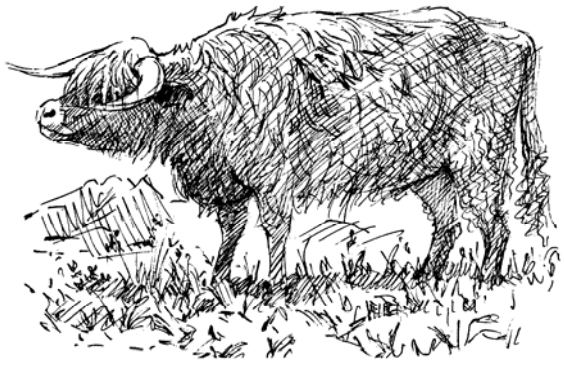
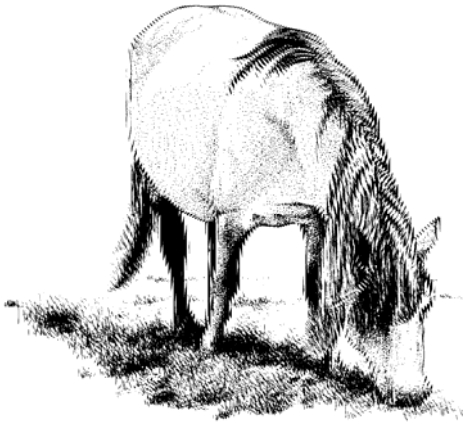
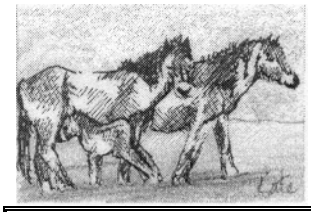
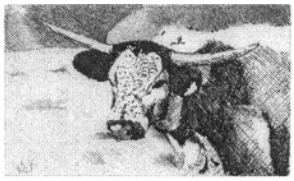
A Guide to Animal Welfare in Nature Conservation Grazing









The Grazing Animals Project

A Guide to Animal Welfare in Nature Conservation Grazing

September 2001

Prepared by the Grazing Animals Project

On behalf of:
Corporation of London
English Nature
National Trust
Royal Society for the Protection of Birds
The Wildlife Trusts

In conjunction with:
Royal Society for the Prevention of Cruelty to Animals
Ulster Society for the Prevention of Cruelty to Animals
Scottish Society for the Prevention of Cruelty to Animals
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Frequent Abbreviations:

(1) DEFRA – Department of Environment, Food and Rural Affairs. Formed from an amalgamation of the Ministry of Agriculture, Fisheries and Food (MAFF) and the Countryside division of Department of Environment and Trade and the Regions (DETR) in 2001. Where DEFRA (1) appears, read also as the National Assembly for Wales, and the Scottish Executive for Environment and Rural Affairs Department (SEERAD).

(2) RSPCA - Royal Society for the Prevention of Cruelty to Animals. Wherever RSPCA (2) appears, read also as Scottish Society for the Prevention of Cruelty to Animals (SSPCA), and Ulster Society for the Prevention of Cruelty to Animals (USPCA).

(3) FAWC - Farm Animal Welfare Council replaced the Farm Animal Welfare Advisory Committee (FAWAC) in 1979 and was given the role of keeping under review the welfare of farm animals on agricultural land, at market, in transit and at places of slaughter and to advise the Agricultural Ministers on any legislative or other changes considered necessary.

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Introduction

Grazing by domesticated stock is essential or highly desirable for the conservation of the vast majority of grassland and heathland habitats in the UK. However, modern livestock production systems, and the breeds associated with them, are seldom suitable for the low quality keep which occurs on many nature conservation sites. As a consequence of this, conservation organisations have begun to acquire grazing animals from outside mainstream agriculture for conservation grazing, through purchase, loan or via grazing licences. In addition, a new grazing 'industry' is starting to develop, based around commercial graziers who are prepared to utilise hardier or more traditional breeds in order to develop niche markets for conservation grade or branded meat products. Agri-environment funding can be used to facilitate such partnerships.

These developments have taken place in the absence of machinery that replicates the beneficial effects of grazing, and within the growing appreciation that large herbivores are 'keystone species' that drive the ecology of many habitats. In addition, there is a genuine wish in the conservation movement to return to more natural systems which aim to be economically, environmentally and culturally sustainable.

