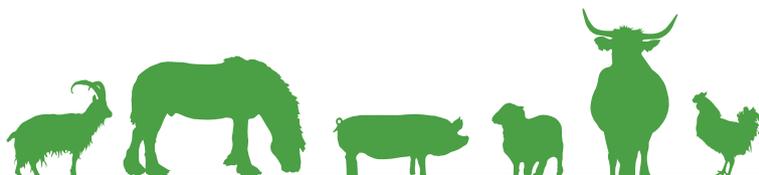




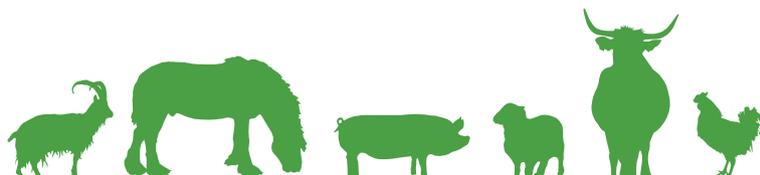
The Breed Profiles Handbook

A Guide to the Selection of
Livestock Breeds
for Grazing Wildlife Sites





Breed Profiles: Sheep



Sheep in conservation

Foraging characteristics

1. Impact on vegetation structure

Sheep have a reputation for overgrazing, due to their ability to graze very close to the ground and producing 'tight' swards* with densely tillered grasses. However, the 'lawn effect' produced by sheep grazing is primarily a factor of stocking density. In free-ranging, extensive situations a considerable variation in structure is likely to develop, with some areas or elements of the sward becoming very closely grazed, and others seldom visited and effectively under grazed.

(*Equines and rabbits also graze close to the ground.)

A small body size allows sheep to move readily into scrubby vegetation where they can see a way through. However, short leg length also means that sheep are less suitable for grazing tall vegetation than larger herbivores, as they will tend to flatten much as they pass through often only grazing the lower leaves of tall herbs and grasses. This results in much wastage, as they will not eat soiled herbage.

Although their small sharp feet can create bare ground, poaching by sheep tends to be minimal and unless kept in high densities or where being fed supplements are unlikely to cause any damage.

2. Feeding preferences

As with cattle, sheep are ruminants; however, unlike cattle, sheep are highly selective grazers.

Sheep preferentially take flowering heads and buds of a range of herbaceous plants, which can be problematic to the long-term management of species-rich swards. However, they do not appear

to graze aromatic herbs and atypical plants (e.g. Butterwort or Sundews), and may be responsible for considerable increases in numbers of these plants where they already occur.

Sedges are readily grazed by sheep, particularly the finer species. However, sheep grazing can also be useful in reducing the size and dominance of large sedges to the benefit of other species.

Both rushes and sedges may become an increasingly important aspect of diet as the summer progresses, and form a major proportion of the diet on winter-grazed sites. In hill situations, species such as Soft Rush and Heath Rush become an important dietary component during the springtime. Careful monitoring of condition is necessary under these circumstances.

3. Impact on trees and shrubs

Some breeds are excellent in controlling the regrowth of scrub and preventing the establishment of new saplings through browsing. The effectiveness of sheep at browsing will often be dependent on the relative palatability of browse and graze; care is necessary to ensure that sensitive herb-rich plant communities are not damaged through using high stock densities to control scrub in the summer. Browse of summer growth, when it is softer, will be more effective than browsing which takes place during winter.

Browsing ability may also be more effective if provided with a varied diet or supplements. However, unlike goats, sheep need to graze and cannot satisfy their nutritional requirements on browse alone.



The Romney Sheep Breeders' Group

4. Social behaviour and its effect on foraging

Unless stressed, sheep, and thus the grazing effect, tend to disperse over the area available. Some breeds bunch more than others (e.g. Clun), others disperse more (e.g. Rough Fell). Sheep within extensive systems form widely dispersed social groups which establish and maintain home ranges (hefts or 'heafs'), which may then be handed down from generation to generation (e.g. Herdwick). Dunging follows a similar dispersed pattern except on 'loafing' and sleeping areas.

5. Sex and dietary differences

There is some evidence of significant differences in grazing abilities between ewes, rams and wethers. Rams and wethers generally take more browse and are reputedly more adept at taking coarse vegetation than ewes (Bullock and Armstrong, 2000).

6. Impact of age on foraging ability

Older sheep may have problems eating tough vegetation, as they tend to start losing teeth from 4-5 years of age; younger sheep will not have a full set of broad front teeth until they are at least three years old. However, it may be easier for broken mouthed ewes to pull large leaves off shrubs than to graze tight swards. Thus there can be a great difference in grazing and browsing abilities of different aged sheep, particularly on habitats where woody vegetation is an important component.

7. Dunging behaviour

Sheep tend not to have distinct dunging areas, although there will often be a concentration of droppings on their favoured 'loafing' or resting areas.

Different types of sheep

The UK is unique within Europe for the structure of its sheep industry, which has developed around the great diversity of breeds used in different parts of the country according to local conditions. Essentially, purebred sheep are crossed in a variety of combinations to produce commercially viable lambs for the meat trade. Although there is now a growing trade in the sale of rare breed and conservation grade meat, the majority market has for several decades been for lambs obtained from crossing two or more different breeds.

For conservation grazing purposes, sheep can be divided into the following categories: primitive, hill, upland and lowland. In general, the lowland breeds are considered to be of limited use for grazing on conservation sites as they have been bred to be productive on improved grass and have largely lost the physical ability to 'do well' on anything else. The majority of other breeds have potential for use on conservation grazing sites, although breed alone does not assure their suitability for conservation grazing. Much depends on the animal's background, especially the terrain and vegetation on which it has been reared.

However, this must be balanced against the fact that lambs reared in easier situations will be bigger and fitter than if they had to cope with the hill or other inhospitable environment initially. It may be that as long as the original genes are present and there are experienced adults to learn from, individuals from different backgrounds may have no problem coping with the tough stuff when they go out to new areas as shearlings (one-two year olds). The critical development factor is probably the reliance on forage rather than concentrates during rearing which maximises rumen function

The following table provides a comparison of some of the characteristics of different sheep breeds which may affect their suitability for conservation grazing.

Type of sheep	Special characteristics and suitability in conservation situations
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Primitive breeds	
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e.g. Soay, Hebridean, Shetland	
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|--|--|
| | <ol style="list-style-type: none"> 1. Generally very hardy in all extremes of weather. 2. Small size, able to do well on poor quality vegetation. 3. No real place in the commercial market of the past few decades, although more recently specialist markets for purebreds have been developed, and crosses with lowland breeds can produce quality commercial carcasses. 4. These breeds often have a strong browsing requirement to their diet, and so are good for sites requiring scrub control. 5. Very protective mothers. Unlikely to have any problems at lambing time. |
|--|--|

*Hill breeds	
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e.g. Swaledale, Cheviot, Welsh Mountain, Scottish Blackface, Herdwick	
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|--|---|
| | <ol style="list-style-type: none"> 1. Generally extremely hardy to extremes of weather. 2. Small size, able to do well on poor quality vegetation. 3. Hill-bred ewes are often crossed with upland rams, and the resultant ewes (often called 'Mules' – see glossary) crossed once more with a purebred lowland ram, to produce a table lamb. 4. Good browsers and so are good for sites requiring scrub control. 5. Excellent mothers; only a small proportion are likely to need assistance during lambing time. |
|--|---|

Upland breeds	
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e.g. Beulah, Clun, Hill Radnor, Kerry Hill	
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- | | |
|--|---|
| | <ol style="list-style-type: none"> 1. Most are hardy, although generally less so than primitive or hill breeds. 2. Readily graze unimproved and coarse vegetation, but may not maintain condition so well as primitive or hill breeds. 3. Browsing is unlikely to form a really strong element of their diet, although some browsing is likely. 4. Reasonable mothers; only a small proportion are likely to need assistance during lambing time. |
|--|---|

Lowland breeds	
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Suffolk, Romney Marsh, Hampshire Down, Poll Dorset, Shropshire, Texel	
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- | | |
|--|---|
| | <ol style="list-style-type: none"> 1. Generally not particularly hardy. Heavy breeds with less tolerance to extremes of weather. 2. In general will only be able to gain condition on improved or the more fertile semi-natural grass; these breeds are likely to require food supplements for much of the winter period. 3. Popular breeds for terminal sires to the table lamb. Used for adding size and shape to lambs destined for the butcher. 4. Unlikely to browse significantly. 5. Ewes are likely to need assistance during lambing and may not make good mothers. 6. Some lowland breeds are able to handle nature conservation situations, e.g. South Downs are quite good grazing animals on rough downland. |
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* The term 'hill' refers to mountainous areas and mountain breeds.

Conservation situations where sheep are in use and contacts

See individual breed profiles in the following sections.

BEULAH SPECKLED FACE

Summary

The Beulah Speckled Face is a medium-sized white sheep, with distinctive black speckles on the face and limbs. Traditional to the Welsh hills, the Beulah is a hardy breed well suited to grazing unimproved grass in exposed areas. A popular breed for use on nature reserves owing to its ability to maintain good condition on poor forage.

Hardiness – A hardy breed, well suited to year-round grazing on unimproved forage.

- *Hardy* – traditionally used at altitudes of between 1000 and 1500 feet. Capable of lambing outdoors and producing hardy lambs with a very low level of hypothermia-related mortality.
- *Maintains good condition* – flocks of wethers or ewe lambs retain condition whilst grazing minimal forage. Pregnant ewes and those with lambs at foot have higher nutritional demands, but still do well on unimproved grass.

Physical Attributes & Husbandry – a low maintenance breed requiring minimal husbandry if kept in free ranging situations.

- *Self-sufficient* – like all hill breeds, the Beulah is capable of looking after itself with low levels of human input.
- *Hooves* – in high, relatively exposed conditions on unimproved pasture, foot rot is rare and hooves should only need trimming once a year in these conditions, but more frequently elsewhere.
- *Fly-strike* – not prone to this condition unless grazed on over-lush pasture.
- *Intelligent* – very capable of learning behaviour patterns and thus can be easily managed with either good dogs and/or a feed bucket.
- *Lambing* – ewes will produce more lambs (160-170%) if on slightly better grass during the autumn. Both ewes and lambs will benefit from some supplementary feed during winter and better grass in the spring.
- *Handling* – should not wander if it has sufficient keep, although can be difficult to contain once it has learned to get out; escape leaders should be removed before they teach others. Strong dogs are necessary to handle this breed.
- *Fleece* – fairly long fleece, so occasional sheep, particularly first winter lambs with long wool can become tangled in Brambles.



Tim Beech (Natural England)

Grazing Characteristics - a useful breed for maintaining unimproved grassland.

- *Grazing ability* – prefers the sweeter grasses and herbs.
- *Browsing ability* – will take summer growth of some shrubs and may strip bark during winter.

Interaction with the Public – not particularly nervous, therefore quite suitable for sites with public access.

- *Reaction to dogs* - the Beulah will generally ignore dogs, although, ewes with young can and do attack dogs.

Marketability – a popular commercial breed.

- *Meat* – produces a lean, marketable carcass.
- *Breeding stock* – increasingly in demand for use in conservation grazing.

BLACK WELSH MOUNTAIN

Summary

A hill breed from the uplands of Wales, the Black Welsh Mountain is agile, hardy and thrifty. Willing to graze both coarse and fine vegetation, as well as being an effective browser, it is suitable for use in a range of conservation grazing situations. Placid and easy to handle, and with good niche marketing opportunities, the Black Welsh Mountain is a good 'all-rounder'.

Hardiness – a hardy, thrifty breed, very suitable for use in conservation grazing.

- *Thrifty* – maintains condition well on low quality forage. Even during winter, supplementary feed only necessary in extreme conditions.
- *Hardy* – tolerant of extremes of weather; its short, but thick, dense fleece enables it to cope well with the cold and rain.
- *Shelter* – natural forms of shelter (rocks, scrub) are adequate.
- *Surefooted* – a lightweight, agile sheep, confident on awkward and steep terrain.

Physical Attributes & Husbandry – a placid, easy to handle sheep, requiring only routine husbandry.

- *Handling* – small, easy to handle and more placid than its Welsh Mountain relatives. Flocks well, so can be worked with dogs easily or bucket trained.
- *Fencing* – fairly respectful of enclosure and electric fencing.
- *Brambles* – rarely becomes entangled in thorny vegetation, as its fleece is short and compact.
- *Supplementary feed* – unlikely to be required by non-breeding animals, except in extreme weather; breeding ewes will benefit from some supplements at lambing time.
- *Breeding* – a self-reliant milky breed; generally lambs unaided. Good, protective mothers with active lambs, quick to suckle. Even on poor keep, will support one good-sized lamb or twins with few losses.
- *Fly strike* – generally not thought to be susceptible, although on one downland site, it was affected more frequently than white Welsh Mountain sheep.
- *Hooves* – good, slow-growing feet. Routine care only required. Placid, thus easy to treat individuals.
- *Size* – small. Ewes weigh up to 45kg and rams between 60-65kg.
- *Appearance* – black, with short, dense fleece. Rams horned.



Sandie Tolhurst

Grazing Characteristics - a fairly hard-mouthed sheep capable of effective maintenance and restoration grazing.

- *Grazing preferences* – readily eats both coarse and fine grasses, including rank Tor-grass and Upright Brome. Good control of Purple Moor-grass.
- *Browsing ability* – reasonable ability to suppress saplings and scrub re-growth; particularly Willow. Dislikes Bog Myrtle.
- *Sedges and rushes* – effective at winter grazing of rushes and sedges; avoids walking through and does not graze areas dominated by Saw Sedge.

Interaction with the Public – suitable for grazing on public sites which are large or where dogs are not permitted.

- *Reaction to people* – a calm, placid breed which will generally ignore people.
- *Reaction to dogs* – vulnerable to attack, although on large sites, is likely to seek cover and avoid confrontation.
- *Public perception* – colour attracts interest from the public, particularly when lambs are present. Well-rounded appearance, even when newly shorn may help avoid welfare concerns.

Marketability – particularly suitable for local, niche marketing.

- *Meat* – lambs quick-growing and lamb produces a 'premium' with distinctive flavour. Particularly suited to niche local or direct markets.
- *Wool* – although not in demand by wool marketing board, sought after by local spinners.

BORERAY

Summary

The Boreray is a hardy, rare breed of primitive sheep, which until recently had been isolated on Boreray Island in the St Kilda archipelago since the 1930's; there are now several small flocks on the mainland. The breed has considerable potential for future use in conservation situations owing to its thriftiness and feral evolution.

Hardiness – an extremely hardy breed, well suited to coping with difficult terrain and exposed conditions.

- *Able to withstand harsh conditions* – evolved as a feral flock adapted to the exposed conditions of Boreray.
- *Thrifty* – copes with sparse conditions and a range of vegetation types.

Physical Attributes & Husbandry – a small, largely self-sustaining breed which requires minimal husbandry.

- *Small size* – adult ewes have an average weight of 30kg and 55cm high at the withers.
- *Short tail* – less prone to fly strike. Tail docking not required.
- *Fleece* – quite dense and sometimes naturally shed, especially by breeding females, so shearing not always necessary.
- *Handling* – unlike some other primitive sheep, the Boreray can be gathered using dogs and will flock like a domestic breed. If unaccustomed to being confined, the breed can be difficult to handle in pens.
- *Fencing* – standard stock fence plus single top wire is sufficient. A horned breed, thus electric net fencing not suitable.
- *Hooves* – good hooves with footrot reportedly very rare, although one breeder on mainland UK has indicated that the Borerays' hooves grow rapidly and need regular trimming.
- *Good general health* – few disease problems evident.
- *Breeding* – lambs easily. Lambs are vigorous and quickly get on their feet.
- *Appearance* - cream, grey or occasionally black in colour, with black, tan or grey faces and legs. Both sexes are horned; rams have heavy spiral horns.



British Wool Marketing Board

Grazing Characteristics – a breed with good potential, but currently no known instances of Boreray sheep grazing on nature conservation sites.

- *Grazing* – eats coarse vegetation.
- *Browsing* – browses, but extent of ability unknown.

Interaction with the Public – an attractive unusual breed with high public appeal.

- *Reaction to people* – variable. Some flocks are very shy of human contact, but others become tame and will approach humans for food.
- *Appearance* – small size, fleece colour and horns make the Boreray attractive to the public.
- *Fleece shedding* – can make the breed appear 'moth-eaten' which may need explanation on sites with public access.

Marketability – as an extremely rare breed, there is a market for breeding stock.

- *Meat* – very tender, with good flavour; small carcass.
- *Fleece* – rather coarse and too short for hand-spinners, but usable if shorn. The Boreray is currently exempted from the regulations concerning the sale of wool to the British Wool Marketing Board.

CASTLEMILK MOORIT SHEEP

Summary

A lean attractive hill sheep which is currently listed as Critical by the Rare Breeds Survival Trust. Small in size with brown close-knit wool and light under parts. Both sexes are horned. Low maintenance breed in terms of husbandry although generally prefer quite good grazing.

Hardiness – small and quite hardy despite a delicate appearance.

- *Shelter is advisable* – shelter of some kind is preferred. Artificial shelter in the form of hayracks is often used.
- *Good hooves* – extremely good, hard, slow-growing hooves. Foot rot is unheard of even on the wettest of grounds.

Physical attributes & Husbandry – easy to keep and handle with few husbandry requirements.

- *Good hooves* – extremely good, hard, slow-growing hooves. Foot rot is unheard of even on the wettest of grounds.
- *Wool* – short close-knit wool which is easy to clip or pull.
- *Handling* – can be flighty and so difficult to pen. However, excellent health records mean penning should not be needed too regularly. Individual sheep can be tamed quite easily.
- *Lambing* – if ewes have too rich a diet, big lambs are produced which can cause birthing difficulties. Lambs are normally born as twins and are small, thus very vulnerable to foxes for the first few days. Accordingly it may be advisable to lamb inside.
- *Supplementary feeding* – benefits from light supplementary feeding through the winter. Fine quality hay is enjoyed with poorer alternatives generally wasted.
- *Horns* – temporary electric netting is a potential hazard, as both sexes are horned.



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Grazing characteristics - a breed which prefers richer forage.

- *Prefers a grass-rich diet* – will graze poorer forage although richer grasses are preferred.
- *Browsing ability* – will browse shrubbery and strip bark.

Interaction with the Public – generally placid although ewes will protect offspring from dogs.

- *Placid nature* – while rams can be very territorial, ewes are generally placid. However, startles easily if anything out of the ordinary occurs.
- *Reaction to dogs* – ewes are good mothers and will use their horns to protect offspring from dogs.

COTSWOLD

Summary

Large, placid and fairly hardy, the Cotswold is a rare breed whose numbers became critically low during the mid-twentieth century. Good marketing opportunities are associated with this breed and being strongly grass-based, the Cotswold is probably best suited to maintenance grazing of restored grassland sites.

Hardiness – a fairly hardy breed.

- *Hardy* – its heavy, all-encompassing fleece provides good protection from extreme weather.
- *Thrifty* – gains weight easily.

Physical Attributes & Husbandry – an easy to handle, placid breed.

- *Appearance* – large and long-legged, with a long wool fleece. Ewes weigh about 85kg and rams may exceed 135kg. Both sexes are polled.
- *Handling* – placid nature, thus despite large size the Cotswold is easy to catch and treat; easily trained to follow a bucket.
- *Fencing* – standard stock fencing suffices. Generally respectful of electric fencing and does not attempt to break out.
- *Fleece* – thick, longwool fleece, thus potential for becoming hung-up in Brambles and thorny vegetation.
- *Breeding* – large pelvic structure facilitates lambing. Ewes are milky and renowned for demonstrating impressive mothering ability.
- *Foot care* – as with many of the heavier lowland breeds, its feet need regular attention.
- *Insects* – the heavy open fleece tends to attract fly strike, so careful monitoring and regular treatment required.



Cotswold Sheep Society

Grazing Characteristics – a strongly grass-based breed, best suited to maintenance grazing.

- *Grazing preferences* - sweet, fine grasses. Less interested in coarse grasses and ignores rank grasses altogether. Does not take Tor-grass unless forced.
- *Rushes and sedges* – not keen.
- *Browsing ability* – minimal, although as with most sheep, it nibbles the new leaves of seedlings and scrub regrowth.

Interaction with the Public – suitable for grazing sites with public access.

- *Public perception* – as an old, rare breed closely associated with one region, the Cotswold may attract interest from the public. An aesthetically appealing sheep with its thick fleece and long forelock.
- *Reaction to dogs* – a breed that stands its ground against dogs extremely well. The usual behaviour pattern is that the sheep stamps the ground fiercely and lowers its head ready to charge.

Marketability – a breed which has become rare through competition with other breeds, the Cotswolds commercial opportunities lie within niche markets.

- *Wool* – produces a heavy, high quality fleece. There is excellent demand for the wool, to the extent that the British Wool Marketing Board collects Cotswold wool separately, in order to sell it by breed rather than by type.
- *Meat* – niche market for purebred Cotswold lamb sold by breed name direct to butcher. Otherwise sold at livestock market. Can be finished at 14-16 weeks.
- *Breeding stock* – high prices may be obtained for good quality pedigree breeding stock.

'EASYCARE'

Summary

The 'Easycare' is a commercially viable breed which has been developed in Anglesey by crossing Wiltshire Horn rams with Welsh Mountain ewes. Although not as hardy as the traditional hill breeds and probably less effective at taking coarse vegetation and browse material, the 'Easycare' seems well-suited to maintenance grazing on conservation sites.

Hardiness – a fairly hardy sheep.

- *Maintains condition on poor forage* – provided stocking rates are low and if not pushed too hard. Supplementary feed may be necessary for breeding ewes, particularly if supporting more than one lamb.
- *Tolerant to extremes of weather* – copes well with cold, wet exposed conditions.

Physical Attributes & Husbandry – a relatively low maintenance breed.

- *Fleece* – short, with a goat hair texture. Naturally falls off in spring, removing the need for shearing. No dagging required and unlikely to get hung-up in Brambles.
- *Fly-strike* – low risk, due to nature of the fleece. A polled breed, so head-fly unlikely.
- *Handling* – flocks well and so easy to gather, although skittish and active, so requires good dogs. A strong animal, it tends to struggle when being handled.
- *Fencing* – fairly respectful of electric fencing, as the short fleece, or 'hair' gives little protection from the shock. However, a quite long-legged athletic sheep and some individuals may habitually jump out of their enclosure.
- *Hooves* – good, requiring routine care.
- *Breeding* – usually lamb unaided outdoors. Good mothering ability. Productivity ranges from 100-175%; with fewer lambs, the ewes tend to maintain condition more successfully.
- *Size* – medium sized.



Grazing Characteristics - a useful maintenance grazer on conservation sites.

- *Grazing preferences* – strongly grass-based. Will eat some of the coarser species as well as finer grasses of short swards. Unlikely to make much impact on rank, older Tor-grass.
- *Browsing ability* – thought to be minimal, although will take newer scrub regrowth.
- *Rushes and sedges* – little interest in rushes; possibly nibble some sedges of short swards.

Interaction with the Public – suitable for grazing sites with public access, but like most sheep, vulnerable to dog attack.

- *Public perception* – generally maintains condition well, so less likely to raise welfare concern. Its self-fleecing ability may mean the sheep look tidier and cleaner to the public, as well as reducing the potential risk of fly-strike.
- *Reaction to dogs* – vulnerable to attack, although have been known to 'face-off' dogs occasionally.

Marketability – a commercially viable breed.

- *Meat production* – when crossed with Texel or Charolais rams, the 'Easycare' produces good-sized, fast growing lambs for slaughter, which are highly marketable.

HEBRIDEAN

Summary

A hardy and minority breed of sheep, once widespread within the Scottish Islands and Highlands, which has now become very popular for use in nature conservation grazing schemes. This is due to the ability of Hebridean sheep to thrive on poor vegetation and to graze/browse in a beneficial way.

Hardiness – an extremely hardy breed, able to cope with extremes of weather conditions and make do on poor quality vegetation.

- *Fleece* - sheds water well, allowing breed to cope with continuous heavy rain.
- *Thrifty* - non wasteful of available grazing.
- *Extremely hardy* - able to cope with a great range of climatic conditions.

Physical Attributes & Husbandry – a low-maintenance breed of sheep.

- *Foot rot* - rare and usually occurs when the Hebridean is run in mixed flocks with a more foot-rot prone breed.
- *Hoof trimming* - hooves hard, but may need regular trimming (2-3 times per year) if animals are kept on soft ground.
- *Shearing* – necessary for most animals, although ewes that have lambed may shed their fleece. Lambs may get stuck in brambles.
- *Supplementary feeding* - may be necessary for ewes in late pregnancy or lactation, depending on the availability of good quality herbage.
- *Handling* - wary and nervous if contact with humans is infrequent, but can become very tame. Fleet of foot; however the Hebridean flocks reasonably well, thus making it possible to round up with good sheep dogs.
- *Small size* - allowing easier handling than many of the larger commercial breeds. Approximate weight of ewes' 40kg.
- *Fencing* – both sexes horned, thus electric net fencing should not be used. Able to jump standard stock fencing when provoked, but does not generally attempt to escape if food supplies are adequate.



Peter Roworth

Grazing Characteristics – a highly suitable breed for grazing unimproved vegetation on a wide range of nature conservation sites, including chalk grassland, lowland and upland acid heath and sand dunes.

- *Browse* - effectively controls scrub and coppice woody regrowth, including Hawthorn, Creeping Willow, Sea Buckthorn and Birch.
- *Bramble* - browses leaves and tips.
- *Bark stripping* - of trees and scrub (e.g. Willow), particularly during winter and when short of fodder.
- *Heathland vegetation* - in trials preferred Purple Moor-grass to Heather, and took sufficient quantities of the former to reduce its vigour and allow Heather to recover (Braithwaite et al, 1997).
- *Coarse grasses* - are readily consumed; the breed is able to thrive on rough grazing.

Interaction with the Public – an aesthetically pleasing breed which generally avoids contact with the public.

- *Appearance* - even when well fed, ewes of this breed rarely have a 'condition score' of more than 2.5 (scale 1-5, 3 = average), which can make them appear rather thin after shearing; this perception diminishes as the fleece grows.
- *Aesthetic appeal* – black colour, horns and alert stature make the Hebridean an attractive, unusual sheep that is popular with the public.
- *Character* – generally wary of humans.

Marketability – as a rare breed there is a market for breeding stock.

- *Meat* – very good, tender and with good flavour, small carcasses.
- *Wool* – the Hebridean is currently exempted from the regulations concerning sale of wool to the British Wool Marketing Board.

HERDWICK

Summary

A very hardy, medium sized breed from the Lake District, possibly of Scandinavian origin. The grey fleece is dense, coarse and oily, making it waterproof and valuable for insulation in extreme weather conditions. Generally placid, with a strong hefting instinct, the Herdwick is also renowned for longevity.

Hardiness - along with the primitive breeds, one of the hardiest of British sheep and highly suited to a free-ranging existence on low quality forage.

- *Maintains condition well* - naturally well covered, even on poor forage. Supplementary feed rarely required and often ignored or used as bedding. Switches to browse in absence of grass.
- *Resilient to extremes of weather* - typically outwintered on the wet, exposed fells and hills of Cumbria, where it grazes up to 3000ft. Its coarse, dense fleece with high kemp and lanoline content is waterproof and effective in extreme cold. Fleece may dry out quicker than breeds with white wool. Copes well in the snow.
- *Shelter* - natural forms of shelter are adequate. Patches of scrub and stonewalls can provide the necessary protection from extended rainfall.

Physical Attributes & Husbandry - an active, but sensible sheep, requiring some routine husbandry.

- *Handling* - a strong sheep, but not too big and fairly placid. Sensible and apart from young sheep, does not tend to struggle much during dosing and shearing. Flocks well, and can be handled with dogs or manoeuvred gently by a few people on foot, unless kept in semi-feral situations.
- *Fencing* - a lively, active sheep which will seek out gaps in fencing and handling pens. However, usually content on poor quality keep, so apart from individuals, not too inclined to escape. Variable opinion on whether it respects electric fencing or not.
- *Brambles* - thick loose fleece may make the breed prone to becoming trapped in thorny vegetation.
- *Foot care* - minimal trimming if on hard, free-draining substrate. On dune systems sand wears the feet down and salt inhibits bacteria. More foot care required on lush, wet pasture. Occasional 'corkscrew' foot growth.
- *Fly strike* - rare on exposed uplands; more likely on warm, humid lowland sites.
- *Lambing* - on poor forage on the Fells year round, productivity <100%. On rich pasture, may increase to 150%. In upland situations, lambs vulnerable to fox attack, as ewes tend to leave newborn lamb hidden and move away to graze.



Mei Stole

Grazing Characteristics - an effective grazer and maintenance browser of poor quality forage.

- *Grasses* - grazes whole range of grasses, including False Oat-grass, Cocksfoot and new False Brome shoots. Not keen on rank Tor-grass or old brown grass. Good impact on tussocky grasses and litter if more intensively grazed.
- *Browsing* - controls scrub regrowth and suppresses tree/scrub encroachment if grazed more intensively. Successfully controls Creeping Willow on dunes. Takes Birch, Sycamore, Pine, Bramble, Honeysuckle, Dogwood and Sea Buckthorn, but little Gorse. Readily eats Heather.
- *Sedges and rushes* - not keen, except for sedges of short swards and Soft Rush in winter. Ignores Wood Small Reed and Sea Club Rush.
- *Coarse herbs* - will take Dewberry, Rosebay Willowherb and the flowering heads of Ragwort.
- *Social behaviour* - in extensive upland situations, demonstrates a strong hefting instinct. Disperses widely, following a strong diurnal pattern. Wethers may take coarser vegetation most effectively, especially Mat Grass.

Interaction with the Public - suitable for public access sites where dogs are controlled or absent.

