



# Animal Genetic Resources in Biosphere Reserves

in Germany



Society for the Conservation of old and endangered Livestock Breeds (GEH)



German Federal Agency for Nature Conservation (BfN)

Periode: September 2011 to January 2013





## Goals and tasks within the project „ Animal genetic Resources in Biosphere Reserves in Germany “

- Status Quo of endangered breeds in Biosphere Reserves – monitoring of the contribution of biosphere reserves in the sector of endangered livestock breeds
- Investigations on the demand of the cultivation of extra grassland, pastures and other forms of animal husbandry.



Rotes Höhenvieh



Pommerngans



Schleswiger Kaltblut



# The Red List of the Society for the Conservation of old and endangered Livestock Breeds (GEH) (2013)

Animal species	Endangered local breeds in Germany
Cattle*	14
Sheep*	15
Goats*	5
Pigs*	6
Horses*	11
Donkeys	-
Dogs	10
Rabbits	8
Chickens	31
Ducks	3
Geese *	6
Turkeys	2
Doves	in process
Total	111

\* = Animal species, which use grassland

**Rote Liste der bedrohten Nutztierassen in Deutschland 2013**

Kategorie	extrem gefährdet I	stark gefährdet II	gefährdet III	Vorwarnstufe	keine weitere Bewertung notwendig	Rassen aus anderen Ländern
<b>Rinder</b>	Limpurger Rind Münchener/Steirer Rind Gauvied Andach-Steirer Rind Angler Rind (off. Zuchtstatus)	Deutsches Shorthorn * Original Braunvieh * Rotes Höhenvieh * Hinterwälder Rind Poggen Rind *	Gelbbild (Frankenrot) * Deutscher Scherbrunnen Niederengrund *	Autonnes Doppelzüchtung * Vorderwälder Rind		Polnische Rind Englisches Rotvieh Fleischlamm
<b>Schafe</b>	Alpen Stornschaf * Böhmschaf * Leinwisch Limpurger/er Tall Wolfe gehörte Hochschaf Deutsches Käsefah * Schwarzes Bergschaf *	Braunes Bergschaf * Weiße Bergschaf * Wälschaf * Merinowollschaf	Brennener Landschaf Wolfe gehörte Hochschaf (Wollschaf) Stulle Kaufmännisches Landschaf Weißköpfiges Fleischschaf Hornschafschaf	Colberger Fleischschaf Hornschaf		Wälschschaf Kleines Hornschaf Ränge du Basailles Soay Schaf
<b>Ziegen</b>		Thüringer Wald Ziege			Schwarzwaldziege * Rarer Ziege * Erzgebirgsziege * Rohrziege *	Saarnachschaf Gänterziege Bulgische Längsziege
<b>Schweine</b>	Angler Seifenschwein Deutsches Seifenschwein Bairisch-Berchtesgauer Schwein Rothbairisch-Hessisches Schwein	Schwarzbairisch Häffisches Schwein				Spanische Wildschwein Rotes Wildschwein Schwarzbairisches Wildschwein
<b>Pferde</b>	Rottaler Pferd Alt-Württemberger Pferd Landstuttmere Pferd Düssener Sensler Pferd Amden/Norddeutscher Pony Lahnstuttmere Pony	Schwarze Katze	Schwarzwälder Katze Schwarze Warmblut (OLD) Rhinisch-Deutsches Katze			Rottaler Pony Krautbagger Bannock Typ
<b>Esel</b>						Polizei Esel
<b>Hunde</b>	Alte deutsche Hütehunde (Westfälischer Kulturhund) Großkopf	Mittelkopf	Deutscher Pinscher Zähringer Hütehunde (Süd- und Mitteldeutsche Schlage, Schäferhund)			Bergamasco
<b>Kanarienvögel</b>	Englische Wilder (gemäß deutschem Zuchtstandard)	Alte Wilder Angora Deutsche Großwälder Japaner Lokale Märkische	Flämische Scherchen			
<b>Hühner *</b>	Alte Hühner Angler Bergische Käfer Bergische Lufthühner Deutsche Langhals Donaubauer Krieger Machener Münchener Lufthühner	Deutsche Sperber Rennhühner Lufthühner	Braker Deutsche Rennhühner Lufthühner Gottsche Mäusen Thüringer Barhühner	Deutsche Lufthühner Fleischhühner Königliche Trotter Vorderhühner Bauerhühner Hühner Orpington Bauerhühner Wendehühner		Altamer * Siamer * Aperille Spitzhühner *
<b>Enten *</b>	Alte Enten Pommerschen	Deutsche Pekingenten Orpingtonenten Pommerschen			Hochkrüppelenten Lufthühner Wassersenten	
<b>Gänse *</b>	Deutsche Legelgänse Lufthühner * Bayerische Landgänse * Lufthühner	Deutsche Gänse Erdener Gänse		Pommersgänse		
<b>Puten *</b>		Brannsputen Deutsche Puten	Crillwälder Puten			
<b>Tauben</b>	in Bearbeitung					
<b>Bienen</b>	Dunkle Biene					

