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SAVE Project-Office:

Safeguard for **A**gricultural **V**arieties in **E**urope  
Sicherung der landwirtschaftlichen ArtenVielfalt in Europa  
Sauvegarde pour l'Agriculture des Variétés d'Europe



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## Report from the

# International Workshop on Conservation of Autochthonous Buffalo in Southeast Europe

*6-7 May 201, Sighisoara, Romania*



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The **Workshop Conservation of Autochthonous Buffalo in Southeast Europe** took place 6-7 May 2011 in Sighisoara, Romania and was organised by SAVE Foundation and Fundatia ADEPT as an occasion to meet together with buffalo experts and stakeholders from South-Eastern Europe with the aim of creating a network for the conservation of autochthonous water buffalo in the area.

The participants each contributed with a presentation based on the following discussion topics:

**Buffalo in country/region:**

- History
- Current situation
- Population numbers
- Level of crossbreeding
- Number of available bloodlines for pure-breeding
- Herdbooks/records

**Varieties of autochthonous buffalo in South-Eastern Europe. State of:**

- Phenotypical characterisation
- Characterisation of production systems
- DNA testing
- Necessary action to improve characterisation
- Keeping a purebred nucleus whilst cross-breeding for better production – can this work?
- How can an international expert network contribute to the conservation of autochthonous buffalo in South-Eastern Europe?

The **goals of the workshop** were:

- to assess the situation of stakeholder motivation, involvement and networking leading to stakeholder network
- to publish an overview of the status quo
- create a plan of action for the characterisation of types both phenotype and genotype
- agree upon a conservation strategy through identifying further priorities and planning future actions.

After a morning of presentations and questions, participants were asked to answer questions within a discussion round. Some time was also taken to look at photos from various buffalo and discuss their physical features for purposes of both characterisation and health.

The **questions addressed** were as follows:

- What are the priorities?
- What action should be undertaken?
- How can a network of experts improve the situation?
- What are the next steps for the network?

The Workshop was completed with an excursion to a large buffalo farm in the area, where it was possible to look more carefully at husbandry issues and to discuss practical aspects of buffalo keeping and conservation.

The following report sums up the presentations and subsequent discussions and, also, presents the conclusions and recommendations of the participants of the workshop.

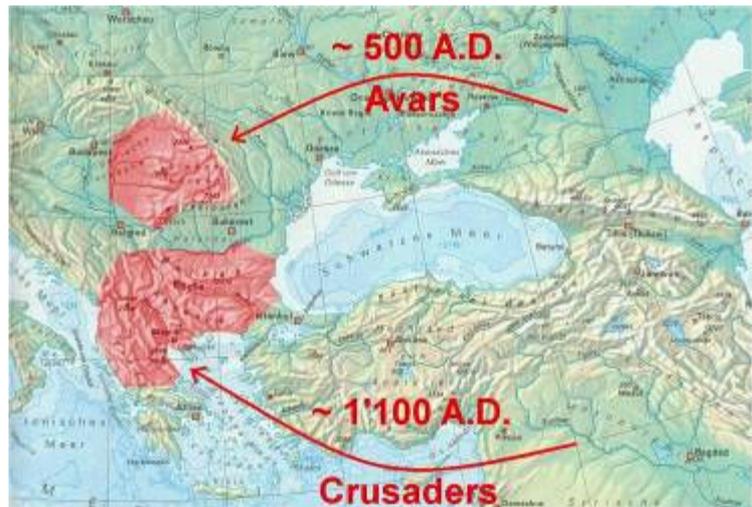
*For information about participants as well as presentations, please see <http://www.save-foundation.net/Conferences/Sighisoara.htm>*

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## Summary of presentations

On a global scale, Riverine or Water Buffalo (*Bubalus bubalis*) is a very popular species. The animals can be used for milk, meat and traction. In 2000, the FAO estimated that there were approximately 158 million water buffalo in the world, and that 97% of them (approximately 153 million animals) were in Asia. Although buffalo are a bovine species, they are very different from the cattle more commonly kept in Europe. In South Eastern Europe buffalo have been an important addition to farms, especially in subsistence and semi-subsistence agriculture. Buffalo are enjoying a renaissance in Italy, where mozzarella production demands vast quantities of high quality milk. These buffalo farms are large-scale, intensive operations that are established with the aims of obtaining as much milk as possible from the buffalo.

