

Conservation of sheep breeds in Europe: main outcomes of the HERITAGESHEEP project

Ch. Ligda

National Agricultural Research Foundation, Thessaloniki, Greece

LIVESTOCK BIODIVERSITY WORKSHOP

5- 6 May 2010, Rome

The Heritage Sheep Project

International program co-funded by the European Commission under Council Regulation 870/04
www.heritagesheep.eu

UNITED
KINGDOM

University of York
Dianna Bowles
djb32@york.ac.uk

Coordinator

The Sheep Trust
Amanda Carson
amandacarson@btinternet.com

FRANCE

Institut de l'Elevage
Delphine Duclos
Delphine.Duclos@Inst-elevage.asso.fr

THE
NETHERLANDS

Centre for Genetic Resources (CGN)
Sipke Joost Hiemstra – Yvette de Haas
sipkejoost.hiemstra@wur.nl

External Evaluators:

Mike Roper,
Dominique Planchenault,
John Woolliams

GREECE

Aristotle University of Thessaloniki
Andreas Georgoudis
andgeorg@agro.auth.gr

National Agricultural Research Foundation
Christina Ligda
chligda.arnc@nagref.gr

SLOVENIA

University of Ljubljana
Drago Kompan
grago.KOMPAN@bfro.uni-lj.si



Aim / Objectives

- Address the conservation of Heritage sheep breeds
- Assess the current and future threats
- Demonstrate new and profitable uses and markets
- Contribute
 - Improvement of the quality of the environment through reducing the negative impact of intensive agricultural practices
 - Use of natural resources to manufacture products for the benefit of regional communities
 - Support the growth and competitiveness of rural economies

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The Heritage Sheep Project

- Heritage Sheep Breeds (HSBs)
 - Genetically distinct
 - Geographically concentrated
 - Adapted to their environments
 - Commercially farmed to economically support the local communities in which they are raised
 - Play an important role in the culture



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WP 1 Characterisation and Evaluation of HSBs (UK)

WP 2 In situ conservation - strategies and guidelines for success (France)

WP 3 / 4 Ex situ conservation - collection and cryopreservation (Netherlands)

WP 5 Web based network of HSB genetic resources (Greece)

Slovenia contributing to all work packages



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WP 1 - Characterisation and Evaluation of HSBs

- Questionnaire
 - Developed and translated into local languages
 - Data collected from their local breeders associations
 - ✓ Origin and history
 - ✓ Factors affecting the population trends
 - Political, social, environmental
 - ✓ Values
 - Contribution to the environment, adaptation, local economy, local community, etc
 - ✓ Current situation and future trends
 - Promotional activities, breeding programs, conservation programs etc



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Heritage sheep data base

General Description of the breed

Netherlands

Breed Name	Drenth Heath	Drenth Heath
Country Name	Netherlands	Blue Texel
Geographical region majority of breed is located	Eastern Netherlands	Friesland
Ewes mated pure (%)		Kempen Heath
Performance Recording schemes	<input type="checkbox"/>	Mergelland
Specific traits associated with the breed	The only horned ha breed in Netherlands	Noth Holland
Environmental adaptation		Schoonsbeek
specific products associated with the breed	Landscapage management	Swifter
Herdbook established	<input checked="" type="checkbox"/>	Tavel
Cryopreservation	<input type="checkbox"/>	Veluwe Heath
Breeders association - contact details		Zeeland milksheep
Average adult weight kg Ram	50	
Average adult weight kg Ewe	45	
Wither height cm Ram	52	
Wither height cm Ewe	47	
Birth weight (kg) males		
Birth weight (kg) females		
Average Age at weaning (days) females		
Weight at weaning (kg) females		
Average Age at weaning (days) males		
Weight at weaning (kg) males		
Age at sexual maturity (months) males / females		
Mating season (months)		

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Conclusions from WP1

- Farms ceasing to farm
 - the ageing population of sheep farmers,
 - the reluctance of their children to carry on the farm
 - the decision of many farmers to go out of sheep farming because of decreasing returns
- Changes in government policies and reform of the CAP
- Diseases

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WP2 - In situ conservation

Detailed study of three French Pyrenean milking sheep breeds (Basco Béarnaise, Manech Tête Noire and Manech Tête Rousse)

- Technical, economic and social means necessary to achieve a successful development programme
- Success factors
 - Dynamic dairy industry in the region
 - A very good collective management (interprofessional association)
 - PDO Ossau Iraty
 - Genetic selection scheme



Comparisons of different breed cases

France	UK	The Netherlands	Greece	Slovenia
- Basco Béarnaise, Manech Tête Noire, Manech Tête Rousse - Causses du Lot	- Herdwick - Shetland	- Kempen Heath Sheep - Milkshoop (Friesian & Zeeland)	- Frizarta - Katsika	- Bela Krajina - Pramenka - Bovec Sheep