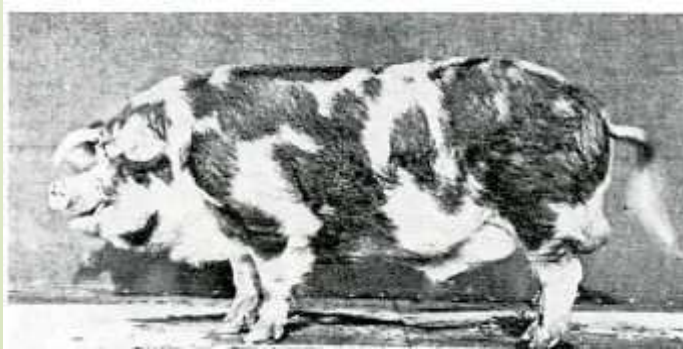
Since 1986 the GEH publishes the red list of endangers livestock breeds





## Last livestock breed, which extinct in Germany:

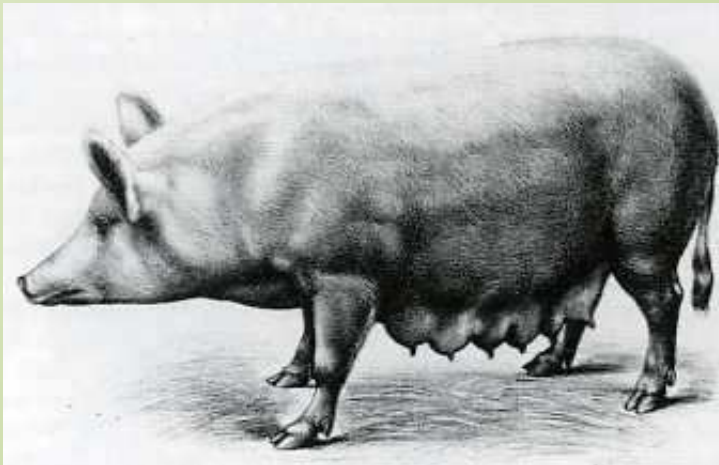
German Pasture in 1975



Baldinger Tigerschwein



Bayerisches halbrotes Landschwein



Meißner Schwein



Hannover-Braunschweiger Weideschwein



## Criteria for the worthiness of the Conservation of endangered Livestock Breeds

(Deutsche Gesellschaft für Züchtungskunde 1999)

1. Biological preconditions
2. Genetic-economic aspects
- 3. Cultural and ecological aspects**

3.1. *The endangered breed is in a special relationship to a particular region or landscape*