- *Public perception* - well-rounded and healthy appearance, even after shearing, advantageous. Unusual looking, pretty black lambs.
- *Dogs* - vulnerable to dog attack. Some Herdwick ewes, however, are active against dogs.

Marketability - some commercial potential for quality meat to specialised markets.

- *Fleece* - traditional carpet making industry using the Herdwick fleece has collapsed. Currently little value; alternative uses of the fleece, such as for horticultural mulch are being developed.
- *Meat* - high quality lean meat, but small carcass and cuts unsuitable for supermarkets. Some Cumbrian farmers have switched to direct marketing and via local butchers with some success.

ICELANDIC

Summary

The Icelandic is hardy and appears to thrive on coarse vegetation. It is an intelligent primitive breed with flighty characteristics, and in some instances, this may make it slightly challenging for the novice to handle. However, its grazing and browsing attributes are highly desirable, making it worthy for careful consideration on nature conservation sites with scrub or rank vegetation.

Hardiness – hardy, thrifty and intelligent.

- *Thrifty* – maintain condition well throughout the year on coarse vegetation.
- *Supplementary feed* – not necessary in extensive situations. However, as twins are common, ewes with lambs at foot will be able to more easily rear them if provided with supplements.
- *Hardy* – has a dual coat; provides good protection against adverse weather conditions. Its fine, dense undercoat is moulted in spring, and the outer coat of long hairs cast irregularly during the year; this moulting of hair is a primitive feature.
- *Intelligent* – very aware of the weather and seeks out shelter when the sky darkens.

Physical Attributes & Husbandry – an interesting breed to own and handle, requiring routine husbandry.

- *Handling* – more docile than most primitive breeds. However, some are flighty, wild and difficult to handle. Most will quickly learn to come when called or if nuts rattled in a bucket. Sheep dogs may be used to 'guide' a flock; if too much pressure is exerted, the herd will tend to split.
- *Fleece* – long and dense; likely to become entangled in Bramble and other thorny vegetation. Prone to matting/felting in high rain areas; thus fleece does not always shed and the new coat grows into it, which can cause problems.
- *Hooves* – good feet, although grow quickly on soft ground, and possibly faster than other hill breeds.
- *Size* – medium. Great variation in weight, although ewes may weigh up to 60kg; rams 90kg.
- *Appearance* – short fluke-shaped tail. Variety of natural colours, multicolour and markings, including grey, black, brown, moorit and apricot. This variation makes it easy to identify individuals. Two horned in both sexes; occasional lambs with four horns. May be polled.
- *Mineral requirement* – may be far higher than other hill breeds. Regional mineral deficiencies may translate into deficiency conditions in individuals.
- *Breeding* – ewes highly protective towards lambs. If crossbred, small-headed breeds should be used to avoid lambing difficulties.



Eric Signal

Grazing Characteristics – a breed with good browsing ability and suitable for coarse grazing.

- *Grazing ability* – prefers coarse rushes and sedges to finer grasses. Eats the flowers of Nettles and Thistles, and the whole plant when they start to die back. In an upland location, eats Nettles and Thistles at all stages of development. Will eat grasses, but not keen on modern ryegrasses or clover; prefer tougher grasses.
- *Browsing ability* – very keen browsers, preferring the hedge to the pasture. Strips Brambles, Hawthorn and Blackthorn of leaves. Strip bark of variety of both mature and young trees in the winter, often killing them. In North America, Icelandic sheep eat Pine and Fir tree needles. Appears to avoid Heather.
- *Social impact of grazing* – forms hefts and generally sticks with its own kind.

Interaction with the Public – suitable for use on public access sites.

- *Reaction to people* – very inquisitive and in some situations will come to the fence to see what is happening.
- *Public perception* – easy going nature of the breed and its attractive appearance, makes the Icelandic a very popular choice for the public.

Marketability – a breed with a range of niche marketing opportunities.

- *Meat* – a slow maturing breed which produces lean tasty meat; fat tends to accumulate round the internal organs rather than as part of the joints. Suitable for direct sales or niche marketing.
- *Wool* – produces a high quality fleece, suitable for hand spinning and felting.
- *Breeding* – ewes can be put to a terminal sire to produce a heavier, faster maturing meat lamb.
- *Skins* – tanned skins fetch good prices when the colours are attractive, or the skins parti-coloured.

JACOB

Summary

The Jacob is an ancient breed, established in Britain as a parkland sheep by the eighteenth century. It is a fairly hardy, goat like animal with proven ability to assist in scrub control. Relatively placid and intelligent, but well able to intimidate dogs, the Jacob may be a good choice for grazing conservation sites where there is public access.

Hardiness – a fairly hardy lowland breed that thrives on poor quality forage, but is less tolerant of extreme weather than the hill breeds.

- *Fairly hardy* – able to out winter in lowland Britain, but may suffer in extreme weather, particularly in extended periods of rainfall, as its fleece is not particularly dense or waterproof.
- *Supplementary feed* – except in extreme weather the breed generally maintains condition well on poor quality forage, although lactating ewes tend to loose condition and may require supplementary feeding.
- *Requires shelter in winter* – requires a more substantial form of shelter (e.g. a wooden shed) than the hill and primitive breeds, unless good natural shelter, such as woodland is available.

Physical Attributes & Husbandry – generally requires less routine husbandry than commercial and even some hill breeds.

- *Handling* – generally easy, as the Jacob is a docile and intelligent breed that can be bucket trained or moved with dogs. However, it has less of a flock mentality than other breeds, and may not gather well. Individuals can be strong-willed and awkward, influencing the others and making control difficult. Capable of intimidating dogs.
- *Fencing* – except for individuals the Jacob is not inclined to escaping, although it is a good and athletic jumper. Respectful of electric fencing.
- *Brambles* – rarely a problem, as the Jacob is a tall, strong sheep and can avoid getting trapped.
- *Flies* – a horned breed, susceptible to head fly which can lead to fly strike. The Jacob has a long, quite open fleece, which tends to retain moisture and makes it more likely to suffer fly strike than the denser fleeced breeds.
- *Split eyelid* – four horned animals seem more susceptible to the genetic condition 'split-eye'.
- *Lambing* – generally lambs easily and produces small, active lambs; occasional problems if horns form prior to birth. Good mothers, with abundant milk, often produced at the expense of the ewe's own condition.
- *Hooves* – good feet, which in dry, hard conditions require minimal attention.



Simon Meek/Corporation of London

Grazing Characteristics – good grazers, with excellent browsing ability.

- *Grazing* – eats most grasses, both coarse and fine, but not rank Tor-grass or dead grasses.
- *Browsing* – rears up on hind legs to eat, often favouring browse material to grasses. Takes a wide range of species, including Bramble, Hawthorn, Hazel, Cherry, Oak, Ash, Whitebeam, Dogwood, Beech and Rowan. Bark strips smooth trees in winter and devastates newly laid hedges. Also selects Ling, potentially suppressing it.
- *Poisonous plants* - adults browse live yew to no obvious ill effect. May also eat a little Ragwort.
- *Sexual differences* – wethers will browse harder than ewes.

Interaction with the Public – suitable for use on urban fringe sites and those with high levels of public access.

- *Aesthetic appeal* – attractive and unusual, the Jacob is usually popular with the public, although its tendency to look a bit thin when shorn can cause some concern.
- *Reaction to people* – generally unconcerned.
- *Reaction to dogs* – the Jacob is quite a large breed with threatening horns and generally stands up to all but the most aggressive of dogs. Used as a 'guard sheep' to protect the more vulnerable Southdown on one urban fringe site.

Marketability – a breed with opportunities for developing niche markets in meat and wool.

- *Meat* – niche marketing a possibility for the sale of the dark, lean meat. Otherwise, Jacob lambs are slow to finish and the cuts do not have the right characteristics for the commercial market (long, bony leg joints).
- *Wool* – opportunities for the sale of multi-coloured fleece for weaving, e.g. sale of will as a local product in National Trust Shop in Arlington.

MANX LOGHTAN

Summary

A hardy rare breed of sheep originating from the Isle of Man but now widespread, although not numerous, on the mainland. Successfully used in several conservation grazing schemes and has the ability to exist on poor vegetation in difficult environmental situations.

Hardiness – a hardy breed able to cope with adverse weather conditions and make do on poor quality vegetation.

- *Thrifty* – non wasteful of available grazing.
- *Hardy* – able to cope with a range of climatic conditions.

Physical Attributes & Husbandry – a low maintenance breed of sheep.

- *Small size* – allowing easier handling than many of the larger commercial breeds.
- *Shearing* – necessary for most animals, although some ewes have the primitive ability to shed their fleece. Lambs may get stuck in brambles.
- *Handling* – with regular handling can become very tame; wary and nervous otherwise. Fleet of foot, but flocks together reasonably well, thus possible to round up with sheep dogs. May charge at crouching sheep dogs.
- *Horns* – both ewes and rams are horned. Multi-horned individuals are more common than in other breeds.
- *Fencing* – able to jump standard stock fencing when provoked, but does not generally attempt to escape if food supplies are adequate. Horns make the Manx Loghtan unsuitable for flexinet electric fencing.
- *Tail* – naturally short, three-quarter length tail, which does not require docking.



British Wool Marketing Board

Grazing Characteristics – suitable for grazing unimproved vegetation on a range of nature conservation sites, including maritime heaths.

- *Browsing* – bark strips trees and scrub, including Willow, particularly during the winter months and when short of fodder. Browses leaves and tips of Bramble.
- *Grazing* – readily consumes coarse grasses. Thrives on rough grazing.

Interaction with the Public – an aesthetically pleasing breed that will generally avoid contact with the public.

- *Appearance* – even when well fed, ewes of this breed rarely have a condition score of more than 2.5 (scale 1-5, 3 = average), which can make them appear rather thin after shearing; this perception diminishes as the fleece grows.
- *Aesthetic appeal* – the dark brown 'moorit' colour fades to an attractive light brown on the outside of the fleece which, along with the horns, makes the Manx Loghtan an attractive and unusual sheep that is popular with the public.
- *Reaction to people* – generally wary of humans unless handled frequently.

Marketability – as a rare breed there is a market for breeding stock.

- *Fleece* – soft to handle and popular with hand spinners. The Manx Loghtan is currently exempted from the regulations concerning sale of wool to the British Wool Marketing Board.
- *Meat* – tender and with good flavour; small carcasses.

MULE

Summary

A commercial crossbreed, the Mule* is hardy and prolific. The established role of the Mule within the UK sheep industry ensures its wide availability and although it is less able to thrive on poor keep than most hill sheep, it is an effective maintenance grazer of unimproved grassland, and therefore has a valuable role within nature conservation.

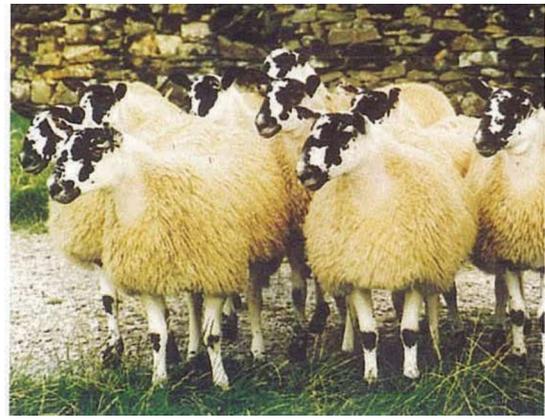
Hardiness – fairly hardy, but less suited to grazing low quality forage than many purebred hill sheep.

- *Maintains adequate condition on poor forage* – although may not gain weight if kept entirely on unimproved pasture. Breeding ewes require supplementary feed, particularly if rearing more than one lamb. All animals likely to benefit from a Rumavite block to assist in the breakdown of cellulose in the gut.
- *Able to withstand harsh weather* – a characteristic of its hill sheep origin, but the introduction of Blue-faced Leicester (a 'soft' sheep not known for its ability to thrive and survive) may have reduced this ability in comparison to the pure hill sheep.
- *Shelter* – natural forms of shelter are adequate.
- *Agility and temperament* – relatively sensible and surefooted, coping well on steep, irregular terrain, although possibly not quite as well as true hill breeds.

Physical Attributes & Husbandry – routine husbandry required, but probably no more so than most hill breeds.

- *Handling* – fairly placid, flocks well, easy to handle with dogs and easy to shear and treat.
- *Fencing* – generally respectful of enclosure and not inclined to escape. Responds well to electric fencing.
- *Fleece* – tendency to get trapped in brambles, particularly the lambs.
- *Hooves* – footrot rare on hard, dry ground; prone to suffer from Scald in long grass. Feet require no more attention than the hill breeds.
- *Insects* – not particularly prone to flystrike.
- *Horns* – a naturally polled breed.
- *Breeding* – a prolific breed, normally producing twins, frequently more. Good mothering ability; produces large quantities of milk if kept on good ground. On rough unimproved land, may only be able to support one lamb, even at low stocking rates. Requires high nutritional input to support its high output and to enable maintenance of condition, so considerable supplementary feeding is necessary. Lambs unlikely to fatten satisfactorily on unimproved pasture unless stocking rates are very low.

Sites where Mule sheep are in use & contacts



North of England Mule Sheep Association

Grazing Characteristics – an effective maintenance grazer that strongly favours grasses.

- *Grazing ability* – prefers shorter sweeter swards and will strongly select the richer, finer grasses, but will take most grasses when within a shorter sward. Will readily eat Wavy Hair-grass, Fescues, Bents, Upright Brome in Spring, and may nibble fresh Tor-grass. Once grass is long and rank will trample rather than eat. Little impact on thatch of grass litter. May take sedges in short swards.
- *Browsing ability* – minimal and unlikely to have much impact, although may take some Brambles and seedlings.
- *Impact of social behaviour* – acts as a lowland breed and tends not to disperse as widely as some hill breeds. Moves as a loosely connected flock and does not appear to have a strongly developed hefting instinct.

Interaction with the Public – suitable for grazing sites with public access, but preferably where access is controlled and the sheep have room to avoid dog walkers.

- *Reaction to dogs* – vulnerable to dog attack. Will generally run rather than stand its ground.
- *Reaction to people* – fairly sensible and so will generally ignore the public.
- *Public perception* – a fairly typical looking commercial sheep not likely to attract particular attention.

Marketability – a popular commercial cross-breed.

- *Breeding* – the Mule is a product of a hill sheep crossed with one of the larger, faster growing, modern breeds. The resultant Mule ewes are often crossed with a fast-growing, lowland, 'meat' breed, such as the Suffolk, to produce a table lamb.

*Mule – see definition of breed in glossary.

NORFOLK HORN

Summary

Originally developed on the grass heaths of East Anglia, the Norfolk Horn was saved from the brink of extinction in the 1970s by a special breeding programme which utilised Suffolk and in some cases Swaledale sheep. The 'new' Norfolk Horn retains the ability to forage widely and thrive on poor quality pastures. Accordingly it is a breed with much potential for expanding use within conservation situations.

Hardiness – a relatively hardy and thrifty breed.

- *Able to withstand exposed conditions* – developed in East Anglia to withstand cold, dry winters and hot summers.
- *Active* – adapted to ranging over poor quality pastures and heathland.
- *Thrifty* – copes with sparse conditions and relatively tolerant of dry unproductive vegetation types.

Physical Attributes & Husbandry – routine husbandry required.

- *Handling* – generally easy to handle, although older rams can be awkward. Can be worked with a dog.
- *Appearance* – both sexes are strongly horned; rams have heavy spiral horns. The fleece is short stapled, close, white wool. The black or dark legs and face are free from wool.
- *Fencing* – standard stock fence plus single top wire sufficient.
- *Breeding* – milky, prolific ewes with good mothering ability. The breed has a low incidence of lambing difficulties.
- *Size* – medium size. Average weight of adult ewes 72kg and rams 92kg.
- *Tails* – long-tailed, usually docked.



Kerry Long

Grazing Characteristics - appears to have good browsing potential and its ranging behaviour is likely to ensure grazing impact is well distributed, particularly on large sites.

- *Grazing ability* – limited details available; see site details overleaf.
- *Browsing ability* – limited details available indicate good browsing ability. See site details overleaf.
- *Impact of ranging behaviour* – well distributed impact on vegetation expected.

Interaction with the Public – may be suitable for use on public access sites.

- *Reaction to people* – can be friendly and docile when regularly exposed to humans.

Marketability – as a rare breed there is a market for breeding stock.

- *Meat* – tender and with good flavour as both lamb and mutton.
- *Lambs* – grow well on grass to reach slaughter weight with minimal additional feeding.

NORTH RONALDSAY

Summary

The North Ronaldsay has evolved over many decades under near-feral conditions on its native Orkney Island. A rare but hardy breed, it is well adapted to harsh environments, sparse grazing and difficult terrain. In locations where there is access to the seashore, the North Ronaldsay will actively seek out and consume nutritious seaweeds as a major component of its diet.

Hardiness – a hardy and thrifty breed, well adapted to harsh environments.

- *Adaptable and active* – where it has access to the seashore, the North Ronaldsay will athletically range over rocks seeking seaweed to eat. Readily grazes grasslands when available.
- *Can withstand harsh conditions* – has evolved under near-feral conditions on areas with sparse herbage, difficult terrain and exposed conditions.

Physical Attributes & Husbandry – a breed with many husbandry advantages, which is well suited to either semi-feral or domesticated situations.

- *Small size* – adult ewes have an average weight of 25kg.
- *Naturally short tail* – thus less prone to fly strike and tail docking unnecessary.
- *Fleece* – naturally shed, but traditionally plucked or 'rooded'. Mainly grey, but can include a wide range (11) of colours and patterns.
- *Handling* – in semi-feral flocks, the North Ronaldsay is wary of humans and not responsive to sheepdogs; if kept in 'hobby' flocks, it can be very tame and friendly. Rams have large horns; ewes may be either horned or polled.
- *Fencing* – standard stock fencing adequate but must be well maintained. A horned breed, thus not suitable for use within electric net fencing.
- *Breeding* – as primitive sheep, the North Ronaldsay lambs easily without intervention. Singles are common on poorer land; twins on better land.
- *Hooves* – foot rot uncommon, but not unknown.
- *Copper poisoning* – very susceptible to copper. The breed should not be used on pastures treated with pig slurry or other sources of copper. May need mineral lick (e.g. Tub-Ron) to counter copper.



Richard Small

Grazing Characteristics – a breed with potential for grazing conservation sites, particularly those pastures with 'weed' problems.

- *Grazing* – actively seeks out and grazes Seaweed when available. Readily eats coarse herbs within pastures, including Creeping Thistle and Dock.
- *Browsing* – enjoy a varied diet and will browse Hawthorn, Brambles, Elderberry and most trees if given access to them. They will eat both leaves and bark.

Interaction with the Public – popular with the public, particularly if it becomes tame.

- *Reaction to people* – tolerates, but is generally wary of people. Can become very tame and friendly.
- *Appearance* – size, varied colours and markings, and horns make the North Ronaldsay attractive to the public.
- *Fleece shedding* – can make the breed appear 'moth-eaten' which may need explanation on sites with public access.

Marketability – as a rare breed there is a market for breeding stock.

- *Meat* – distinctive flavour, with lean, small joints.
- *Fleece* – if shorn or rooded (plucked) the fleece has value to handspinners. The North Ronaldsay is currently exempted from the regulations concerning sale of wool to the British Wool Marketing Board.

PORTLAND

Summary

Despite being one of the rarest British breeds of sheep, the Portland has characteristics which may favour its expansion within nature conservation grazing. Hardy and thrifty, this small breed is able to maintain condition well on poor forage, and seems to be particularly well suited to maintaining unimproved grasslands.

Hardiness – a thrifty and fairly hardy breed.

- *Fairly hardy* – resilient to extremes of weather, although possibly less so than the hill breeds.
- *Thrifty* – good at exploiting nutritionally-poor vegetation types
- *Supplementary feed* – maintains condition well on poor forage; non-breeding animals will generally need little more than mineral licks. Breeding ewes may benefit from supplements at lambing time. Handled sheep lose the self-reliant skills needed for extensive winter grazing.

Physical Attributes & Husbandry – a small breed requiring routine husbandry.

- *Handling* – co-operative if handled regularly and can be trained to follow a bucket or gathered as a flock. However, in semi-feral situations may behave more like the primitive breeds, with individuals scattering when under pressure, so not easy to gather with sheep dogs.
- *Size* – a small breed; ewes 34kg and rams 45kg.
- *Appearance* – the adult sheep is creamy white with tan face and legs, and black nose; lambs are reddish brown at birth. Both sexes are horned; the ram's horns are heavily spiralled.
- *Background* – related to the Welsh Mountain and a descendant of the native tan-faced British breeds. Nearly died out by 1970; rescued by crossing ewes with suitable breeds, such as the Exmoor Horn. Although generally small, some have been bred for greater size and prolificacy.
- *Breeding* – generally produces one lamb. Ewes milky and protective. Usually easy lambing and lambs quick to find teats. If well fed prior to lambing, may need assistance as ram lambs have quite large horn bumps. Some bloodlines may produce two lambs in intensive systems.
- *Fencing* – fairly respectful of enclosure, although with the protection of its reasonably thick fleece, can push through strands of electric wire.
- *Insects* – not particularly susceptible to fly strike, but its woolly tail is often left long and inclined to get dirty; potential for head fly, due to horns.
- *Hooves* – quite good, hard feet; few problems on dry, hard ground.
- *Brambles* – rarely gets trapped, as seems to have the willpower and energy to drag itself out.



Michelle Jones

Grazing Characteristics - generally well suited to grazing conservation sites.

- *Grazing preferences* – readily eats both fine and coarse grasses, including long tussocky species such as Cocksfoot. Tor-grass is eaten both in season and when ranker. Tackles most grasses of acid swards.
- *Browsing ability* – will suppress seedlings and scrub re-growth, although tends not to bark-strip. Fond of Privet and fresh Bramble growth.
- *Sedges and rushes* – not keen, but will nibble the top of rushes.

Interaction with the Public – suitable for use on public access sites where dogs are excluded.

- *Public perception* – an unusually coloured sheep with attractive spiral horns, so likely to appeal to the public. Its rare breed status, particularly if grazed in its 'homeland' may raise interest.
- *Dogs* – small and very vulnerable to dog attack, despite being a heavily horned breed, although ewes with lambs will see dogs off.

Marketability – although a non-commercial breed, some opportunities for niche marketing exist.

- *Meat* – produces a small, lean carcass with a good, gamey flavour. Some people sell finished lambs through the RBST unit using accredited butchers; there may be potential for further development of niche marketing.
- *Fleece* – produces a fine wool which is good for spinning. There are indications that the smaller Portland, when grazed on poor low nutrient forage, may carry higher quality fleeces than the larger type kept on a higher plane of nutrition. Niche marketing opportunities are currently being explored by the RBST.

ROMNEY MARSH

Summary

Developed on the bleak, low-lying grasslands of Kent and East Sussex, the Romney Marsh is common throughout the world. Adaptable to changing environments and production systems, it is able to thrive on very short grass swards and is suitable for maintenance grazing of lowland grasslands, particularly where a tight sward is desirable. A docile, easy to handle breed which has an established commercial market for its meat.

Hardiness – a fairly hardy lowland breed.

- *Maintains condition well* – and recovers quickly when given better keep. If kept on low quality forage, may require supplements in winter and at and lambing time.
- *Tolerant of an exposed environment* – a breed adapted to the bleak climate of some of southern England's most exposed grazing; its good, thick, heavy fleece provides protection from the elements.

Physical Attributes & Husbandry – a docile, easy to keep breed, which is respectful of enclosure.

- *Handling* – a docile sheep which is easily worked by dogs, and easy to handle.
- *Fencing* – respectful of enclosure and content when confined; standard stock fencing without barbed wire is reputedly sufficient to keep the Romney in. Responds well to electric fencing. Not very athletic and tends not to stray.
- *Breeding* – the Romney is as prolific as the system. Many traditional marsh farms on poor keep, farm Romneys extensively and are happy with one lamb at a time. Under more intensive systems, lambing percentages rise to 180-185%. Plenty of pelvic room allows easy lambing and good lamb survival. Good mothering ability. May be more resistant to mastitis than other sheep breeds.
- *Size and appearance* – a heavily built longwool breed, once important for its wool. Ewes weigh about 70-75kg and the rams can reach 100kg. Both sexes are hornless.
- *Hooves* – sound feet and legs; believed to be more resistant to foot-rot than other breeds.
- *Scrapie* – the breed may have a genetic-based resistance to scrapie.



The Romney Sheep Breeders Group

Grazing Characteristics – a breed well suited to maintenance grazing on lowland grasslands.

- *Grazing* – strongly grass based, favouring grasses of short swards. Good at exploiting very short grasslands.
- *Rushes and sedges* – unlikely to eat unless very short of grass forage. Grazes ditch margins and some emergent vegetation, such as Common Reed.
- *Ranging behaviour* – strong tendency to spread evenly over the grazing area to make best use of the available forage.

Interaction with the Public – a large docile sheep suited to grazing conservation sites with public access.

- *Reaction to people* – a fairly calm sheep, not particularly disturbed by the presence of people.
- *Public appeal* – large and docile, the Romney Marsh is a well-covered breed with a dense fleece, giving it a healthy, plump appearance.
- *Reaction to dogs* – vulnerable to dog attack, although its large size may act as a partial deterrent.

Marketability – a commercial breed with an established market for the lamb.

- *Meat* – the Romney Marsh produces a large carcass which attracts a higher value than some other commercial breeds.
- *Finishing* – lambs generally slower to finish than those of other commercial sheep, although this will depend partly on the system. Possible to finish a big single lamb if kept on good grazing at 10-12 weeks.
- *Breeding* – not as prolific as other commercial breeds.
- *Wool* – high quality.
- *Milk* – very rich and suitable for cheese making.

ROUGH FELL

Summary

A hardy hill breed from the Yorkshire Dales and the Lake District, the Rough Fell typically grazes extensive, exposed coastal and upland sites. Intelligent and docile, it also adapts well to being confined on smaller sites and is particularly suited to maintenance grazing of unimproved and semi-improved grassland.

Hardiness – a hardy hill breed, suitable for grazing low quality forage on exposed sites.

- *Supplementary feed* – rarely required; maintains condition well on poor quality forage. Even in snowy conditions prefers to dig through the snow to find favoured vegetation, and will often ignore supplementary feed provided. Breeding ewes on nutrient poor vegetation, such as chalk grassland, may need additional feed.
- *Resilient to extremes of weather* – has a coarse, dense and hairy fleece, which provides good insulation and waterproofing.
- *Shelter* – good at 'digging-in' behind rocks and scrub on open hillsides to avoid the worst of the weather.
- *Surefooted* – confident negotiating difficult terrain, such as limestone pavement and crags.

Physical Attributes & Husbandry – an easy to manage breed, requiring routine husbandry.

- *Handling* – placid, easy to handle and can be gathered with or without dogs. Approaches familiar humans, so easy to treat individuals as necessary. Tends not to struggle or object to being up-ended. Medium sized.
- *Fencing* – relaxed when confined and generally shows little inclination to escape. Horned, so electric fencing not suitable, particularly mesh.
- *Fleece* – adults tend not to get trapped in Brambles and other thorny vegetation, which may be attributable to the breeds 'hairy' rather than 'woolly' fleece. Lambs may become entangled, not having the strength to escape.
- *Hooves* – generally good on thin, stony, free draining soils of the uplands; on more improved and damper soils, may require more attention.
- *Fly strike* – not particularly susceptible on exposed upland sites. The risk is higher on lowland sites and being a horned breed, it is more susceptible to head fly, which can progress to fly strike.
- *Breeding* – not prolific, but able to produce a good single lamb on low quality keep. Good mothers which lamb easily.
- *Disease resistance* – the breed may be free of Scrapie.



Rough Fell Sheep Association

Grazing Characteristics – a good maintenance grazer on a range of grasslands, with some potential for restoration grazing.

- *Favours grasses* – readily grazes both fine and coarse grasses, including rank Cocksfoot. Eats Upright Brome until it gets too long; Tor-grass only in season and when other forage is limited.
- *Other grazing characteristics* – may nibble occasional stems of rushes or sedges, but with minimal impact. Favours Heather and other Ericaceous vegetation. As with most sheep breeds it will take some Ragwort.
- *Browsing* – minimal impact, although can have good effect on Bramble scrub and Honeysuckle if stocked quite heavily. It will eat seedlings, a little scrub regrowth and young Gorse tips.
- *Social and ranging behaviour* – disperses widely to graze, but will tolerate/adapt to confinement.

Interaction with the Public – provided the site is large enough, the Rough Fell is suitable for grazing where there is public access.

- *Reaction to the public* – docile and not unduly alarmed by the presence of humans.
- *Reaction to dogs* – the Rough Fell is vulnerable and not particularly confident when faced with an attacking dog.

Marketability – currently not a very commercial breed.

- *Fleece* – no market available.
- *Meat* – currently not a very commercial breed; some opportunities for direct marketing.
- *Breeding* – Rough Fell ewes may be crossed with other breeds of ram in the production of Mules.

SCOTTISH BLACKFACE

Summary

A hardy breed widely kept on the Scottish hills and moors, the fleece and size of the Scottish Blackface, influenced by climate and environment of their origin, varies considerably. A naturally ranging breed that disperses widely to forage, it has a strong hefting instinct and is well adapted to grazing extensive areas of low growing poor quality grassland.

Hardiness - hardy and well adapted to extreme weather conditions and exposed environments.

- *Tolerant of extremes of weather* - its coarse, dense fleece is resistant to rainfall. However, many flocks are now overwintered on more productive, sheltered land, which may condition the breed to a less harsh existence.
- *Maintains condition on poor forage* - although maybe less so than the primitive breeds and one or two of the other hill breeds.
- *Shelter* - adept at sheltering behind rocks and scrub to avoid the worst of the weather.
- *Supplementary feeding* – Generally none required

Physical Attributes & Husbandry - a self-sufficient hardy breed, particularly when kept in traditional upland grazing situations.