Although site managers aspire to high standards of animal welfare, many are inexperienced in the management or care of livestock. This has occasionally resulted in the setting up of grazing regimes wherein the ecological requirements have been considered in full but the requirements of the livestock have been under-estimated. Of course, as each conservation site is unique, the development of good grazing practice that suits both wildlife and stock is far from straightforward. Even people with good animal husbandry skills will need to enlarge on their experience in order to anticipate the problems they could encounter when first grazing some nature conservation sites.

Over the past few years there have been occasional incidents of poor animal husbandry on conservation sites, some of which have resulted in the involvement of animal welfare organisations. Although most of those instances have involved stock owned by local graziers, rather than animals owned by nature conservation organisations, they have not helped the image of the wildlife conservation movement as conservation managers. Until recently, nature conservation and animal welfare organisations have only come together when welfare problems have occurred at site level, which has made them become somewhat wary of each other. Also, as much nature conservation land is open to access by a public that is becoming increasingly concerned with animal welfare issues, it is essential that animals grazing on nature conservation sites are well managed.

It has become widely recognised that wildlife managers must give more time and attention to the planning and preparation of grazing schemes. We believe that more consideration needs to be given to preventing animal welfare problems from arising, rather than reacting to them after they have occurred. The animal welfare organisations are keen to help conservationists to minimise the risk of suffering.

Until recently, stockmanship guidance has been directed towards mainstream agriculture and related to stock kept within conventional livestock systems. Guidance more relevant to nature conservation was developed and presented as Appendix 6 of the Lowland Grassland Management Handbook (1999), and the first of the revised DEFRA (MAFF) *Codes of recommendations for the welfare of livestock: sheep* (2000) is also of much relevance to nature conservation. Along with the other MAFF codes, these have formed the starting point for this current review. We believe there is now a

need for more specific and detailed guidance aimed at wildlife managers, and relating to the types of grazing animal and grazing situations commonly found on wildlife sites.

A Guide to Animal Welfare in Nature Conservation Grazing has been produced to help provide information that will enable nature conservation managers to appreciate and implement the high standard of animal care that is expected of them when they use grazing animals to manage wildlife sites. It has developed through discussions between members of the Grazing Animals Project and representatives from animal welfare organisations in the UK, as well as many individuals from a range of disciplines. We believe that it provides information relevant to animal welfare issues, together with a rationale which should help the decision-making process at the site level. Of necessity, most of the information is provided at a general and species level.

The guide uses the risk assessment approach, which is widely used within nature conservation and society as a whole. This is, in our view, the best and quickest process to guide managers to sensible and pragmatic decisions that will assist the welfare of their animals by significantly reducing risk. Individual risk assessments have the added advantage in that they can be used in constructive discussions with local representatives of animal welfare organisations to develop and review welfare policies at site level. This is a process we would encourage. We make it clear that responsibility rests on all those involved in managing grazing systems.

The guide is structured around *The Five Freedoms*, a concept developed by the Farm Animal Welfare Council (3) and used by the Department of Environment, Food and Rural Affairs (DEFRA) (1) in the development of its *Codes of recommendations for the welfare of livestock*.

We hope this guide will be helpful to conservation managers and accept that a revised, expanded version may need to be produced as knowledge extends.

How this document is structured

The first section provides a brief summary of the legislation surrounding animal welfare. It is followed by a discussion about the responsibilities of those who keep animals.

A Risk Assessment Approach to the Five Freedoms follows. It starts with an explanation of the risk assessment process and is then divided into topics relating to various aspects of welfare within the framework of the Five Freedoms. Each topic contains a rationale to consider when assessing risk. A sample risk assessment has been completed and inserted at the end of the Five Freedoms.

Throughout both of the above sections, information which is not necessarily true for all animals, but relevant to one or more types, is identified as such at the end of each discussion topic, under one of the headings: cattle, equines, goats, pigs and sheep, and by a change in font size and type (font as demonstrated by this paragraph).

The final section looks at factors which affect the suitability of different types of animal for use within conservation grazing.