WP2 – Identification of the success factors

- Breed cases were different
- Common elements
 - Rusticity and capacity to live in harsh environments
 - Positive impact in landscape management
 - Some specific products, sometimes PDO. Even when not under a specific label, the products are acknowledged as of high quality
- Breeders interest in their own breed: (phenotypic traits, qualities and abilities of their breeds)

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WP3 - Ex situ conservation

- Identification of collection and cryopreservation strategies through a detailed survey
- Comparison and evaluation of the practicalities involved in various collection & freezing methods of semen, embryos and tissues
- Development and implementation of strategies for *ex situ* conservation, tailored for HSBs in Europe – Report published : August 2008



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WP4 - Collection of semen

Criteria

- Existing resources
- Effective population size
- Geographical isolation
- Existing conservation schemes
- Co operation of the breed society in coordinating animals for collection of semen



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WP4 - Collection of semen

Netherlands	France	United Kingdom	Slovenia	Greece
Black Blazed	Limousine	Shetland	Istrian Pramenka	Boutsiko
Milksheep (Friesian and Zeeland)	Rava	Lonk	Bela Krajina Pramenka	Katsika
Kempen Heath	Bizet		Bovec	Frisarta
	Causse du Lot			



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Work Package 5



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HERITAGE SHEEP
An international programme co-funded by the European Commission
to conserve the genetic resources of heritage Sheep Breeds

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Heritage Sheep Fact Sheet
Heritage Sheep Handbook

Heritage Sheep Breeds are regional breeds - playing an important role in local culture and the rural economy adapted to their environments - helping to sustain the countryside. Have important genetic resources - biodiversity needing protection.

Download GIBBIS POLICY Paper
Download Heritage Sheep Fact Sheet

- Website and database development
 - Establish a web based European network of national inventories of HSBs <http://www.heritagesheep.eu>
 - Provide a database structure for combining all the information for the assessment of threats
 - Provide the environment for the presentation of the results

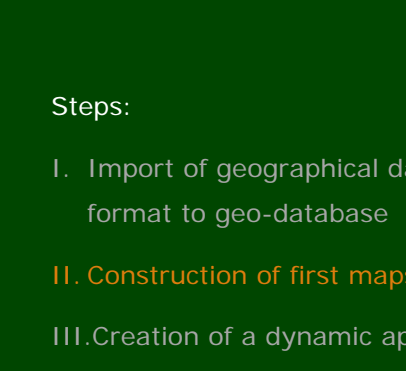
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Including GIS Dimension

Steps:

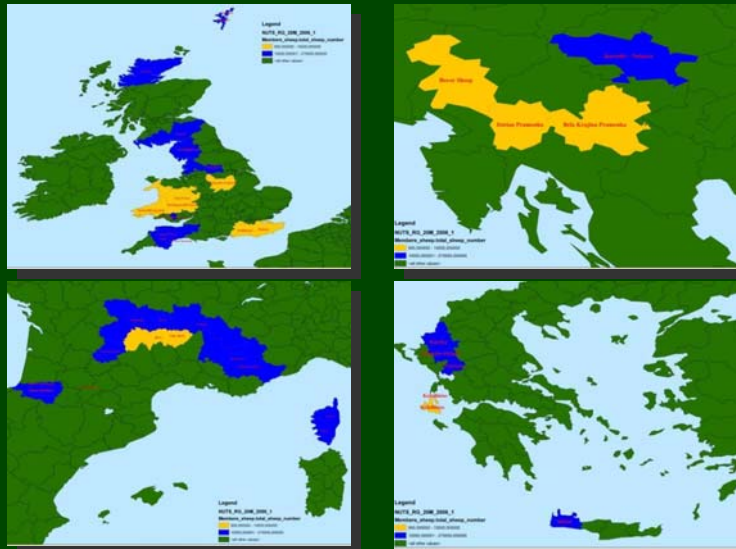
- I. Import of geographical data and modification of the database format to geo-database
- II. Construction of first maps using GIS Desktop ArcInfo
- III. Creation of a dynamic application running under ArcGIS Server



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II. Maps 1. According to the Population Size