or

3.2. It owns advantages for the preservation of landscape or the ecological balance of a region

or

3.3. It owns advantages for recreational activity of humans

or

3.4. It shows particular rare attributes in shape, colour or behavior



Bentheimer Landschaf



Murnau-Werdenfelser



Rotes Wollschwein



Elbe bei Boitzenburg

## Conserving diversity and using synergies



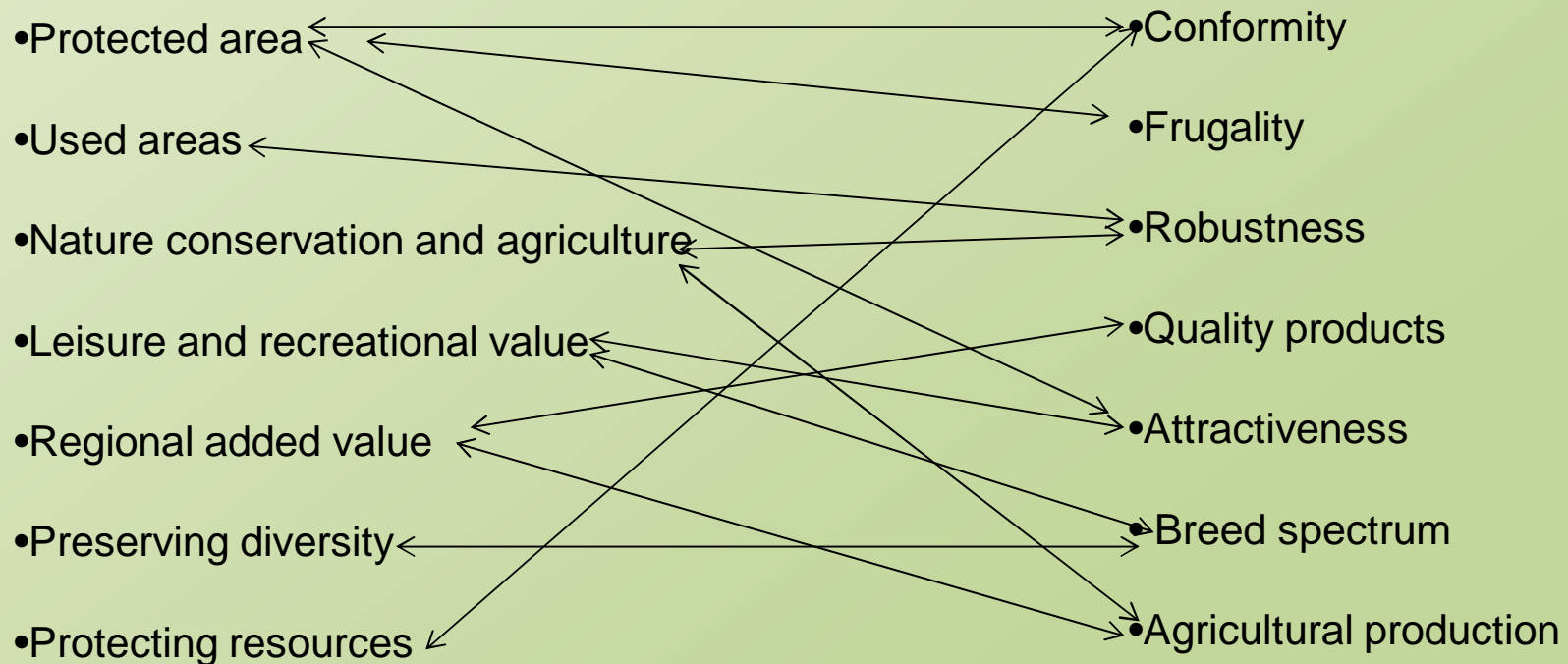
Schwarzbuntes Niederungsgrind

### Biosphere Reserves

- Protected area
- Used areas
- Nature conservation and agriculture
- Leisure and recreational value
- Regional added value
- Preserving diversity
- Protecting resources

### Endangered breeds

- Conformity
- Frugality
- Robustness
- Quality products
- Attractiveness
- Breed spectrum
- Agricultural production







## An endangered breed often is related to a certain region or landscape (1)

The cultural or ecological reference to the landscape or region is especially given when the breed was already typical for a region since decades or the breed is because of its ability for certain husbandry systems, claims or performances specifically suitable for utilization in the framework of preservation of landscape.