Legal obligations to all domestic livestock

Summary of Statutory Provisions relating to (Farm) Animal Welfare

A number of Acts govern the welfare of farm animals. People responsible for animals must have a working knowledge of the relevant codes and legislation applicable to their situation and the information supplied within this guide does not abdicate the keeper from his/her responsibility to read and observe the law as set out in those codes and legislation. DEFRA(1) publications have produced a very useful *Summary of the Law Relating to Farm Animal Welfare*, available free by telephoning 08459 556000.

However, the following are brief extracts of the Statutory Provisions which are of particular relevance to animals used in conservation grazing. For a full understanding of the requirements of each Act, keepers should refer to the appropriate Statutory Provision.

Feral stock are also covered by the same legislation as those kept in more domesticated situations. Animals with no registered owner are considered the legal property, and thus responsibility, of those whose land they reside on at any given time.

In conjunction with DEFRA (1), it is the statutory responsibility of County Council Trading Standards to enforce all animal health legislation. The remit of Trading Standards varies from county to county, but includes the welfare of animals in transit, at markets and ports; along with DEFRA(1), they are also involved with enforcing the identification of livestock. Local Authorities coordinate Trading Standards and are the first point of contact for anyone seeking further information. There is no legal obligation to notify Trading Standards concerning ownership of stock.

The Protection of Animals Acts 1911-1988 - contain the general law relating to cruelty to animals. Within these Acts, animals must not be caused unnecessary suffering. Broadly it is an offence (under Section 1 of the 1911 Act) to be cruel to any domestic or captive animal by anything that is done or omitted to be done.
(The Protection of Animals (Scotland) Act 1912)

The Protection of Animals (Anaesthetics) Acts 1954, 1964 and Amendment Order 1982 – these acts prohibit the carrying out of operations without the use of anaesthetics, whilst defining parameters within which certain operations are acceptable, including tail docking, castration and emergency situations.

The Abandonment of Animals Act 1960 – this Act makes it an offence under the 1911 Act (the 1912 Act in Scotland) for the owner, or any person having charge or control of an animal, to abandon it, whether permanently or not, in circumstances likely to cause it any unnecessary suffering.

The Agriculture (Miscellaneous Provisions) Act 1968 - broadly states that it is an offence to cause or allow livestock on agricultural land to suffer unnecessary pain or unnecessary distress.

The Welfare of Animals (Slaughter or Killing) Regulations 1999 as amended by the **Welfare of Animals (Slaughter or Killing)(Amendment) Regulations 1999** state that it is a general offence to cause or permit any avoidable excitement, pain or suffering to any animal during slaughter or killing. The general offence applies in all cases, but the detailed provisions in respect of the method of slaughter or killing do not apply when an animal has to be killed immediately for emergency reasons.

The Animals Act 1971 – lays down measures with respect to civil liability for the protection of livestock from dogs and also includes provisions on the detention and sale of trespassing livestock and animals straying onto the highway and the protection of livestock against dogs. (Animals (Scotland) Act 1987).

The Welfare of Livestock Regulations 1994 – consolidate much of the legislation relating to the welfare of livestock on agricultural land. Replaced by The Welfare of Farmed Animals (England) Regulations 2000.

The Welfare of Animals (Transport) Order 1997

- Sets out general and specific requirements for the transport of animals, including fitness to travel, conditions of transport, maximum journey times, rest, feed and water intervals, space requirements, duties of transporters and documentation to accompany vehicles.

- Provides that an unfit animal may be transported *only* if it is being taken for veterinary treatment/diagnosis or is going to the nearest available place of slaughter, and then only provided it is authorised by a veterinary surgeon and transported in a way which is not going to cause it further suffering.

Article 5 of the **Animal By-Products Order 1999 (S.I. 1999 No. 646)** requires that fallen stock are disposed of by:

- despatch to a knacker's yard, hunt kennel or similar premises;
- incineration;
- rendering in approved premises;
- in certain circumstances, burial in such a way that carnivorous animals cannot gain access to the carcass, or burning.

The Protection of Animals (Amendment) Act 2000 makes provision for the care, disposal or slaughter of animals to which proceedings under Section 1 of the Protection of Animals Act 1911 are being enacted. (Thus if somebody is being prosecuted, the prosecuting authority has the power to take charge of the animals for the sake of their welfare. Taking charge may entail selling them, disposing of them otherwise than by way of sale, or having the animals slaughtered.)

