conservation concept. For *in situ* conservation, it would be advantageous if conservationists were organised in own breeding organisations.

Breeds with acute need for action:

- Cika (Cikasto Govedo) Cattle (types *Tolmin* and *Bohinj*), pig breed Slovenian White (*Slovenska Bela Zlahтна Pasma*) and Noric (Norican) horses.

Breeds and types classified with risk status 'Critical'

Species	Breed	Stock**	Trend	Initiative*
Horse	Noric (<i>Norican</i>)	49 breeding mares (2000)	?	-
Pig	Slovenian White / <i>Slov. Bela Zlahтна</i>	35f HB (2000)	→	-
Goat	<i>Bovcka Koza</i>	287 OP (2000)	?	(+)
Dog	<i>Koroski</i>	?	?	?
Chicken	<i>Stajerska Kokos (brown type)</i>	Extinct?	?	-
Chicken	<i>Stajerska Kokos (white type)</i>	Several animals (1999)	?	-

Breeds and types classified with risk status 'Endangered'

Species	Breed	Stock**	Trend	Initiative*
Cattle	<i>Bohinj + Tolmin</i>	400 OP (1999)	?	++
Horse	<i>Lipitsa / Lipicanski</i>	600 OP (1999)	↑	++
Horse	<i>Ljutomer Trotter / Ljutomerski Kasac</i>	315 breeding mares (2000)	↑	+
Horse	<i>Posavski</i>	263 f HB (1999)	?	+
Horse	<i>Slov. Toplokrvni</i>	194 breeding mares (2000)	→	-
Pig	<i>Krskopolje Saddleback / Krskopolje</i>	400 OP (1999)	↑	+
Sheep	<i>Bela Krajina</i>	250f OP (1999)	?	+
Sheep	<i>Bovska</i>	? (300-1500)	?	+
Sheep	<i>Istrska</i>	600f OP (1999)	↑	+
Dog	<i>Krasevec</i>	>1000 OP (2000)	↑	++
Chicken	<i>Stajerska Kokos (partridge coloured)</i>	1000 OP (1999)	↑	+
Pigeon	<i>Slov. Beloglavcek</i>	<600 OP (2000)	?	+
Rabbit	<i>Slov. Kunec</i>	<250 OP (2000)	?	+

* ++ (existing, with success), + (existing), - (not existing)

** f = female animals, m = male animals, HB = Herdbook, OP = Overall Population

2.4. General Need for action in the Alpine region

Continuous monitoring

As the present study shows, the transfer of observations into a continuous monitoring is urgently required. This is the only way to pay credit to a fast changing situation and to register negative developments in time.

Product marketing

The efforts to bring old varieties out of gene banks and type gardens, to cultivate them increasingly and to offer them at the market are still in their infancy. In the first line, suitable marketing concepts are being asked for, e.g. product promotion by labels.

Variety gardens, arboreta, and rescue stations at higher altitudes

The set up of variety gardens and arboreta, especially for varieties from higher altitudes, is still poor in the entire Alpine region. Rescue stations for breeds from mountainous regions are missing, too. Such establishments should be set up together with a suitable on farm management.

Network cultivated plants

For the Alpine region, transborder cooperation for beans, cabbage, cereals and potatoes is estimated as important.

Elaboration of a record of formerly used varieties

A well-directed search for old types is necessary for many species and regions. Taking historical inventories of varieties which were initially grown in different areas would allow to set up search lists based on historical data and to search specifically for these varieties.