- *Handling* - run together well as a flock, so easy to work with good dogs. Difficult to handle as strong and inclined to struggle; nervy when enclosed.
- *Size* - medium (45/70 kgs on poor/good grazing).
- *Agile and adventurous* - almost goat-like, so will get to less accessible parts of sites to graze, but may work its way into dangerous places and get stuck or fall.
- *Brambles* - long-fleeced, thus liable to become entangled in Brambles and other thorny scrub. Adults strong and may be able to pull free, although not advisable to put ewes where there are brambles; lambs prone to getting trapped.
- *Fencing* – requires well-maintained standard stock fencing, although lambs may get heads stuck and so need frequent checking. May become trapped by the horns when pushing through slack wire. Will jump, and also very good at climbing.
- *Flystrike* - rare on extensive, exposed upland sites. May be a problem on warmer, more humid lowland sites and on sandy areas.
- *Lambing* - produces good single or twin lambs on low quality keep. Good mothers, able to give birth unaided, with self-reliant offspring. Tend to lamb late in the year (March/April).
- *Feet* - generally good on thin, stony acidic soils of the hills. On more improved and damper sites, their feet will require routine attention, especially if kept on same area all year round.



Grazing Characteristics - well suited to grazing extensive areas, especially where dominated by low growing grass swards.

- *Favours short grassland swards* - and grazes even shorter. Takes Purple Moor-grass, Cotton Grass, Tor-grass and other coarser grasses in season. Not keen on Yorkshire Fog and Creeping Soft-grass.
- *Grazing impact* – remains loosely within family units which disperse widely to graze, and selectively produce a mosaic within the site.
- *Sedges and Rushes* - take sedges of short swards. May take Soft Rush in winter in absence of grasses and Heather.
- *Browsing* - readily eats and suppresses Bramble. Some impact on Willow and Birch seedling growth. Otherwise, minimal browsing impact.
- *Ericaceous plants* - selectively grazes Heather; low stocking densities crucial to avoid damage. Not keen on Bell Heather. May suffer a photosensitive reaction if Bog Asphodel is eaten (probably also true of other breeds).

Interaction with the Public - probably best suited to large sites if there is heavy public access, particularly where dog walking is common.

- *Dogs* - nervous and vulnerable to attack. Will generally run, rather than stand their ground.
- *People* - wary of humans and will keep their distance. This may have implications for grazing impact on small or well-used sites.

Marketability - used most commonly for crossing with other breeds.

- *Meat* - lambs slow to finish and not much of a UK market for its fairly small carcass, although a big European market for the 28-33kg finished lambs.
- *Breed value* - the pure bred ewes are often kept to cross with sheep such as the Blue-faced Leicester, to produce the larger, more commercial North Country and Scotch Mules.

SHETLAND

Summary

A hardy, active and adaptable breed, the Shetland is suitable for use within a range of conservation grazing situations. Attractive in appearance and able to maintain condition well on poor quality forage, it is a good choice for use on public access sites.

Hardiness – a very hardy breed.

- *Extremely hardy* – intelligent at seeking shelter and able to withstand very harsh climates. Fleece is dense and warm; in primitive types, a layer of guard 'hairs' effectively shed water. However, best adapted to cold, windy, rather than wet climates.
- *Lambs* – extremely active at birth; virtually hit the ground running. Tiny, but better able to survive hypothermia than lowland breeds because its birth coat usually cleans and dries quickly and because it gets a colostrum feed very soon after birth.
- *Thrifty* – effectively forages on whatever is available, including seaweed. Readily accepts supplementary feed.
- *Surefooted and agile* – copes well with steep slopes and rocky shores; although older animals (> 10 years) are less suited to difficult terrain, as fitness declines. Rare for it to become cast.

Physical Attributes & Husbandry – an intelligent, small sheep which is easy to handle.

- *Appearance* – a short-tailed breed, with the widest variety of colours and markings of any British sheep, including black, brown, white and grey in various shades and tints; either as whole colours, or as mixtures. Rams usually two horned, occasionally four. Ewes normally hornless.
- *Size* – small, but varies considerably between the more primitive types, those that have been commercially 'improved' and location. Lambs range (6 months) from 20-38kg; ewes 30-40kg.
- *Handling* – small, so easy to clip and drench. Highly intelligent; tames easily with food.
- *Containment* – within standard stock fencing. However, it quickly becomes adept at finding gaps in old fences. Respects electric fencing; three strands required. Horned sheep should not be kept in electric flexi-netting.
- *Breeding* – good mothers, which lamb (pure bred) easily outdoors. Great variation in prolificacy and growth rate. Number of lambs largely dependent on type of land tugging takes place on. Rams can become aggressive towards humans as they age.
- *General health* – long-lived. Breeding ewes may reach 10/12 years, but can live to 24 or so.
- *Fly strike* – short tail reduces vulnerability.
- *Hooves* – good, particularly on rocky ground; copes well on wet heaths and marsh grassland with good husbandry.



Sandie Tohurst

Grazing Characteristics – an adaptable breed, suitable for grazing a range of habitats in restoration and maintenance phases of management.

- *Grazing ability* – very adaptable to eating a range of grasses and herbs. Eats seaweed if available. Good control of coarse grass species, including Purple Moor-grass.
- *Browsing* – readily browses dwarf shrubs, as well as saplings and regrowth of most Willow species, Oak, Hawthorn and Alder. Strips bark. Browses Bramble.
- *Sedges and rushes* – keen grazer of sedges, particularly finer-leaved species; eats rushes during winter months.

Interaction with the Public – good public appeal.

- *Public perception* – varied colouring and fine features makes the Shetland very attractive and unusual in comparison with commercial sheep.
- *Reaction to people* – intelligent and with gentle handling, can become tame and approachable; with excessive noise and disturbance, may become shy and unsettled.
- *Reaction to dogs* – vulnerable to attack, although on large sites with good scrub cover, may seek shelter to avoid confrontation and attack.

Marketability – suitable for niche markets.

- *Meat* – the Shetland produces fine meat which is usually lean, since most fat reserves are carried around the internal organs. Fed on semi-natural pasture and slaughtered at circa 16 months, mutton from wethers produces mutton of high quality in terms of texture and flavour. New research suggests the meat contains a substance with anti-cancerous properties.
- *Wool* – soft and fine. Coloured fleeces are ideal for hand-spinners and high quality craft knitwear producers.

SOAY

Summary

A good example of a breed which has by-passed the intensive artificial selection applied to most breeds of sheep. As a consequence, the Soay has retained primitive characteristics enabling it to cope in harsh conditions utilising poor quality forage. The Soay is ideally suited to semi-feral situations on large, ring-fenced sites, where moving stock only involves opening and closing gates between compartments.

Hardiness – primitive characteristics make this a very hardy and tolerant breed.

- *Can withstand harsh conditions* - evolved as a feral breed and its characteristics demonstrate the effects of selection in a harsh environment.
- *Fleece* – naturally sheds.
- *Good survival instincts* – will disperse when threatened or under pressure.

Physical Attributes & Husbandry – a small, independent breed, highly suited to grazing extensive, permanently fenced areas.

- *Small size* – an average weight of approximately 25kg allows them to graze on fragile sites.
- *Fly strike* - short tail, coloured body and exceptionally short fleece may all contribute to a very low, almost non-existent incidence of fly strike.
- *Active* – enables it to travel greater distances; useful in areas of sparse herbage or difficult terrain.
- *Handling* – although small and light, the Soay is extremely difficult to herd and catch, even within relatively small enclosures, as the breed disperses rather than flocks when under pressure. Will often challenge and butt sheepdogs. Penning is more easily achieved by leading with food than driving, although this method also has severe limitations.
- *Fencing* – requires well-maintained standard stock fencing, which closely follow the contours of land as the Soay will push under the smallest gap; this can cause problems on undulating sites. Electric fencing may be useful for subdividing compartments; but adventurous individuals soon learn if the bottom line is shorting out on growing vegetation, and will push underneath.
- *Coloured fleece* – may discourage fly-strike.
- *Naturally sheds fleece* – useful as a commercial advantage as it costs more to shear fleeces than can be gained by selling.
- *Hooves* – highly resistance to foot rot.
- *Lambing* – lambs easily and happily outdoors without assistance. Mothers tend to eat the after-birth, and so minimise interest from foxes.



British Wool Marketing Board

Grazing Characteristics - effective at scrub control owing to a requirement for wood in its diet.

- *Mixed herbage* – prefers a diet of mixed forage.
- *Browsing* – control invasive scrub, through nibbling saplings, scrub regrowth and bark stripping.
- *Preferential flower grazers* – like most sheep Soays will preferentially graze flowers from a variety of plants.

Interaction with the Public – quite useful on areas with public access as generally avoid high numbers of visitors, including those with dogs.

- *Appearance* – shedding fleece in stages does mean that Soays can look ‘moth-eaten’ which may need some explanation on sites with public access. However, its quite unusual appearance can also be quite popular with the public.
- *Reaction to visitors and dogs* - tend to avoid high numbers of visitors and any dogs off the lead.

Marketability – a good specialist market exists for meat and wool.

- *Available market* – effective and profitable market through the Traditional Breeds Meat Marketing Scheme, established by the Rare Breeds Survival Trust.
- *Distinctive meat* – well-flavoured ‘gamey’ meat with high meat: bone ratio. Lean carcass does mean cooking methods must take account of lack of fat in the joint.
- *Wool market* – if plucked or gathered, the naturally coloured Soay wool is desired, if clean and free from seeds, twigs etc., in small quantities by the growing craft industry of hand spinners.

Sites where Soay Sheep are in use & contacts

Southdown

Summary

The Southdown originates from the Sussex Downs and is well adapted to the poor quality forage of this area. A docile breed, which historically was taken onto the slopes by day and returned to the foot of the Downs by night, it is tolerant of close confinement. The Southdown has good potential for use on lowland grassland nature reserves.

Hardiness

A resilient breed, able to thrive on nutrient-poor grasslands in cold conditions.

- *Maintains condition well* – adapted to the poor quality grassland of the South Downs; looks well covered even after shearing.
- *Supplementary feed* – occasionally required by ewes prior to lambing in high productivity systems. Benefits from a Rumavite block on sites with coarser forage.
- *Tolerant of cold* – adapted to exposed conditions; insulated by short, fine, dense fleece.
- *Shelter* – natural shelter is generally sufficient, although ewes may be brought in to lamb.

Physical Attributes and Husbandry

A docile and easily handled breed.

- *Handling* – flocks easily and can be manoeuvred without dogs. Docile. Simple to trim feet and treat individuals as necessary.
- *Fencing* – respectful of enclosure, including electric fencing. Not very athletic, so not inclined to escape.
- *Fleece* – short, thus enables adult sheep to avoid entanglement in Brambles and other thorny vegetation; lambs, with looser fleeces, are more at risk.
- *Shade* – important, as the Southdown can suffer in the heat; shade is also used to escape from flies.
- *Insects* – if kept clean, the dense fleece may offer good protection against fly-strike.
- *Breeding* – has evolved on poor grasslands and will usually produce one good lamb on poor keep without additional feed. Can suffer infertility problems when too fat. Lambs outside with minimal assistance, but lambs not very active at birth and ewes not very milky.
- *Hooves* – generally good feet on their native downland soils, which may require trimming twice a year; on wetter soils and lush growth the feet will grow faster with an increased risk of foot-rot.
- *Size* – a medium sized, fleshy sheep. Broad back may make it prone to becoming cast.



Lisa Rigby

Grazing Characteristics

A good maintenance grazer, particularly useful for small grassland reserves or sites such as churchyards.

- *Grazing ability* – strongly favours shorter grass swards. Will tackle coarser grasses, but less so when rank. Takes only new shoots of Tor-grass.
- *Browsing* – minimal impact, although will take Bramble leaves and the more palatable shrubs such as Hazel.
- *Coarse herbaceous plants* – readily eats mature and slightly woody Nettles; also cut, wilted Nettles. Grazes Docks right down.
- *Impact of social behaviour* – grazes in a loosely dispersed flock, generally as a more cohesive unit than the hill breeds.

Interaction with the Public

Potentially useful on public access sites, but some form of protection from dogs is essential.

- *Reaction to people* – a friendly, unthreatening looking sheep, which is fairly unconcerned by the presence of people. Individuals may become so tame as to allow people to walk up and fuss them. Whilst being good for events and positive publicity, this aspect of its character can make the Southdown vulnerable to human abuse.
- *Reaction to dogs* – naturally polled, short-legged and not very agile, so vulnerable to attack.

Marketability

A breed with some commercial opportunities.

- *Fleece* – money received from the wool marketing board barely covers shearing costs. Lots of wool to shear (e.g. around face and ears).
- *Breeding* – main role is as terminal sires for prime crossbred lamb. Produce fast growing lambs with good conformation and carcasses suitable for the meat trade.
- *Meat* – meat from purebred lambs is top quality and high grade but must be marketed before becoming too fat as the Southdown finishes faster than other breeds. Good specialist markets.

SUFFOLK

Summary

A lowland breed that has been developed for commercial meat production, the Suffolk has limited potential for use within nature conservation grazing. Docile and happy within confined areas, it may be particularly well suited to grazing areas such as churchyards or small, flat lowland grassland sites.

Hardiness – a lowland breed that is not very hardy.

- *Poorly adapted to extremes of weather* – has a 'woolly, fine-fibred, but dense fleece which provides good insulation but does not repel rain well. May suffer from the heat during hot weather.
- *Not well suited to poor quality grazing* – is likely to lose condition on less palatable vegetation, such as rank grasses, rushes and scrub.
- *Supplementary feed* – likely to be necessary in the majority of conservation grazing situations if weight-gain for the commercial market is required.

Physical Attributes & Husbandry – requires regular, routine treatment.

- 1 *Handling* – placid, thus easy to gather and pen, but heavy and long-bodied, so as with other large breeds, not easy to shear or trim hooves.
- 2 *Fencing* – comfortable in confined areas; not particularly athletic, so unlikely to attempt escape. If trained, respects electric fencing.
- 3 *Brambles* – short, dense fleece unlikely to hook up in Brambles, except for young stock.
- 4 *Hooves* – likely to require regular hoof trimming and footbaths. On heavy clay soils, suffers from mud balling between the hooves, exacerbated by its heavy weight.
- 5 *Insects* – not vulnerable to head fly. Short dense fleece with low lanolin content reduces risk of fly strike.
- 6 *Background* – bred from crossing Norfolk Horn ewes with Southdown rams.
- 7 *Appearance* – white fleece, with black legs and face. Both sexes are hornless.
- 8 *Size* – a large, heavy breed. Average weight of ewes 84kg; rams 130kg.
- 9 *Breeding* – tends to produce large lambs, which may cause difficulties birthing. Ewes good defensive mothers. Few lambing difficulties and lambs generally self-sufficient and strong.
- 10 *Agility* – heavy and not very agile; happier on flat ground.



British Wool Marketing Board

Grazing Characteristics - suited to maintenance grazing on flat lowland grasslands.

- *Grazing preferences* – strongly favour the most nutritious, easily accessible and finer grasses of short swards.
- *Browsing ability* – insignificant, although may nibble a little of the softest scrub regeneration, such as the leaves of Blackthorn. Like all sheep, will hollow out the base of hedges if not protected.
- *Sedges and rushes* – not keen.
- *Ranging behaviour* – limited on steep or awkward sites; tends to stay on the flatter ground and on the best grazing if plenty of forage available.

Interaction with the Public – suitable for grazing public sites where dogs are controlled or excluded, and where dry, nutritious grazing is available.

- *Public perception* – placid, unhorned and not a threatening breed. However, these benefits may be offset against the likely concern of the public, which may be caused by its susceptibility to lameness and loss of condition.
- *Dogs* – hornless and not very athletic, so unlikely to escape from dog attack, although large size may help deter some dogs.

Marketability – a commercial lowland breed.

- *Rams* – highly rated as terminal sires for producing lambs for slaughter. Crossed with commercial lowland breeds, hill breeds and crosses.
- *Meat* – Suffolk cross lambs are fast to mature and produces a large, lean, commercially desirable carcass.

SWALEDALE

Summary

A hardy breed from the Yorkshire Dales which thrives on poor quality forage. Medium sized, with a black face and horns, the agile Swaledale is well adapted to grazing extensive and exposed areas with difficult terrain. It is commonly used for breeding with Leicester rams to produce the popular commercial crossbreed, the North of England Mule.



Ben La Bas/English Nature

Hardiness – a hardy breed, well adapted to extensive grazing in exposed upland or coastal sites.

- *Maintains condition well on low quality forage* – able to seek out the most nutritious vegetation on areas of poor forage. Ewes with lambs, particularly those with twins may need some supplementary feed to maintain condition.
- *Tolerant of extremes of weather* – a sheep with a hairy, dense fleece, adapted to cold and relatively exposed conditions.
- *Well-adapted to utilising available shelter* – a typical hill sheep; adept at digging-in behind rocks and scrub to avoid the worst of the weather.

Physical Attributes & Husbandry – a fairly placid breed, capable of self-sufficiency in extensive upland situations.

- *Handling* – flocks well and can be manoeuvred with dogs. Reasonably placid and sensible and not as strong as some hill breeds.
- *Agile and surefooted* – confident in irregular terrain; a good climber.
- *Brambles* – a heavily woolled breed, and prone to becoming entangled in thorny vegetation. Not as strong as the Scottish Blackface or Rough Fell which are generally able to pull themselves out.
- *Fencing* – fairly respectful of enclosure, but an agile breed, so individuals may become good escape artists. Horned, so generally unsuitable for electric fencing.
- *Fly strike* – rare on extensive, exposed upland sites; possibly more of a problem on warmer, more humid lowland areas.
- *Lambing* – not a very prolific sheep but capable of producing a good single lamb when kept on low quality keep. Good mothers, able to lamb unaided, with self-reliant lambs.
- *Feet* – generally good on thin, stony soils; requires routine attention on improved or damper grasslands.

Grazing Characteristics – a useful breed for maintaining poor quality extensive grasslands.

- *Grasses* – strongly favours the species of short swards, although will also take coarser grasses when pushed.
- *Sedges and rushes* – minimal impact; although may nibble Soft Rush.
- *Browsing* – a ‘hard-mouthed’ breed which can be effective on tree seedlings, Bramble and Honeysuckle; may also take live Yew. Adept at grazing Ling. Otherwise, minimal browsing impact.
- *Social behaviour* – when grazing extensive areas, individuals disperse widely. A breed with a strong hefting instinct.

Interaction with the Public – probably best suited to large sites if there is heavy public access, particularly where dog walking is common.

- *Reaction to people* – wary of humans and will keep its distance. On smaller sites, may avoid areas used regularly by people, which may have implications for grazing coverage.
- *Reaction to dogs* – although horned, the Swaledale is vulnerable to attack and will generally run rather than stand its ground.

Marketability – a staple breed in many hill areas; no special markets, except as breeding ewes for more commercial crosses.

- *Breeding* – ewes commonly kept to cross with the Bluefaced or Border Leicester to produce the more prolific and commercial North of England Mule.
- *Fleece* – currently worth very little.
- *Meat* – no special markets for meat, although as part of extensive systems, might attract a premium as traditionally reared produce.

Sites where Swaledale sheep are in use & contacts

WELSH MOUNTAIN

Summary

A hardy hill sheep capable of exploiting the low quality forage of upland Wales, the Welsh Mountain is a lively and agile breed with an important role in the UK commercial meat industry. Adapted to roaming over large areas, it is suited to extensive grazing in a variety of conservation situations.

Hardiness – a hardy breed, adapted to survival on low quality forage.

- *Extremely hardy* – well adapted to the exposed harsh conditions of upland Wales. Its close-textured fleece protects against the worst of the winter weather; pregnant ewes were traditionally wintered on the cliffs.
- *Shelter* – utilises natural forms of shelter.
- *Thrifty* – small, and a very active forager with catholic tastes, so tends to do well on poor keep.
- *Supplementary feed* – rarely required. Even breeding ewes maintain condition well and lamb successfully without supplementary feeding. Benefits from a feed block if kept on particularly rough/scrubby forage.
- *Surefooted and agile* – at home on the rough terrain of the uplands and on steep coastal cliffs; grazes on hazardous ledges and slopes.

Physical Attributes & Husbandry – a lively breed which requires routine husbandry.

- *Fencing* – not easily contained. Tends to push through and under fences and hedges; also good at climbing. Thick fleece protects it from electric shocks, so flexi-netting is required rather than just a few strands of electrified wire.
- *Handling* – small and light, so easy to up-end to shear or foot trim; however, lively and skittish so challenging to gather, although once familiar with surroundings can be moved around fairly easily with a dog(s).
- *Brambles* – thick-fleeced, so risks entanglement, although tends not to get hung up too badly.
- *Size* – small, ewes weigh about 35kg, although on improved lowland grassland, may weigh as much as 50kg. Rams weigh around 80kg.
- *Appearance* – thick white fleece with a close-texture. Rams horned; ewes polled.
- *Hooves* – generally has good feet. On dry hard ground little foot-trimming necessary.
- *Insects* – not particularly prone to fly strike; the close-textured fleece may not provide favourable conditions for egg laying. The horned rams may suffer head fly.
- *Breeding* – ewes able to lamb unaided out on the hills; good survival rates. Good milky mothers, easily able to produce and support one good lamb when on poor forage.



British Wool Marketing Board

Grazing Characteristics - an effective maintenance and restoration grazer.

- *Grazing preferences* – readily grazes both coarser and finer grasses, including tussocky species. Will eat new flush of Tor-grass, and if pushed will take it when old and brown and even make inroads into the 'thatch'.
- *Browsing ability* – moderate. Browses most woody plants, including Holly and Ash. Good at breaking down larger blocks of Bramble and other low growing scrub into smaller clumps. Readily eats Heather, which can be a problem.
- *Sedges and rushes* – not especially interested in rushes; may graze sedges of shorter swards.
- *Impact of social behaviour* – has a strong hefting instinct; the flock spreads quite widely with individual sheep tending to heft to its own particular 'spot' on the site.

Interaction with the Public – suitable for use on public sites where there is sufficient area for the sheep to avoid dog attack.

- *Public perception* – a healthy sheep which maintains condition well, so unlikely to attract welfare concerns from the public.
- *Reaction to dogs* – small and fairly vulnerable to attack. On large sites will keep its distance from dogs.

Marketability – an important breed in the breeding programme for the production of commercial meat.

- *Breeding* – Welsh Mountain ewes are popular for crossing with longwool rams; the resultant 'Mule' ewes are crossed again with a terminal sire breed such as the Suffolk, to produce a fat lamb for slaughter.
- *Meat* – has a good flavour and is suitable for the commercial market, although niche marketing is also a possibility.

WHITEFACED WOODLAND

Summary

Rare and endangered, the Whitefaced Woodland is a large hill sheep originating from the southern Pennines, where it is known by the local name Penistone. A hardy and self-sufficient breed, well adapted to the harsh conditions and often-difficult terrain of the uplands, the Whitefaced Woodland has potential for expanding into grazing nature conservation sites.

Hardiness – a hardy breed well suited to areas with difficult terrain and exposed conditions.

- *Can withstand exposed conditions* – developed on upland Pennine moorlands, it is tolerant of cold, wet conditions.
- *Agile and active* – adapted to ranging over poor quality pastures and moors, often coping with steep or difficult terrain.
- *Suited to poor quality grazing* – does best when kept on rough pasture, as rich food causes scouring.

Physical Attributes & Husbandry – a large, self-sufficient breed, requiring routine husbandry.

- *Appearance* – a large breed, adult ewes and rams have an average weight of 63kg and 130kg respectively. Both sexes are horned; the rams have heavy spiral horns. Fleece colour is white.
- *Long tailed* – may be docked in females, but usually left long, particularly in rams. Tails are very muscular and a feature of the breed.
- *Fly strike* – not a major problem, but if tail left undocked, may be an increased risk of fly strike in lowland areas. Rams tend to get it in cracks in the horns.
- *Handling* – generally easy to handle. Rams usually friendly, but because of large size need firm handling; some keepers have found that older rams can be difficult. Can be worked with a dog.
- *Fencing* – standard stock fence plus single top wire sufficient. A horned breed, thus not suitable for containment within electric net fencing.
- *Lambs* – vigorous and quickly on feet.
- *Hooves* – can get foot rot in damp conditions. No problems with feet if vaccinated.
- *Brambles* – tend to get caught up due to rather loose fleece.



Caroline Lewsey

Grazing Characteristics - a thrifty breed which copes with sparse conditions and is relatively tolerant of unproductive vegetation types.

- *Browsing characteristics* – will happily browse Bramble and thorn bushes.
- *Grazing characteristics* – very catholic eating habits.

Interaction with the Public – a useful breed for grazing public access sites, particularly on larger areas.

- *Public appeal* – due to large size and large horns, which give the breed a striking appearance.
- *Reaction to people* – can be friendly and docile when regularly exposed to humans, but sheep from the hills are likely to be wary.

Marketability – as a rare breed with proven commercial attributes, there is a market for good breeding stock.

- *Meat* – lean with good flavour.
- *Fleece* – produces 2-3kg of fine (for a hill breed) white wool which will take any colour dye. Very good for hand spinning.

WILTSHIRE HORN

Summary

Developed on the exposed sheep walks of the Wiltshire Downs, the Wiltshire Horn is a hardy minority breed, well adapted to range over large expanses of poor quality pasture in search of forage. Its characteristic lack of wool is unique amongst sheep and offers distinct welfare advantages. A breed with established commercial uses.

Hardiness – a fairly hardy breed.

- *Tolerant of hot and cold climates* – developed on exposed open Downs and thus can cope with cold, but dry, conditions. White skin and lack of wool makes the breed also well suited to warmer climates.
- *Shelter* – keen on areas of scrub or small trees to shelter in at night and in bad weather.
- *Agile and active* – adapted to ranging over and coping with sparse, poor quality grazing, often on steep downland.

Physical Attributes & Husbandry – a breed with distinct husbandry advantages, particularly on humid lowland sites with thorny vegetation.

- *Handling* – generally docile, easy to move, load, dose and handle; older rams can be belligerent. Easily worked with a sheepdog.
- *Fleece* – shearing unnecessary as it grows little or no wool, and the short winter fleece, mainly a thick mat of hair on the back, is naturally shed in spring. Does not become entangled in Bramble or other prickly species.
- *Fly strike* – lack of fleece ensures incidents are very rare. A popular breed in Australia.
- *Appearance* – a large breed, adult ewes and rams have an average weight of 72kg and 126kg respectively. Both sexes are horned; the rams have heavy spiral horns. Fleece and skin white; some individuals have a few small black spots.
- *Long tailed* – thus usually docked.
- *Hooves* – varied opinion as to how frequently hooves need trimming, from twice yearly, to quite frequent treatment. Consensus that foot diseases generally rare.
- *Breeding* – gives birth easily. Lambs are vigorous and quickly on feet.
- *Fencing* – standard stock fence with single top wire sufficient. Also respects three-strand electric fence; as a horned breed, not suitable for containment within electric net fencing.



Matthew Oates

Grazing Characteristics - well adapted to grazing poor quality pasture.

- *Browsing* – eats young scrub and hedgerows, including Sycamore, Ash, Blackthorn, Oak, Hawthorn and Brambles. Also takes Thistles.
- *Grazing characteristics* – no specific information available.

Interaction with the Public – a useful breed for grazing sites with public access.

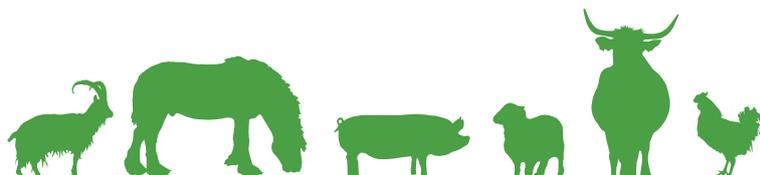
- *Public appeal* – striking appearance due to large size, very white coat and large horns.
- *Reaction to people* – can be friendly and docile when regularly exposed to humans.

Marketability – as a minority breed with proven commercial attributes, there is a market for breeding stock.

- *Meat* – lean, tender and with good flavour.
- *Lambs* – fast growing. Reach slaughter weight without excess fat.
- *Rams* – popular as terminal sires for the production of lean, early maturing, crossbred lambs.



Breed Profiles: Cattle



Cattle in conservation

Foraging characteristics

1. Impact on vegetation structure

Cattle are ideal for removing long, coarse grass growth. The tongue is used to pull tufts of vegetation into the mouth, which at low/medium intensity leaves a tussocky appearance.

Cattle are less selective grazers than either equines or sheep, and are likely to graze a vegetation stand or community to a fairly average height, producing a more homogeneous end result. They do not selectively eat flower heads of herbs, unlike sheep. This can be beneficial in a botanically diverse meadow; but may support less variety of invertebrates than a more structured end result.

As ruminants, cattle may spend up to 16 hours a day resting to allow ingested food to be digested by the rumen micro-fauna. They can be quite selective about their resting places and favoured spots can soon show signs of dung accumulation or damage to the turf, but this is generally less noticeable than with sheep or equines. On very large areas, this impact is likely to be significant.

Hoof marks can be very valuable on sites where bare ground is desirable. Heavier animals can cause damage to vegetation and soils around supplementary feeding sites, especially in wet weather or on soft ground.

Cattle have a considerable impact on the vegetation with respect to the trampling of bracken and low scrub, breaking up mats of dead litter and creating pathways through tall, dense vegetation.

2. Feeding preferences

Cattle have a generalised feeding behaviour and broad mouths, making it impossible for them to ingest individual components of the sward by choice. Selection is therefore made on the basis of patches of sward rather than of individual plants. This generalised feeding behaviour is a valuable asset, within extensive systems, for maintaining species diversity of herb-rich swards.

