Livestock breeds and cultural landscapes

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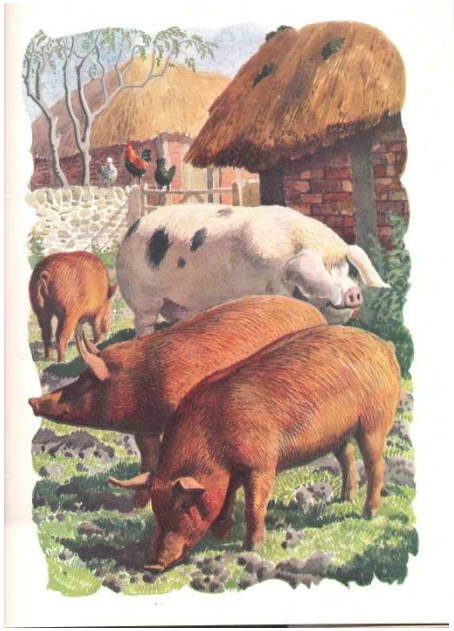
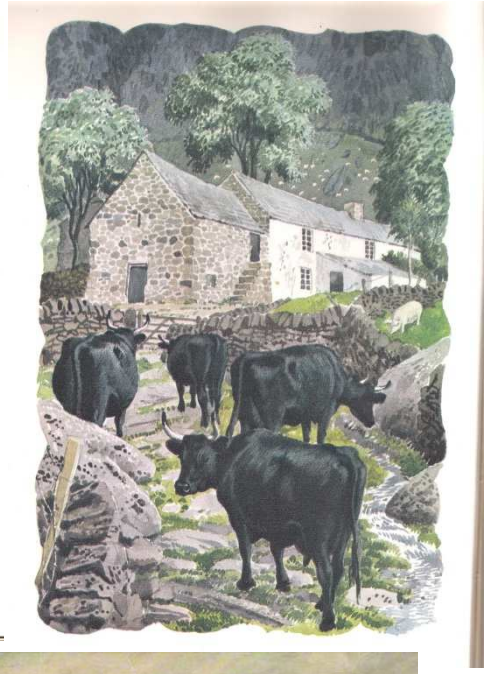
Pristine (“natural”) environments converted to cultural landscapes

- People have replaced the original post-glacial environments with cultural landscapes
- These replacements have been due – to a great extent – to the activities of livestock
- Livestock are fundamental to the sustainable conservation of many (perhaps most) of these landscape

Livestock & cultural landscapes

I suggest that for very many cultural landscapes to be understood, interpreted, conserved, and developed in a sustainable way, the diversity of livestock breeds must be appreciated





Theoretical background

- Discussion of the cultural significance of livestock breeds does not appear to have a theoretical framework
- Most reports are “case studies”
- This is unlike the situation with cultural landscapes and landscape ecology, where theory based on (and tested by) fieldwork offers contributions to development of policy

Outline of this talk

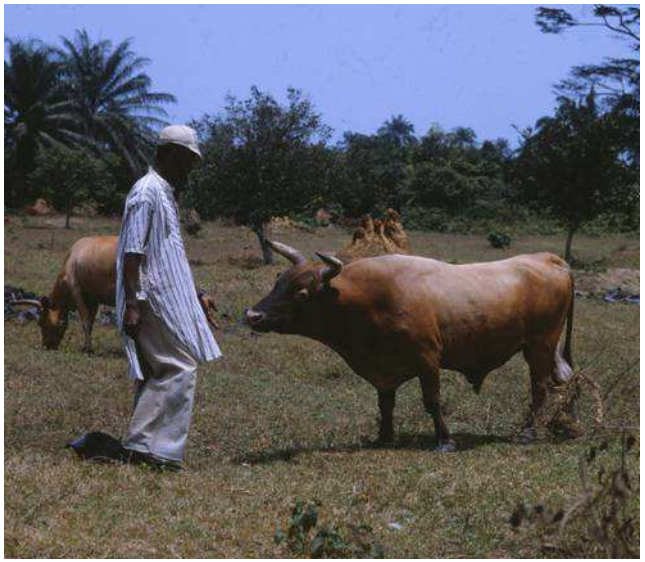
1. What is a “livestock breed”?
2. Examples of cultural landscapes where the breed of livestock is significant
   - Extensively grazed wooded landscapes
   - Pasture-based commercial systems
   - Communal systems
   - Nature reserves
3. General principles
   - Research needs
   - Policy aspects

What is a livestock breed?