Angler Rind

Biosphere Reserve	Originating breed (examples)
Schleswig-Holsteinisches Wattenmeer	Angler Rind (cattle), Anglen Saddleback (pig) , Husumer Schwein (pig)
Niedersächsisches Wattenmeer	Schwarzbuntes Niederungsrind (cattle), Oldenburger Pferd (horse), Bentheimer Black Pied (pig)
Südost-Rügen	Pomeranian Coarsewool (sheep), Mecklenburger Kaltblut (Rhein.-Deutsch) (horse), Pommernente (duck), Schafpudel (dog)
Stream landscape Elbe Niedersachsen	Schwarzbuntes Niederungsrind (cattle), Diepholzer Gans (goose) , Weiße gehörnte Heidschnucke (sheep)



Glanrind

**An endangered breed often is related to a certain region or landscape (2)**



Thüringer Wald Ziege

Biosphere reserve	Originated breed (examples)
Stream landscape Elbe Brandenburg	German Mutton Merino, Skudde
Rhön	Rhönschaf (sheep), Frankenvieh (cattle), Coburger Fuchsschaf (sheep)
Vessertal / Thüringen Forest	Thüringer Wald Ziege (goat), Thüringer Kaltblut (horse) (Rhein.-Deutsch)
Swabian Alb	Limpurger (cattle), Schwäbisch-Hällisches Schwein (pig), Süddeutscher Strobel (dog), Alt-Württemberger Pferd(horse)
Palatinate Forest/ North Vosges	Glanrind (cattle), Vogesenrind (cattle)
Karstic landscape Südharz	Rotes Höhenvieh (cattle), Harzer Fuchs (dog), Harzziege (goat)





Specialist in the mountains: Braunes Bergschaf

## Regional livestock breeds



Specialist in the moor: Weiße hornlose Heidschnucke

- Regional breeds are adapted to native locations
- Every type of landscape establishes particular requirements for the animals and their environmental context. The special characteristics of the animals are the result of centuries of breeding
- Grazing animals have created the diverse cultural landscape (i.e. dry grasslands, common pastures, forest pastures)

### Examples for the differences of the local requirements of grazing by sheep in the mountainside in north german moor-regions

Local condition	Bavarian Alps	Ostfriesische and Stader Geest
Grazing season	May - September	All year round
Temperature	- 5°C bis 30°C degree	- 15°C bis 30°C degree
condensation	till 2000 mm, snowfall	till ca. 800 mm
Altitude	400 to 1900 m	0 to 21 m
Exposition	Steep to extremely steep	flat
Type of pasture	Alpine pastures and boulders	high and low moor, Dunes
Feeding basis	Fertilized meadows of the valley, mountain meadows	Heath, moor grass, bushes, birch



# Tiergenetische Ressourcen in Biosphärenreservaten in Deutschland

## Livestock in their landscapes

Rotbuntes Husumer Schwein



Weißköpfiges Fleischschaf



Angler Sattelschwein



Angler Rind



Ramelsloher



Rauhwollige Pommern



Merinofleischschaf

Schwarzbuntes Niederungsrind



Emdener Gans



Shorthorn



Schweres Warmblut



Rotes Höhenvieh



Rhönshaf



Vogtländer Rotvieh



Glanrind



Schwäbisch-Hällisches Schwein



Pinzgauer Rind



Alpines Steinschaf



Bayerische Landgans





## Application area of endangered livestock breeds

Old and endangered livestock breeds has amenities especially where the animal husbandry of high performance breeds is not ecological an economical reasonable

### Agriculture

- Animal husbandry on extensive farming holdings, also as a second income, in mountain regions and on marginal land
- Production of quality products (Meat, Dairy products, Wool, Eggs)
- Utilization of the robustness in species-appropriate, extensive husbandry systems for example suckler cow husbandry, pasture fattening, hut keeping of pigs

### Forestry

- Usage of logging horses in forestry
- Usage of different species in historical grazing forests
- Grazing of young plants and fire protection stripes



Braunvieh old breeding program



Thüringer Wald Ziege



Production of forest hay





## Application of endangered livestock breeds

### Maintainance of nature and landscape

- Grazing of marginal land
- Grazing of protected areas (cultural landscapes)
- Grazing in projects of landscape preservation
- Integration in biosphere reserves



Hinterwälder in a valley

### Other

- Breeding and keeping in animal parks, wildlife parks, zoos, museum villages, school farms
- Breeding, keeping and marketing in Arche-Projects (GEH)
- Breeding, keeping und research in state experimental farms