Cattle usually take sedges, along with other herbage, particularly as the grazing season progresses.

Rushes are generally avoided. Control of rush within an area through cattle grazing involves high stocking densities for short periods of time; careful consideration of possible impacts on other aspects of sites importance, such as breeding birds and invertebrates, should also be taken into account if this occurs.

3. Impact on trees and shrubs

Cattle can have quite a significant impact on shrubs and small trees, as they tend to remove leaves and twigs by a tearing action rather than a nipping with their teeth; this can be highly damaging and cause the affected tree/shrub to die.

A broad range of woody species is consumed, with Ash, Sycamore and Oak being amongst the most preferred, whilst Birch, hazel and hawthorn are less favoured.

Horned cattle may cause significant physical damage to scrub, by rubbing against trees and bushes and pushing through them.

4. Social behaviour and its effect on foraging

In general, cattle are social grazers and on large sites will almost always be found in close proximity to each other when feeding. Favoured parts of the site will thus begin to show signs of grazing very quickly, whilst areas where the pasture is less palatable will take longer to show any impact.

However, some breeds of cattle, for example Highlands, appear to form territories with cyclical use of large areas and may travel miles in one day, with individuals quite widely dispersed.

5. Sex and dietary differences

During the production of this hand book, no comments about differences between sexes and diet are offered.

6. Impact of age on foraging ability

Cattle have resilient teeth and seldom lose them with age. Additionally, grazing ability tends to improve with age and animals cope better with a poorer quality diet once the rumen is fully developed at around 18-20 months. Old dry 'cull' cows, now quite rare, were highly sought after for use in conservation situations before the advent of BSE; this improved foraging ability must be balanced against their ability to get about, particularly on arduous terrain.

7. Dunging behaviour

As an adaptation to reducing parasite burdens, cattle avoid grazing within 10-20 cm from the edge of each pat of dung; thus even in tightly grazed situations the sward develops a mosaic pattern of short turf strewn with randomly scattered tufts of tussock where pats have been deposited. If desired, this patchy effect can be overcome by combining cattle grazing with sheep and/or ponies.

Different types of cattle

Nearly all commercially reared bovines in Britain are European domesticated cattle (*Bos Taurus*), with limited numbers of Asian cattle (*Bos indicus*), Water Buffalo (*Bubalus bubalis*) and American Bison (*Bison bison*). Domestication has produced more than 1000 different breeds, of which around thirty are native to Britain. They vary in size, shape, colour, temperament and adaptations for particular environments.

Within the UK, cattle are kept for the production of either meat or milk and in general desired characteristics for beef and dairy cattle are mutually exclusive since resources diverted into milk production are not available for growth of the carcass. Of the two, it is usually the beef breeds that best suit conservation grazing since the production of meat can more easily be sustained on low quality pastures.

The traditional type of British cow, with short legs, squat body, large abdomen (barrel) and tendency to put on surplus fat has now declined in popularity due to the demand for faster growing, leaner and larger animals, typified by the breeds from continental Europe. These 'improved' features have now been introduced into many of the indigenous UK breeds by crossing with foreign breeds to enhance their commercial appeal. The resulting animals, although preferred for marketability, are often not as good for conservation as the native type because they have less of the original's ability to convert low quality forage to meat productions.

The following table represents a categorisation of breeds according to commercial important to conservation grazing and relevant to the breeds within that category, listed for each. Whilst the commercial categorisation of breeds is a straightforward matter, the assignation of characteristics such as 'hardy' and 'thrifty' to groups of animals is more difficult. Breeds such as the Aberdeen Angus for example, may easily be as 'hardy' or 'thrifty' as breeds such as the Beef Shorthorn; whilst a breed, such as the Kerry, when not in milk production is particularly well-adapted to grazing coarse vegetation. Thus the following table is offered as guidance only, with the caveat attached that the categorisation offered is dependent on the way in which breeds are used.

Upland Beef

Examples include: Highland, Galloway, Welsh Black, Beef Shorthorn and Vaynol (Welsh)

Special characteristics and suitability in conservation situation:

1. Hardy, thrifty breeds well suited for use in a wide range of conservation grazing situations.
2. Small-medium size and weight, thus less likely to damage sensitive swards and soft soils.
3. Some breeds may be flighty and difficult to handle.
4. Slow growing and late maturing, thus less likely to be able to finish within current 30 month time period, unless given supplementary feed or time on improved grazing.
5. Moderate- good conformation (carcass quality); keepers of these breeds will often have developed local or niche markets for meat.

Lowland Beef

Examples include: Hereford, Aberdeen Angus, Sussex, South Devon and Lincoln Red.

Continental examples include: Limousin and Charolais.

Special characteristics and suitability in conservation situation:

1. Moderately hardy and moderately thrifty breeds, thus suitable for use in many conservation situations, where some good keep is included within the area grazed.
2. UK breeds medium size and weight, thus suitable for grazing a range of conservation sites. Continental breeds large size and weight, thus less suitable for grazing on sensitive swards or wet ground.
3. UK breeds have placid temperament, thus easy to handle. Continental breeds tend to be excitable and more difficult to handle.
4. UK breeds fast growing and early maturing, thus possible to finish within 30 month timescale without too much supplementary feed. Continental breeds fast growing but late maturing, thus likely to require considerable supplementary feed to finish if kept on conservation grazing.
5. UK breeds have good conformation (carcass quality); continentals have very good conformation, thus highly marketable.

Dairy

Examples include: Holstien, Ayrshire, Jersey, Guernsey and Kerry.

Special characteristics and suitability in conservation situation:

1. Reliant on high quality pastures for milk production, thus of limited use within conservation situations. However, some breeds within this category (e.g. Jersey, Kerry) not in milk production can be very effective grazers of coarse vegetation and some are also very hardy (e.g. Kerry)
2. Great range in size. Smaller breeds (e.g. jersey 350kg) can be very useful on sensitive swards or wet sites; larger breeds (e.g. Holstien 700kg) are of extremely limited use within conservation.
3. All breeds generally adapt well to handling and become placid; young stock may be flighty.
4. Likely to require supplements or plenty of good grazing to allow condition to be maintained if kept on conservation sites.
5. Generally poor conformation (carcass quality)

Dual Purpose

Examples include: Red Poll, Shetland and Dexter

Continental examples include: MRI (Holland), Simmental (Germany).

1. Generally hardy, thrifty breeds, which when not being kept for milk production, are well suited to use within conservation situations.
2. Fair range in size and weight, although most seem to fall within small medium category; examples include 360kg (Dexter) to 450kg (Red Poll).
3. Generally adapt well to handling and become placid.
4. Moderate/good growth rate: fatten well on good grass; some breeds may finish within 30 months off conservation grazing with little supplementary fed. Those used for milking produce moderate-high milk yields.
5. Moderate – good conformation (carcass quality)

ABERDEEN ANGUS

Summary

Widespread and popular for commercial purposes, the Aberdeen Angus may have great potential for expanded use within conservation situations. A hardy, easy to handle breed with good indicative grazing and browsing characteristics, the placid nature of the Aberdeen Angus also makes it a good choice for sites with public access.

Hardiness – a useful hardy breed for a variety of situations, although not best suited to extremely harsh climates.

- *Hardiness* – adaptable to a range of environments, although not well suited to high, exposed upland moors or areas of high rainfall.
- *Agile* – able to cope with steep slopes and difficult terrain.
- *Supplementary feed* – able to live outdoors year round, provided supplementary feed and adequate shelter are available.

Physical Attributes & Husbandry – a good-natured, easy to handle breed.

- *Handling* – a good natured, adaptable and easy to handle breed. Polled.
- *Fencing* – respects electric fencing.
- *Flies and ticks* – not particularly susceptible.
- *Size* – medium/light framed. Short-legged with a deep body. Average weight of a cow 450-550kgs.
- *General health* – very good. Slight tendency to copper deficiency; a reddish tinge will come through on their black coats if they are deficient.
- *Breeding* – cows usually remain productive until 12-14 years of age. Gestation period slightly shorter than continental cattle, leading to especially easy calving, with calves that are strong and have a good survival instinct. Bulls very placid in a herd situation.
- *Appearance* - generally black in colour, although some animals may be red or dun.



Sarah Murphy/Surrey Wildlife Trust

Grazing Characteristics – a breed with good grazing and browsing potential, indicating an ability to prevent scrub encroachment and graze coarse grass and herb swards.

- *Browsing ability* – sufficient to stop encroachment of new scrub. Pushes pathways through, but does not browse older scrub. Eats thorn, hedging shrubs, Gorse and Beech.
- *Grazing ability* – see table overleaf for site-specific information. The breed appears to take a range of coarse species including Tor-grass, Thistles and Nettles.

Interaction with the Public – a good-natured breed, not renowned for aggressive behaviour towards the public.

- *Curiosity* – not especially interested in people.

Marketability – a highly popular commercial breed, renowned for its high quality meat.

- *Fattening* – early finishers on pasture of reasonable quality; animals which have been reared on a high roughage diet of low productivity need to be finished on pasture of high productivity or with a few weeks of supplementary feed.
- *Quality beef* – purebred Angus beef fetches a premium over Angus cross breeds, which in itself fetches a premium. Produces well-marbled, fine textured meat. Medium frame gives cuts of meat that are a popular size with butchers.

BEEF SHORTHORN

Summary

Very hardy and adaptable to harsh environmental conditions, the Beef Shorthorn thrives on coarse, poor-quality vegetation. Agile and sure-footed, it has proven ability to do well in upland moorland situations. Equally, as a calm and placid breed, which is reputedly easy to manage, the Beef Shorthorn can be considered for grazing a wide range of nature conservation sites

Hardiness – very hardy and readily adapts to extremes of environmental conditions.

- *Very hardy* - historically the Shorthorn was grazed and out wintered on poor quality grassland on the Carboniferous Limestone of the Burren in Southern Ireland. Currently used largely on upland moorland situations in Scotland.
- *Foul weather resistant* - has a double coat, with a cotton wool-like undercoat and will happily out-winter in most situations.
- *Summer* - moults very quickly to give a very tight coat and thus, is not susceptible to heat stress.
- *Adapted to outwintering on poor quality keep* - Beef Shorthorns readily put on weight during the summer months, which helps to see them through the winter. Some supplementary feed may be necessary.

Physical Attributes & Husbandry – a placid breed, which is easy to manage.

- *Handling* - very quiet, placid and easy to handle.
- *Fencing* - respects electric fencing.
- *Flies and ticks* - a thick hide means that the breed is not unduly bothered.
- *Breeding* - easy calvers. Cows show good mothering instincts, but are usually tolerant of people once calves are a few days old; this allows tagging of calves within the five day stipulated period. Bulls are very placid within a herd situations.
- *General health* - very good. Cows will produce calves until 10 or 12 years old. Resistant to Redwater, but may be susceptible to Blackleg.
- *Size* – medium, with average weight of a cow 500-600kgs.
- *Background* – the breed originates from the Durham and Yorkshire areas. It has perhaps been the most widely used bloodline in the development of other breeds world-wide.
- *Status* – a rare breed (vulnerable) which is widely used in the uplands of Southern Scotland and the Borders.



Karl Barton

Grazing Characteristics - a breed with a proven ability to graze and do well in upland moorland situations.

- *Grazing* - the breed grazes and does well on rank upland and unimproved grasses. In Scotland where used widely, does not have a significant impact on rushes. See table overleaf for site-specific details.
- *Browsing* - the Beef Shorthorn browses readily, although the extent to which they will control scrub has not been ascertained. They are known to favour Willows and Ivy. For site specific details, see table overleaf.

Interaction with the Public – a breed which is suitable for use in most situations with public access.

- *Temperament in breeding situations* - although cows show good mothering instincts, they will usually be tolerant of people once the calves are a few days old.
- *Curiosity* - the breed would rather carry on grazing than look at visitors.

Marketability - the Beef Shorthorn may be one of only a few breeds which when reared on the unimproved vegetation of most nature conservation sites, will readily gain sufficient condition to allow commercial viability.

- *Fattening* - the breed is an excellent converter of forage. It is more susceptible than other breeds to run to fat, although this is unlikely to happen on conservation sites. It will quickly put on weight to finish between 20 and 30 months if put on fertile grass or given supplementary food.
- *Marketing* – a ready market is available through the RBST Traditional Breeds meat-marketing scheme.

BELTED GALLOWAY

Summary

Extremely hardy and adaptable to a wide range of habitats and environmental conditions, the Belted Galloway has proven value for both conservation and commercial use. A gentle, placid nature and attractive appearance makes the Belted Galloway a very useful animal for grazing sites with public access.

Hardiness – a very hardy breed, particularly useful in wet climates and in year-round grazing situations.

- *Extremely tolerant of wet weather* – has a thick mossy undercoat & long wavy overcoat that sheds rain, enabling it to graze contentedly through the wettest weather.
- *Prefer to winter out-of-doors* – not ideally suited to being housed during winter months and unlikely to grow a winter coat in this situation.
- *Supplementary feed* – fares well on coarse grasses even during winter and may only need minimal amounts of hay or concentrate.

Physical Attributes & Husbandry – a good all-round breed of cattle, which is placid, easy to handle and of good general health.

- *Handling* – generally docile and easy to handle. Even animals in semi-feral situations quickly become used to handling if their circumstances change. Some individuals may have a tendency to kick. A polled breed.
- *Sure-footed* – is particularly adept at grazing on steep slopes without causing poaching or erosion damage. Flatter areas are necessary for resting and ruminating.
- *Containment* – standard stock fencing is ideal, but will respect electric fencing provided they are not short of keep and there is a strong charge.
- *Insects* – not particularly susceptible to flies and ticks.
- *Breeding* – good, milky mothers.
- *General health* – very good. Cows will usually live at least 10-12 years.
- *Size* – medium build, average weight of a cow 500-600 kg.
- *Appearance* - an attractive breed with a broad white belt around its otherwise black or dun body and is classified as a Minority Breed by the Rare Breeds Survival Trust.



Mariccia Fraser (GER)

Grazing Characteristics - adaptable to grazing and browsing a great range of species and habitats.

- *Preferences* – not particularly selective. Appears to take a wide range of grasses, shrubs and coarse herbs.
- *Browsing* – appears to take a wide range of shrub species. See table overleaf detailing sites where the breed has been used.
- *Grazing* – see table overleaf for site-specific information.

Interaction with the Public – a gentle animal with high aesthetic appeal.

- *Placid nature* – placid, gentle nature and unusual markings are helpful in achieving local support in potentially controversial grazing schemes (see example in site table overleaf).
- *Temperament in breeding situations* – not such strong mothering instincts as the Galloway and so not as likely to be over-protective of calves. However, calving may best be avoided on well visited sites. Bulls very placid in a herd situation.
- *Curiosity* – generally oblivious to visitors and unlikely to take any notice of walkers or dogs on a site.

Marketability - a breed with great possibilities for both conservation and commercial viability.

- *Commercial value* – able to produce tasty, lean meat off rough grazing. Fattening on improved grassland to finish within 30 months may be necessary.

CONTINENTAL CROSS BREEDS

Summary

Obtained from crossing Continental cattle with British native breeds, the Continental Cross retains many characteristics useful to conservation grazing. Fairly hardy, yet placid and easy to handle, the Continental Cross is a good maintenance grazer. It is widely available throughout the UK and has an established and widespread commercial market.

Hardiness – fairly hardy, although not suitable for most year-round grazing systems.

- *Hardiness* - generally not so hardy as British native breeds, thus most herds are wintered under cover.
- *Supplementary feeding* – generally necessary for animals that are outwintered.

Physical Attributes & Husbandry – a placid, easy to handle breed.

- *Size* – generally larger and heavier than British native breeds, owing to the Continental influence. Charolais and Blonde d'Aquitaine cows average 700-900kgs; Limousin and Belgian Blue pure breeds weigh 650–800kgs. The crosses are a little lighter according to the other breeds in its genetic make up.
- *Handling* – Generally quiet, placid and easy to handle. On many of the sites listed overleaf, stock were given a small daily ration of nuts to keep them tame and facilitate inspection.
- *Fencing* – single strand electric fencing usually sufficient, provided the animals are not hungry.
- *Flies and ticks* – no particular concerns expressed by graziers.

Grazing Characteristics – a good maintenance grazer, most suitable for drier sites.

- *Browsing ability* – no noticeable impact on scrub. On contacts overleaf, mainly young stock in use; older stock, if available, may browse a little more.
- *Grazing ability* – see table overleaf for site-specific information. In general seem most likely to graze coarser vegetation whilst it is young and still tender.
- *Poaching impact* – likely to be substantial on wet or soft ground, due to the heavier weight of these breeds. Unlikely to be suitable for wintering outdoors for the same reason.



Sandie Tohurst

- *Poaching impact* – likely to be substantial on wet or soft ground, due to the heavier weight of these breeds. Unlikely to be suitable for wintering outdoors for the same reason.

Interaction with the Public – generally placid, although stock which are fed supplements may unwittingly intimidate visitors.

- *Reaction to people* – may approach visitors at speed if used to supplementary feed, although then generally moves away and ignores.
- *Reaction to dogs* – not disturbed by dogs unless has young calves at foot.
- *Bulls* – most continental bulls are placid in a herd situation.

Marketability – fast growth rates and good conformation make Continental cross breeds commercially viable and thus widely available.

- *Commercial viability* – the majority of suckler herds and young animals available from weaning to fattening (10-20 month period) are Continental cross breeds, which are favoured due to their good conformation (in terms of meat production) and fast growth rates which facilitates fattening within the 30 month period allowable.
- *Fattening* – No records amongst contacts listed overleaf of animals fattening off conservation sites. Young stock readily put on weight on pasture of high nutrient status or with supplementary feed.

DEXTER

Summary

The Dexter is an ancient native Irish cattle breed, which until as recently as 1876 was considered to be the same breed as the Kerry. Hardy and adaptable to a range of environmental conditions, and producing good quality meat, the Dexter may be well-suited to grazing low quality keep on a range of conservation sites.

Hardiness - a hardy and adaptable breed suited to a range of geographical conditions.

- *Maintains condition well* - capable of subsisting on scant fare with minimal supplementary feeding.
- *Can withstand extreme weather* - may be overwintered outside quite happily. Bodies designed to throw off rain and have an adequate coat to keep out the cold.
- *Summer* - coat readily becomes short and fine.
- *Agile* - able to cope with a rough ground and a range of terrain.

Physical Attributes & Husbandry - a small, docile and easy to handle breed.

- *Appearance* - wholly red, wholly black or wholly dun are official colours of the Dexter, although it may have small amounts of white on the underside, behind the navel and on the tip of the tail. Horns white with black tips. A short-legged breed, with a short thick neck.
- *Small size* - helps to minimise damage through poaching. Average weight of a cow is 360 kg. Three Dexters are considered the grazing equivalent of two animals of another breed.
- *Handling* – generally docile and easily managed. Tolerant of and adaptable to changes in its management. Can be kept in small or large areas, singly, although not ideal, or in herds. Generally horned, although most are dehorned as calves.
- *Breeding* - short period in season, so it is preferable to run with a bull rather than rely on Artificial Insemination. Cows calve easily and are good mothers. Calves regularly until 14/15 years. Occasionally still-born or aborted 'bulldog' calves are produced.
- *Hooves* - may require trimming if run on soft ground.



Matthew Oates/National Trust

Grazing Characteristics - well suited to grazing low quality keep on a range of conservation sites.

- *Grazing* - strongly grass-based and readily consumes a wide range of grasses.
- *Browsing ability* – willing to browse, even when good grazing is available.

Interaction with the Public - a very useful breed on nature conservation sites where there is public access.

- *Friendliness* - probably quieter than the Kerry. Docile and generally oblivious to members of the public. The Dexter can be easily approached if it has been 'well-handled'.
- *Reaction to dogs* - tolerates the presence of dogs close by except when it has calves are at foot.
- *Public appeal* - even cows feeding calves maintain good condition, thus mitigating against likely animal welfare complainants. Well-proportioned animal giving it a 'cute' appearance.

Marketability - a breed which may have good commercial potential.

- *Dual purpose breed* - produces up to 15 litres milk per day and when put on good keep, fattens readily.
- *Meat* - produces fine marbled beef of excellent flavour. Highly prized within the Rare Breed Survival Trusts 'Accredited Butcher Scheme in GB.

GALLOWAY

Summary

The Galloway is one of the oldest breeds of cattle in the UK and retains many of its native characteristics. The breed originates from wet, reedy country, and is an excellent choice for fen and marsh sites where it is happy to wade into reed areas to trample and graze.

Hardiness – a very hardy breed, particularly useful for grazing in wet climates and year-round grazing systems.

- *Extremely hardy* - has a thick undercoat with long, sometimes wavy hair overlying it which sheds the rain. Will happily continue grazing through the wettest weather.
- *Dislikes too much heat* - does not shed coat until high summer and as a result can suffer from heat stress, particularly on warm inland sites in the south of the country. The provision of shade is crucial.
- *Prefers to be outdoors year round* - not ideally suited to being housed in winter as the Galloway finds it too hot.

Physical Attributes & Husbandry – a placid, easy to handle breed with good general health.

- *Handling* - generally quiet, placid and easy to handle, although if turned out on a large area for a long period of time, the Galloway may become unapproachable.
- *Fencing* - will break out of single strand electric fencing if there is something tempting on the other side. Its thick hair means that the Galloway does not feel the shock particularly.
- *Medium weight* - average weight of a cow 450-500 kgs.
- *Versatile* - happy to graze on a great range of terrain, including wet and boggy, steep, and rough and uneven. However, requires dry, flat areas for ruminating and resting.
- *Flies & ticks* - Galloways are very thick skinned, so biting insects do not pose a problem.
- *Breeding* - bulls very placid in a herd situation. Cows retain strong mothering instincts for up to three months after the birth of her calf and can be fiercely protective within this time.
- *General health* - Very good. Older cows (over 12+) may be susceptible to arthritis in the pelvis.
- *Distribution in extensive systems* - a herd will move out and spread across a site well.
- *Appearance* - a polled breed. Black and occasionally dun in colour,
- *Distribution* - most herds occur across southern Scotland and the Borders. Also found in the SW of England.



Chris McCarty/English Nature

Grazing Characteristics - an excellent choice for a range of habitats, including fen and marsh sites.

- *Fen vegetation* - happily wades into, tramples and grazes a range of typical species.
- *Rush control* - is variable. See site information table for more details.
- *Grasses* - Grazes Purple-moor grass in spring and early summer when most palatable. Norfolk Reed, the Hair-Grasses and Small-Reeds are all eaten at various times throughout the year.
- *Browsing* - varies from site to site. Trample Bracken readily, especially in winter. See table overleaf for details.

Interaction with the Public – a placid breed which will generally ignore the public and dogs.

- *Temperament* - generally a placid, quiet breed.
- *Reaction to people* - will move away from people it does not know. May mistake young children for dogs which can be a problem if cows have young calves at foot.
- *Reaction to dogs* - not disturbed by the presence of dogs unless young calves are at foot, in which case, a cow may be fiercely aggressive.

Marketability - a breed well-adapted to vegetation on a range of conservation sites, although is likely to need finishing with concentrates.

- *Slow maturing* - historically, Galloways would have been marketed for beef at around 4 years old, so although superbly adapted to rough grazing, very difficult to fatten even on average pasture within the 30 months. Easily fatten in 24 months with good feeding; 36 months if left alone to marter.

HEREFORD

Summary

The Hereford is one of the most numerous breeds in the UK and is widely used for commercial meat production. It preferentially grazes coarse vegetation and browses a range of trees and shrubs. Docile and easy to handle, yet adventurous, adaptable and surefooted, the Hereford is already widely used in conservation grazing.

Hardiness – A hardy, versatile breed.

- *Hardy* - thick skinned and has a coat which becomes very dense in the winter.
- *Suitable for outwintering* - although may need to be provided with some supplementary hay or short feed. Housing this breed *may* cause problems with heat stress if a thick coat develops.
- *Water* - there are indications that the Hereford will travel further to and from a source of water than any other breed. This may be a useful attribute on large sites.
- *Maintains good health on poor forage* - the Hereford thrives on low quality forage, being an excellent converter of roughage to meat.

Physical attributes & Husbandry – a versatile, docile breed, requiring routine husbandry.

- *Adaptable & sure-footed* – able to negotiate and graze steep banks and is also content on sites where there are wet areas.
- *Handling* – a docile breed which is easy to handle.
- *Fencing* – respects electric fencing.
- *Horns* – both polled and horned strains occur.
- *Size* – a medium sized breed, weighing 500-600 kg.
- *Flies and ticks* – no evidence of problems, especially if ear fly tags are used.
- *Breeding* – the Hereford is a good easy calver. Cows are likely to produce calves until 14/15 years of age. Bulls are docile in a herd situation.
- *General health* – very good.
- *Appearance* – has a red body, characteristic white face, white stripe from the neck to the withers and patchy white under parts.



Gary Williams

Grazing characteristics – a useful breed on a wide range of habitats, the Hereford prefers to graze varied unimproved pasture, in preference to an improved ley.

- *Non-fussy* – willing to graze whatever is available, although will tend to select a varied herb rich sward in preference to an improved ley.
- *Grasses* – Purple Moor-grass willingly taken on sites where available.
- *Rushes* – individual site information indicates that rushes are quite well grazed. See table overleaf for more details.
- *Herbs* – some indication of a preference for herb-rich areas, which on some sites has led to noticeable numbers of orchids being consumed. Also appears to graze coarser herbs. See table overleaf for more details.
- *Browsing* – significant browser of a range of species. See details in table overleaf.

Interaction with the Public – a docile breed.

- *Curiosity* – appears to take no particular notice of people crossing a site

Marketability – a traditional and popular meat breed with good marketing potential.

- *Fattening* – one of the easiest breeds of cattle to fatten. Even off unimproved pastures in the summer months, it is easily possible for them to become over fat by 24 months when second head-age payments are due. Purebred Herefords run to fat quicker than cross breeds. The modern Hereford will need more inputs over the winter months to maintain condition and to fatten.
- *Meat quality* - produces a quality carcass.
- *Hereford Beef Scheme* – a branding scheme was started in 1999, putting labelled, pre-packed meat on the shelves in 17 Waitrose stores; with plans to extend. In the space of a year, there has been a trebling of throughput of animals per week.

Highland (Kylloe)

Summary

The Highland is an extremely hardy and intelligent breed, which responds well to quiet handling. Its extensive ranging behaviour lends the breed to being most appropriately used as a grazer and browser of coarse vegetation on large sites.

Hardiness

An extremely hardy breed, best suited to living outdoors on mixed vegetation.

- *Extremely hardy* – tolerant to the most adverse weather conditions, including prolonged, driving rain and extreme cold. The breed has a double coat; the outer of which is waterproof and comprises long, coarse hair and underneath, a very fine, wool-like layer provides insulation. The outer layer is shed every summer. Black animals are generally smaller, more agile, hardier and more flighty than light coloured ones. They are the true Kylloes.
- *Reaction to heat* – can tolerate hot weather, particularly if water to wade in is available. Large horns may provide a mechanism for radiating heat away from the body; thus polled Highlands may be more susceptible to heat stress.
- *Housing* – unsuitable for housing, unless extremely well-ventilated or clipped, as thick coat causes heavy sweating, even on the coldest of days.

Physical Attributes & Husbandry

A breed which responds well to quiet and intelligent handling.

- *Handling* – as an intelligent and horned breed, the Highland should be treated with great respect. Generally quiet if used to handling, and if handled when very young, remains tame and approachable even if grazed in extensive situations. Gathers and pens most easily with feed, rather than through rounding up and driving.
- *General health* – good, although possibly more susceptible to mange and fly strike than other breeds, as a consequence of its long hairy coat. Requires a mixed diet with lots of bulky herbage for optimal health. On difficult terrain, older cows may be prone to arthritis.

Containment – very agile and may challenge boundary features when first arriving on any site, including standard stock fences, water filled ditches and cattle grids. Low walls provide a successful boundary. Wire fences may be damaged through being used for scratching. Unlikely to escape once settled.



Matthew Oates/National Trust

- *Breeding* – generally calves unassisted. Good mothers. Seeks secluded, remote calving site in extensive situations and can be difficult to locate. Calf will lie hidden for several days – mother leaving it to join herd to graze, returning to feed it and using smell to follow trail back to it. Bulls generally placid, particularly in a herd situation.
- *Size* – one of the smaller cattle breeds, average weight 400 kgs.
- *Access* – dislikes wooden bridges, unless turf-covered.

Grazing Characteristics

Well-adapted to grazing coarse forage and with good browsing ability.

- *Grazing* – preferentially takes grasses and herbs, including coarse grasses. Good impact on Purple Moor-grass where it has become rank and dominant. On wetter sites, sedges may be important winter food. Eats Common Reed during spring/early summer; nettles in late summer. Enjoys Reed Sweet-grass. Dislikes Saw Sedge, Fleabane, Mint and Yellow Iris.
- *Browsing* – able to control scrub encroachment as part of an extensive grazing system. Known to willingly browse Willow species. Does not selectively graze Heathers and Ericaceous plants unless really short of fodder.
- *Grazing pattern* – appears to form territories with cyclical use of large areas; may travel miles in one day. Dispersal of individuals within social groups effectively distributes grazing effect. If available, will use improved pasture as part of cycle, but no more intensively than any other areas available.
- *Impact of horns* – can cause considerable damage to scrub, although this may be a factor for all horned breeds.

HOLSTEIN/FRIESIAN

Summary

Originating from Holland, both the Holstein and Friesian cattle breeds and their crosses have a poor reputation in nature conservation grazing. However, dry cows and young stock can effectively maintain grassland sites with gentle terrain. Perhaps more than any other breed or cross, the ability of the Holstein/Friesian and their crosses to graze sites of conservation interest may depend largely upon their upbringing.

Hardiness – not suited to year round extensively grazed situations.