UK definition: “an interbreeding population of husbanded or formerly husbanded domesticated animals of consistent genotype and phenotype with a recognized history and administrative framework”

Great diversity of breeds worldwide

http://www.fao.org/3/a-i4787e.pdf



NDama bull, Nigeria

Clydesdales, Northumberland

status	Donkey	Water buffalo	Cattle	Goat	Horse	Pig	Sheep	**Total**
rare	29	4	171	91	202	97	191	**785**
extinct	4	1	184	19	87	107	160	**562**
common	26	45	285	157	137	109	403	**1162**
unknown	115	89	768	414	479	396	788	**3049**
Total	**174**	**139**	**1408**	**681**	**905**	**709**	**1542**	**5558**

For comparison in wild fauna there are at least 4237 recognized mammal species and 9672 avian species

Estonian breeds

Signatories of the 1992 Rio Convention agree to conserve their breeds as components of world biodiversity

Cattle	Estonian Black Pied
	Estonian Grey
	Estonian Native (Eesti maatoug)
	Estonian Red (Eesti punane)
Horse	Estonian Native (Eesti hobune)
	Estonian Heavy Draught
	Tori
Pig	Estonian Bacon (Eesti peekon)
	Estonian Large White (Eesti suur valge)
Sheep	Estonian Darkheaded (Eesti tumedapealine)
	Estonian Native (Eesti maalammas)
	Estonian Whiteheaded (Eesti valgepealine)
Goats	None listed
Poultry & waterfowl	
	No information yet

UK examples

Cultural landscapes and their associated livestock breeds in the UK: 1. Grazed wooded landscapes

- Official statement in 2011: "At present, there are no reliable statistics on the extent of the overall resource, nor on historic or current rates of loss or degradation of this habitat"
  http://jncc.defra.gov.uk/pdf/UKBAP_BAPHabitats-65-WoodPastureParkland2011.pdf
- Total extent might be 20,000 hectares
- In lowland Britain, many of these landscapes survive because in recent history they were included in parks and designed landscapes
- Some of these landscapes have a long association with particular specific breeds

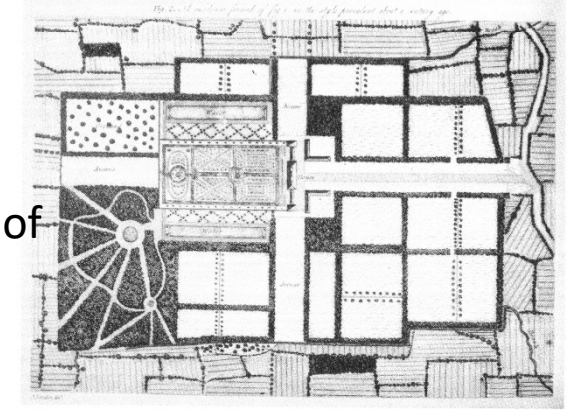
“Imperial landscapes” in Britain

It was very fashionable in the 1700s to show off one’s wealth by having a landscape park designed by one of the famous landscape architects – Lancelot (“Capability”) Brown (1716-1783) was the most famous

Fashions in British parkland design

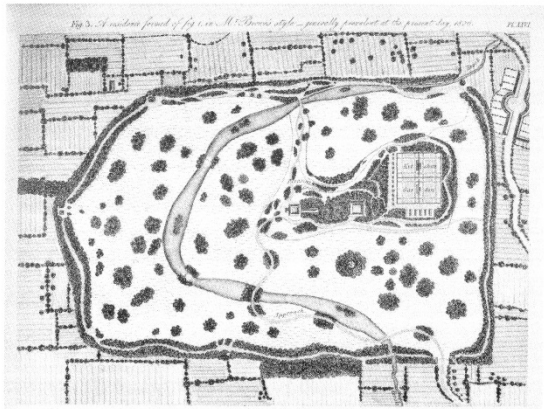
1. Farmland

(In the style of Versailles)

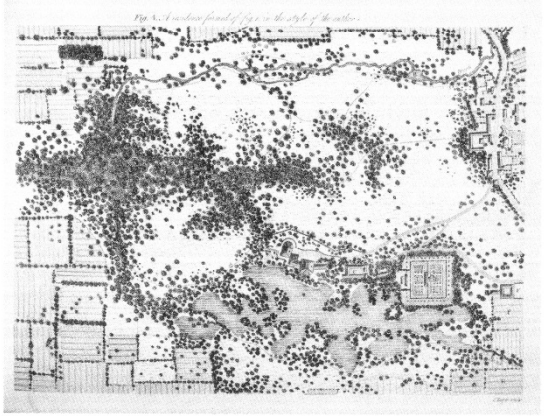


2. Formal layout of 1700

3. In the style of Brown (mid-1700s)



(claimed to be "natural" – water feature, trees in groups, emphasis on views and vistas)