Calves in an open-air museum



Schwäbisch-Hällisches Schwein





# Animal Genetic Resources in Biosphere Reserves in Germany



Numbers – Data – Facts

Results of the survey



Dunkle Biene



Harzer Fuchs



Sachsenhuhn



## Database

- Questionnaire survey of animal keepers in the 16 Biosphere Reserves in Germany
- Implementation of information events, each on-the-spot in cooperation with the administrations of the Biosphere Reserves
- Data bank of endangered livestock breeds in the Biosphere Reserves in Germany
- Breed advisor and breed coordinator of the Society for the Conservation of old and endangered Livestock Breeds (GEH)



Poitou-Donkey



Meißner Widder



Pomeranian Coarsewool





## Analysis

- 3067 Questionnaires were sent out
- The return rate was 8,9 %
- 226 Questionnaires of animal keepers, who farm within the Biosphere Reserves, were analyzable



Westerwälder Kuhhund

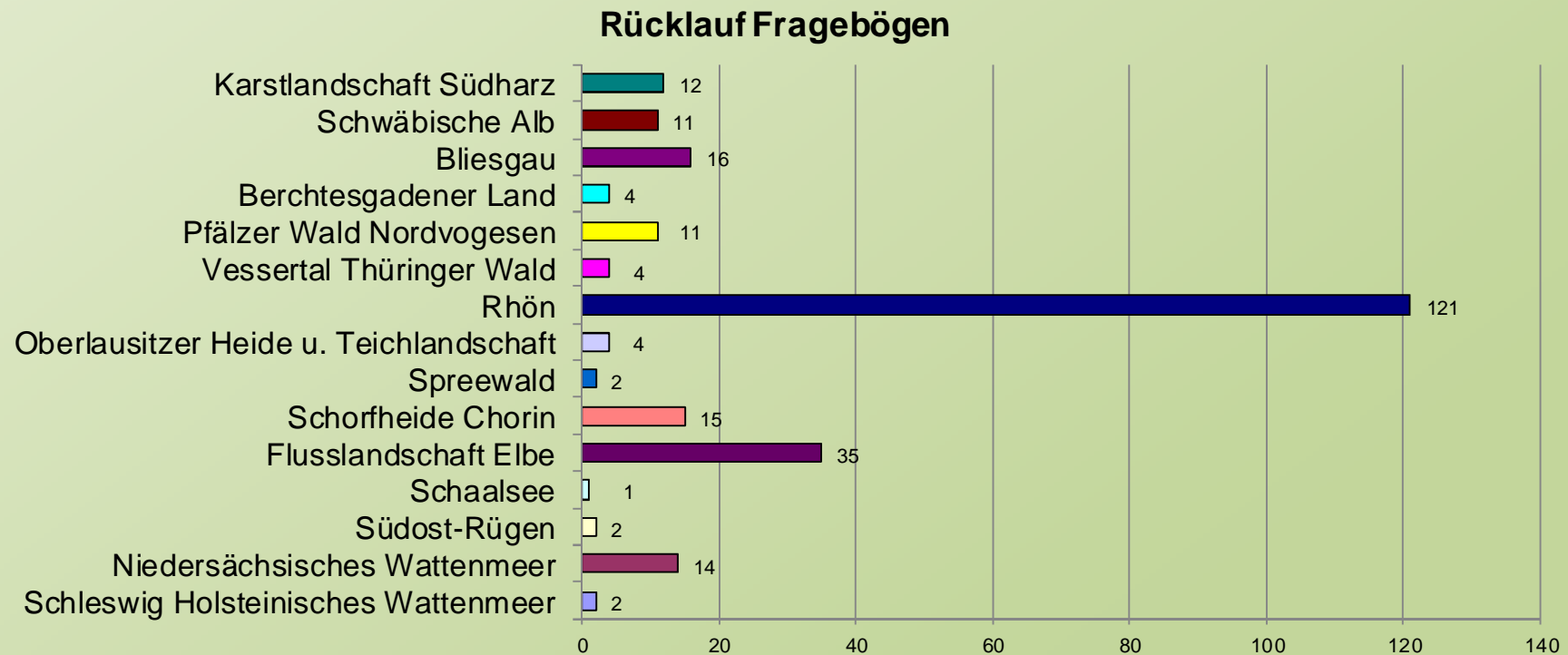


Chart: Number of the returned questionnaires of animal keepers within the biosphere reserves