- *Not particularly hardy* – thin-skinned and with soft silky hair, neither breed nor their crosses are suited to out wintering. However, depending on local climate, it may be possible to out winter British Friesian stock on dry land with adequate supplementary feed.

Physical Attributes & Husbandry – large and docile, easy to contain and handle.

- *Handling* – older animals are very docile and easy to handle. Young stock may be a bit more flighty.
- *Fencing* – respect electric fencing.
- *Flies and ticks* – particularly on hot and humid sites New Forest Eye can be a problem.
- *Size* – large breeds; average weight of a Friesian cow around 650kgs, a Holstein around 750kgs+.
- *Appearance* – black and white. The Holstein is a tall, rather skinny dairy animal; the Friesian is shorter, stockier and dual-purpose.
- *Breeding* – a Holstein will have an average productive life of 3 or 4 lactations, a Friesian around 6. Bulls are not usually run with a herd. Dairy bulls in particular do not have a good reputation.
- *General health* – may be more susceptible to foot problems on wet soils than other breeds. New Forest Eye may also be a problem in hot, humid conditions. Summer mastitis may be a problem for dry cows/in calf heifers, due to flies.



Lawrence Alderson

Grazing Characteristics - good maintenance grazers, particularly of semi-improved grasslands.

- *Grazing preferences* – older cows with harder mouths are likely to take a wider range of vegetation than younger individuals. Enjoy lush pastures. Take limited amounts of Flote-grasses, Reed Canary-grass, Couch-grass when soft and succulent, and Purple Moor-grass before flowering. Avoid Tufted Hair-grass. Coarse grasses may tend to become more dominant over a period of time.
- *Sedges & rushes* – generally avoided, although may take young Soft Rush and Common Spike-rush, particularly older cows or in early growth stages. Sedges are eaten as a constituent of hay.
- *Browsing ability* – not suitable for scrub management. Do not browse and will not push into scrub either.
- *Impact of size* – on sites with very thin soils, old dry cows may be too heavy.

Interaction with the Public – suitable for use on public sites, particularly with older stock.

- *Reaction to people* – young stock can be particularly curious, and as these breeds are very used to human contact, can be quite inquisitive.

Marketability – popular and widely available.

- *Fattening* – it is not possible to finish off low quality pastures, although Friesians generally perform better.
- *Milk* – a highly popular dairy breed, widely used throughout England. However, herd numbers are declining with milk quotas.

Irish Moiled Breed Profile



Photograph courtesy of Farmers' Guardian Newspaper

Summary

The Irish Moiled is the rarest of the surviving indigenous breeds of Irish cattle. Traditionally a dairy cow, it has earned the reputation as a truly dual purpose type producing both milk and meat from poorer quality grazing. Kept throughout Ireland on a wide variety of habitats it was particularly popular in the 'drumlin' country of South Ulster. Officially designated of medium size a mature cow can weigh up to 650 kgs. They are red in colour and characteristically marked by a white line or 'finching' on the back and under-parts, but they can vary from white with red ears to nearly all red.

Hardiness

Will grow a thick winter coat and winter outside quite happily though bear in mind that they are a heavy animal and will 'poach' on any but the drier ground.

- *Supplementary Feed* - Silage or hay will be required for out-wintering in most situations particularly where calves are at foot. Mineral supplements are advisable but concentrates should not be required unless cows are entering the winter without fat on their backs.
- *Thrifty* - Irish tradition has it that they are 'big bellied' to consume and digest large quantities of poorer quality forage which was their traditional diet.
- *Water* - A good supply of clean drinking water will always be required.

Physical attributes and husbandry

- *Sure-footed* - They are sound in hoof and leg though not with the agility of a mountain breed; they have a more matronly gait.
- *Handling* - Easy to handle if on familiar territory and behave very much as a herd. Handlers should establish a relationship with the dominant females and the herd will follow.
- *Fencing* - No special requirements.
- *Horns* - A polled breed where the polled gene is very dominant. When crossed with a horned breed the poll remains for many generations.

- *Size* - Medium sized but this very much depends on the nutrition received by the young animal. The cow will milk off her back to give the calf the best start in life but where pasture is very poor both for the cow and weanling then a smaller animal will result.
- *Flies and ticks* - No particular problems.
- *Breeding* - Can be relied upon to produce a calf every 12 months if running with a bull and is in good health and body condition. Will calve to a continental bull without difficulty and has sufficient milk to do a good job with the 'cross' calf. Will continue to breed satisfactorily until at least ten years of age and many have continued to 15 years and beyond.
- *General health* - No problems particular to this breed.
- *Appearance* - A very attractive animal with the distinctive white line back mentioned above. This line is also a highly dominant feature and will be inherited for several generations even when crossed out. The name Moile (or Mael or Maol) comes from the Gaelic meaning 'little round' or 'mound' describing the distinctive shape of the head where horns would normally grow. The face is very long with approximately one third above eye level and two thirds below.

Grazing characteristics

- *Grazing preferences* - Generally will eat whatever sward is put before them.
- *Browsing ability* - Will browse readily with particular preference for willow, ash and ivy. Eating green Acorns from young Oak trees has proved fatal.

Interaction with the public

They are placid by nature and treat strangers with apathy or curiosity. Much depends on the environment in which they have been raised as young animals; some will even seek human company. Bulls are normally quiet and remain within the herd. As with all suckler cows some can be extremely 'calf proud' for 24-48 hours after calving and should be approached with caution.

Marketability

- *Fattening* - Pure bred steers will finish between 20-24 months on good quality forage diet to grade O3, at carcass weights from 220-260kgs. Where forage is poor, supplements will be required, but care should be taken to avoid them becoming over fat.
- *Meat quality* - Superb quality beef with a distinctive flavour. Specialist niche markets for the beef exist both in Great Britain and Ireland but it has not yet been possible to fully exploit this market due to shortage of supply.

Sites where Irish Moiled Cattle are in use and contacts

Site Name	Habitat	Details available	Contact
Clandeboyne Estate Co. Down N. Ireland Private	Species Rich Grassland and Parkland	Small breeding herd (10) used for conservation grazing on parkland and wild flower meadow	Mark Logan 028 9185 2966 mark@clandeboye.co.uk www.clandeboye.co.uk

KERRY

Summary

A rare breed, the Kerry originates from and continues to have its stronghold within the Irish Republic. Despite being essentially a dairy breed, the small and agile Kerry is fairly hardy and well adapted to digesting poor quality vegetation. It readily consumes a range of grasses, both coarse and fine, and has potential for wider use within conservation grazing situations.

Hardiness – thrifty, agile and well adapted to maintaining condition on poor quality vegetation.

- *Maintains condition well* – appears to have a good capacity to digest poor quality grasses such as Purple Moor-grass and in extensive systems may only require minimal supplementary feeding.
- *Outwintering* – essentially a dairy breed and whilst of hardy constitution, needs to be given some sheltered grazing especially in winter.
- *Summer* - coat becomes short and fine when on good pasture.
- *Agile and surefooted* – essentially a mountain breed within the range 400-3000ft, thus adapted to ranging over difficult terrain.

Physical Attributes & Husbandry - a small adaptable breed, which adjusts well to being handled.

- *Small size* - relatively lightweight, thus helps minimise damage to pastures. Cows weigh 350-450kg, although in mountainous areas may only reach 300kg; bulls 455 kg.
- *Handling* – without regular handling, the breed can be quite flighty; easily tamed and domesticated. Calves born with horns, although most are dehorned. Bears confinement extremely well and does not suffer from being transferred from mountain to garden. Steers/bullocks are preferable to cows for handling purposes. As with all dairy breeds, Kerry bulls must be handled with respect.
- *General health* - considered resistant to Tuberculosis. Worming may be required if kept in confined areas.
- *Breeding* - rarely trouble with calving due to good pelvis. Good nurse cows. Calving regularly until 14 - 15 years.
- *Hooves* - may require trimming if run on soft ground.
- *Background* - the Kerry is descended from the early Irish cattle and until as recently as 1876 was considered to be the same breed as the Dexter. The principal surviving herd of Kerries is based at Muckross House in County Kerry, Eire.
- *Appearance* - black bodied, with fine white, black-tipped horns.



Lawrence Alderson

Grazing Characteristics - readily consumes a wide range of grasses, including coarse species.

- *Grazing ability* - strongly grass based and readily consumes a wide range of grasses. Rushes eaten by both calves and grown cattle, particularly during winter.
- *Browsing ability* – readily take leaves and twigs during summer; browse more during winter when other feed is more limited.

Interaction with the Public - an aesthetically appealing breed, but one which may be inclined to aggressive behaviour if used for breeding on public access sites.

- *Friendliness* - docile and generally oblivious to members of the public. Easily approached, but unless well handled is likely to become quite flighty if in actual contact with people. Cows that are milked are friendlier than those kept as sucklers. As a dairy breed, Kerry bulls must not be kept on sites where there is public access.
- *Behaviour when breeding* - cows may become flighty and difficult when in season or recently calved, when they may attack anything that is perceived as a threat to the calf.
- *Reaction to dogs* – once used to dogs will accept and tolerate them without curiosity or alarm; care must be exercised when cows have a calf at foot.
- *Public appeal* - steers and dry cows maintain good condition thus mitigating against likely animal welfare complainants. However, cows feeding a calf may get a lean appearance by the end of the winter.

Marketability - a breed with good commercial potential if some good keep is available.

- *Breeding* – excellent as a single suckler on rough grazing.
- *Meat* - when put on good keep the breed fattens readily, producing a fine marbled beef of excellent flavour.
- *Milk* – a dairy breed; the main surviving herd is kept in that capacity.

LINCOLN RED

Summary

A hardy and thrifty rare breed, with the ability to fatten off grass within 30 months, the Lincoln Red has much potential for expanded use within nature conservation grazing situations. Docile and easy to handle, it appears to have fairly non-selective grazing habits and is likely to be a good choice for maintenance grazing any sward.

Hardiness – a hardy and thrifty breed, well able to withstand adverse weather conditions.

- *Hardy* – bred for its ability to withstand cold east winds during winter and drought conditions in summer months.
- *Thrifty* – an excellent converter of roughage into meat; will also cope well on pastures of higher nutrient status.
- *Able to out winter* – and maintains condition well, provided food is not in short supply. However, out wintering may not always be practicable as its heavy weight makes poaching likely, especially on heavy clay soils.

Physical Attributes & Husbandry – docile and easy to handle, the Lincoln Red may provide an attractive choice for conservation grazing situations.

- *Background* – two categories of Lincoln Red are accepted: pedigree animals without any continental blood (Traditional Lincoln Reds) and these are a Rare Breed; animals with an element of continental blood in them.
- *Distribution* - fairly widespread across the country, although registered herds found primarily in Lincolnshire and the adjacent counties.
- *Handling* – quiet, non aggressive and easy to handle, although can give the appearance of being belligerent.
- *Fencing* – respects electric fencing.
- *Flies and ticks* – no particular problem; quite thick-skinned.
- *Size* – amongst the largest of our native breeds; average weight of a cow 600-700kgs.
- *Appearance* – deep cherry red in colour. A polled breed since the 1940's when Aberdeen Angus blood was introduced to the previously named Lincolnshire Red Shorthorn.



Rare Breeds Survival Trust

- *Breeding* – bulls very placid in a herd situation. Cows will usually calve up to 12-14 years of age and produce a plentiful supply of milk for calves. A popular choice for crossing with continental bulls.

Grazing Characteristics - unselective grazers that will make good use of any sward.

- *Grazing ability* – no particular preferences noted, although appears to take a range of coarse and fine grasses, including Tufted Hair-grass, Common Reed when young and Soft Rush in the winter or after being cut.
- *Browsing* – limited information available. See site details overleaf.

Interaction with the Public – a docile breed, suitable for use on public access sites. May be easily spooked if not handled often.

- *Reaction to people* – a very docile and non-aggressive.

Marketability – a breed with good commercial potential.

- *Meat* – produces a fine textured, well-marbled beef.
- *Finishing* – finishes well off grass within 30 months. Bull beef can be finished at 14-15 months.

Sites where Lincoln Red cattle are in use & contacts

References

LONGHORN

Summary

Hardy and adaptable, with good grazing and browsing characteristics, the Longhorn has good potential for expanding use within conservation grazing management.

Hardiness – a hardy breed, adaptable to a variety of harsh environmental circumstances.

- *Robust* – thick hide and dense silky coat allows breed to withstand wet weather. Able to outwinter on dry ground with some supplementary feeding. Too heavy to winter on wet ground.
- *Thrifty* – maintains condition well on rough pasture.
- *Agile and adaptable* – reputedly happy on a range of habitats including steep cliffs and wetland fringes. Young animals will learn to wade through water from older individuals.

Physical Attributes & Husbandry – a large, docile breed, but with special handling requirements in horned animals.

- *Size* – one of the largest and heaviest of UK native breeds. Average weight of a cow around 750kgs.
- *Appearance* - light roan to dark brindle in colour; the tail and stripe along the back are white, with white also on the underside and legs.
- *Confined areas* – care needed to provide plenty of space if kept in yards; a shortage will lead to disputes and possibly injury from horns.
- *Horns* - long and sweeping, usually downwards. If horns start growing into the face, they will need cutting back. Disbudding of the young animal makes it easier to transport and yard, and may improve marketability of steers.
- *Breeding* – long lived and will calve until 13/14 years old or longer. Good mothering ability and abundant good quality milk. One of the quietest breeds of bull. Bulls usually work until around 10 years old, after which they become very heavy and fertility seems to decrease.
- *Hooves* – as with other breeds, may need occasional foot trimming.
- *Handling* – docile with people and responds well to gentle handling. Easy to halter train.
- *Fencing* – respects electric fencing, though horns can tangle badly.
- *Flies and ticks* – no problems reported.
- *Longevity* – generally long-lived.
- *Background* - rare, but increasing in numbers, the Longhorn was formerly the dominant breed within Eighteenth Century Britain, as a draught animal and for the production of meat and milk.



Longhorn Cattle Society

Grazing Characteristics - a breed with good grazing and browsing characteristics.

- *Impact of social behaviour* – ranges widely, grazing methodically. Due to horns, individuals generally graze further apart than some breeds.
- *Grazing preferences* – variable reports as to impact on rank grasses, particularly Purple Moor-grass. See site details overleaf. Some good results on False Oat-grass and Upright Brome.
- *Thistles and nettles* – will eat if pushed hard.
- *Rushes and sedges* – grazes rushes if wilted after being cut or if pushed hard; grazes young shoots of Tussock Sedge and Reedmace.
- *Browsing* – occurs year round. Good control of Alder, Birch, Buckthorn and Hawthorn. Browsing of Creeping Willow has encouraged regrowth in a prostrate form, helping the plants to compete in the same way as Heather. Tramples, but does not appear to eat Bramble. Significant role in pushing through and opening up dense mature scrub; particularly in hot weather and to escape flies.
- *Bracken* – may browse young Bracken fronds; good at trampling down rank Bracken litter.

Interaction with the Public – suitable for use on public access sites, if fears about its appearance can be allayed.

- *Public perception* – although docile, graceful and photogenic, can appear intimidating due to large size and horns.
- *Reaction to dogs* – generally unconcerned.
- *Reaction to people* – unhandled animals easily spooked, although if used to people, very calm. Not particularly curious.

Marketability – a breed with good commercial opportunities, particularly within niche markets.

- *Fattening* – a slow maturing breed which finishes off grass at 4 years. Additional feed 6-8 weeks prior to slaughter can allow steers to be finished between 24-30 months. Some livestock markets will not be able to handle the breed if horned. May need to seek specialist niche markets.

MURRAY GREY

Summary

A hardy breed, the Murray Grey is also believed to take a range of vegetation, including coarse species. Placid and easy to handle, it is suitable for consideration on sites with public access.

Hardiness – a hardy breed, well suited to grazing natural forage.

- *Hardy and adaptable* – able to live outdoors all year in many different climatic conditions; natural forms of shelter are sufficient in British conditions.
- *Supplementary feed* – maintain condition well on natural forage and do not need extra supplements even after calving. In winter, may require hay if natural forage is insufficient.

Physical Attributes & Husbandry – a docile, easy to keep breed.

- *Size* – medium sized.
- *Appearance* – dark pigmented skin; coat colour ranges from silver grey to brown. Naturally polled.
- *Handling* – a docile breed; can be easily trained to come to feed prior to any routine penning requirements.
- *Breeding* – considered to be one of the easiest calving breeds. Cows produce enough milk for their calf to grow well, but not in excess to cause mastitis. Bulls are docile in breeding situation.
- *Fencing* – easily contained; two strand barbed wire fence should suffice. Not great jumpers.
- *Character* – docile and not easily stressed.
- *Background* – developed from the Aberdeen Angus and Beef Shorthorn.



Peter Harris

Grazing Characteristics – believed to have catholic eating habits.

- *Grazing preferences* – will eat most types of grasses and coarse herbs, including Nettles, Thistles and young Docks.
- *Browsing ability* – no details available.
- *Physical impact on scrub* – break up scrub, thus aiding the restoration of neglected ground.

Interaction with the Public – a non-aggressive breed.

- *Reaction to people* – does not normally pose a threat to the walking public. Displays an even temperament and may be inquisitive, but not aggressive. Newly calved cows should be approached with caution.

Marketability – a commercial breed.

- *Breeding* – popular as single suckler cows.
- *Meat* – can be fattened off grass to produce a good quality product.

NORTH DEVON

Summary

A very old, hardy breed of cattle, the North Devon is suitable for grazing a range of habitat types. Commonly called Devon cattle, it is also known as Red Rubies or Ruby Red due to its deep rich red colour. Attractive in appearance, placid and easy to handle, the North Devon provides a good option for sites with public access.

Hardiness - an adaptable breed, suitable for use in a range of climatic conditions.

- *Very hardy* - has a thick skin and dense curly coat which protects it from driving rain and cold temperatures.
- *Winter* - able to outwinter on most sites. However, in recent years, use of Saler blood by some breeders has produced anecdotal evidence that these modern (often larger) animals do not fare so well on less improved pastures especially in the winter months. Thus origin of stock may be an important factor.
- *Condition* - renowned for its ability to convert forage into growth.
- *Heat* - tolerant of hot conditions and not susceptible to sunburn. However, like all animals, requires some shade.

Physical Attributes & Husbandry - a quiet, easy to handle breed. Most suited for use on flat ground.

- *Handling* - one of the quietest breeds, making it suitable for first time cattle keepers.
- *Fencing* - respects electric strand and flexi-net fencing.
- *Flies and ticks* - thick hide means it is not unduly bothered. Some people feel the breed may be more prone to redwater (transmitted by Red Deer ticks) than other breeds, although this disease is site rather than breed linked.
- *Size* - shorter in height than Shorthorn or Hereford, but heavier, so may cause poaching on soft sites. Average weight of a cow 400 - 450 kg.
- *Horns* - traditionally the breed have magnificent horns, but most animals are disbudded as calves. Many breeders are trying to maintain naturally polled herds.
- *Terrain* - probably not suitable for sites with slopes, particularly if steep. Prefers grazing flat areas.
- *Breeding* - easy calving with good milk yield off poor quality pasture, although milk quality may be better if the cow is not on the very poorest areas at calving. Cows may calve into mid-teens. Bulls usually even tempered in a herd situation.



Matthew Oates/National Trust

- *Temperament* - a tolerant breed, but which when it has had enough of a particular site or area of pasture, will let you know by bellowing.

Grazing Characteristics - a breed which moves back and forth across a pasture, producing a well-grazed sward.

- *Behaviour* - a grazer, rather than a browser. However, as it gets fat, the breed becomes lazy, does not move around a site so effectively, and tends not to browse much.
- *Grazing preferences* - for details overleaf.
- *Browsing* - where paths have been cut into scrub the North Devon has been found to keep them open, but this is mainly due to trampling and not browsing. It is unlikely to make major in-roads into scrub control otherwise.

Interaction with the Public - a very docile, even-tempered breed.

- *Curiosity* - unlikely to approach people, but equally unlikely to walk away. On one site, however, they run away from mountain bikes.
- *Public perception* - a placid, non-threatening breed, although horned animals may cause concern.

Marketability - A high quality beef breed, producing much sought-after meat.

- *Fattening* - possible to finish within 30 months on poor grazing, although carcass size is slightly on the small size.
- *Meat* - reputedly the finest beef available and is much sought after. The Breed Society is aiming to obtain a European Union "Certificate of Specific Characteristic" to aid in the marketing of the meat.

RED POLL

Summary

The Red Poll is a hardy rare breed tolerant of both hot and cold climatic conditions. Versatile and a non-fussy grazer, it is extremely thrifty and suited to doing well on coarse vegetation. Small sized, calm by nature and attractive in appearance, the Red Poll is ideal for grazing public sites, whilst also being easy to handle and keep.

Hardiness – very hardy and able to maintain condition well on poor forage.

- *Hardy* – well able to withstand icy winds straight off the North Sea; has a thick winter coat which moults in the following spring. Prefers to outwinter; seeks shelter in driving rain or snow.
- *Tolerant of hot conditions* – pigmented skin allows breed to be successfully used in hot climates.
- *Thrifty* – large rumen well-adapted high food conversion rate from low quality vegetation.
- *Supplementary feed* – silage, hay or straw based diet, with appropriate feed blocks, may be necessary to maintain condition in non-breeding animals during winter months.

Physical Attributes & Husbandry – an easy to keep, good all-round breed.

- *Size* – small to medium. Adult cows weigh 450-600kg; mature bulls 550-750kg.
- *Appearance* – dark red body; white tail and some white on udder. Pink nose.
- *Background* – breed originates from Norfolk and Suffolk; derived from the Old Norfolk Red and Suffolk Dun Breeds.
- *Breeding* – calving problems rare in purebred animals; usually able to give birth outside and without assistance. Good, protective mothers. In a herd situation, bulls can normally be used on sites with public access.
- *Hooves* – good feet.
- *Handling* – easy to handle once familiar with those involved. Facilitated by a generally calm and inquisitive temperament.
- *Longevity* – reputedly the longest living of the British dual purpose and dairy breeds.



Eric Moss

Grazing Characteristics – a versatile, non-fussy breed.

- *Grazing ability* – not fussy and readily eats most green vegetation, including Nettles and Common Reed. Thistles taken when pushed.
- *Rushes and sedges* – readily takes young rush or when mature once topped. Good control of Soft Rush.
- *Versatility* – developed on poor, light sandy soils of Suffolk and adapted to grazing sparse, low quality vegetation. Also readily grazes through lying water on marsh land; light weight an advantage on wet ground.
- *Browsing ability* – readily browse any accessible woody vegetation.

Interaction with the Public – an ideal breed for grazing on public access sites.

- *Reaction to people* – generally calm; may be inquisitive. Tends to ignore footpath walkers, although may move away from large groups.
- *Public perception* – an attractive, non-threatening and traditional British breed.

Marketability – good niche marketing opportunities, particularly at local farmers markets.

- *Meat* – produces high quality (tender and good-flavoured) beef. Good opportunities for niche and local marketing.
- *Fattening* – stock kept on conservation grazing are likely to need supplementary feed if they are to be finished by 30 months of age.

Sites where Red Poll cattle are in use & contacts

References

SHETLAND

Summary

Rare, and classified by the Rare Breeds Survival Trust as critically endangered, the Shetland nonetheless has great potential for expanding use in nature conservation grazing situations. A good all-round grazing and browsing animal, it is ideally suited for restoration and management of unimproved, neglected sites. Hardy and easy to handle, the Shetland is well worth further consideration.

Hardiness – a hardy breed, adapted to harsh conditions and poor grazing.

- *Hardy* – originating from Scandinavia, this breed has evolved on the Shetland Islands under harsh weather conditions and periods of starvation.
- *Supplementary feed* – may be necessary, depending on factors such as severity of weather and quality and quantity of vegetation.
- *Adapted to poor grazing* – a long-lived breed, which maintains best health on poor grazing.
- *Wintering* – able to winter out; if housed, adapts by growing a finer coat.

Physical Attributes & Husbandry – an easily handled and fairly small breed.

- *Handling* – generally easy. May be easily halter trained and quickly learns to come to a bucket. Some individuals can dislike restraint, but this trait is mostly bred out.
- *Fencing* – easily contained; three strands of barbed wire will generally suffice; however, need to take into account the very small size of calves. Respectful of electric fencing.
- *Insects* – no particular problem.
- *Breeding* – very easy calving; able to produce large continental cross-bred calves with little difficulty. Good fertility, but low numbers due to popularity of crossing with other breeds to produce highly commercial cross breeds. Generally continues producing calves until 15 years of age, some into 20's.
- *Size* – large variation; average weight 350-500 kg.
- *Appearance* – commonly black and white, but may also be red and white. Previously much more variation in colour to include dun and mottle grey. A horned breed.
- *Background* – of Scandinavian origin, reputedly brought to the Shetland Islands by the Vikings, the breed evolved has since evolved under harsh conditions.



Tony and Cath Bennett

Grazing Characteristics - demonstrates good grazing and browsing capabilities.

- *Grazing ability* – takes a wide variety of grasses including Purple Moor-grass, rushes and coarse herbs throughout the year. Eats thistle tops.
- *Seaweed* – willing to eat seaweed.
- *Browsing ability* – wide variety of shrubs taken year round, including Birch and Scots Pine. Young Heather also eaten.

Interaction with the Public – a small non-aggressive breed, with high public appeal.

- *Public perception* – high aesthetic appeal due to critical numbers status. Small in size, thus less intimidating than other, larger breeds.
- *Reaction to people* – very content; ignores walkers and avoids horses. Bulls happy in a herd situation.
- *Reaction to dogs* – defends very young calves against dog attack.

Marketability – a breed with good commercial potential.

- *Meat* – good flavour. Eligible for Rare Breeds Survival Trust meat marketing scheme, with carcasses fetching substantial premium.
- *Finishing ability* – Fast growth rates on good grazing; 15/18 months possible with good feeding. Under 30 months on grass.
- *Breeding* – good potential for expansion into wider use as suckler cows, requiring medium/low inputs.

Sites where Shetland cattle are in use & contacts

SOUTH DEVON

Summary

The South Devon is the largest native beef breed within the UK. Its quiet, placid nature and capacity for consuming large amounts of forage are worthy attributes for consideration in conservation grazing schemes. Although primarily a beef breed, the South Devon produces very high quality milk, almost equal to that of the Channel Island breeds.

Hardiness - a fairly hardy breed.

- *Hardiness* - fairly hardy, with a thick, curly winter coat. Happy to outwinter in the milder climes of southern England, but possibly not further north in the country, depending upon upbringing.
- *Shelter* - likes to shelter on the leeward side of scrub.
- *Adaptability* - happy on a range of terrains and soil conditions, although its size and weight may make it unsuitable for very thin soils or on soft sites.

Physical Attributes & Husbandry - probably the most docile breed of cattle in the UK and thus a good breed for first time cattle keepers.

- *Size* - largest native beef breed, similar in height to a Simmental. Average weight of a cow 650 kg. Large rumen an attribute for conservation grazing purposes.
- *Breeding* - good maternal instincts. A cow may produce calves into her mid-teens. Historically South Devons had a reputation for difficult calving, but this is less likely to be a problem today. Avoid cows putting on too much weight prior to calving. Seem happier to calve outside, although in scrubby areas it may then be difficult to find calves. Bulls usually even tempered in a herd, but as with all livestock must be treated with caution.
- *Handling* - very quiet and contented, but has a slight stubborn trait. Thus if it is happy where it is, the South Devon will take some moving.
- *Fencing* - respects electric fencing, both strand and flexi-net.
- *Flies and ticks* - thick hide means that the breed is not unduly bothered.
- *General health* - good. On rushy sites watch out for New Forest Disease.
- *Appearance* - yellow red in colour.
- *Status* - the breed is not minority status, and outnumbers the North Devon (also known as Rubies or Devon) by 4:1.



John Williamson

Grazing Characteristics - a good general purpose conservation grazing animal, with potential for wider use.

- *Grazing ability* - see individual site details overleaf for more details. The breed is generally a grazer rather than a browser. In general, grazes fairly unselectively. Will eat Nettles, Thistles and Dock if cut and wilted first. Generally avoid Rushes, except some young shoots and if very hungry. May have a preference for orchids.
- *Browsing* - minimal browsing, but they seem to love pushing through Gorse, Broom, Birch and other scrub in search of tasty morsels under the canopy. They also enjoy using it as a rubbing and scratching post. Their size gives them a good ability to do mechanical damage. See table overleaf for site-specific details. Unlikely to touch Heather.

Interaction with the Public - an excellent choice for sites with public access.

- *Temperament in breeding situations* - a very docile breed. This aspect of their temperament generally over-rides their maternal instincts, so unlike some other breeds they are not usually aggressive when they have young calves at foot.
- *Curiosity* - unlikely to approach people.

Marketability - a commercially viable breed.

- *Finishing* - will need to finish on good quality pasture or with additional feed, to be within the 30 months.

SUSSEX

Summary

A placid, easy to keep breed which does well on low quality forage. The Sussex is a large, deep red animal, which although not a Minority breed is far from widespread. Nearly all herds found in southeast and central-southern England. Formerly used as a draught animal.

Hardiness – a hardy breed, suitable for outwintering and on hot inland sites during summer months.

- *Tolerant of heat* - considered to be especially resistant to hot, sunny conditions due to an unusually high number of sweat glands. Summer coat is fine and sleek.
- *Winter* - develops a dense, curly coat and outwinters well.

Physical Attributes & Husbandry – a placid, easy to handle breed.

- *Handling* - very docile and easy to handle.
- *Horns* - Sussex cattle may be horned or polled.
- *Fencing* - will respect electric fencing.
- *Flies and ticks* - not unduly bothered.
- *Mobility* - will range widely over a large site, slowly walking many miles in a day. Not particularly adept at grazing on steep slopes.
- *Size* - one of the larger UK breeds. Average weight around 650 kg.
- *Breeding* - easy calvers providing that the cow has not become over-fat. Out wintering in-calf cows on very low quality grass with supplementary feed, can be a useful practice to ensure they lose weight prior to calving. Cows will continue to produce into the mid-teens. Cows may disappear into scrub with calf for 48 hours. Bulls are very docile in a herd situation.