Welfare of Farmed Animals (England) Regulations 2000
Welfare of Farmed Animals (Scotland) Regulations 2000

- Replace The Welfare of Livestock Regulations 1994. The regulations require all stock keepers to have access to the relevant welfare codes and to be familiar with their provisions. Where appropriate, employers must ensure that their staff receive guidance on them.

- Require that all animals kept in husbandry systems in which their welfare depends on frequent human attention shall be thoroughly inspected at least once a day to check that they are in a state of well-being; and that animals kept in systems other than husbandry systems in which their welfare depends on frequent human attention shall be inspected at intervals sufficient to avoid any suffering.

- State that any animals which appear to be ill or injured shall be cared for appropriately without delay; and where they do not respond to such care, veterinary advice shall be obtained as soon as possible.

- State that animals shall be cared for by a sufficient number of staff who possess the appropriate ability, knowledge and professional competence.

- State that animals not kept in buildings shall, where necessary and possible, be given protection from adverse weather conditions, predators and risks to their health and shall, at all times, have access to a well-drained lying area.

- State that a record shall be maintained of any medicinal treatment given to animals and the number of mortalities found on each inspection. These records must be retained and available for inspection for a period of at least three years.

- State that, where necessary, sick or injured animals shall be isolated in suitable accommodation with, where appropriate, dry comfortable bedding.

Administrative requirements

The Welfare of Farmed Animals (England) Regulations 2000 – state that a record shall be maintained of any medicinal treatment given to animals and the number of mortalities found on each inspection. These records must be retained and available for inspection for a period of at least three years.

A number of compulsory administrative requirements are associated with keeping of farm stock, including movement records, tagging and identification, chemical treatments, health tests for notifiable diseases and drug records. The following provides a summary relating to different types of grazing animal.

- **Farm registers/records** – these are on-going historical entries that relate to births, deaths and movements of the various livestock species on and off a holding. Farm Registers should be maintained in a specified format for each species or as a composite register and can be held electronically provided it is possible to provide a hard copy on request by an Inspector from DEFRA or the Local Authority.

- **Movement documents** – relate to movements of animals and accompany the animal during any movement. These include cattle or horse passports, pig (self) declaration or licences, and sheep or goats movement documents. It is also necessary, apart from certain exemptions, to keep a transit record.

- **Notifiable diseases** – those which are contagious to other animals, including Foot and Mouth, as well as those diseases which have implications for human health, such as BSE, must be notified to DEFRA (1) immediately they are suspected. Appendix 5 contains a full list of notifiable diseases.

- **Reportable diseases –** are those where it is compulsory to seek veterinary advice and where it is a welfare offence to not treat infected animals. There are three reportable diseases in Great Britain, but only sheep scab is relevant to this guide; the other two diseases affect birds. When a vet confirms a reportable disease, the vet will pass the information onto DEFRA (1).

CATTLE

- **Holding number requirements** – it is a legal requirement for all keepers of farm stock to have a holding number for the land that they occupy.
- **Identification of individuals** - cattle are subject to more regulation and legislation than any other grazing animal, particularly since the advent of BSE. All breeders must register their herd with DEFRA (1) to obtain a herd registration number which must be displayed on ear tags attached to every animal that they breed. Cattle are required to be individually identified by double tagging, one of which must be distance readable (the primary tag) within a specified time of birth dependent on beef or dairy type. These tags must be replaced if lost (a fairly frequent occurrence when grazing scrubby nature reserves). This is the responsibility of the animal's new keeper if it has been sold from its farm of origin.
- **Monitoring of disease** – keepers of cattle must submit their animals for routine testing when requested to do so by DEFRA (1) to monitor their disease status. These tests for tuberculosis and brucellosis are carried out on all cattle over 2 years old on a 2-3 year basis. Any positive reactors must be dealt with according to instructions from DEFRA (1).