## The Participants of the Questionnaire Survey in the BRs



Leinegänse



Alpines Steinschaf

226 Data sets



50 Hobby keepers, 2 Organizations

174 Farmers



34 Hobby keepers with  
endangered livestock breeds  
(65,4%)

95 Farmers with endangered  
livestock breeds (54,6%)



**131 Holdings with endangered livestock breeds\* in  
the 16 Biosphere Reserves in Germany were recorded**

\* Some holdings keep divers endangered breeds



Rhönschaf

## Overview on the animal keepers based on the questionnaire survey



Deutsches Sattelschwein

Nationwide 226 animal keepers with agriculture areas or residence within the biosphere reserves were registered

- ➔ 131 holdings are keeping one or more endangered livestock breeds (58%)
  - ➔ 32 keepers applied for subsidies for endangered breeds (14,2%)
  - ➔ 36 holdings are organic certified (15,9%)
  
- ➔ 91 keepers participate in programs of landscape conservation and extensification of grassland (40,3%)
  - ➔ 52 keepers practise conservation of landscape with their animals (57,1%)
  - ➔ 40 keepers are using endangered breeds for it (44%)





## Diversity of the Livestock Breeds in the Biosphere Reserves

- ➔ **Nationwide 181 different livestock breeds in the BRs were recorded (incl. Hybrids, crossings, special animal species)**
- ➔ of them 75 livestock breeds are on the Red List of the GEH, which corresponds to 67,5 % of the whole red list



Sundheimer



Buntes Bentheimer Schwein



## Stock figures of livestock in the Biosphere Reserves

Animal species in all BRs	Number of animals/ of all breeds in the BRs	Keepers	Number of animal of endangered breeds in the BRs	Keepers
Cattle	6735 /	107	631	40
Sheep	6601	90	4670	67
Pig	2047	40	188	14
Chicken	1790	83	460	38
Goat	1207	51	518	27
Horse	323	51	35	10
Goose	397	23	28	9
Duck	316	17	12	3
Turkey	148	8	23	7
Bee	109	7	-	-
Rabbit	90	21	32	8
Dog	53	19	41	13
Donkey	37	10	1	1
<b>Total of animals</b>	<b>19 853</b>		<b>6 639 (33%)</b>	



## The diversity of livestock in the Biosphere Reserves

Animal species in the BRs	Number of breeds in the BRs	Number of endangered breeds in the BRs
Cattle	25	13
Sheep	30	17
Pig	10	6
Chicken	23	15
Goat	14	4
Horse	26	4
Goose	9	4
Duck	6	3
Turkey	3	2
Bee	1	-
Rabbit	6	2
Dog	9	5
Donkey	3	1
Other	16	-
<b>Total</b>	<b>181</b>	<b>75 (41%)</b>





## The most kept livestock breeds in the BRs

Recorded breeds	Number of animals	Number of keepers	Endangerment (Red list of the GEH)	Number of BRs with endangered breed
Rhönschaf (sheep)	2139	22	endangered-maint.	3
Holstein Friesian (cattle)	1547	8	not at risk	-
Merinolandschaf (sheep)	1287	5	not at risk	-
Fleckvieh (cattle)	1084	37	not at risk	-
Weißer hornlose Heidschnucke (sheep)	1006	5	endangered	4
Uckermärker (cattle)	727	4	not at risk	-
Merinofleischschaf (sheep)	625	5	endangered	3
Thüringer Wald Ziege (goat)	388	22	critical-maintained	10
Deutsche Angus (cattle)	297	8	not at risk	-
Coburger Fuchsschaf (sheep)	236	7	endangered-maint.	4
Schwarzköpfiges Fleischschaf (sheep)	232	2	not at risk	-
Gelbvieh (cattle)	193	7	endangered	2
Dt. Schwarzb. Niederungsrind (cattle)	191	7	endangered	3
Walachenschaf (sheep)	181	3	critical-maintained	3