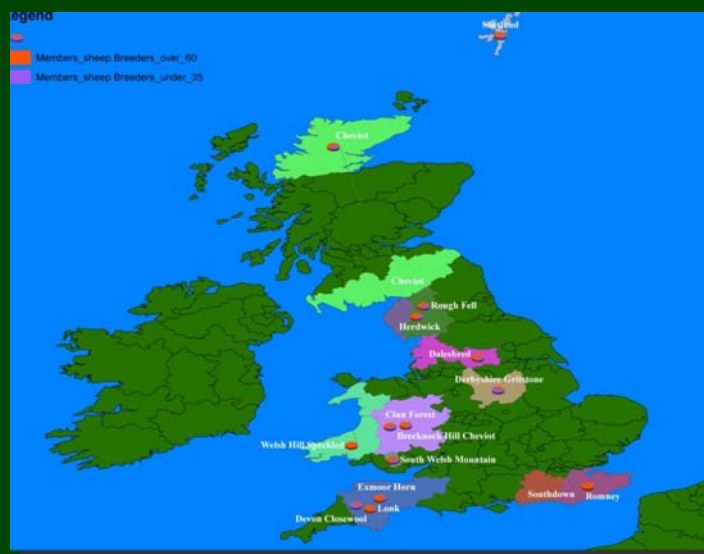


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II. Maps 2. Age of Farmers



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Including GIS Dimension

Steps:

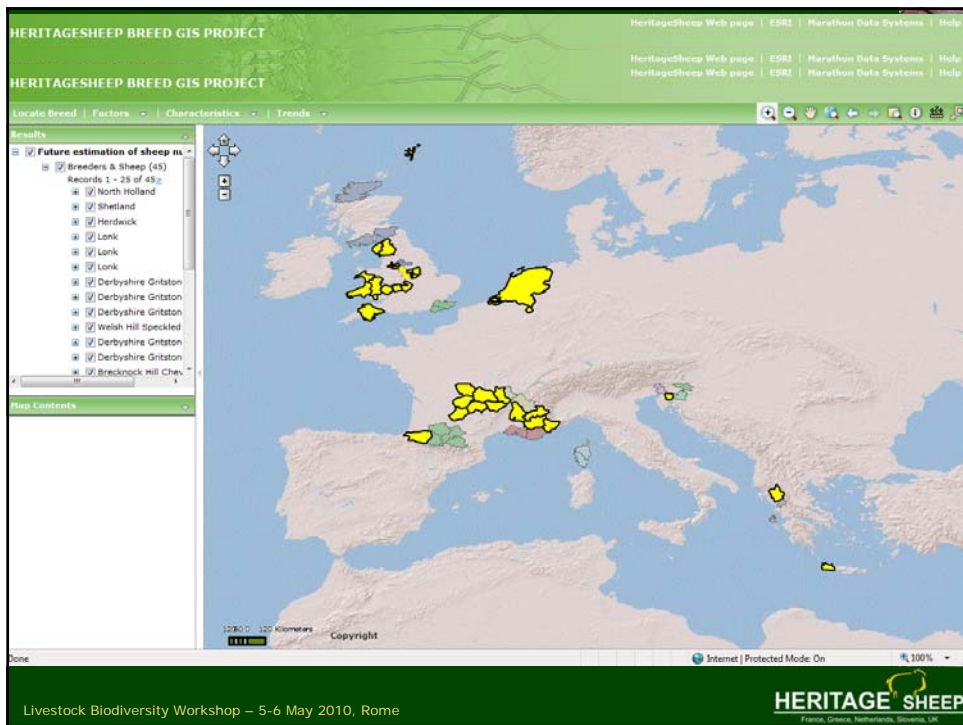
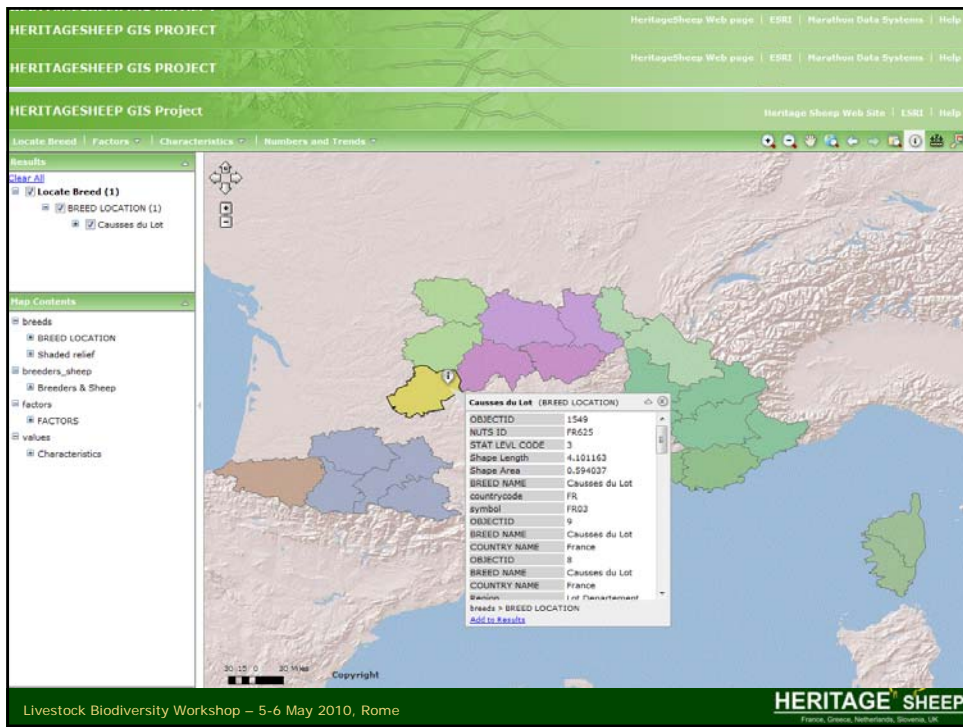
- I. Import of geographical data and modification of the database format to geo-database
- II. Construction of first maps using GIS Desktop ArcInfo
- III. Creation of a dynamic application running under ArcGIS Server