- **Movements of cattle** - all movements of cattle between holdings must be recorded and notified to the British Cattle Movement Service. Movements must also be recorded in the farm's own movement book. It is a legal requirement to keep a copy of all movement records within a bound book; computerised records alone are not sufficient. The animals must be accompanied by their passports when being moved; these are documents that confirm their identity and record all of their past owners. A detailed register of all the cattle kept on a holding must be maintained by the person managing the enterprise, and must be available for inspection if DEFRA (1) request it. Future movement restrictions are likely to be imposed following the 2001 outbreak of Foot and Mouth disease.
- **Veterinary treatments** - records must be kept of all drugs purchased, stored and used.
- **Legislation relating to BSE** - under current UK legislation most cattle for human consumption have to be slaughtered before reaching 30 months of age and the majority are 'finished' between 12 and 24 months. The Beef Assurance Scheme allows registered herds to finish animals up to 42 months. Cattle can live productively for twenty or more years, although the average commercial herd life is usually 5 or 6 years for suckler cows and 3 or 4 years for dairy cows. None of these breeding animals are allowed to enter the British food chain and have to be disposed of using government-approved abattoirs operating the 'Over 30 Months Scheme' which compensates farmers for part of the value that they would have had pre-BSE.

EQUINES

Equines may be classified by DEFRA as livestock and thus come under the umbrella of **The Welfare of Farmed Animals (England) Regulations 2000,** only if used for agricultural purposes, that is, for the production of meat or in the farming of the land. Otherwise certain legal restrictions relevant to cattle, sheep and goats do not apply. For example, there is currently no compulsory requirement to keep movement sheets, medical or identification records, or administer vaccinations or chemical treatments; however, this may change in the future.

There is some legal uncertainty as to whether equines used in conservation are considered as 'farmed' or not; accordingly, it might be as well if conservation managers treated them as such. The legal uncertainty is demonstrated in the following extracts from the DEFRA (MAFF) (1) publication *Summary of the Law Relating to Farm Animal Welfare*:

> "The definition of livestock given in **The Agriculture (Miscellaneous Provisions) Act 1968** applies to animals being kept for the production of food, wool, skin or fur on agricultural land. The definition includes cattle, horses kept for meat, sheep, goats, pigs . . . It also applies to a horse or a dog when used in the farming of land . . . Agricultural land is defined . . . as land used for the purpose of an agricultural trade or business . . .
>
> In order to decide whether livestock comes under the 1968 Act, there are two questions which should be asked:
> 1) Is the land on which the animals are being kept agricultural land within the meaning of the 1968 Act, that is, is it being used agriculturally for the purpose of a trade or business?
> 2) Are the animals being kept for the production of food, wool, skin or fur, or for use in the farming of land?
>
> If the answer to both questions is 'yes' then the animals do come within the scope of the 1968 Act."
>
> However, according to the relevant Acts, the term "agriculture" includes . . . "dairy farming and livestock breeding and keeping, the use of land as grazing land, meadow land . . . the use of land for woodlands . . . "

GOATS

- **Holding number requirements** – it is a legal requirement for all keepers of farm stock to have a holding number for the land that they occupy.
- **Identification of individuals** – from 1 January 2001, all goats removed from their holding of birth must be identifiable by tagging or tattooing of the herd number, preferably of the ear. This will have considerable practical implications for goats kept in feral or semi-feral situations.
- **Records** – must be maintained of any medicinal treatment given and the number of mortalities found on each inspection. These records must be retained and available for inspection for a period of three years.
- **Movements** – must be recorded in any farm register and movement document. It is a legal requirement to keep a copy of all movement records within a bound book; computerised records alone are not sufficient. Future movement restrictions are likely to be imposed following the 2001 outbreak of Foot and Mouth disease.

PIGS

- **Holding number requirements** – it is a legal requirement for all keepers of farm stock to have a holding number for the land that they occupy.
- **Identification of individuals** – all breeders must register their herd with DEFRA(1) to obtain a herd registration number. There is currently (August 2001) no requirement to individually identify pigs; a mark, normally temporary, is required for the duration of any movement.
- **Monitoring of disease** – keepers of pigs must register with their local Animal Health office. A detailed register of all pigs kept on a holding must be maintained by the person managing the enterprise and must be available for inspection if DEFRA (1) requests it.
- **Movements of pigs** – all movements of pigs between holdings must be recorded and no pigs should be moved off a premises within 20 days of any pigs moving on to those premises. When pigs are moved off, they must be accompanied by either a movement licence (issued by the local authority) or a declaration signed by the keeper/owner of the pigs. There may be localised occasions when the movement of pigs between holdings is not permitted, such as with the outbreak of infectious disease. It is a legal requirement to keep a copy of all movement records within a bound book; computerised records alone are not sufficient. Future movement restrictions are likely to be imposed following the 2001 outbreak of Foot and Mouth disease.
- **Feed** – it is against the law (fine of up to £5000) to feed waste meat/animal protein products to pigs, even kitchen scraps, unless a licensed operator has supplied these. It is no longer permitted to feed pigs swill. On sites where pigs are kept which also have public access, appropriate notices should inform the public of the law against feeding scraps.
- **Veterinary treatments** – records must be kept of all drugs used on or veterinary treatments administered to pigs.

