### Institutional and Legal Framework for ex situ Conservation at National Level

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#### **Situation in Germany**

The National Action Plan for conservation and sustainable use of AnGR was developed by the DGfZ project group "Conservation of biodiversity in Farm Animals". Scientists from animal breeding and husbandry institutes as well as members of breeding organizations and NGOs as well as representatives of the Federal Ministry of Agriculture and state administration decided on an 80 page program in the year 2004. This was approved by the state Ministers of Agriculture since their administration is responsible for execution of the Animal Breeding Act. A revised version of the National Action Plan was printed in April 2008. Although the official foundation of the German Gene Bank for Farm AnGR has not been realized as yet, the meetings of the standing committee (DGfZ Fachbeirat Tiergenetische Ressourcen) for AnGR take place regularly twice a year discussing amongst others issues of the National Action Plan. Besides the question of responsibilities, matters like "red lists" for all endangered breeds are inspected, and for the different species recommendations are worked out to support various in situ programs and the management of small populations. These are very often private initiatives with little or no support by public funding. Data collection for the assessment of population structures is therefore limited.

## Objectives of the national cryopreservation program

#### **Collection goals:**

- 12 horse breeds
- 15 cattle breeds
- 19 sheep breeds
- 3 pig breeds
- 3 goat breeds are regarded as native endangered breeds (red list) and proposed for cryopreservation of semen.

**25** (unrelated) males of each breed should donate **100** semen portions for the core set. Some breeds are too small in population size, so it will not be possible to fulfill these goals.

There is no fixed number of embryos and oocytes since not all species allow a collection. Poultry and rabbit breeds will be dealt with in special projects.

# **Collection categories**

The breeds listed above belong to three collection categories. N<sub>e</sub> (effective population) was calculated dividing (4 x Number of  $\bigcirc$  x Number of  $\bigcirc$ ) by (Number of  $\bigcirc$  + Number of  $\bigcirc$ ).

$N_e \leq 200$	ERH = breed at risk, needs a well managed maintenance program,
$N_e \leq 50$	PERH = breed close to extinction therefore cryoconservation,
$200 < N_e \le 1000$	BEO = breed under observation, cryopreservation recommended
Ne > 1000	not endangered – changes in size should be assessed by regular monitoring

# Achievements until today

A systematic collection of according to list of the National Action Plan is not on the way. Nevertheless there are some cryo storage facilities used in AI stations, state owned institutions or even private companies as well as at university institutes where reproduction biology is a subject.

# Cryopreservation of semen

Species/ breeds				
Horses	6 breeds	1	to	9 stallions
Cattle	9 breeds	15	to	22 bulls
Sheep	5 breeds	1	to	12 rams
Goats	2 breeds	4	to	12 bucks
Pigs	3 breeds	9	to	22 boars

## Cryopreservation of embryos

Out of two cattle breeds (Old type Braunvieh, German Black and White) 29 and 300 embryos are stored.

# Future plans

Very shortly a 3 years cryopreservation program for chicken breeds will start. 15 roosters from 12 breeds will be housed in the Institute for Farm Animal Genetics to collect semen. The German Association of Fancy Poultry breeders has applied for funding at the Federal Office for Agriculture and Food. Our institute can cooperate in this project as a scientific partner. The semen will be stored in the central storage location (gene bank) in Mariensee and will therefore belong to the German gene bank. The project is meant to serve as a logistic and technical model for future semen collection in poultry.

For other species where more cryomaterial is needed (accord. to the Nat. Action Plan) the states will have to find sources for semen, embryo and tissue collection.

## Participation of stakeholders/Responsibilities

Domestic breeds were or are very often of regional relevance. They are locally adapted and in many case still serving a special purpose. This is true e.g. for sheep breeds in coastal areas (dike preservation), in moorland, heather and also mountain ranges. States have therefore regional funding programs for sheep and in some cases cattle breeds grazing marginal grassland areas. There are differences how funding is organized by the state ministries depending also on local conditions. In order to cover these differences, state representatives will be part of the German gene bank organization (see figure below)



## Fig.: Organization chart of the German Gene Bank

By laws, objectives and internal regulations were developed by a working group of the standing committee for AnGR, even specimen of contracts between possible members of the gene bank were designed. As long as there is no agreement in sight about sharing the costs between the federal and state institutions, unfortunately no progress will be made.

## **Decision making process**

Decisions concerning collection targets, type of material etc. in Germany are presently left to the standing committee. They also discuss Maintenance programs for breeds at risk and publish recommendations how those should be accomplished. Red lists are discussed, reports from projects are submitted. From its function, capacity or role this committee is only able to recommend actions until the final legal framework of the gene bank is decided.

## **Storage and Documentation**

A gene bank storage location is provided at the Institute of Farm Animal Genetics. It is mainly used for storage of more the 100000 doses of sperm from DSN bulls (German Black and White - dual purpose). 22 boars of Bunte Bentheimer Pigs serve as gene reserve for Lower Saxony, Saddleback samples from Brandenburg will also be moved to Mariensee shortly, two horse breeds (heavy warmblood, Knabstrupper as a composite breed) are also kept here. Cryo Web is applied for documentation.

## Sanitary arrangements

Sanitary arrangements do not differ from regulations in approved AI stations. In case samples of semen are delivered certificates have to come together with the sample (whether they are adequate to be used in the EU etc.

### Legal Issues

All projects for collection of cryo material which were financed with public money, belong to the respective state or the federal government. Storage in the central facility of Mariensee is financed by the Institute's budget which comes of course from the Federal Government. The final ownership has to be agreed upon, once the gene bank is founded. So far bilateral agreements are made between the Institute and the party which is delivering material. Access to the samples is still subjected to the original owner, who can utilize the doses of semen outside the 100 core set samples. Further agreements will be necessary at a later stage.

No decisions have been taken concerning tissue sample collection for the German gene bank at present.