Simon Meek/Corporation of London

Grazing Characteristics - the Sussex does well on low quality forage but is not a great browser.

- *Unselective grazers* - will take a range of species and tends to graze a sward more tightly than other breeds of cattle. Compact sedges such as Glaucous, Carnation and Brown Sedge are eaten; Saw Sedge may also be eaten if no other food available, otherwise avoided. Purple Small-reed, rushes (mainly during winter), and thistles are readily taken, although in no great quantities. Purple Moor-grass, Red Fescue and Tor-grass also taken.
- *Poisonous plants* - the Sussex has been known to eat out an abundance of ragwort rosettes in an arable reversion during early summer, though this cannot be recommended as practice.
- *Browsing* - will lightly browse a range of trees and shrubs, but not sufficiently to knock the plants back. The more typical species such as hazel and birch (in spring) are taken, but unusual species such as alder have also been recorded as browse. Young and low bushes appear to be favoured.

Interaction with the Public – a contented breed which will generally ignore people, dogs and horse riders.

- *Curiosity* - will not usually take any notice of the public on a site.
- *Aesthetic appeal* - striking deep red colour.

Marketability - a commercially viable breed.

- *Fattening* - reputedly lives on fresh air and views. Will finish at 18 - 20 months off average quality forage.
- *Marketing* – local marketing schemes hope to be established in 2001.
- *Beef quality* - a small amount of Limousin blood has been introduced to much of the breed, to improve carcass quality.

WATER BUFFALO

Summary

A hardy animal, the water buffalo is well suited to a range of different habitats, particularly those with a wetland component. It readily takes coarse vegetation and may have a major role in scrub control on nature conservation sites.

Hardiness – a fairly hardy animal, requiring good natural shelter in extensive grazing situations.

- *Fairly hardy* – generally able to tolerate extremes of hot/cold temperatures within the British climate, although likely to seek shelter in wet, windy weather. Cold winds and rapid drops in temperature can cause ill-health.
- *Shelter* – access to woodland/scrub may be very important, particularly in windy/wet weather.
- *Supplementary feed* – on extensive sites with lots of forage, supplementary feed requirements likely to be minimal. Mineral licks likely to be necessary.

Physical Attributes & Husbandry – placid, easy to handle and with minimal husbandry requirements.

- *Handling* – naturally timid and placid; startle easily and require quiet and calm handling.
- *Flies* – thick-skinned, thus not bothered by biting insects.
- *Veterinary treatment* – a standard vet can be used, as the water buffalo has similar requirements and illnesses to cattle.
- *Hooves* – large, boxy feet; rarely needing treatment. May be resistant to foot rot on wet sites.
- *Enclosure* – respects electric or permanent fencing, provided food resources are adequate. May require stronger fences with more wires and lower to the ground than cattle, as able to lift fences up with horns. Powerful swimmer; likely to go through still or moving water up to and possibly deeper than 1 metre; thus wet fencing is not a suitable barrier.
- *Wallowing* – essential to have access to pools for wallowing up to neck depth; may break out to find suitable pool if not present within enclosed area.
- *Parasites* – affected by internal parasites, such as Liverfluke to a similar extent to domestic cattle.
- *Ectoparasites* – the wallow and resultant mud-pack seems to protect the water buffalo from many biting flies. Also notably resistant to tick infestation.



Alison Clark

- *Appearance* – horned.
 - *Size* – large, 800-1200 kg.
- Breeding* – usually produces one calf per birth, with a birth interval of about 2 years. Gestation period 300-340 days. Sexually mature at 18 months.

Grazing Characteristics - readily takes coarse vegetation and with good browsing potential.

- *Grazing pattern* – nibbles grass like sheep, rather than tearing like cattle. Fairly even grazing over whole sward. Move around as a close herd with little separation.
- *Grazing preferences* – readily take grasses including Reedmace, Purple Moor-grass and Common Reed, as well as herbs, such as Creeping Buttercup.
- *Browsing ability* – readily browse Brambles and Ivy. Appear not to browse Heather and Willow.
- *Impact of social behaviour* – localised damage on dry areas; heavy trampling of Bracken on one site. Wallowing in favoured pools may be detrimental to their nature conservation interest. Dung deposited fairly evenly over grazed area.
- *Rushes and sedges* – grazes Soft Rush.

Interaction with the Public – suitable for grazing on public sites.

- *Reaction to people* – generally ignores, although may be curious if visitors rare.
- *Reaction to dogs* – unafraid and likely to chase them away.

Marketability – a commercial breed for milk production.

- *Milk production* – good.

WELSH BLACK CATTLE

Summary

Small, hardy, intelligent and adaptable, the Welsh Black is being used on a wide variety of nature conservation sites including coastal cliffs, fen, heath, and chalk and limestone grassland. A good choice of animal for the restoration phase of a site as The Welsh Black will happily make its way into scrub where it browses usefully.

Hardiness – a hardy breed suited to a range of climatic conditions.

- *Extremely hardy* - the majority of herds out winter with little or no supplementary feed.
- *Tolerant of wet and cold climates* - facilitated by a thick hide and long wavy hair.
- *Suitable for out wintering* - may be best to clip the coat if wintered under cover, as overheating may lead to health problems.
- *Summer heat* - does not seem to suffer from summer heat stress.

Physical Attributes & Husbandry – an adaptable and intelligent breed, well suited to a range of conservation grazing situations.

- *Handling* - generally placid and approachable when outdoors. Indoors or in confined spaces it is likely to be livelier. Historically the breed had a reputation for possessing a rather fiery nature, although this has largely been bred out in recent years. The breed may be horned or polled.
- *Breeding* - Cows are very protective of calves, and will continue to produce calves well into the teens. Calve easily. Bulls are happy provided they are in a herd situation.
- *Sure-footed* - grazes safely on steep sites, including sea cliffs where cows guide younger stock.
- *Background* - an ancient breed of uncertain origin, of which two types occur: the northern or Anglesey type which is shorter in the leg and heavier in the body than those from South Wales.
- *Fencing* - largely respect electric strand and flexi-net fencing. At one site they learnt to cross cattle grids very effectively.
- *Flies and ticks* - no undue problems.
- *Size* - average weight of a cow 400 - 450 kg.
- *General health* - good, but will put on weight readily if kept on productive pasture, which can lead to too large a calf in breeding cows.

Grazing Characteristics - an excellent forager and one of the most efficient breeds for browsing.

- *Fens & marshes* - favours Purple Moor-grass, Common Reed and Meadowsweet. Will also graze Saw-sedge, trample reed and happily stand knee-deep in water.



Matthew Oates

- *Rushes and sedges* - consumed variably. In some instances only taken when young, in others throughout the year. This may depend on background of stock and other forage available.
- *Limestone grasslands* - very good at controlling Tor-grass, Upright Brome and Tufted Hair-grass.
- *Browsing* - will effectively browse a great diversity of trees and shrubs, including Silver Birch, Rowan, Oak (seedlings and regrowth), young Gorse, Bramble and Willows. In winter will browse Bilberry and Ling. Moves through and browses amongst dense scrub if pathways are cut first. Will trample Bracken and sometimes graze it late in the season.

Interaction with the Public – though sometimes flighty, will generally ignore both people and dogs.

- *Curiosity* - will generally ignore people.
- *Reaction to dogs* - not disturbed by their presence.
- *Temperament* - young stock, where used on their own, may be flighty to start with but will soon settle down and get used to passing walkers and dogs. Cows highly protective of calves, therefore probably unwise to calve on well-visited sites.

Marketability - a commercially viable breed, which may require finishing away from conservation sites,

- *Fattening* - will usually need finishing on richer pasture or supplementary feed if it has been on pasture of low productivity. The breed will put on weight quickly when moved to improved pasture or diet otherwise improved. Trials by the National Trust and English Nature are currently underway in the Cotswolds to raise commercially viable Welsh Black calves on unimproved pasture only, with no supplementary feed.
- *Commercial value* - there is a beef marketing scheme for the breed (see contact list) which achieves an average 20p / kg premium for its members. Beef is fine grained, deep in colour, and not unlike venison in texture.

WHITE PARK

Summary

The White Park is the oldest native cattle breed in Britain, and is extremely well adapted to the natural environment in a wide variety of conditions. Distinctively attractive in appearance, with a white coat and black points. It is a tough and thrifty breed, ideal for conservation grazing which also yields beef of high quality.

Hardiness – a hardy, rustic breed, well adapted to a wide range of conditions and management systems.

- *Adapts well to many environments* – originally widespread through Britain and well adapted to diverse conditions ranging from upland rough grazing (Pennines and Scotland) to rich lowland pastures (Devon and East Anglia).
- *Tolerant to a range of weather* – grows a longer protective coat in winter and happily winters outdoors; smooth short coat in summer.
- *Suited to poor grazing* – produces efficiently on rougher grazing and able to over winter on poor coarse forage. Also suited to good grazing but shows a preference for coarser herbage to balance rich grasses.

Physical Attributes & Husbandry – a breed with a long history of domestication and handling.

- *Regional adaptability* – stock on lowland pastures tend to be robust, deep-bodied and short-legged; hill stock are lighter framed and more active.
- *Efficient production* – able to perform efficiently under low-input systems.
- *Handling* – responds well to normal handling and management, due to long history of domestication.
- *Fencing* – contained by ordinary stock fencing or by electric fencing.
- *Health* – vigorous healthy cattle, with great longevity; cows often breed up to 15/16 years of age.
- *Maternal qualities* – easy to calve and good mothers. High fertility and milkiness even on moderate grazing.
- *Size* – upland cows are medium small (450 kg); lowland cows are medium large (600+ kg).



Lawrence Alderson

Grazing Characteristics – thrives on a wide variety of grazing types including poor coarse forage.

- *Grazing ability* – grazes coarse herbage readily, even when richer grasses available. Readily wades into deep water to graze Common Reed.
- *Browsing ability* – determined by grazing regime; increases with reduced availability of grazing.

Interaction with the Public – attractive appearance appeals to public.

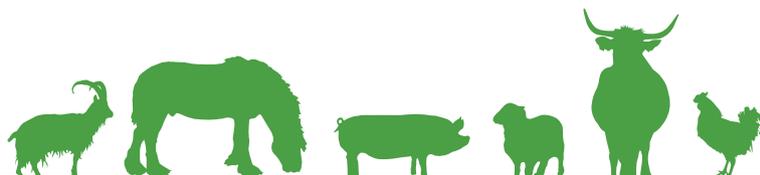
- 1 *Reaction to public and dogs* – becomes accustomed to public and dogs in areas of open access, although necessary caution should be exercised when cows have very young calves.
- 2 *Aesthetic appeal* – its distinctive colour pattern appeals to the public.

Marketability – the high quality beef of this breed provides good marketing opportunities in premium markets.

- *Profitability* – the output of premium products from low-input systems can yield good returns.
- *High quality meat* – White Park beef is well marbled but has a low overall fat content; it is of gourmet quality and ideal for specialist niche markets.
- *Established market* – prime meat in great demand through the Rare Breeds Survival Trust's Traditional Breeds Meat Marketing Scheme.



Breed Profiles: **Equine**



Equine in conservation

Foraging characteristics

1. Impact on vegetation structure

Equines are selective grazers. Within extensive systems, they create vegetation mosaics with shortly grazed 'lawns' (aided by slightly forward pointing incisors) interspersed with areas of taller, undisturbed vegetation.

This structural diversity benefits a range of species, including for example, invertebrates, small mammals, and birds of prey. However it may lead to some areas of vegetation becoming rank; if undesirable, this may be overcome by either increasing the stock density, or more preferably, through grazing equines in combination with species.

On softer ground, grazing by equines is likely to create bare ground, which in moderation can be beneficial for species.

2. Feeding Preferences

Equines are monogastric, with fast throughput stomachs and will ideally graze for up to 16 hours within every 24-hour cycle. They are strongly grass based, which is particularly noticeable in extensive grazing systems with heterogeneous habitats and plant communities. They preferentially graze the sweet grasses that are associated with botanically rich areas, but generally avoid eating flowering plants; thus with the competing grasses removed, rare flowering plants tend to thrive and multiply within grazing systems

Despite being strongly grass-based, the hardy breeds appear to be highly adaptable foragers, and in year round extensive systems develop varied patterns of diet. New Forest ponies, for example consume large quantities of Bracken in August, once its toxicity has declined, with no apparent ill-effect; in large wetland systems, equines graze common reed throughout the year, taking the leaves in early summer, the seed heads in autumn and the rhizomes in winter.

Having utilised the best of the grasses, equines consume increasing quantities of other plant species as summer progresses. Where available, sedges become important as late summer and winter forage; rushes, particularly Soft Rush, may also be consumed in large amounts. Some breeds will dig up roots of plants such as nettles, particularly during winter months.

3. Impact on trees and shrubs

Equines can be useful for slowing down scrub encroachment by browsing seedlings and the nutritionally rich tips of woody species. Tearing and eating of tree bark can be effectively kill shrubs and saplings. The amount of woody material consumed varies considerably depending on breed, up-bring and general food availability. Within extensive systems, browse material may be important dietary component for some breeds, particularly during winter months.

4. Social behaviour and its effect on foraging

As social animals equines form strongly bonded herds, the individuals which will generally remain in close proximity.

If breeding groups are kept on adjacent sites (with a common boundary), equines often treat the grazing area as a territory; this can be highly beneficial, as it encourages the herd to consistently roam the 'territory', leading to a well-dispersed grazing effect. Similarly, sub-groups of young colts or fillies may also form an associated territories develop. Thus, the formation of territories encourages better use of large sites without having to increase stocking densities to force animals to graze vegetation or graze difficult terrain.

In non-breeding, extensive situations, equines tend to spend most of their time grazing on areas which support their favoured vegetation, and may only roam the whole available area as favoured food supplies dwindle.

5. Sex and dietary difference

No obvious differences have been noted.

6. Impact of age on foraging ability

Some equines dung in distinct areas of rank or less palatable vegetation, although there is no single pattern and much may depend on paddock size. The advantage of this habit is that, whilst dung areas may become enriched and locally under-grazed, the more botanically diverse swards tend to remain relatively dung free. The disadvantage is that on some sites, grazing by equines alone may give a rank, ungrazed vegetation.

7. Dunging behaviour

Some equines dung in distinct areas of rank or less palatable vegetation, although there is no single pattern and much may depend on paddock size. The advantage of this enriched and locally under-grazed, the more botanically diverse swards tend to remain relatively dung free. The disadvantage is that on some sites, grazing by equines alone may give areas of rank, ungrazed vegetation

Different types of equine

- Domestic horses-equines above 14.2 hh at the withers (hh=hands high; one hand = 4inches/10cms). Domestic horses are not bred for survival in harsh environments and are less hardy than British native ponies. They are also more prone to diseases, accidents and unsoundness than native ponies and require a higher level of supervision. Horses also pose a problem of needing supplementary feeding, especially during the winter period. The role of horses in nature conservation is therefore limited to working situations or more controlled grazing.
- Ponies-equines below 14.2 at the withers. Ponies used for conservation grazing should have strong and correct conformation, to ensure the risks of injury or ill health are minimised.

Poor physical conformation could have serious implications for safety on in even or difficult terrain. The coat is also an important indicator as to the individual animal's ability to cope with wintering out, and also how suitable a site is for winter.

- Donkeys-well nourished donkeys with plenty of shelter may be suitable in some nature conservation grazing situations. They are unable to withstand heavy rain and wind without shelter and seek shelter more readily than native ponies. The role of donkeys in nature conservation grazing is limited to situations where roofed shelter is available.

For the purposes of conservation grazing within the UK there are essentially four groups of equines available for use. They all demonstrate the same general grazing characteristics listed above, but to a greater or lesser extent.

Types of equine

Native ponies in a free-ranging environment: Highland, Exmoor, Dartmoor, Dales, Fell, Shetland, New Forest, Welsh Mountain.

Special characteristics and suitability in conservation situations

1. Hardy breeds adaptable to a range of difficult environmental conditions and can tolerate inclement weather and biting insects.
2. Ponies grazing a mosaic of habitats show signs of mineral deficiency when grazed year round without supplements.
3. Free-ranging animals are adaptable to a range of food types.

Non-native primitive and hardy breeds: Przewalski, Konik, Fjords, Icelandic, Camargue.

Special characteristics and suitability in conservation situations

1. Hardy breeds adaptable to a range of difficult environmental conditions and can tolerate inclement weather and biting insects.
2. Horses grazing a mosaic of habitats show no signs of mineral deficiency when grazed year-round without supplements.
3. Free-ranging animals are adaptable to a range of food types, as for native ponies.

Donkey

Special characteristics and suitability in conservation situations

1. May not be very hardy, particularly in wet conditions.
2. Donkeys in extensive systems show signs of mineral deficiency when grazed year-round without supplements.
3. Very thrifty and adaptable to a range of food.

Domesticated horses: domesticated native ponies, warm bloods (e.g. Arabs and thoroughbreds) cross-breeds.

Special characteristics and suitability in conservation situations

1. Generally not well suited to conservation grazing, except in meadows and problem-free calcareous grasslands.
2. Often softened by domestication (through stabling, rugging, clipping etc). So that they may suffer more readily from cold, wet conditions.
3. Those with thin skins (e.g. Arabs and Thoroughbreds) are unlikely to be tolerant of insects.

DARTMOOR

Summary

The Dartmoor is a small, hardy breed of pony originating from the moorland and mires of Dartmoor. It has a proven ability to maintain itself on poor keep and in exposed conditions, although numerous introductions to the bloodline over recent years have reputedly reduced the breeds' survival ability. Bay, brown or black in colour, the Dartmoor pony is one of the milder, more biddable native breeds.



Fiona Freshney

Hardiness - a hardy breed in the absence of inappropriate breeding.

- *Maintains condition well* - mature non-breeding animals of traditional type thrive on low quality keep all year round.
- *Supplementary feed* - may be necessary for young stock and breeding mares in severe weather conditions and where forage is primarily browse material.
- *Withstands exposure and extreme weather* - coat adapted to a harsh moorland environment. Copes well on exposed coastal sites, although some shelter needed - e.g. gorse brakes or hedges.

Physical Attributes & Husbandry - little intervention required as long as the breed has adequate keep and suitable free-ranging conditions.

- *Good hooves* - small, strong and slow growing. Minimal foot care necessary for free-ranging ponies on poor keep with access to hard ground.
- *Laminitis* - rare if kept away from lush pasture.
- *Handling* - considered one of the milder, more biddable breeds of pony; potentially easy to train. Unhandled animals can be flighty and alarmed by enclosed spaces. Non-breeding and single sex herds are usually easier to manage.
- *Size* - variable, but the heavier set, smaller pony with short ears, a small head and solid-looking leg bones is often considered to be the most hardy.
- *Summer* - it has a high water requirement and may need some shade to escape flies.
- *Worming* - used in extensive systems, Dartmoors may be able to break parasitic cycles by moving from area to area. However, regular worming may be necessary and is generally recommended for animals kept in relatively small areas.
- *Teeth* - genetic abnormalities in individuals can manifest themselves in deformities of the jaw (undershot or overshot), which can reduce grazing effectiveness and increase tooth wear.
- *Latrine sites* - on extensive sites it dungs in an ad hoc fashion; on smaller sites, the Dartmoor tends to use defined latrine areas.

Grazing Characteristics - a breed suitable for grazing poor quality forage.

- *Strongly grass based* - favours both coarse and fine grasses including Cocksfoot, Fescues & Purple Moor-grass. Less keen on Bristle Bent-grass and False Oat-grass.
- *Sedges and Rushes* - readily eats smaller sedges and Soft Rush.
- *Browsing ability* - readily eat Brambles and if short of grass, may switch to feeding almost entirely on Gorse. Browse Heather tops if pushed. Some suppression of Willow, Birch and Blackthorn regrowth.
- *Coarse herbs and flowering plants* - does not normally select flowering plants, but may occasionally nibble Thrift leaves or Primroses.
- *Adventurous* - pushes into and opens out areas of dense vegetation, including Bramble and Bracken.
- *Sea cliffs* - the Dartmoor has a poor track record on unfenced sea cliff slopes. Incidents may be due more to flightiness, background and social group fighting than lack of sure-footedness or caution.

Interaction with the Public - unhandled ponies will generally avoid the public, but may be extremely flighty in the presence of dogs.

- *Friendliness* - untrained, unhandled Dartmoors will tend to keep their distance from people.
- *Reaction to dogs* - variable. Unhandled animals reared on the moor may be particularly inclined to flightiness or aggressive behaviour if introduced directly to a site with public access. A degree of socialisation on 'safe' sites may be necessary for moor-bred animals.

DONKEY

Summary

Although far less hardy than UK native ponies, the donkey nonetheless thrives on poor forage. It also appears to graze and browse in a way which is much sought after in many nature conservation situations. Accordingly, the donkey deserves due consideration for use, particularly in sheltered locations and where appropriate accommodation is available.

Hardiness – thrives on poor forage, but not very hardy and therefore unsuitable for use on sites with wet ground or damp climates.

- *Thrives on poor forage* – has a lower food requirement than an equivalent sized pony.
- *Fares well on sunny, sheltered lowland sites* – but desert origins have not led to physical adaptations appropriate to the wet or windy conditions of northern Europe.
- *Shelter* – may not cope well with heavy rain. Its coat has no natural water repellent and soon becomes saturated. This, coupled with low temperatures can lead to pneumonia, particularly in foals or if an animal has lost condition or is stressed. Requires year-round access to housing on exposed sites or in wet or fly-ridden regions. Housing essential during autumn/winter months.
- *Intelligent* – with long memory. Quick to take advantage of any food/ shelter offered by people.

Physical Attributes & Husbandry – requires regular routine husbandry.

- *Hooves* – fast-growing; vary with terrain and feed. Unless kept on a hard, dry, abrasive substrate, feet likely to need regular trimming (every two/three months).
- *Surefooted* – on difficult or uneven terrain.
- *Water* – similar high water requirement to ponies and also fastidious about water quality.
- *Laminitis* – at risk on improved or lush pasture.
- *Handling* – fairly placid and less powerful than ponies so generally not as potentially hazardous to handle. However, not always biddable and well able to deliver a damaging kick or bite.
- *Parasites* – can suffer from worms and lice. Lungworm readily occurs and can cause serious illness in horse 'companions'. However, regular worming can eradicate this risk.
- *Teeth* – until it gains its adult teeth after 3 years a donkey will not have good 'bite' and may need extra feed to maintain condition. When older teeth may need rasping annually to enable effective feeding.
- *Long-lived* – commonly reach 30-40 years of age; some have been known to reach 60.
- *Insects* – disturbed by biting insects, but may adapt behaviour to avoid them, taking shelter by day and grazing by night.



Matthew Oates

Grazing Characteristics – good grazing and browsing ability on a large range of species.

- *Grasses* – readily eats a wide range of fine and coarse grasses, including tall, rank species. Dislikes Purple Moor-grass or the habitat in which it grows.
- *Sedges and rushes* – readily consumed. Takes Wood Small-reed, Sand Sedge, Blunt-flowered Rush, Soft Rush and Common Reed.
- *Herbs* – eats many flowering plants, including the flowers of Hemp Agrimony, Creeping Thistle and Hawkweed; also Spear Thistle, once frosted. Takes many flowering plants, but not Bluebells, Devil's-bit Scabious and heathers.
- *Browsing* – readily browses year round, taking the leaves, buds and seedlings of most species of tree and scrub, and the leaves and fruits of Roses and Brambles. Strips bark. May destroy regrowth on newly laid hedges. As much of 20% of a donkeys diet may comprise browse material.
- *Impact of social behaviour* – ranges widely to forage, probably travelling further each day than native ponies. Enjoys rolling in dust/sand; uses favoured spots on a regular basis.
- *Poaching* – minimal, as the donkey avoids mud.

Interaction with the Public – suitable for use on sites where public access is controlled.

- *Reaction to people* – generally placid. Ignores people unless fed titbits, then may become a bit pushy and aggressive. Stallions can be unpredictable and may be unsuitable on public access sites.
- *Reaction to dogs* – likely to see-off pestering dogs, 'Jennys' with foals and Jacks are likely to be quite aggressive. Dislikes and chases foxes; sometimes kept with sheep for this purpose.
- *Public appeal* – friendly and perceived as less threatening than ponies or cattle. Maintains condition well and has a thick, all covering coat for most of the year.

EXMOOR

Summary

A hardy native breed of pony, the Exmoor appears to have inherent capability and intelligence to do well on conservation sites, particularly when kept in extensive situations. As a rare breed, it also has high aesthetic appeal and is well worth consideration for use on sites with public access.

Hardiness - possibly the hardest of British breeds.

- *Maintains condition well* - mature non-breeding animals can do well on poor forage; less likely to need supplementary feeding. Breeding animals and young stock (< 3 years) may need extra feed in severe weather or when keep is short.
- *Can withstand extreme weather* - very tolerant of rain, snow and cold winds, but needs to be able to stand in the lee of some form of shelter.
- *Intelligent* - particularly in semi-natural, free-ranging habitats. For example, able to break ice on frozen drinking water.

Physical Attributes & Husbandry – a breed with characteristics well suited to extensive grazing situations.

- *Good hooves* - strong & slow growing, able to cope with wet conditions. Unlikely to need trimming if areas of rock or stony ground present.
- *Laminitis* - rare if kept away from improved or semi-improved grassland
- *Handling* - animals which are unbroken or not head collar trained are extremely strong and difficult to handle. Consequently, grazing schemes involving semi-feral Exmoors work well until an animal needs to be treated and proper handling facilities should be in place.
- *Summer* - needs shade and has a high water requirement in hot weather. Sweet itch can occur; once a pony has the condition, it requires daily treatment during summer months for the rest of its life.
- *Worming* - Research (Baker, 1993) indicates if used in extensive systems, Exmoors may be able to break parasitic cycles by moving from area to area. However, regular worming may be necessary and is generally recommended.
- *Appearance* – medium sized, with individuals' colouring ranging from light to dark brown, with a mealy muzzle and pale around the eyes.



Matthew Oates

Grazing Characteristics - a highly suitable breed for grazing low quality keep on nature conservation sites.

- *Strongly grass-based* - prefers finer, richer grasses, but will also take coarse grasses, notably rank Tor-grass.
- *Rushes & Sedges* - readily consumed with grasses, including Saw Sedge.
- *Browsing* - limited role as browsers depending on general food availability, except Gorse and Sloe. Will strip bark off broad-leaved trees and shrubs (including gorse) in winter when short of forage.
- *Coarse herbs* - for example, thistle buds and Hemp Agrimony are readily consumed.

Interaction with the Public – worthy of consideration for use on sites with public access.

- *Friendliness* - unless deliberately trained, inclined to keep away from people and it can be difficult to get within 25 metres of an unhandled pony.
- *Reaction to dogs* - generally oblivious, although adults are capable of seeing off or attacking dogs if pestered. Young Exmoors are likely to panic and run off.
- *Public appeal* - maintains condition well, so can be useful on sites where public perception of animal welfare is important.

Fell

Summary

One of Britain's hardiest native pony breeds, the Fell pony originates from the fells of Cumberland and Westmorland, and from Northumberland and the Scottish border. Hardly used in conservation programmes (2004), its endurance, adaptability and intelligence are likely to prove extremely useful in a range of grazing situations.

Requiring only routine husbandry, the Fell thrives on rough grazing. It should perform particularly well on sites in extensive situations. It is ideally suited to grazing a variety of lowland (< 650 feet) and upland (650 - 2,500 feet) habitats. Thrifty feeders, upland herds maintain themselves on sufficient low quality forage in exposed conditions.

A 'breed at risk' (D.E.F.R.A.), it is categorised as 'locally adapted', 'distinctive', 'rare' (Traditional Breeds Incentive) and 'endangered rare' (Rare Breeds Survival Trust). There are fewer than 500 registered adult females, relatively few male bloodlines and inherited Fell Pony Foal Syndrome has been identified.

Physically appealing throughout the year, the Fell deserves consideration for use on public access sites.

Hardiness

Possessing exceptional hardiness, a naturally 'well covered' pony adapted to free-ranging grazing schemes.

- **Thrifty** - Mature non-breeding animals, but often not foals, maintain condition year-round on sufficient poor-quality forage. In times of food shortage, growth is delayed with no detrimental effect. Able to safely lose up to one-third of body weight in winter.
- **Supplementary feed (hay)** - May be required by youngstock (< 3 years), and occasionally by breeding mares or whole herd: (a) in severe winter weather, (b) in late winter. Possibly required at sites where forage is primarily browse material.
- **Exposure and extreme weather** - copes well on exposed upland sites. Natural shelter (Eg Bracken, Gorse, trees, gullies) sufficient throughout the year. Withstands temperatures as low as -20 degrees C. Coat adapted to harsh mountain environment - snow, heavy rain, cold winds; it prevents snow from melting on back.
- **Adaptable** - cautious. Will seasonally exploit whole of available area. Bloodlines that readily switch to browse in winter maintain condition most successfully.
- **Intelligent** - varies diet according to the season. Actively seeks 'optimal' grazing throughout the



David Anthony Murray

year. Finds the best available shelter.

- **Resourceful** - in snow will dig for forage. Able to break thin ice on frozen drinking water. Will find shelter in hollows. Some individuals take advantage of food and shelter offered by people.
- **Surefooted** - surefooted on difficult, steep or uneven terrain. Comfortable negotiating rocky sites, outcrops and limestone pavement.
- **Adventurous** - Ranges widely about available area. Grazes beyond 2,500 feet above sea level in summer. Takes careful, sensible approach to exploring hazardous terrain. Pushes into and tramples own path through Bracken.