## Use of grassland in the BR with livestock

Animal species in all BRs	Use of grassland im BR all breeds (ha)	Use of grassland im BR endangered breeds (ha)
Cattle	3612	1056 (29%)
Sheep	2170	1865 (86%)
Pig	469	347 (74%)
Chicken	1255	617 (49%)
Goat	1575	1121 (71%)
Horse	1554	926 (60%)
Goose	415	198 (48%)
Duck	197	95 (48%)
Turkey	219	169 (77%)
Rabbit	144	56 (39%)
Dog	749	568 (76%)
Donkey	157	1,5 (1%)
<b>Total</b>	<b>12556</b>	<b>7020 (56%)</b>



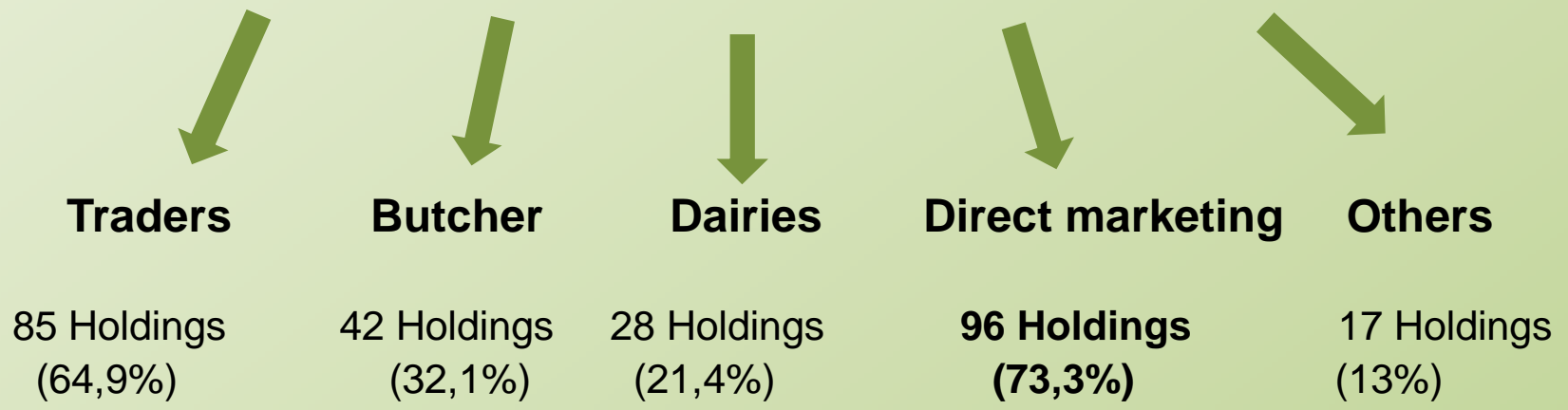
## Livestock breeds on different locations of grassland in the BRs

location	Flock at the location	Most commonly used breed and number of animals (on the Red List of the GEH)	Number BRs
Humid grasslands and wetlands	80	Merinofleischschaf (625), Holstein-Friesian (420), Fleckvieh (352)	12
Orchard	71	Rhönschaf (1222), Holstein-Friesian (290), Schwarzköpfiges Fleischschaf (232)	12
Arid grassland	70	Rhönschaf (1289), Moorschnucke (589), Fleckvieh (425)	12
Rich pastures	41	Holstein-Friesian (1140), Fleckvieh (318), Angus (203)	11
Fodder crops	38	Limousin (728), Uckermärker (708), Rhönschaf (444)	8
Oat grass meadow	18	Rhönschaf (954), Holstein-Friesian (290), Fleckvieh (143)	6
Nardus grasslands	13	Rhönschaf (1162), Merinolandschaf (1010), Thür. Wald Ziege (118)	2
Grazing-forests	13	Coburger Fuchsschaf (153), Rhönschaf (124), Galloways (120)	6
Moors	9	Moorschnucke (406), Deutsche Angus (183), Weiße gehörnte Heidschnucke (72)	4
Heath land	8	Moorschnucke (970), Coburger Fuchsschaf (153), Thüringer Wald Ziege (127)	2
Reeds/ tal forb communities	7	Galloway (120), Konik (68), Weiße dt. Edelziege (55)	5
Vineyard fallow	3	Merinofleischschaf (21), Thüringer Wald Ziege (14), Schwarzköpfiges Fleischschaf (10)	2