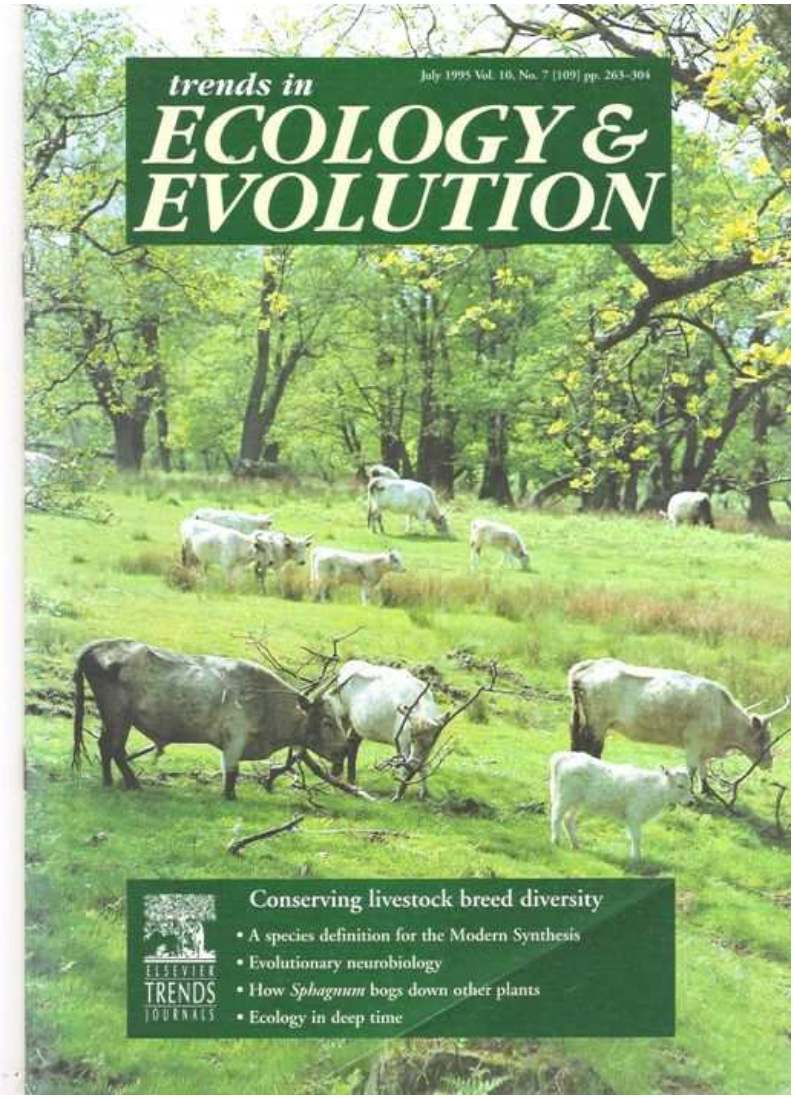
("informality" as reaction to Brown's style)

4. Mid-1800s Picturesque style

Wimpole Hall (county of Cambridgeshire)

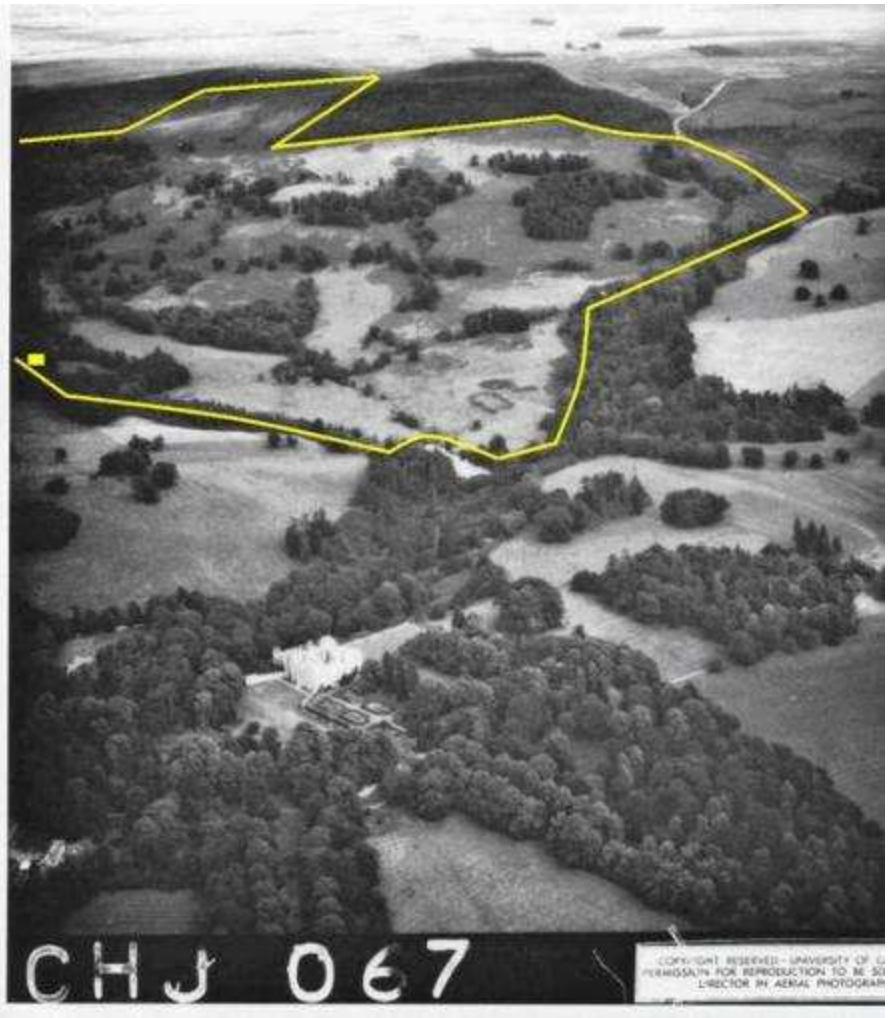
- Landscaped by Capability Brown
- Painting from 1821 shows Longhorn cattle, with the house in the background
- A herd of Longhorn cattle was reintroduced to Wimpole in the 1980s