Physical Attributes and Husbandry

Well suited to extensive grazing situations. Low-maintenance breed, requiring only routine husbandry throughout year. Less intervention is necessary with sufficient poor quality keep away from rich (improved or semi-improved) pasture.

- **Background** - descendants of Europe's wild Celtic pony, which migrated to Britain before 500 BC. Recognised since Roman times as a pony type indigenous to Britain.
- **Size** - medium-sized, heavier set breed with well-muscled quarters, weighing approximately 350 - 450 Kg. Ideally 13.2 hands, but up to 14.0 hands (142.24 cm) high.
- **Appearance** - The only colours are black, brown, bay and grey. Solid-looking, strong legs with plenty of flat bone and fine, straight, silky feathering which can extend from the back of the knee to the heels and around the feet. Long, straight mane and tail. Fine summer coat and thick winter coat.
- **Temperament** - non-flighty, curious breed. Generally placid, particularly if kept in family or social groups, although some individuals are excitable and spirited.
- **Handling** - biddable. Potentially easy to train. With regular contact, becomes approachable. Usually has 'affinity' to humans. Unhandled individuals may be difficult to pen. Grazing schemes involving semi-feral Fells need handling facilities in place.
- **Hooves** - strong, good-sized, open, round, hard hooves of characteristic blue horn. Slow-growing,

exhibiting seasonal variation. Minimal foot care necessary for free-ranging ponies on poor keep with access to hard ground. Likely to require regular trimming on softer or wetter sites or better keep.

- *Laminitis* - rare on upland sites and away from improved or semi-improved grassland.
- *Seasonal requirements* - Usually copes in situations with little shade. Needs shade to escape lowland flies and hot weather.
- *Containment* - respects simple fences provided pony has adequate resources within contained area. Generally responds well to electric fencing. Usually respects wide ditches but may jump narrow ditches.
- *Worming* - recommended. May be necessary with lowland herds. Necessary for animals kept in relatively small areas. Ponies may break parasitic cycles by moving from area to area.
- *Other parasites* - can suffer from lice.
- *Insects* - some tolerance of biting insects. May be affected by bot fly, flat fly, Blandford fly or ticks. Lowland individuals occasionally suffer sweet itch in hot weather; unlikely to occur in upland herds.
- *Teeth* - very occasionally suffers jaw deformity, reducing grazing effectiveness. If grazed continuously on sandy sites, may suffer tooth wear.
- *Longevity* - commonly lives 20 - 22 years on the fell, 25-30 years if on 'good' grazing after 20. Excellent general health. Good healing ability of cuts and wounds if kept on unimproved vegetation.
- *Fell Pony Foal Syndrome* - believed to be a recessive genetic mutation that impairs the foal's immune system. A foal surviving beyond 6 months cannot have FPFS. Scientists hope FPFS will not threaten the breed's long term survivability.
- *Water requirements* - prefers rainwater to tap water. Refuses stagnant water unless no alternative exists.

Grazing Characteristics

A suitable maintenance grazer: (a) of poor quality forage on nature conservation sites, (b) on a variety of habitats. Thrives on extensive rough grazing. Good browsing ability on a large range of species.

Upland herds graze heathland, upland without Heather, Purple Moor-grass and rush pasture, blanket bog, acidic grassland, calcareous grassland, basin mire, limestone pavement and upland hay meadow.

Lowland ponies graze limestone grassland, reseeded arable land, wet grassland, permanent lowland pasture, wet woodland, scrub and lowland meadow.

- *Favourable sites* - grazes heathland and moorland. Able to graze wetland sites but may not utilise areas with extensive surface water. May be

advantageously employed on limestone grassland and, during driest part of year, on wet heathland. Probably unsuited to sand dune.

- *Fine grasses* - strongly grass-based. Prefers fine, short, sweet grasses, and clovers: Fescues, Bent-grass species, Mat-grass, Meadow-grass, Broad leaf Pasture-grass and Yorkshire Fog.
- *Coarse grasses* - consumes longer and coarser grasses: White Land, Purple Moor-grass, Cocksfoot-grass, Timothy, Rye-grass and Cotton-grass, especially during autumn and winter, when short grasses are unavailable.
- *Rushes and sedges* - consumes available rushes (Common Rush, Soft Rush) with grasses and when grasses are unavailable, preferring new growth in late April, following late March burn. Takes sedges, especially when snow covers the ground, and Common Reed in spring.
- *Browsing (upland)* - browses deciduous trees - Hazel, Ash, Beech, Hawthorn - in spring, summer and autumn. Will take available autumn Raspberry, Black Currant and Blackberry twigs, leaves and fruit, Bramble and, especially during frosts, Gorse. Will occasionally strip bark from Ash, Oak, Hazel, Blackthorn and Sycamore, mostly in winter. Helps suppress shrub and tree regrowth. Could possibly help to control scrub development.
- *Browsing (lowland)* - browses shrubs and trees in the absence of other forage. Eats Bramble and Gorse throughout the year. Will strip bark from Beech, Ash, Holly, Elm, Willow, Turkey Oak, Apple and conifers, especially during winter. Will consume Hawthorn, Ash and Holly shoots in spring and summer. Also eats Blackberry leaves and fruit, Lime leaves and twigs and Blackthorn.
- *Herbs* - Takes seasonal coarse herbs: Spear and Creeping Thistle tops, Dandelion, Yarrow, Ribwort, Common Nettle tops and flowers, Willow Herb, Cow Parsley, Hogweed, Vetch species.
- *Other flowering plants* - seasonally selects wildflowers with grasses and when grasses are unavailable: Cowslip, Red and White Clover, Cuckoo Flower, Broom, Common and Oxeye Daisy and Sheep's and Common Sorrel. Broad-leaved Dock may be a last resort in winter.
- *Dislikes* - Bracken, Ragwort, Buttercup species, Foxglove, Honeysuckle, Bluebell, Primrose, Bellflower, Field and Wood Geranium. Generally refuses Heather but eats coarse grasses amongst it. Might browse Heather in a hard winter. Might usefully graze 'sensitive' Heather sites.
- *Harmful eating habits* - may occasionally browse poisonous Bracken fronds and wilted Ragwort. On sandy sites may ingest sand.
- *Other* - may eat mosses.
- *Impact of social behaviour* - ranges widely to graze. Uses favoured locations regularly. Adapts diet to include foods not previously encountered.

- *Latrine areas and dunging behaviour* - tends to use defined latrine areas on smaller sites. Avoids grazing dunging areas. Herds kept extensively will not graze near latrine areas, thus avoiding infestation by worms. Stallions are generally more selective than mares at choosing latrine areas.

Interaction with the Public

Suitable for use on sites where public access is supervised, pony condition is monitored and problems are addressed swiftly. Unhandled animals may be suitable for use on public access sites if sufficient area is available to allow avoidance of dogs.

- *Friendliness* - Generally amiable and inquisitive. At ease with people after little handling. Untrained, unhandled ponies will generally avoid the Public.
- *Public appeal and perception* - few people know of the breed's existence. A breed which is viewed positively and which is regarded as friendly. Attractive, especially in winter due to long coat, mane and feathering. Maintains condition well

throughout year, so could be useful on sites where public perception of animal welfare is important.

- *Reaction to People* - on large sites generally ignores or avoids people, particularly if unhandled. Individuals and bachelor groups may keep a cautious distance if unused to humans. May become pushy or aggressive if given titbits. Some stallions can be unpredictable and may therefore be unsuitable for public access sites.
- *Reaction to dogs* - variable reaction. Likely to see-off pestering dogs. May approach to investigate but is unlikely to follow. Unhandled animals are generally not bothered by dogs on public access sites, but may be extremely flighty. Fell-bred animals may need socialisation on 'safe' sites. Stallions in a breeding group may become aggressive if threatened. Mares with foals may become protective if threatened, and attack pestering dogs. May trample dogs that get too close.
- *Reaction to sheep and cattle* - usually unconcerned or oblivious towards adult cattle and sheep. Young colts might become aggressive towards lambs. May steal winter feed intended for cattle / hefted sheep.

Sites where Fell ponies are in use and contacts

Site name	Habitat	Details	Contact
Heald Brow Lancashire	Limestone pavement, grassland, lowland fell and scrub = 15 ha.	1 mare (11Yr) and 2 geldings (3 Yr), rotation grazing on 3 lowland (< 18 m) sites with cattle and sheep since 1995. Rotation maintains open glades and ancient limestone	Roger Cartwright Conservation Grazer Breeder
Hazelwood Hall Lancashire	Limestone grassland, wood pasture and parkland = 2 ha.	grassland and consolidates scrub and bracken clearance. Prefer grasses: Fescues, Bent-grass, Cocksfoot-grass, Timothy, Rye-grass. Take Juncus Sp, nettles and thistles.	01524 701115
Hale Moss Cumbria	Lowland fen, wetland hay meadow and wood pasture = 4.5 ha (part Countryside Stewardship Scheme).	Browse Holly, Gorse (winter), Bramble (spring). Eat Ash leaves. Dig up nettle roots (winter). React well to Public; may show off. Sweet itch is aggravated by maritime climate / sheltered woodland pasture. Breeding herd.	
Titchbourne and Uppermead; Langley Wood Wiltshire English Nature	Wet lowland meadow (S.S.S.I.) = 15 acres. Ancient woodland (N.N.R.).	1 gelding (15 Yr), grazing of both sites on own and with cattle, goats, Hebridean sheep, Arab gelding for 1.5 years. Great positive impact upon sites. Prefers coarse and fine grasses, rushes and sedges (Jan - Dec), Bramble and young Willow (autumn - winter). Amiable; easy to handle.	Judi Elliott Assistant Site Manager 01980 620485
Other contacts			
Linnel Wood Northumberland	Improved lowland pasture and upland hay meadow. L.F.A. = 150 acres.	Approximately 30 ponies (now 15 mares, 3 geldings, 1 stallion, colts and youngstock) aged 1 - 28 grazed with sheep / cattle since 1900. Rotation graze lowland (200 m) and upland (300 m) sites. Thrive on unimproved fell.	Robert Charlton Breeder 01434 673262
Melkridge Common Northumberland	Unimproved fell without Heather, Purple Moor-grass, rush pasture and heathland on whinstone. L.F.A. / partly S.S.S.I. = 100 acres.	On enclosed site may suffer laminitis, grass sickness, sweet itch. Prefer fine and some coarse grasses (White Land) and winter rushes. Strip bark: Holly, Ash, Poplar. Oak. Receive hay in severe weather. Amenable. Breeding herd.	
Shap Cumbria	Limestone fell without heather < 100 acres.	8 mares and foals grazed since 1960. Strip bark in winter. Positive interaction with humans (coast-to-coast footpath passes through site). Breeding herd.	Barry Mallinson Breeder 01931 716769

HIGHLAND

Summary

The Highland is one of the larger, heavier breeds of native pony. Very hardy, having evolved in the cold exposed uplands, it thrives on extensive rough grazing. Currently little used in conservation, the strength and docile nature of the Highland pony has made it a good working animal for deer carcass and timber extraction.

Hardiness - a hardy and resourceful breed.

- *Maintains condition well* - a naturally 'well-covered' pony.
- *Supplementary feed* - easily becomes over fat, so health benefits from some loss of condition during winter months. Additional feed may be necessary in very bad weather, particularly breeding mares.
- *Resourceful* - in snow will dig for forage; in exposed conditions, find shelter in hollows.
- *Hardiness* - copes well with extremes of climate in exposed upland areas. Able to withstand very low temperatures, high winds and snow.
- *Insects* - not unduly bothered by bot flies or horseflies, although chestnut coloured individuals seem to suffer more; this may be due to thinner skins.

Physical Attributes & Husbandry - a hardy, easy to keep breed, with much potential for use in conservation grazing.

- *Hoof care* - good hooves with few problems. Trimming necessary if kept on soft ground. Some individuals have extremely hard feet requiring little attention.
- *Laminitis* - can be prone to this on richer keep.
- *Handling* - generally very placid and trainable; appears to have an 'affinity to humans'.
- *Summer* - copes in situations with little shade. Sweet itch can occur, but not common.
- *Appearance* - common colours are dun and grey, some with an eel stripe, dark points and zebra stripes on the legs.



Les Street

Grazing Characteristics - potentially suitable for conservation grazing, particularly in extensive systems and where the climate can be more extreme. Little utilised in conservation so far.

- *Strongly grass based* - prefers areas of short sward, particularly where mineral-rich (e.g. riverside & coastal grasslands), feeding less on longer, tussocky grasses. On dune systems, grazes Marram Grass, even in winter when coarse and brown, shifting the community balance towards shorter grasses. Takes Purple Moor-grass and Fescues.
- *Limited role as browsers* - appear to take very little; some animals may develop a hairy top lip if browsing Gorse. May browse Hawthorn in winter and sometimes Holly.
- *Grazing in water* - will graze areas with extensive surface water and wade into quite deep water to forage for fresh bite.
- *Coarse herbs* - ignores or takes very little Heather. May take nettles in winter, including digging out the roots.
- *Latrine areas* - tends to use defined dunging areas, particularly stallions.

Interaction with the Public - a placid breed, suitable for sites where public access is supervised.

- *Friendliness* - at ease with people. Generally placid and with a small amount of handling when young, easy to train. May become aggressive if given too many titbits.
- *Reaction to dogs* - not afraid of dogs and will generally ignore them. Stallions in a breeding group, or mares with foals may become protective and attack pestering dogs.
- *Public appeal* - maintains condition well so tends to look good all year round.

KONIK POLSKI

Summary

An extremely hardy breed of good constitution, the Polish pony is well suited to extensive grazing within nature conservation situations. Although currently within the UK the breed is used in wetland systems, its adaptability and attributes are likely to be useful on other habitats.

Hardiness – extremely hardy and adaptable.

- *Extremely hardy* - able to out winter in severe weather conditions with temperatures as low as minus forty degrees.
- *Intelligent* – well able to make sensible decisions within the choices available on a particular site, thus allowing the breed to vary diet according to season, seek the best shelter and maintain good condition throughout the year.
- *Compensation of growth* – primitive feature which enables breed to delay growth in times of shortage, with no detrimental effect to overall growth pattern.
- *Adaptable and active* – cautious and intelligent. Will carefully explore and seasonally exploit whole of available area.

Physical Attributes & Husbandry – within an appropriate grazing system is likely to have few husbandry requirements.

- *General health* – excellent, with good healing ability of cuts and wounds.
- *Temperament* – generally placid and curious, particularly if kept in family or social groups. Individuals and bachelor groups may keep a cautious distance if unused to humans.
- *Hooves* – strong and slow growing. Hoof treatment rare, particularly if hard, dry ground available.
- *Handling* – calm temperament but highly intelligent, thus unhandled individuals may be difficult to pen. Extremely strong and athletic; sturdy, high handling facilities required.
- *Parasitic burdens* – herds kept extensively will dung on definite latrine areas and will not graze these areas, thus avoiding infestation by worms. Research into worm burdens of this breed currently underway.
- *Laminitis* – unknown within the breed; able to put on considerable condition in the summer and lose up to one-third of body weight in winter with no ill effect.
- *Containment* – respects the simplest of fence provided it has adequate resources in the area within which it is contained. Respectful of wide ditches, but may well jump narrow ones.
- *Background* – a descendent of the ancient Tarpan horse; the Konik Polski has been reconstituted using Przewalski blood.



- *Appearance* – generally dun, with a black eel stripe along the spine, black mane and tail and black horizontal stripes on the legs.
- *Size* – approximately 12-13hh. Solid build, weighing around 500kg.
- *Flies* – tough, thick skins; highly tolerant of biting insects.

Grazing Characteristics - well adapted to making appropriate food choices in extensive areas.

- *Browsing* – readily browses a range of species, including Elm, Willow, Oak, Hawthorn, Brambles and Wild Privet on coastal dunes. Alder and Birch generally ignored. May actively seek wood if other browse material not available. Some individuals will take mature trees in preference to young scrub. Important part of diet in year-round grazing systems. Effectively controls the invasion of scrub into open habitat.
- *Grazing* - during spring/summer, prefers grasses. By September, takes more varied diet if available including sedges, rushes, seed heads of thistles, and reeds. Digs up and eats roots/rhizomes in winter, including those of Stinging Nettle and Common Reed.
- *Behavioural impact* – good learning ability; gradually adapts diet to include new food items not encountered previously.

Interaction with the Public – completely unhandled individuals may be suitable for public access sites.

- *Reaction to people* - a naturally placid and curious breed which may become a problem on sites with public access although if individuals have had no associations with humans at all, they will generally ignore people.
- *Reaction to dogs* – very curious and likely to follow and want to investigate.

Sites where Polish ponies are in use & contacts

NEW FOREST

Summary

Originating from the New Forest area, ponies of this native breed are generally hardy and thrive well on poor quality forage. The majority of New Forest ponies from a free-ranging background are well suited to grazing wildlife habitats, particularly heath and mire systems.

Hardiness - a hardy native breed, with some bloodlines producing ponies better adapted to a free-ranging existence than others.

- *Condition* - generally maintains condition well, although the breed has a natural tendency to lose a little condition in late winter/early spring.
- *Influence of genetic background* - those animals which readily switch to browse in winter (Holly & Gorse) and which develop the New Forest 'moustache' (hairy top lip), maintain condition most successfully. Genetic background may also affect coat and jaw development (see below).
- *Supplementary feed* - adult mares, stallions and geldings survive well on poor forage throughout the year, although may require supplementary feeding in extreme weather. Young animals and some breeding mares may require more regular feeding in late winter. Eat leaves, including dead ones, for minerals brought up from the sub-soil.
- *Hardiness* - tolerant of rain, snow and wind, but requires some form of natural shelter. Shade important in summer.

Physical Attributes & Husbandry - a breed well-adapted to free-ranging grazing situations.

- *Good hooves* - small, strong and slow-growing. Minimal trimming if on hard/stony ground.
- *Laminitis* - very rare away from improved pasture.
- *Handling* - a relatively placid breed, although some individuals excitable and nervous. With time and a calm approach, most are easily handled and headcollar trained. Less handled animals can generally be penned or boxed using food.
- *Insects* - not unduly affected by bot fly, flat fly, Blandford fly or ticks. Occasional individuals suffer sweet itch.
- *Teeth* - occasional individuals suffer jaw deformities (overshot or undershot jaws), thus reducing grazing effectiveness. Ponies grazed continuously on sandy sites (heathland or dunes) may suffer tooth wear.
- *Acorns* - some ponies develop a taste for acorns, with dire consequences.
- *Appearance* - bay, chestnut or grey in colour.
- *Background* - Arab, Thoroughbred and other bloodlines introduced have resulted in a modern breed which is variable in size, conformation and hardiness.



Matthew Oates

Grazing Characteristics - a good grazer of low quality keep, particularly heath and mires.

- *Grasses* - prefers grasses of short swards and of wet flushes. Most coarse grasses taken, including Cocksfoot, Purple Moor-grass, Tor-grass, Wood False-brome and Tufted Hair-grass. Common Reed is also favoured. Less keen on Fescues. If pushed will take brown, rank Tor-grass in winter, and effectively break-up established litter layer.
- *Rushes and sedges* - primarily the smaller, finer species are selected, but also Soft Rush and Pond Sedge. Does not graze Saw Sedge.
- *Coarse herbs* - may eat large coarser herbs such as Rosebay Willowherb and the heads of old Knapweed and Thistles. Takes little Heather unless no other suitable forage available.
- *Browsing* - takes cut or younger (<15 years) Gorse and Holly, Blackthorn shoots, Broom and a small amount of Bracken. Sometimes Bramble scrub. Little bark stripping except Dogwood in winter and occasionally Elder and Oak.
- *Latrine sites* - free-ranging ponies often prefer to dung on habitat less favoured for feeding (e.g. heath). Where less favoured habitat is adjacent, studies show that animals may move up to 20m onto heathland, enriching and potentially transforming it to grassland. On large areas of short grass, dunging tends to occur in an ad-hoc fashion.
- *Wetlands* - may not utilise areas of sites with extensive surface water.

Interaction with the Public - suitable for supervised public access sites, where condition is monitored and problems addressed swiftly.

- *Friendliness* - generally amiable and inquisitive. May pester and become aggressive if regularly given tidbits.
- *Reaction to dogs* - generally ignore. May approach to investigate; may run from an aggressive dog.
- *Public appeal* - generally popular, although its tendency to lose some condition in late winter can cause concern.

SHETLAND

Summary

The smallest of the British native pony breeds, originating from the wet and windswept Shetland Isles. Generally placid and surefooted on steep, dangerous terrain, the Shetland pony is well suited to graze low quality keep as it maintains better health on a lower plane of nutrition.

Hardiness - known to be a very hardy pony breed.

- *Maintains condition well* - thrives on poor forage throughout the year with loss of condition being rare.
- *Tolerant of exposed conditions* - copes well on exposed cliffs and moorland. Has a double coat in winter; sleek in the summer.

Physical Attributes & Husbandry - docile and of good health when kept on unimproved vegetation.

- *Hooves* - strong & slow growing. If not fed on concentrates, little foot care is likely to be required on sites with hard, stony ground. In softer or wetter conditions regular foot trimming may be necessary.
- *Laminitis* - prone to this on improved and semi-improved grassland or where there are seasonal flushes of rich forage. Geldings particularly at risk. In some cases mares have been kept in foal to maintain a lower plane of nutrition.
- *Handling* - a non-flighty breed, generally inclined to be docile and sedate, although also renowned as a very cheeky, which is inclined to kick or bite. With regular contact and occasional inducements (e.g. a bucket of pony nuts), should become approachable and easier to handle. Forms close associations and moves as a group, which aids daily checks and penning. If kept in larger groups (15+) may be harder to approach and manipulate.
- *Summer* - has a high water requirement and a need for shade in hot weather. Occasional individuals may suffer from recurring sweet itch.
- *Containment* - generally respond well to the use of electric fencing. Some individuals may be 'escape artists' aided by their small size.
- *Insects* - not unduly bothered by flies.
- *Surefooted* - reliable on rocky outcrops and cliff tops.
- *Appearance* - small, hairy in winter and demonstrates the largest range of colours of all pony breeds including bay, black, grey and piebald.



Matthew Oates

Grazing Characteristics - a breed suited to a wide range of habitat types, including cliffs, moorlands, sand dune and wetlands.

- *Preference for fresh, accessible swards* - although will take both fine and coarser vegetation. Keen on Purple Moor-grass and Cocksfoot grass. Dislikes False-oat Grass. In winter Purple Moor-grass grazed in preference to Heather.
- *Enthusiastic browsers particularly in winter* - bark strips and eats regrowth of many deciduous species: Hazel, Blackthorn, Willow, Alder, Elm, Blackthorn and new Gorse growth. Less interested in Birch.
- *Rushes and sedges* - readily eats Soft Rush and the finer-leaved sedges.
- *'Pingo' and open water grazing* - will wade into water to chest height to graze on marginal vegetation causing little damage to bank sides.
- *Coarse herbs and flowering plants* - may take Thistles, Thistle tubers, and Hemp Agrimony. Generally does not select flowering plants; it may take some heather when pushed.
- *Dunging behaviour* - apart from stallions, tends not to use latrine areas but to dung on a more ad hoc basis; this may be site specific.
- *Seaweed* - willing to eat seaweed.

Interaction with the Public - Generally good on sites with public access but can become bullying and aggressive.

- *Friendliness* - ignores people unless encouraged by titbits; can become quite aggressive and may 'mug' passers-by.
- *Reaction to dogs* - generally unconcerned by dogs. May kick or bite dogs which get too close.
- *High public appeal* - maintains condition well and has an appealing 'woolly' appearance during winter months. Small, so not as threatening as larger breeds may be.

Welsh Mountain Pony (Section A) Semi-Feral Hill Pony



Summary

Centuries of harsh conditions have ensured the sound constitution of the Welsh mountain ponies. The Welsh Mountain (Section A) semi-feral ponies are now in danger of extinction in their natural habitat; having formed the basis of the Welsh Pony and Cob Society Stud Book in 1901. The importance of retaining these genetic lines is imperative to the breed. Proven conservation grazers, they are vital to the landscape of upland Wales and other nutrient poor lowland areas including designated conservation areas. This native breed is also vital for our culture and historical heritage. Small (under 12hands) hardy and lightweight, Welsh Mountain (Section A) semi-feral hill ponies are thrifty feeders that can thrive on poor quality forage; they eat coarser grasses rather than flowering plants and rarely eat heather, which is a priority habitat in both upland and lowland Wales. Their grazing habits can encourage rare flower species by opening up overgrown areas. Non semi-feral ponies brought from improved grazing may take time to adjust to the inferior diet of conservation sites, unlike hill bred ponies. It follows that they will require more supervision than their upland cousins at least in the early stages.

Hardiness

A hardy and adaptable breed, which can thrive in the harshest conditions.

- **Thrifty** – able to thrive in poor conditions, mares may lose condition in late pregnancy, monitoring advisable.
- **Supplementary feed** – welfare regulations recommend supplementary feeding when needed, ponies will normally adapt to seasonal grazing.
- **Hardy** – their thicker winter coat allows them to withstand exposure to the harsh weather conditions, will predict storms and blizzards a day before and find suitable shelter. Prefers frost and snow, to continuous wet conditions.
- **Adventurous** – within recognised territory, will graze extensively, but will heft on hill, when there is pressure from other herds and stallions.

- **Adaptable** – ponies bred on their domain adapt easily to conditions, marsh ponies are a classic example of this where from birth they learn to live with tidal conditions and develop a tolerance to salt contents of the plants.
- **Surefooted** – owing to their surefootedness and intelligence they will safely explore dangerous conditions such as bogs and steep rocky terrain.

Physical Attributes and Husbandry

A lightweight hardy breed, requiring only infrequent routine husbandry.

- **Handling** – Welsh Mountain (Section A) Semi-Feral-Hill Pony are normally only handled when weaning foals, for worming and any other necessary welfare.
- **Size** – weighing approximately 250kg at maturity.
- **Background** – evolved in the Welsh hills for thousands of years making them hardy and fit. The Pony Improvement Societies made sure that the 1908 Commons Act requiring the removal of scrub stallion from commons was carried out, resulting in a marked improvement of the breed.
- **Appearance** – any colour, except piebald and skewbald.
- **Hooves** – round dense hooves.
- **Laminitis** – virtually unheard of in hill ponies, can occur on rich pastures.
- **Summer** – High tolerance from biting insects, ticks can be a problem on extensive grazing. Flies do not normally upset ponies on hills. In extreme heat you will see them move in and out of water. Sweet itch almost unheard of.
- **Containment** – Standard fencing is usually adequate, gulleys on the marshes help to contain ponies.

Grazing Characteristics

Good grazing tools that can assist in the control of bracken, gorse and scrub, preventing areas becoming choked by these plants.

- **Grazing** – Young growth of purple moor grass is readily grazed, nutritious but low in minerals. Ponies need access to areas of clean water. On extensive sites they will chose grazing according to the season. They ignore rare plants. On confined sites care must be taken that they have adequate grazing to protect rare plants.
- **Rushes sedges** – prefers young rush, but will eat mature rush when sward is covered by snow.
- **Browsing** – will take some willow or gorse to vary the diet.
- **Dislikes** – old dead herbage.
- **Wetlands** – being comparatively light weight is an advantage on wet and boggy sites.

Interaction with the public

Semi-Feral ponies are rarely handled but are suitable for public access sites, provided there is sufficient scope for them to move away from people and dogs.

- **Reaction to public** – mares with young foals move quickly away. Some ponies are inquisitive and will come close and then move away if approached. On urban sites problems can arise with public feeding ponies.
- **Reaction to dogs** – Ponies perceive a dog as a potential predator, so may move away where they are able to but will defend themselves against an attack by a dog.
- **Public perception** – accepted generally as a graceful and a beautiful breed. Visitors from across the world view and photograph the ponies in their natural environment.

For further information on the semi-feral Section A Welsh Mountain Pony contact:

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Tel: 01970 617501
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Website: www.wpcs.uk.com

For information on 'grazing for wildlife' and for support in sourcing ponies contact:

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Tel/Mobile: 07791 932484
Email: pontcymru@btconnect.com

Website:
www.grazinganimalsproject.org.uk/pont_home

Y Ferlen Fynydd Gymreig (Adran A) Led-wyllt



Crynodeb

Mae canrifoedd o amgylchiadau caled wedi sicrhau cyfansoddiad cadarn y merlod mynydd Cymreig. Mae'r merlod Mynydd Cymreig (Adran A) lled-wyllt bellach mewn perygl difodiant yn eu cynefin naturiol; ar ôl ffurfio sail Llyfr Gre Cymdeithas y Merlod a'r Cobiau Cymreig ym 1901. Mae cadw'r llinellau genetig hyn yn hollbwysig i'r brid. Maent wedi profi eu bod yn borwyr er lles cadwraeth, ac yn hanfodol i dirwedd uwchdir Cymru ac ardaloedd iseldirol eraill â phrinder maetholion gan gynnwys ardaloedd cadwraeth dynodedig. Mae'r brid brodorol hwn hefyd yn hanfodol i'n diwylliant a'n treftadaeth hanesyddol.

Mae merlod Mynydd Cymreig (Adran A) lled-wyllt yn fach (o dan 12 dyrnfedd), yn wydn ac yn ysgafn, ac maent yn fwytafyr darbodus sy'n gallu ffynnu ar borthiant o ansawdd gwael; maent yn bwyta glaswelltau brasach yn hytrach na phlanhigion blodeuol a phrin y maent yn bwyta grug, sy'n gynefin blaenoriaeth yn uwchdiroedd ac iseldiroedd Cymru. Gall eu harferion pori annog rhywogaethau blodau prin drwy agor ardaloedd sydd wedi gordyfu.