III. GIS Server (1)

- o ArcGIS Server was used
- o Combine the information on the breeds, threats, values, trends etc with the geographical location
 - deeper understanding of the current situation and the perspectives
 - wider dissemination of the outputs to stakeholders
 - to be used as a tool for decision making







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- Heritage sheep data base
- Geographic Information System

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1. Meetings / Conferences

Meetings	Documents
14th ERFP Workshop , 23rd August 2008, Vilnius, Lithuania	Presentation
59th EAAP Annual Meeting 24th August 2008, Vilnius, Lithuania	Poster presentation
Mediterranean Symposium - EAAP Mediterranean WG 7-9 November 2008, Corte, France	Poster Presentation
Meeting of ABCGIS users 5-7 November 2008, Thessaloniki, Greece	Presentation
1st GLOBALDIV Workshop 18 - 19 March 2009, Bydgoszcz, Poland,	Presentation
15th ERFP Annual Workshop 23 August 2009, Barcelona, Spain	Presentation
60th EAAP Annual Meeting 24-27 August 2009 Barcelona, Spain	Presentation
2009 ESRI European User Conference	

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HERITAGE SHEEP ACTION 040 CO-FUNDED BY THE EUROPEAN COMMISSION, DIRECTORATE-GENERAL FOR AGRICULTURE AND RURAL DEVELOPMENT, UNDER COUNCIL REGULATION (EC) NO 870/2004.

Community action on the conservation, characterisation, collection and utilisation of genetic resources in agriculture

THE UNIVERSITY of York



Context and Outcomes of the Heritage Sheep Action

The University of York

Heritage Sheep AGRI GEN RES action 040

co-funded by the European Commission under Council Regulation (EC) N° 870/2004¹



www.heritagesheep.eu

¹ Council Regulation (EC) No 870/2004 of 24 April 2004 establishing a Community programme on the conservation, characterisation, collection and utilisation of genetic resources in agriculture. Official Journal L 102 - 20/04/2004 P. 0008 - 0010

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Conclusions / Outputs

- Study of Heritage Sheep Breeds in the partner countries
- Contribute to a collection of semen of the breeds
- Propose ways to develop markets as a means of protecting and conserving the sheep breeds
- These breeds are a resource to their communities and their importance will become increasingly recognised as the need for sustainable farming becomes urgent

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Geographical concentration

- Geographical concentration urgently needs to be recognised as a major risk factor
- New policies need to address the vulnerability of Heritage Sheep Breeds as much as those of other vulnerable categories such as numerical scarcity

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Regional Development

- Milk and meat products from HSBs are already in the market but the supply chains are not developed
- Funding from regional development mechanisms is required to underpin marketing schemes until integrated supply chains reach maturity

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Sustainable farming

- Sustainability of agricultural production and the need to achieve food security are key issues
- HSBs contribute to robust low input farming systems, that have already proven their worth over many generations
- Continuing need to provide support for these systems given the wide range of benefits they deliver to local communities and strategic objectives

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Conservation of sheep genetic resources

- The ERFP scoping study (2005) has demonstrated that European countries have their own characteristic and important Heritage Sheep Breeds
- Tools to precisely geographically map these breeds and define their diverse benefits

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Next steps (1)

- Include in the database
 - Population data / Location across years
 - Environmental data / Social etc from the relevant databases
- Review and update the information collected
- Include more countries / breeds
- The aim is not only the geographical visualization but the assessment of the current status and the trends by developing of appropriate indexes based on the statistical analysis of the collected data.

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Next steps (2)

- ERFP Call for action 2010
Development of models assessing the breeds risk status by utilization of population and relevant georeferenced data
- to find a common base on the information that should be collected and their format
- Identify the kind of information that should be collected at farm level, breeding region or country level
- to develop models that will weight the different factors to an index
- to classify the breeds according to their risk status

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Thank you



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