Buffalo were once numerous and popular within the region of South East Europe. Despite the fact that the origins of buffalo in the area are unclear, it is sure that they were introduced about 1000 years ago - by perhaps the Crusaders or the Islamic invaders. The buffalo found in the north in the Carpathians were, possibly, introduced 500 years earlier by the Avars. However, genetic testing is required to find out whether the northern and southern populations are separate or not. Even though the origins are not yet clear, it is possible to see that the buffalo have adapted to their local environments: the Carpathian and Transylvanian types have hard hooves for moving over stones and have a thick winter coat. Wherever the buffalo live, this Riverine type loves to swim.



Various traditional products were made with their milk, meat and skins. Their muscle power was used on the farm as traction. Buffalo were valued for their frugality, longevity and triple-use. The negative side of the buffalo is, perhaps, part of the key to its downfall: the cows often only let down their milk for one person – usually the man of the family - they can also be aggressive and are extremely wilful and stubborn. These factors, along with the increased use in tractors and the promotion of high-yield cows led to the buffalo being replaced. Numbers in the last 20 years have decreased from tens of thousands down to, in some countries, too few to make breeding viable without import of new stock.

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**Successful conservation** depends on many factors. The evidence presented at the workshop shows some interesting aspects.

Numerical data shows that large populations exist where there are many products on the market and the animals are essential for local economical structures. Selection (using milk recording), animal recording, and also, creating a market for products is important for both conservation breeding and also for the survival of the buffalo as a species of domesticated animals in Europe. However, market demand cannot always be met due to low population numbers.

In some countries it is not even possible to produce enough for a niche market - buffalo are kept in a semi-subsistence situation. Difficulties in buffalo husbandry (e.g. their preference to always be milked by the same person) add to the economic constraints, which make buffalo less

attractive for new owners. A coherent strategy for addressing this problem needs to be developed.



Professor A. Borghese from the International Buffalo Federation

Often, attention gets paid to specific species and/or systems when action from outsiders occurs. In many cases, buffalo-keeping becomes more attractive as soon as outsiders (from other countries or regions within the country) become involved. These interests, when applied sensitively, can provide a catalyst for change in perception of an animal or product and also for the promotion of ideas, organisation of production etc.

That there is a **need for action** is clear. What that action should look like and in which order activities should be planned, is more difficult. The danger of extinction of buffalo in South-Eastern Europe has already been outlined. There is also a risk of inbreeding. Concrete action is required in order to reverse these trends. However, it is not advisable to just jump in and “do something”, committing time to spend on planning and communicating, recording and observing is essential.

**Priority setting – what comes first?** (this looks different for the various countries/regions):

- Characterisation on all levels – *can give indications for conservation strategies before possibly damaging action is taken!*
- Live conservation – *strategy for managing breeding in small populations must be worked on*
- Sustainable use – *economically and ecologically sustainable praxis*
- Connect to rural development – *small-scale, local production to revitalise economies and create employment*
- Promotion to general public, information sharing between stakeholders and other experts.

In many of the countries concerned, availability of land and land ownership has been negatively affected by historical processes. Land has changed hands, been collectivised or, in some places, national borders have changed. Often it is impossible to find out who really owns a piece of land, this is compounded by the fact that many traditional farms are so small-scale that, to buy a land parcel large enough for a commercially viable buffalo herd would mean tracking down many

Subsidies can be useful to increase stock numbers but, as participants emphasised, buffalo are farm animals not zoo animals, they should be utilised within agricultural production. Subsidies are not a long-term, sustainable solution for conservation of the species. Policy changes can lead to immediate decrease in numbers as subsidies are cut or the focus of them merely changes.

Connecting with nature conservation in protected areas (e.g. grazing) provides a cost-effective eco-management system whereby buffalo can obtain a monetary value without requiring a commercial activity. This, in turn, can be coupled with agri-tourism activities, use within extensive production systems and linked to local traditions and ethnic minorities.

Breeding associations provide essential services – herdbooks, monitoring, farm visits, information dissemination and networking of breeders. These activities are the basis for successful conservation.

previous owners and their relations in order to negotiate a purchase. Factors such as this can dishearten even the most enthusiastic buffalo farmer.

**Points to consider** were taken from the presentations into the discussion round in order to look at them more closely. These were as follows:

- How can farmers, consumers, experts and scientists be better targeted in future actions?
- Are the Southern and Northern populations (Carpathian/Mediterranean) closely related or is there a difference between them?
- Should there be knowledge exchange with Georgia, Turkey and Bulgaria – should they also be in the network?
- What can we learn from the Italian experience?
- How are stock numbers related to demand for products?
- Milk yield is low – is crossbreeding (e.g. with Italian) an option?
- Carpathian type respond to their owners – is this a barrier for commercial activity?