Mae merlod heblaw merlod lled-wyllt sy'n dod o borfa wedi'i gwella yn gallu cymryd amser i addasu i ddieta israddol safleoedd cadwraeth, yn wahanol i ferlod a fagwyd ar y mynydd. Mae'n dilyn y bydd angen eu goruchwyllo'n fwy na'u cefnderoedd uwchdirol, o leiaf yn y cyfnodau cynnar.

Gwydnwch

Brid gwydn a hyblyg, sy'n gallu ffynnu yn yr amgylchiadau caletaf.

- **Darbodus** – gallu ffynnu mewn amgylchiadau gwael, gall cesig golli cyflwr tua diwedd eu beichiogrwydd, mae'n ddoeth eu monitro.
- **Bwyd ychwanegol** – mae rheoliadau lles yn argymhell bwydo ychwanegol pan fo angen, bydd merlod fel arfer yn addasu i bori tymhorol.
- **Gwydn** – mae eu cot gaeaf mwy trwchus yn eu galluogi i wrthsefyll tywydd garw, byddant yn rhagweld stormydd a stormydd eira ddiwrnod ynghynt ac yn dod o hyd i gysgod addas. Mae'n well ganddynt rew ac eira na thywydd gwlyb parhaus.

- **Anturus** – ar dir cyfarwydd, byddant yn pori'n helaeth, ond byddant yn swmpo ar fynydd, pan fo greoedd eraill a meirch yn rhoi pwysau arnynt.
- **Hyblyg** – mae merlod a fagwyd ar eu parth yn addasu'n hawdd i amgylchiadau, mae merlod cors yn enghraifft glasurol o hyn gan eu bod yn dysgu byw gydag amgylchiadau llanw o'u genedigaeth ac yn dysgu sut i oddef cynnwys halen y planhigion.
- **Sicr ar eu traed** – oherwydd eu sicrwydd ar eu traed a'u deallusrwydd byddant yn archwilio amgylchiadau peryglus fel corsydd a thir creigiog serth yn ddiogel.

Priodoleddau Corfforol a Hwsmonaeth

Brid gwydn ysgafn, sy'n gofyn hwsmonaeth arferol anaml yn unig.

- **Trin a Thrafod** – Dim ond pan fyddant yn diddyfnu ebolion, ar gyfer dilynryu ac unrhyw waith lles angenrheidiol arall y caiff Merlod Mynydd Cymreig (Adran A) Lled-Wyllt eu trin a'u trafod fel arfer.
- **Maint** – maent yn pwysu rhyw 250 cilogram pan fyddant yn aeddfed.
- **Cefndir** – wedi esblygu ym mryniau Cymru am filoedd o flynyddoedd gan eu gwneud yn wydn ac yn ffit. Sicrhaodd y Cymdeithasau Gwella Merlod y cyflawnwyd Deddf Tir Comin 1908 a fynnodd waredu meirch prysg o diroedd comin, gan arwain at welliant amlwg y brid.
- **Golwg** – unrhyw liw, heblaw brith a choch a gwyn.
- **Carnau** – carnau crwn trwchus.
- **Llid llafnog** – prin iawn y clywir am hyn ymhlith merlod mynydd, ond gall ddigwydd ar borfeydd bras.
- **Haf** – gallant oddef pryfed sy'n cnoi yn dda iawn, gall trogod fod yn broblem ar borfa helaeth. Nid yw pryfed fel arfer yn aflonyddu ar ferlod ar fryniau. Mewn gwres eithafol byddwch yn eu gweld yn symud i mewn ac allan o ddŵr. Bron nad oes sôn am y gosfa felys.
- **Cyfyngiant** - Mae ffensys safonol fel arfer yn ddigonol, mae rhigolau ar y corsydd yn helpu i gadw merlod i mewn.

Nodweddion Pori

Arfaul pori da sy'n gallu helpu i reoli rhedyn, eithin a phrysg, gan atal y planhigion hyn rhag tagu ardaloedd.

- **Pori** – Porir tyfiant ifanc glaswellt y bwla â pharodrwydd, sy'n faethlon ond yn brin o fwynau. Mae angen bod merlod yn gallu cyrraedd ardaloedd o ddŵr glân. Ar safleoedd helaeth, byddant yn dewis porfa yn ôl y tymor. Maent yn anwybyddu planhigion prin. Ar safleoedd cyfyngedig, rhaid gofalu eu bod yn cael digon o borfa i amddiffyn planhigion prin.

- **Brwyn a hesg** – mae'n well ganddynt frwyn ifanc, ond byddant yn bwyta brwyn aeddfed pan fydd tywarch o dan orchudd eira.
- **Pori amrywiol** – byddant yn cymryd ychydig o helyg neu eithin i amrywio'r diet.
- **Anhoffterau** – hen lystyfiant wedi marw.
- **Gwlypdiroedd** - mae bod yn gymharol ysgafn yn fantais ar safleoedd gwlyb a chorslyd.

Rhyngweithio â'r cyhoedd

Prin y caiff merlod lled-wyllt eu trin a'u trafod ond maent yn addas ar gyfer safleoedd mynediad cyhoeddus, lle bo digon o gyfle iddynt symud i ffwrdd o bobl a chŵn.

- **Ymateb i'r cyhoedd** – mae cesig ag ebolion ifanc yn symud i ffwrdd yn gyflym. Mae rhai merlod yn chwilfrydig a byddant yn dod yn agos ac wedyn yn symud i ffwrdd os dynesir atynt. Ar safleoedd trefol, mae problemau'n gallu codi os bydd y cyhoedd yn bwydo merlod.
- **Ymateb i gŵn** – Mae merlod yn tybio bod ci yn ysglyfaethwr posibl, felly efallai byddant yn symud i ffwrdd os gallant wneud hynny ond byddant yn amddiffyn eu hunain yn erbyn ymosodiad ci.
- **Canfyddiad y cyhoedd** – fe'u derbynnir yn gyffredinol fel brid urddasol a hardd. Mae ymwelwyr o ledled y byd yn gweld ac yn tynnu ffotograffau o'r merlod yn eu hamgylchedd naturiol.

Am wybodaeth bellach am y Ferlen Fynydd

Gymreig Adran A led-wyllt, cysylltwch â:

Chymdeithas y Merlod a'r Cobiau Cymreig
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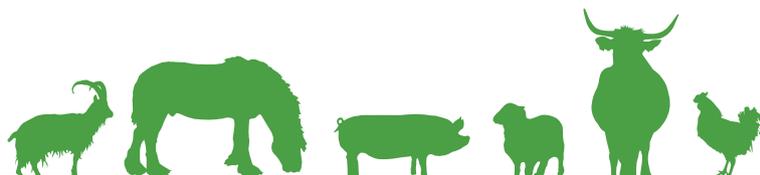
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Breed Profiles:

Goat



Goats in conservation

Foraging characteristics

1. Impact on vegetation structure

Goats do best when they have access to a wide range of plant species and a structurally diverse habitat, as they can either graze or browse. Goats have narrow muzzles and a flexible upper lip which allows them to be highly selective. In addition, they are agile and good climbers, allowing them to access a greater range of forage than sheep. Goats graze a sward to a typical 6cm height (3cm for sheep), but browse and graze to approximately 2 m with ease, by going bipedal and climbing.

In grass, tall herb and scrub mosaics grazed by sheep, the first two are targeted; where just goats are kept, the grass layer is somewhat ignored but the scrub and tall herb layers are targeted instead. However, as goats can be more selective than sheep, they often target grass seed heads (e.g. of wood false-brome) before they eat the leaves.

2. Feeding preferences

Goats are highly responsive (opportunistic) in exploiting ephemeral types of feed. They are able to climb low branches of trees and are adept at covering steep rocky ground at speed.

They are very selective and able to target the leaves and flowering parts of herbaceous species including Orchids, Gorse flowers (which they are able to extract from amongst the spines of the leaves), ferns and fruits, including hazel nuts.

Rushes are targeted in the spring, soft rush may be effectively controlled at this time of the year by mob stocking at high densities of greater than 10 goats per hectare.

3. Impact on trees and shrubs

Highly effective browsing ability and where woody vegetation is readily available, goats tend to browse for 50-75 % of their feeding time – much more than most other large herbivores.

In addition, goats usually bark strip a range of trees. In upland Oak situations the order of preference is: Holly and Ash, Rowan and Willow, Oak, Hazel, Alder and lastly, Birch; in lowland, a base-rich site, Elder is taken first, followed by Ash, with black thorn, Sycamore and Rose taken in similar quantities. Goats do not willingly bark strip Field Maple or Hawthorn. Bark stripping occurs most in mid-late winter. Pine is also readily taken, particularly during the spring.

Thus goats have the potential to effectively control scrub which is invading grass lands. Goats may browse heather to a much greater extent than sheep.

4. Social behaviour and its effects on foraging

Goats are social animals and in the feral or free-ranging state they form matriarchal groups (of nannies and young) that can include yearling billies. Typically, these are hefted to an area which includes some dry, sheltered ground. Billies may be more solitary and are known

to wander for several kilometres in search of females in oestrus, but can be found in all-male groups outside rutting period. Because of their strong rutting behaviour, fecund billies may not be ideal components of nature management schemes, and (feral) castrate billies may be used instead.

5. Sex and dietary differences

This is not properly understood, but mature billies appear to bark strip more than nannies, perhaps because they use sheltered sites more frequently. In addition, like feral Soay rams (bullock and oates, 1998), billy goats seem to eat Ivy more than nannies; this might be because they may need more bulk food even if it is low quality.

6. Impact of age on foraging ability

In good conditions where goats do not rely on hard grazing or bark, they can remain in active service in nature management schemes for at least a decade. However, as with sheep, they do not develop a full set of teeth (8) until their fifth year, and as they become older they are likely to begin to lose teeth and become 'broken-mouthed'. Thus in practice, their working life is usually less than 10 years.

7. Dunging behaviour

Like sheep, goats dung in favoured rest/shelter sites. Shelter sites used by ferals can have deep up to 0.5m accumulations of dung from centuries of use. In legend, Robert the Bruce, when fleeing from the English on the east side of Loch Lomaond, hid in a cave used by goats. The English seeing and smelling the goats therein could not believe that the Bruce was also in there and passed on – hence the Royal decree he passed protecting the goats from molestation.

The goat cave is still there, and has a big accumulation of dung; it is still used by goats.

Goats will not graze contaminated herbage.

Different types of goats

The goats, Capra species, are not native to northwest Europe. They originate from an area which extends from eastern Mediterranean to Central Asia and the earliest evidence of domesticated goats is from approximately 10,000 years ago in the near east.

Despite thousands of years of domestication, all goats, regardless of breed or background, have a number of common features and attributes which are of particular relevance to nature conservation.

All goats

- A) Are agile;
- B) Have a propensity to browse
- C) Are adapted to dry (cold or hot) environments;
- D) Require some dry sheltered ground within their home range;

E) Are social animals

Until the beginning of the last century; the British and Irish goats breeds tended to be small, horned, hairy and 'all purpose'. Their milk had high butterfat content. Then improved milking breeds (Saanen, Toggenburg, Alpine, Anglo-Nubian) were introduced and today the phenotypic and genetic characteristics of old breed(s) of goat are represented in feral populations.

Goats can become 'feral' if returned to breeding in the wild state after being domesticated. 'Historic feral goats' are those with long history (70-80 years) of being present in particular locations. For example, populations such as those in the Moffat Hills have very little human interference and show phenotypic characteristics typical of ancient populations. Free ranging goats are those that are able to roam freely (or within a large confine) but non-breeding or where breeding is controlled.

There is debate as to whether any of the so-called native breeds, for example, the British Native or Landrace (Werner, 1998) can be re-domesticated from existing feral stocks. At least one feral population, at the Valley of the Rocks (see table site details), is selected to favour goats that appear to show characteristics of the British Native goat.

Classification of goats in Britain and Ireland

The following table provides a simple classification of goat breeds, according to features which most strongly influence their suitability, or not, for conservation grazing situations. Thus the first two rows represent those breeds which are currently most popular for conservation grazing situations; the third row represents longhaired goats which are kept commercially for fibre production, and the last row includes European imported breeds from the last century which are kept commercially for milk production.

Thus the following information is offered for general guidance only, with the caveat that the categorisation offered is dependent on the way in which breeds are used.

Breed examples: Bagot - Historic feral goat - Feral goat

Special features relevant to conservation grazing:

1. Likely to be unhandled and so difficult to manage.
2. As a rare breed the Bagot may be more difficult to come by and not locally available.
3. Smaller and more agile, so perhaps better suited to difficult terrain.
4. Relatively thick coat thus may be better suited/adapted to free ranging.
5. Feral goats are readily available from 'gather'.

Breed example: Dwarf/Pigmy

Special features relevant to conservation grazing:

1. Generally well handled, thus may be easier to manage.
2. Appear to do well in conservation grazing situations.
3. Small, thus easier to contain.

Breed example: Alpine, Saanen, Toggenburg, Anglo-Nubian

Special features relevant to conservation grazing:

1. Generally well handled and polled, thus may be easier to handle.
2. More readily available than other breeds.
3. Commercial domestic, high milk yield goats. Those in milk production will have high-energy demands, thus may not be suited to poor quality grazing.
4. Those in milk production will have large udders, vulnerable to damage on brambles and thorny vegetation.
5. The Anglo-Nubian is heavily improved for milk production and also has a large body size and may be as agile as other goat breeds.

Breed example: Angora, Cashgora, Cashmere, Golden Guernsey

Special features relevant to conservation grazing:

1. Generally well handled, thus may be easier to manage.
2. None of the breeds are commonly available; in addition, the Golden Guernsey is a rare breed and so stock may be more difficult to come by and not locally available.
3. Longhaired, so liable to becoming tangled in thorny vegetation and brambles.
4. The Angora grazes more than other goat breeds.
5. The Abgora reputedly stands out in rain, so may be more vulnerable to ill health than other breeds which will seek shelter.

Comparison of goats and sheep

Differences

1. Goats are relatively long-legged, depending on breed and more agile than sheep.
2. Goats can travel further than sheep (in part because they are selective feeders), especially towards the evening.
3. Goats are able to climb low branches of trees.
4. Goats are more discriminating than sheep in terms of feeding habits. This may allow them to select parts of poisonous plants with relatively low levels of toxins.
5. Goats browse much more than sheep, including mature heather.
6. Goats are not susceptible to fly strike, although Angora goats with their long woolly hair may be an exception.
7. Goats are able to recycle the urea they produce and can go for long periods without drinking; however goats should always have access to a suitable water supply.
8. Goats require proper (overhead and preferably windproof) shelter.

9. Goats do not require shearing, except Angora goats, which require twice yearly shearing.

Similarities

1. Goats and sheep are similar size.
2. Free-ranging goats and sheep become hefted to an area.
3. Both have selective feeding habits.
4. Extensive, ranging goats and sheep have low water requirements.
5. If kept on hard, rocky ground, hoof trimming is unlikely to be necessary; otherwise, both types of animal will require routine foot care.
6. Similar teeth development and wear sequences.

Conservation situations where goats are in use and contacts

Site name: Smithcombe, Hills and Totternhoe, Knolls, Bedfordshire.

Habitat: Scrub invaded. Species-rich calcareous grassland.

Details available: Trails to compare the abilities of goats vs. Conventional nature management to control scrub and restore species-rich calcareous grassland. 21 free-ranging goats of mixed Saanen/Nubian/20th century feral origin and both sexes used. Oliver et al, papers in prep.

Contact: Pauline Oliver 01727 858901

Site name: Cheddar Gorge, Somerset.

Habitat: Somerset species-rich calcareous grassland on steep slopes in Cheddar Gorge.

Details available: Domestic goats of mixed origin (Saanen-Nubian) free ranged in Cheddar Gorge in early 1990's, in order to control scrub. Removed largely due to inquisitiveness and interaction with public. Focus of study on summer feeding behaviour and habitat use (Smith and Bullock 1993)

Contact: Dr David Bullock 01285 651818

Site name: Lullington Heath, Sussex.

Habitat: English nature Chalk grassland and scrub.

Details available: combination of Bagot goats, New forest ponies and Exmoor ponies used for scrub control. 25 nannies and billies (equal proportions of each sex) and 1 wether. Goats open up the scrub, pony's follow- up by grazing under storey. Supplemented by hay in winter and hard feed near kidding time.

Contacts: Dr Tim Beech 01273 476595

Site name: Coed y Bronnedd, National trust.

Habitat: Pasture woodland on archaeological site.

Details available: 30 'cashmere' goats (mixed domestic and feral origin from Australia). Cashmeres run on wood-pasture May/June- Sept/Oct (Grazing to preserve both wood pasture and historical interests), require little husbandry.

Contact: Rosemary Kent 01873 810547

Site name: Near Sugar Loaf, Silgo.

Habitat: Upland pasture.

Details available: 12 nanny Bagot goats- on in-by-land on upland farm near Sugar Loaf mountain- reduce weeds e.g. thistles.

Contact: Rosemary Kent 01873 810 547

Site name: SSSI near Birmingham.

Habitat: woodland and scrub.

Details available: 7 Bagot goats on a 6 ha. Surrounded by 5 ft split oak fencing. No handling. Hay in winter.

Contact: Peter Evans 01564 742354

Site name: Mays Lane cemetery, Berkshire.

Habitat: unused cemetery land with scrub and coarse grass. Bee orchids present.

Details available: 2 Bagot goats and 5 sheep successfully grazed 1.2 ha in order to reduce scrub (Bramble, Birch) and rank grass over 3 years. Natural shelter. Scrub was reduced considerably and grassland improved without loss of grassland diversity. Bee orchids were not eaten. A small amount of winter hard feed was given, but no hay. No longer on site. Main reason for terminating the project was distance away from main holding and difficulty in handling/catching Bagots when necessary.

Contact: Mrs. J E Taylor 01753 642029

Site name: Oxwich, Gower peninsula. Countryside Council for Wales.

Habitat: Dune slacks.

Details available: Surplus nannies from North Wales populations used for coastal grassland restoration in early 90's. Very effective in high densities but scheme stopped due to mainly to difficulties of containment. 12 pygmy goats now used, in same system. Mixed breeding herd. Currently used for scrub control in 100m x 100m (1 ha) plots in dune slacks. Moved on every 2 weeks. Plots surrounded by 4 foot electric netting topped with horse tape. Very effective but don't browse as much as feral goats that were previously on site; may be due to fact that these goats had been used to pasture. Intend to sell off nannies in hope that offspring will browse more. Appear to drink more than feral goats. Require occasional foot-trimming, also wormed, deloused. Cost ex fencing approx £160 / year. Good with people (not skittish), easy to catch. (See Hughes, 1993).

Site name: Stackpole, Pembrokeshire.

Habitat: 1. Merepool valley. Ash-hazel woodland on valley side; sand dunes, some wet dune slacks in bottom.

2. stackpool warren SSSI. Maritime heath.

3. Promontory fort on lakes.

4. Merepool valley. Terrace below big house.

Details available: 1 and 2 Crossbred domestic goats introduced 3 yrs ago on 10 ha (25 acre). 16-20 nannies and 1 billy. Owned by local traveller. Introduced to graze Clematis, Brambles, Sea Buckthorn etc. Shelter provided but not used; in winter goats retreat into woodland. Good results, trees improving habitat for lichens.

3. 5-6 of the same goats used to remove scrub. Successfully used for 1 year then followed by cattle.

4. Historic landscape with unwanted shrub invasion, used with good results in small area, eating Lonicera japonica especially after clearance of big scrub by hand. Some goats escaped across standard stock-proof fencing into neighbouring gardens, but successfully replaced by new goats unfamiliar with gardens!

Site name: Minsmere, Suffolk. RSPB.

Habitat: Scrub in 'pit' area to be managed for Stone Curlew. Blackthorn/hawthorn most abundant woody species.

Details available: 2 feral billies from Valley of the Rocks, Lynton. On 1 ha surrounded by 4 strand electric fence since Sept '99'. Have natural water and shelter. Objective

to destroy the scrub. Mature billy escaped at first. Two animals died, apparently from over – consumption of Elder.

Contact: Andy Needle 01728 648701

Site name: Horsall Common, Surrey.

Habitat: lowland heath with invading Pine and Birch scrub.

Details provided: Saanen, British Alpine, Toggenburg, Anglo-Nubian crosses. These goats came from Lynton prior to the now largely successful back-breeding programme to goats of Cheviot type. They are not, therefore, good examples of the breed. No billies. Problems with dogs. Grazing occurred in 1994 for 11 months and was not repeated. Site now cattle grazed.

Contact: Rob McGibbon 01483 579713

Site name: valley of the Rocks, Lynton.

Habitat: Coastal heath and grassland.

Details available: feral goats at Valley of Rocks; not a conservation grazing project per se, but subject to improvement of stock as 'British Native Goats'. Lynton feral goats originate from Cheviot stock that had some introgression with domestic goats, but which are being reconstituted to the original type.

Contact: Raymond Werner 020 7622 5637, Melanie Small 01598 752530

Site name: Ventnor and Bembridge Fort, Isle of Wight.

Habitat: Coastal chalk grassland with acid gravel cap with encroaching scrub (Holm Oak woodland).

B) Rank grass, Bramble and Ivy in dry moat.

Details available: a) Feral goats at Ventnor since 1993. Successful at controlling Holm Oak invading chalk downland. Vegetation monitored using permanent quadrats. See Tutton (1994)

b) Two vasectomised bellies kept in a dry moat. Very successful at stopping Ivy and rank vegetation covering fort.

Contact: Tony Tutton 01983 741020

Site name: Great Orme

Habitat: Coastal heath and grassland.

Details available: feral goats that have been recently recognised by the British Goat Society as rare cashmere breed originating from Windsor) Great park) Whites. Originate from 4 cashmere goats, imported from Persia via France in 1819 and taken to Weald hall, Essex. A pair went to Windsor Great Park in 1828, from where a pair was sent to the great orme in the early 1890's.

Contact: Sally Pidcock, sally.pidcock@conwy.gov.uk, see Pinchen 1992.

Site name: the Burren, County Clare.

Habitat: Karst.

Details available: largest population of free-ranging feral goats in North-west Europe. Probably important in controlling encroachment of hazel and other scrub into limestone grassland of exceptional nature conservation interest.

Contact: Duchess National Heritage 00353 5035 9444

Site name: Ash Ranges, Surrey. Surrey heathland project.

Habitat: Heathland with Pine and birch scrub.

Details available: Non-breeding herd of 46 feral goats. Billies have been castrated. These goats came from Lynton prior to the now largely successful backbreeding program to goats of cheviot type. They are not, therefore, good examples of breed. Part of site uses 6 strands of wire, but vast majority has 4 strands. Natural water supply supplemented by browser in dry period. Foot-trimming c. 3 times a year. Shelter provided (rarely used). Last 4-5 animals in first winter. Vet brought in when necessary. Goats have become fairly tame and easy to handle. Photographic monitoring.

Contact: Rob McGibbon 01483 579713

Site name: Magillaghan, Northern Ireland. Environment and heritage Service.

Habitat: Dune System.

Details available: Feral goats used to control scrub. Trail undertaken in 1996 to assess but high cost of maintaining fence combined with a few neighbour problems led to ending of trail in 2000.

Contact: Darrell Stanley 028 7776 3982.

Other contacts:

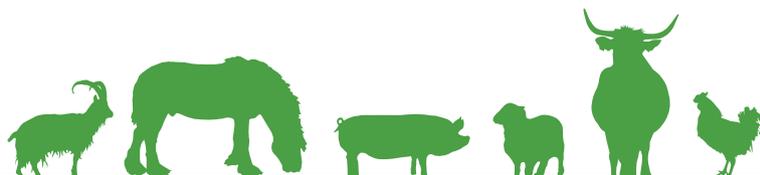
- Bagot Goat Breed Society-Peter and Audrey Evans-01564 742354
- British Goat Society (FOR Saanen, Nubian, Alpine, Pygmy etc)-www.allgoats.com
- Feral Goats-Estates Department, national Trust- Mr David J Bullock 01285 651818
- Great Orme Goat Breeders- Annette Cleaver 01491 642021
- Rare Breed Survival Trust-0247 6696551
- The British native Goat preservation Society- Raymond Werner- 020 7622 5637
- The Lynton Feral Goat Preservation Society- Melanie Small- 01598 752530

Other sites: Trent Country Park, Windsor Great Park, Queen Elizabeth Country Park, Thorndon Country Park- Raymond Werner- 020 7622 5637



Breed Profiles:

Pig



Pigs in Conservation

Use of pigs in nature conservation is very understudied. The following text gives examples of what has been reported concerning the effects of pigs.

Foraging characteristics

1. Impact on vegetation structure

Rooting behaviour is the most obvious impact of pigs kept on an area of land. Depending on the stocking density, rooting can be beneficial or devastating. At low densities, pigs will dig some areas untouched. More intensive rooting resulting from higher stocking densities can be useful in forestry plantations for preparing the soil for planting or natural regeneration.

Rooting tends to be localised but not always predictable and is strongly dependant on pasture size, stocking density and biotic site parameters. Thus apart from areas with abundant acorns, nuts and berries which are usually favoured first, rooting may be determined by factors, such as whether the soil is soft or not, rather than as a result of any plant community which may be growing in an area.

Pigs love suitable wet, muddy patches for wallowing. Where readily available they will use existing puddles or damp depressions and enlarge them. In dry weather it is desirable to help pigs create a wallow or they will adapt the area around their water trough! Wallows are essential; pink-skinned breeds are easily sun burned.

Rooting may not only kill unwanted invasive species, but the bare ground created as a result may be suitable for colonisation by some preferred plant species and favoured by some invertebrates and reptiles.

2. Feeding preferences

Pigs are omnivores; they mainly consume roots, rhizomes and tubers as a result of rooting, although they will also take invertebrates and fungi, as well as grazing grass (pigs favour Couch-grass) and other vegetation. The impact of grazing is negligible in comparison to the rooting effect. They will pick berries (e.g. black berries) off bushes and root underneath bushes and trees for fallen fruits. Their impact on fungi is unknown although they are known to feed on truffles. Shore areas of ponds are also utilised for foraging if they are shallow and rich in food. (E.g. molluscs, rhizomes).

If plenty of varied food is available there may be no need for supplementary feeding. However, some supplements may be necessary for breeding pigs and feed can help to keep animal's more manageable. Some breeds can live on grass from May-September; dependent upon stocking rates and biomass produced.

Pigs readily take Bracken rhizomes in the autumn when other obvious food sources are finished. It seems that the various toxins and carcinogens in Bracken do not affect pigs as they do in other animals but thiamine deficiencies can be a real problem' other food should always be available to them.

Pigs have been used to break up thick litter layer left after clearance of Rhododendron. Rhododendrons can be toxic to some animals and not enough is known of the effects of the plant on pigs so care should be exercised and other food always available.

Control of Gaultheria, an introduced plant species, has been achieved in the New Forest by using pigs.

3. Impact on trees and shrubs

Leaves of some trees (fresh if in reach or fallen) are readily taken at certain times of the year. Bark stripping also occurs. Rooting and chewing on the roots as well May also damage trees and shrubs, particularly if there are only a few trees/shrubs on site.

Pigs may also use trees as rubbing posts; continual rubbing can damage tree bark and kill trees and shrubs. In native woodland, where pigs are confined to rooting in a small area the first to be rooted out are oak followed by hazel.

4. Social behaviour and its effect on foraging

In general, pigs are social animals and on large sites will usually be found in small groups. This heightens the localised impact of rooting. Favoured parts of the site will thus begin to show signs of rooting very quickly whilst other areas will take longer to show any impact. Boars need to be kept singly, but can be easier to handle than sows with piglets if treated gently.

5. Sex and dietary differences

Male pigs seem to root more deeply. Boars are less easy to handle so it is usually gilts (females that have not yet had piglets) and sows that have been used on conservation sites.

6. Impact of age on foraging

Older pigs show more pronounced rooting behaviour and are generally more effective at rooting in densely vegetated areas. Piglets start rooting at an age of approximately two weeks.

7. Dunging behaviour

Dung is not usually left in specific areas. However, if the animals receive supplementary food and if they have small huts, they probably concentrate dung deposition in 'favourite' areas. Also a tendency seems to emerge that the pigs 'prefer' to dung close to the fences. By moving feeding areas, one can exercise a limited control.

Different types of pig

Within the UK, pigs are largely kept for commercial production of meat. The majority of those kept are the domesticated pig (*Sus domesticus*) but there are a few producers rearing Wild boar (*Sus scrota*). Most commercial pigs kept are from a small number of breeds that have been selected for high reproductive rates, quick rearing and low fat levels on the carcass. Whilst increasing numbers of pigs are now reared outside or partly outside, these breeds are probably less suitable for use in conservation grazing than the traditional breeds.

Traditional British breeds of pig tend to be hardier, more suitable for feeding on a variety of food that they find for themselves and some are less prone to sun burn. They may also be more placid temperament. The traditional breeds are also more varied in their appearance and may be more interesting to look at. Older breeds have usually been developed under different commercial requirements to modern breeds. For example, fatty pigs were at one time preferred so these pigs usually have higher fat levels, which may account for their better hardiness. The disadvantage is that the carcasses tend to be less saleable. However, selling offspring not required for conservation work to a specialist meat-marketing Scheme (TBMMS), can help to overcome this issue.

A small number of animals are kept as pets and these are often pot-bellied Vietnamese pigs or sometimes the New Zealand Kune Kune. These are also a small number of 'Iron age pigs' kept for interest in museums and farm parks. These are usually a cross between a Wild Boar and a domestic pig (usually Tamworth).

Previously, Wild Boar occurred naturally in Britain and would carry out similar functions to a traditional breed of pigs on conservation sites. Wild boars are however much more difficult to handle and it is essential to have suitable areas to catch and handle them. There are a few animals loose in the wilder countryside in parts of Southern England and the numbers may rise with increased interest in farming them. The meat is very lean, quite different flavour to domestic pig and there is an expanding niche market for it.