Chillingham cattle



- Inhabited baronial park in Northumberland certainly since 1600s, maybe much earlier
- Long history of inbreeding with no known admixture from other breeds
- Natural sex ratio and age distribution
- 100 in main herd, 20 in reserve herd, embryo storage project in progress

Chillingham



www.chillinghamwildcattle.com

The park

- Up to 1980 was owned by Earls of Tankerville and then, to 2005, by Knott Trust
- In 2005 was bought by Chillingham Wild Cattle Association (CWCA), thus reuniting herd and park under same ownership
- From 2005, sheep flock removed from park

This is the estate terrier (technical term for a plan of this kind) as drawn in 1711
Subsequent landscape history is quite complex

Yellow boundary – property of CWCA

Purple boundary – accessible to cattle (but excluding some of the woods)

Chillingham is a designed landscape dating from 1799-1808 and superimposed on a medieval deer park

The designer was John Bailey, the estate steward

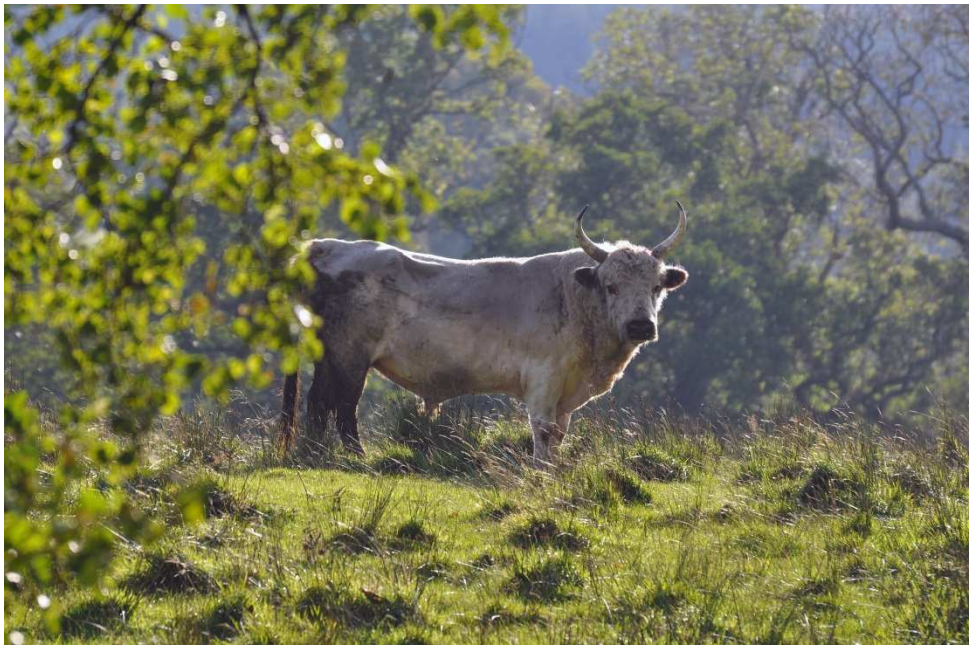
Semi-natural grassland

Brown leaves - oak probably planted/sown early 1600s

On the left: alder trees that have regrown from clearfelling in 1750s

Right: ornamental beech planted 1789

- Mature bull – in 1980s, 300-320 kg in winter; cow 280 kg (i.e. small)
- Body size larger (bull: 400 kg) and cow fertility better since sheep removed in 2005
- “Old-fashioned” conformation – relatively long legs & short body (like medieval cattle)
- All carry horns; all are white with red ears & some spotting on face, neck & shoulders



Special status

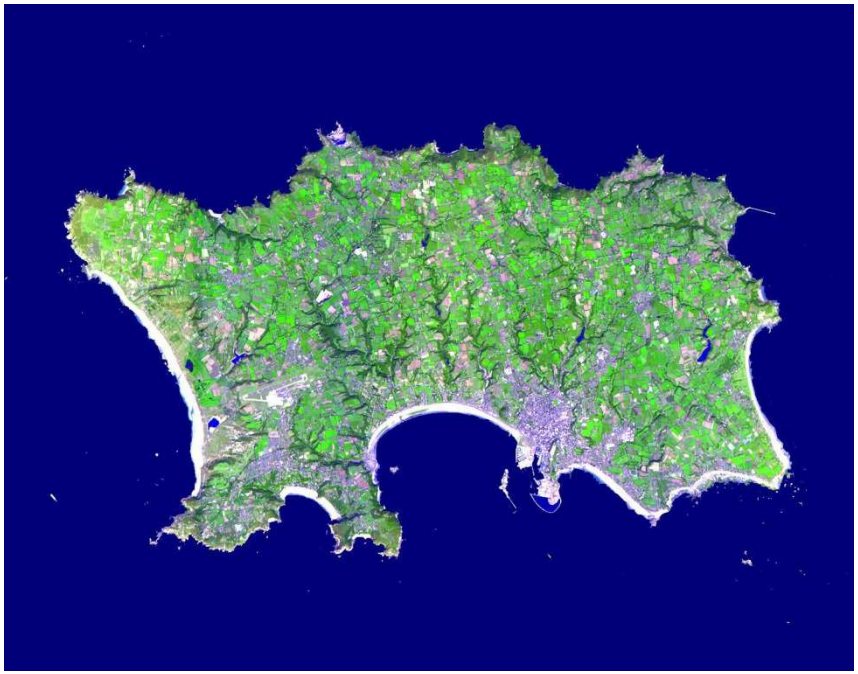
Defined as wild –

- Don’t enter food chain
- No ear-tagging
- Regular bovine tuberculosis testing replaced by annual autopsy of sampled animal