## **Summary of the discussion**

**Conservation and commercial activities** need to be separated if cross-breeding is to be used to improve production. Improved production is needed if buffalo are to be utilised in large scale (100+ animals per herd) production. Demand for products is in place but the supply is often poor. Conservation activities should preserve the full range of buffalo type to ensure a large gene pool. Selection for better production can take place within the conservation activities.



*Water buffalo grazing in Serbia*

Conservation herds can be utilised in extensive, low-input systems such as grazing in protected areas. These animals are also interesting for the subsistence and semi-subsistence farmers who utilise buffalo for their own needs. With good bull management, conservation breeding with small-scale farmers would be a good option.

Markets for buffalo products (dairy products and meat, depending on country) exist but could be improved upon. Improvements need to be made in production, distribution channels and raising awareness of the unique nature of buffalo products. Organic and other labelling, e.g. DPO or Heritaste®<sup>1</sup> adds value to the products.

**Registration and record keeping** adds value to individual animals or to herds of buffalo. Registration and recording is poor to very poor in all countries. Some form of payment or benefit in order to motivate animal owners to register their animals is required.

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<sup>1</sup> See <http://www.save-foundation.net/english/market.htm>

**Greece** – animals are earmarked according to EU regulations and there are records up to grandparents. However, there is no production data collected.

**Ukraine** – the NGO SATrans marks and registers their own animals and is starting a herdbook. There is no production data.

**Serbia** – animals that are registered for subsidies are earmarked. Earmarking for all animals is planned but there are inadequate finances for implementing this. There is some production data kept but only for a few animals and only for milk production.

**Romania** – There is a herdbook and some milk recording done in conjunction with Sercaia. Small farms are unregistered; these farms make up approximately 50% of the buffalo population. Registration and data can be kept by private persons on their own initiative (e.g. Buffalo Breeders Association of Transylvania).

**Albania** – there is partial registration related to subsidies.

**Genotyping** of the buffalo found in each country in SE Europe is an expensive but necessary measure that should be conducted as soon as possible.

In some countries, populations are so small that breeding lines need to be imported. Genotyping will aid the decision-making process. It is also necessary to ascertain whether or not the northern “Carpathian” population of buffalo differentiate greatly from the Mediterranean-type due to introduction into the area by Avars 500 years earlier than the rest of Europe.

Commercial interest in cross-breeding e.g. Romanian with Italian stock is great. However, if the two populations show a significant genetic difference, this cross-breeding exercise may endanger the Carpathian-type enormously. In this case, a move towards investment in performance selection within the Carpathian-type population would be more sensible. Many participants, (especially at the Roundtable discussion for Romanian stakeholders which took immediately place after the main workshop), preferred the latter route to improving commercial potential than the route of cross-breeding with Italian bloodlines.

Participants are willing and able to collect necessary samples. Finding a suitable laboratory to conduct the analysis is urgent. A concerted effort to find a suitable partner for this piece of research will be needed. Some institutes or scientists appearing to be suitable will be directly approached but a more general appeal for assistance will also be made.

It was suggested that samples are also collected in Bulgaria, Georgia and Turkey in order to complete the picture of the area. Although the Bulgarian buffalo are considered to be exclusively cross-bred with Murrah, it is possible that, as in other regions and other species, there are still some remnant populations in cut-off areas that are not crossbred.

### **Exchange of knowledge**

within the network is very important. This exchange ranges from practical aspects such as discussion of nutrition and monitoring to the more theoretical ideas for conservation strategies. Some factual information was also shared within the discussion which resulted in the following information:

- The **highest recorded age for a buffalo**, according to participants is about 25 years. Buffalo cows have



been known to **reproduce up to 22 years**. These facts should be taken into account when comparing productivity to that of cows.

- The **peak milk production** is usually in the 3<sup>rd</sup> lactation.
- Buffalo show **significant behavioural differences** between summer and winter and also between types. Observations show that buffalo move around less in winter and consume very little food. On the pastures in summer, buffalo of the Carpathian-type walk further and graze more than those animals that are phenotypically Murrah-crossbreeds. These animals walk significantly less, rest more and are less integrated into the herd.
- Buffalo are to be found at **altitudes as high as 1700-2000m** above sea-level in Georgia. In South Eastern Europe it is reported that they are found up to 1100m in Serbia, 700-800m in Romania and that, during the Greek Civil War, they were used for traction at altitudes of about 1200m. The buffalo found at these altitudes tend to have harder hooves and rougher, longer coats than their counterparts lower down. Whether these animals are a distinct variety of buffalo or not can only be satisfactorily explained by genotype testing.