## Ways of marketing in the 131 holdings with endangered breeds



Weißer gehörnte Heidschnucke

### Products

Fresh meat  
Meat products  
Wool/ skins  
Eggs  
Milk  
Milk products  
Honey

### Direct marketing

75 Holdings (78,1%)  
38 Holdings (39,6%)  
26 Holdings (27,1%)  
12 Holdings (12,5%)  
8 Holdings (8,3%)  
7 Holdings (7,3%)  
3 Holdings (3,1%)

\* Multiple mentions are possible, 131 keep one or more endangered livestock breeds



## Application possibilities of endangered livestock breeds amongst others in the forestry, in tourism, exhibitions, school farms

The most mentioned animal species, which are used in the sector of tourism etc., are sheep and horses, closely followed by cattle, goat and poultry. 26 Holdings are providing different offers.



Rheinisch-Deutsches Kaltblut

Activities	26 Holdings	Animal species	Breeds
Logging	1	1	2
Carriage ride	4	1	2
Tourism	15	9	25
Petting enclosure	1	2	4
Animal supported therapy	2	4	6
Environmental education	2	2	4
Partner holding	1	2	2



## Events on endangered Livestock Breeds in the BRs

- Nationwide 19 information events were held in the different Biosphere rReserves
- Different participations at trade fairs and events in the biosphere reserves
- Implementation of two completion workshops Haus der Schwarzen Berge (Rhön Bayern), Freilichtmuseum Am Kiekeberg (Niedersachsen)
- **Number of participants all in all 391 people**







## Operators, who can support and promote the use of endangered livestock breeds

**As important network partners for the introduction and long-term supervision of the keepers of endangered livestock breed must be named:**

- Accepted breeder association in the different federal states
- Breed specific groups of interest
- Small animal breeding societies (poultry, rabbits, bees)
- Society for the Conservation of old and endangered Livestock Breeds (GEH) with regional groups and Arche-Farms
- Associations of conservation of landscape and nature conservation
- Pasture associations like Taurus e.V., Weidewelt e.V.
- Nature conservation agency and agriculture authorities
- Regional farmers association and local farmers
- Regional marketing organizations



Walachenschaf



## Conclusion and forecast (1)

- In many biosphere reserves the awareness of the problem of endangered livestock breeds was raised and accompanied through the project
- A consultations regarding endangered livestock breeds can be offered by the Biosphere Reserves with the help of in the project developed information
- The integration of endangered livestock breeds is being actively implemented in single Biosphere Reserves corresponded as the task of a BRs in the sector of MAB (Man and Biosphere) and is targeted as a long term goal
- Within pasturing concepts it should be tested to which extent the regionally adapted livestock breeds could be integrated
- In the sector of marketing it was pushed forward that the Biosphere Reserves are considering the integration of the endangered breeds in already existing marketing projects



Orpington-  
ente



Angora  
Kaninchen



## Conclusion and forecast (2)

- Some biosphere reserves want to pay more attention to the sector of endangered livestock breeds in form of public relation, events, lectures or the like
- In the sector of the so called „Biosphären Partnerbetriebe“ (EUROPARC ) endangered livestock breed can receive new attention
- The in the scope of the project developed Data bank of animal keepers with endangered livestock breeds can be extended as an important element of the collaboration
- The GEH e.V., as a nationwide acting association, continues to be available for further developments as a contact within the bounds of its possibilities



Pommernente



Englisches Parkrind



Deutsche Legegänse





## Résumé

- ✓ The within the BfN-Project identified and at the beginning initiated activities in the sector of animal genetic resources in Biosphere Reserves as well as the numerous BR-specific questions should be rated as very positive and should be continued and implemented contemporary and according to the task of the biosphere reserve
- ✓ To achieve this goal in long term, it needs concrete support and contributory work in the administration of the Biosphere Reserve as well as within the attendance of the animal keeper of endangered livestock breeds
- ✓ Endangered livestock breeds and Biosphere Reserves can be seen as a longterm and succesful partnership



## Tiergenetische Ressourcen in Biosphärenreservaten in Deutschland



Special thanks to all participants the great support  
and for the shared interest in endangered livestock  
breeds





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