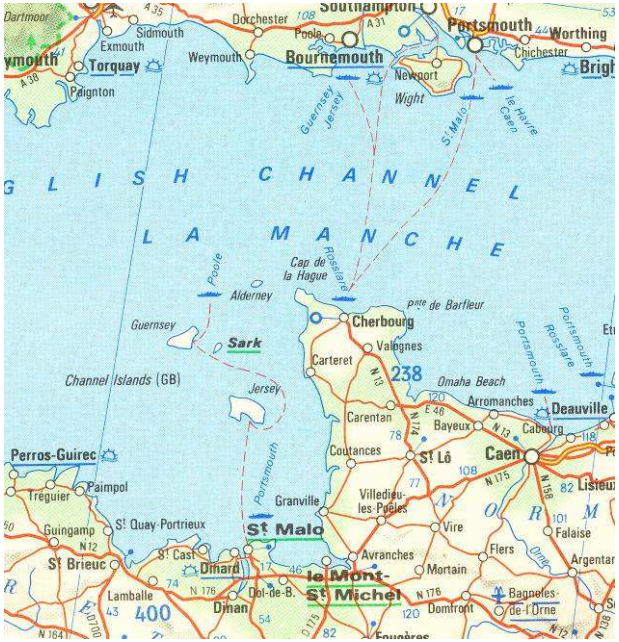
No other UK cattle have this status

Cultural landscapes and their associated livestock breeds: 2. Pasture-based commercial systems

- Many examples in alpine and mountainous regions in continental Europe
- Many examples in continental Europe of livestock breeds contributing to local identity through an association with some local food, usually a meat or dairy product
- Example: Jersey cattle on the island of Jersey (a UK dependency)

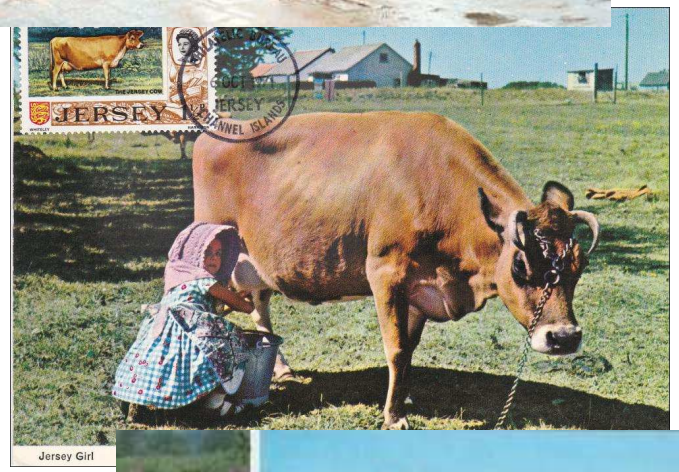


- Human population 87,200
- 116 km^2, 45 square miles
- Jersey cow is world's 2nd most numerous dairy breed
- Cattle imports from France into Jersey banned altogether in 1789, subsequently to all imports including semen & embryos
- Exports of Jersey cows began in late 1700s - now all over the world



Suited farmers with limited land. Pork was main meat on island so not much interest in beef, also tended to make butter rather than hard cheeses

- Liquid milk imports into Jersey have been banned since 1946, to protect the local dairy industry
- In 2009 after public debate the ban on cattle imports was lifted at the request of dairy farmers to enable access to superior Jersey semen and embryos from across the world
- Objections had centred on concerns that the famous and iconic “brown cows in green fields” of Jersey would be threatened



Cultural significance of Jersey cattle

- People of Jersey are strongly aware of the special nature of the cattle but their place in island culture has not been critically examined
- There was considerable public participation in the semen importation debate; the level of public discussion was non-technical and focussed on the visual importance of “brown cows in green fields”
- The public are, it appears, generally accepting of milk prices being rather high in Jersey

Conservation of Jersey Island cattle

- The Jersey herdbook distinguishes “pure Island” cattle
- Very large pre-importation semen stocks are kept in the USDA gene bank
- Although semen of any cattle breed can now be imported, Jersey Dairy will only accept milk from registered Jersey cattle
- Some beef breed semen is imported, but as pasture is scarce on Jersey beef crossbreds spend almost all their time indoors so the “brown cows in green fields” situation is preserved

Cultural landscapes and their associated livestock breeds: 3. Communal systems

- Many of these in continental Europe
- Example: North Ronaldsay sheep (Orkney Islands)