**Populations** are stable in Hungary, Serbia and Greece. They are declining in Romania, Macedonia and Bulgaria – where cross-breeding with Murrah has possibly totally eradicated local stock. Populations in the Ukraine and Albania are increasing albeit on a low level.



*Curious buffalo coming to meet the Workshop participants, Buffalo farm in Meschendorf, Romania*

## **Next steps**

The next steps of the Network appear to be clear:

- The urgent need for genotype testing must be addressed by finding a suitable institute willing to undertake this piece of research.
- A list of recommendations and priorities should be published along with a report of the Workshop (this document).
- The presentations and other information from the Workshop should be made available online (see: <http://www.save-foundation.net/Conferences/Sighisoara.htm>) Furthermore, dissemination channels such as the SAVE Foundation's eNews, the Buffalo Newsletter, DAD-Net etc should be utilised.
- A "Buffalo Network" will be set up on the SAVE website "Agrobiodiversity Net" under "regional networks"([www.agrobiodiversity.net](http://www.agrobiodiversity.net))
- A buffalo interest group should be set up on the European Network of Breed and Seed Savers (<http://variety-savers.net>). This multilingual, cross-border initiative from SAVE provides forum space and networking opportunities.



*Buffalo cow at Buffalo farm in Meschendorf, Romania*

## **Recommendations and Priorities**

The participants of the workshop make a number of recommendations for the conservation of Water Buffalo in South Eastern Europe:

- **Genotyping** is urgently required as a basis for future conservation work. The following people should be approached for this: J. A. Lenstra (NL), B. Moioli (IT), A. Valentini (IT). The need for this research should also be widely publicised in order to gain financial and other support for it.
- **Monitoring** of populations and holdings is urgently required in countries where this does not already take place. It is important that the (approx.) age of animals and farmers is recorded. The number of available bulls, the phenotypical characteristics of the animals and the production systems they are kept in should also be recorded. Any products or specialities offered should be noted.
- **Registration** of animals into a herd book where it is not already occurring is essential if an overview of the bloodlines is to be achieved.
- **An assessment of the capacity for production** of local breeds should be undertaken before any cross-breeding occurs. On no account should Murrah be used in Europe (Borghese), Europe has enough commercially viable stock that is adapted to local conditions.
- **Introducing bloodlines** from other European countries before genotyping and production recording has taken place may also be a mistake – it is suggested that, with improved production systems, local breeds have the capacity to be just as productive as imported breeds. In countries where no herdbooks are kept, there is no way of keeping imported commercial lines separate from autochthonous conservation breeding lines.
- Although the desire to rapidly **improve commercial capacity** is understandable, from a conservation perspective extreme caution is called for as this kind of activity, if not carefully handled could lead to disaster for locally adapted breeds.
- The current **level of communication** about the buffalo situation in South Eastern Europe is poor. There are many interested people and associations, institutes etc, however there is very little coordinated response to the situation which is, in some places, critical. The International Workshop on Conservation of Autochthonous Buffalo was a good first step towards improving matters. This must now be built upon so that information is shared and action can be coordinated.

## Discussion papers

Various discussion papers were prepared for the Workshop. In particular, an overview of the currently available information on Water Buffalo in SE Europe was prepared. The first paper is based on a literature search with additional information from participants. This paper can be accessed here: <http://www.save-foundation.net/Conferences/Sigishoara/Buffalo-Overview.pdf>

Secondly, a similar overview was prepared with information from the 5<sup>th</sup> Edition of Mason's World Directory of Livestock Breeds, Types and Varieties (Porter, 2002) with additional information from the SAVE Foundation database "RARBASE". This paper can be accessed here: [http://www.save-foundation.net/Conferences/Sigishoara/Buffalo\\_Mason.pdf](http://www.save-foundation.net/Conferences/Sigishoara/Buffalo_Mason.pdf)

## Addendum

*Since the workshop in May, some additional information has become available:*

An extensive search tour for various autochthonous breeds in **Georgia** undertaken by Hape Grünenfelder, SAVE Foundation in June led to the locating of a mountain-type of water buffalo at an altitude of 1,900m above sealevel. These animals were documented and their phenotypical characteristics recorded.



At the workshop, it was suggested that the "third type" of buffalo reported to be found in the Ukraine could be from **Azerbaijan**. The other two types are the Transcarpathian type mainly found in Romania and, also, the Murrah-crossbreed. Now Luigi Guarino reports on his blog about eating "delicious cheese, butter and yoghurt made from their milk last week". His photo (used here with permission) shows the buffalo from the rear – it would be very interesting to see some photos of their horns and also to receive more information about them. (blog: <http://agro.biodiver.se/2011/07/water-buffaloes-in-azerbaijan/#comment-977377>)