Sheep on North Ronaldsay, Orkney

- The wall was put around the Orkney island of North Ronaldsay in the 1840s and the shore corresponds to a common hill grazing
- Local rules exist regarding number of sheep each farmer is allowed to keep on the shore
- Conserving this breed on the island necessitates maintaining the wall which is an important cultural monument
- The breed is also conserved off the island but this disconnects it from its cultural background

Sheep on North Ronaldsay, Orkney

- Since the 1840s the sheep have lived on the shore
- For most of the year they depend on seaweed
- Special adaptations – very efficient at absorbing copper

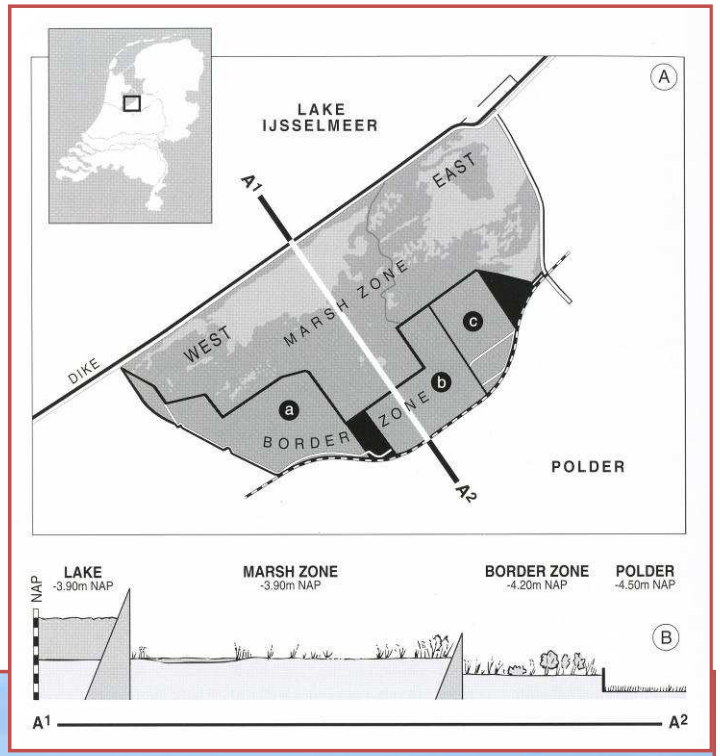
- Copper is an essential micronutrient for sheep – but can poison if in excess
- But when kept on grass (which is normally quite high in copper) there have been several incidents of copper poisoning

Cultural landscapes and their associated livestock breeds: 4. Nature reserves

Conservation grazing schemes

- Konik horses at Wicken Fen, near Cambridge
- Pony breeds have not been compared in relation to value for these schemes, but the Konik has been quite widely used

Oostvaardersplassen (nr. Lelystad, Netherlands)



Heck cattle & Konik horses

Heck cattle

- Heinz and Lutz Heck, in Germany in 1920s and 1930s, crossed various European breeds and selected primarily for colour and horn shape
- The aim was to “re-create” the aurochs
- Heck cattle are kept in small numbers today notably in Germany, France & the Netherlands
- Currently about 2000 registered Heck cattle in Europe, mainly in Belgium, Germany & France plus (in 2008) about 400 unregistered animals in Oostvaardersplassen
- Not used in UK (but there are some water buffalo)

Options for Estonia

Two possible beef cattle breeds:

- Belted Galloway
- Hereford

General principles for policy decisions (1) conservation managers

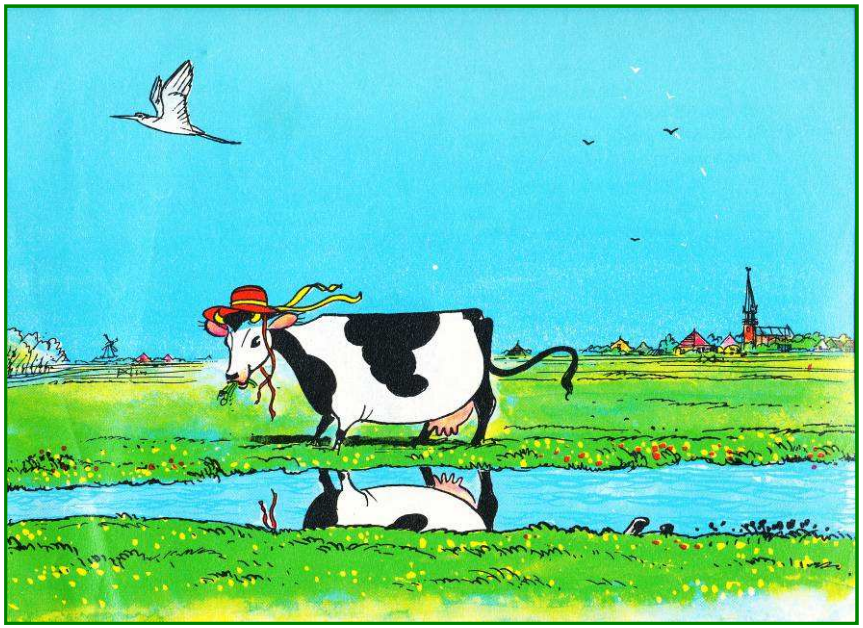
- There are many situations where an informed choice of breed can greatly enhance a landscape
- Chapel of King's College Cambridge – an iconic English view but the cattle are not an "interesting" or local breed – they are Hereford x dairy cattle

An advantage for nondescript or "ordinary" animals?

- A lack of historic linkage between the pastoral environment and the breed used to manage it might be welcomed by managers
- This would give considerable freedom in that animals could be brought in, transferred out or replaced as required
- If the herd is of conservation significance in its own right there will be constraints on these practices

An advantage for non-native breeds?

- Perhaps if animals are used for conservation grazing / habitat management / rewilding that are completely different visually from local breeds, the public will be more accepting?
- Heck cattle – probably totally unlike Dutch conception of cattle
- Will depend on local conditions
- Various objections to Heck cattle



General principles for policy decisions (2) policy makers

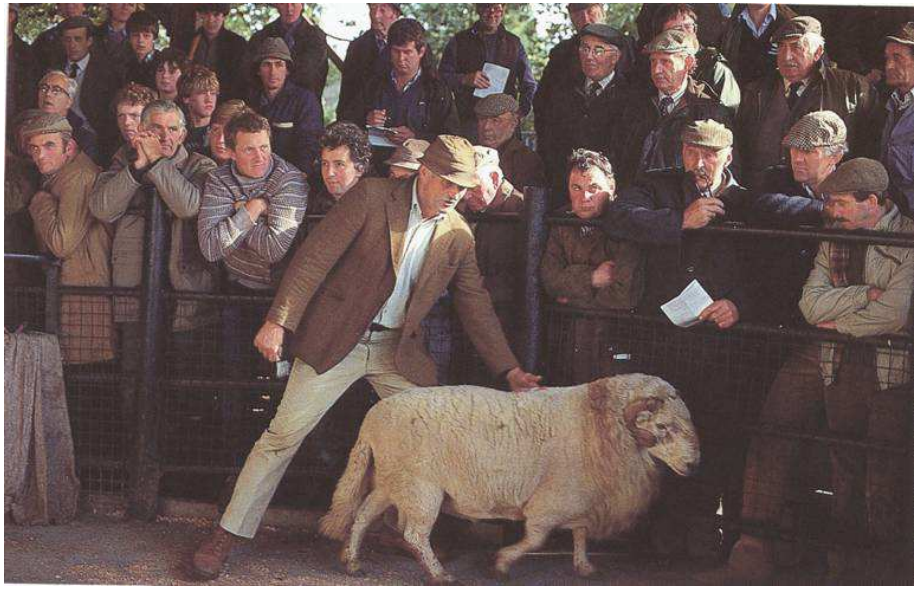
Three major issues –

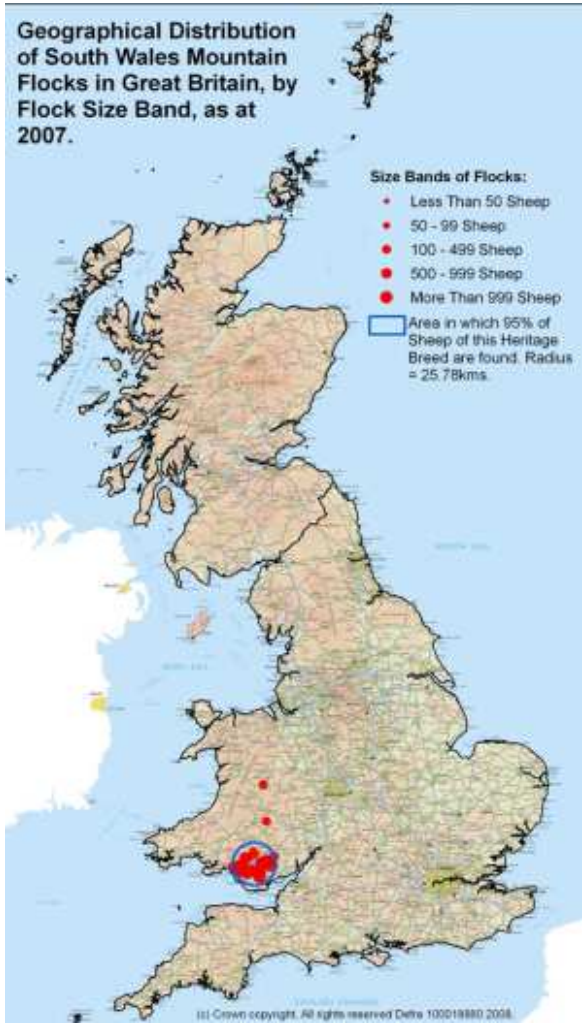
1. Prioritisation of particular breeds, or flocks/herds
2. Breeds with outdated specialities
3. Conservation of within-breed genetic variation

Prioritisation

UK Foot-and-mouth disease (FMD) outbreak in 2001 and more recent concerns over bluetongue virus revealed how some breeds may be quite common, but very localised

- South Wales Mountain sheep is not rare (24,000 ewes) but would be seriously threatened by another FMD outbreak
- How do you protect breeds like this?
- Can you define particular flocks as meriting special protection measures?
- Does this link with cultural landscape issues?





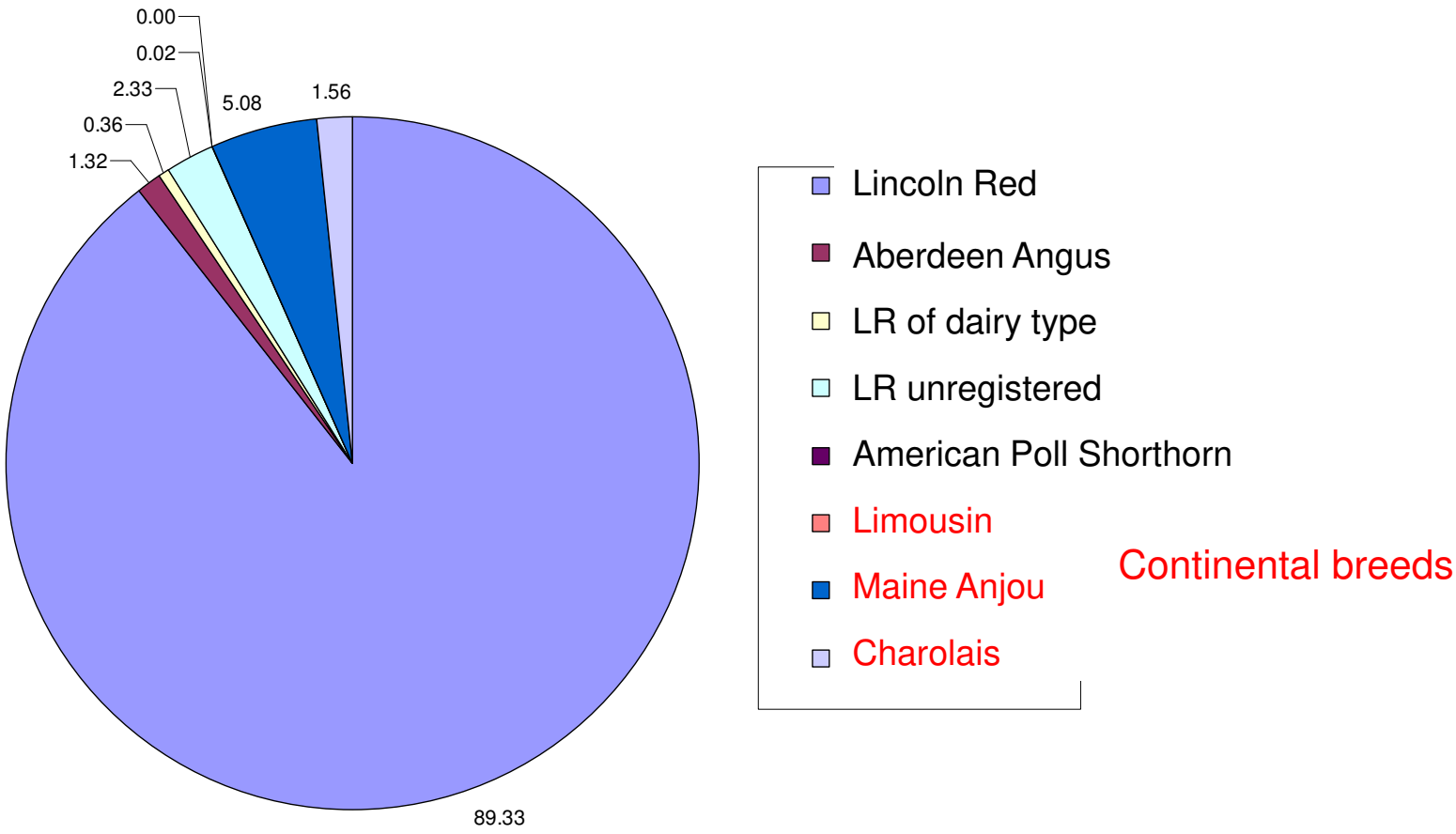
Breeds with outdated specialities

- Local breeds can survive by developing niche markets for meat, cheese, wool etc.
- Some breeds have specialist roles within crossbreeding systems, which are now under threat
- This is particularly evident in UK sheep where these crossbreeding systems are part of the commercial cultural landscape

Within-breed genetic variation

- The Jersey experience illustrates how so long as the breed looks much the same, people will tolerate genetic changes within it.
- With computerised registration and pedigree systems breed societies can maintain sectors of their breeds free of outside influence, if they want to
- These procedures are governed by EU legislation (the “zootechnical regulations”)

Genotype of a popular Lincoln Red bull (b. 1994)



Keeping breeds in their landscapes

Lincoln Red cattle in Lincolnshire

- Whether genetic admixture of this kind is essential for the continued existence of livestock farming in the EU is another question!
- Certainly livestock farming is fundamental to the conservation of very many cultural landscapes

Understanding of breeds is essential for understanding rural cultural landscapes!