SHEEP

- **Holding number requirements** – it is a legal requirement for all keepers of farm stock to have a holding number for the land that they occupy.
- **Identification of individuals** – from 1 January 2001, all sheep removed from their holding of birth must be identifiable by tagging or tattooing of the herd number, preferably of the ear.
- **Records** – must be maintained of any medicinal treatment given and the number of mortalities found on each inspection. These records must be retained and available for inspection for a period of at least six years. Previous to 1 September 2000, this period was three years.

- **Movements** – must be recorded in any farm register and movement document. It is a legal requirement to keep a copy of all movement records within a bound book; computerised records alone are not sufficient. Future movement restrictions are likely to be imposed following the 2001 outbreak of Foot and Mouth disease.

Responsibilities of the 'keeper'

"The relevant animal welfare legislation applies to owners as well as to any person [keeper] looking after [animals] on their behalf, wherever [those animals] are located. A written contract can be of value in ensuring that all parties are clear about their responsibilities in respect of welfare. However, the obligations imposed by law will still apply." - Extract from: *Codes of recommendation for the welfare of livestock: sheep*

The Welfare of Farmed Animals (England) Regulations 2000

- Replace The Welfare of Livestock Regulations 1994. The regulations require all stock keepers to have access to the relevant welfare codes and to be familiar with their provisions. Where appropriate, employers must ensure that their staff receive guidance on them.
- State that animals shall be cared for by a sufficient number of staff who possess the appropriate ability, knowledge and professional competence.

The following guidelines have been produced to assist staff in conservation organisations that own or keep animals, to ensure that welfare is given adequate consideration:

- **Overall responsibility** – for welfare of animals owned or kept by an organisation must be delegated to one named member of staff, who must be sufficiently competent, experienced and empowered to ensure that welfare is properly considered and implemented. Overall responsibility should never fall to a volunteer.

- **Delegation** – duties may be delegated to persons other than the named member of staff with overall responsibility, provided that the person with overall responsibility ensures that the delegated person is *competent* to perform the allocated duties. Further delegation should only occur with the knowledge of the person who bears overall responsibility and the knowledge that the delegate is also competent.

- **Action plans** – it is the responsibility of the member of staff with overall responsibility to ensure that action/emergency plans are in place and readily available to everyone involved with animals. Thus, for example, the person who checks animals must be sufficiently competent to assess and either deal with a problem themselves (e.g. trim the hoof of a lame sheep, repair damaged fencing) or immediately initiate a process for further action (e.g. contact a vet for an injured animal, call for back-up support to remove an animal from a ditch). Action plans should contain information on all relevant contacts, including those of emergency services such as a vet, fire brigade, police, and relevant disposal authority e.g. knackerman.

- **Competence** – staff should be appropriately trained and able to demonstrate competence in tasks for which they are responsible. Training may be formal, or obtained through supervised hands-on experience. However, specialised training relevant to husbandry within extensive systems may be required in addition to standard agricultural stock husbandry courses for those directly responsible for

managing stock. Certification alone should not be accepted as a guarantee of competence; it should be backed up by a demonstration of practical ability.

- **Handling** – should always be done by or under the close supervision of experienced and competent personnel, and with appropriate equipment.

- **Adequate resources** - must be available to ensure that good welfare practice is not impeded by insufficient funds.

- **Legislation** – all owners or keepers of animals must familiarise themselves with the legislation governing the care of stock and be aware of amendments/updates to welfare recommendations. For some stock there are legal requirements to register stock with DEFRA (1); it is often worth 'registering' ownership of animals with DEFRA (1) in any case as amendments/updates to welfare legislation and seminars will then be forwarded as they become available.

- **Health Plan** - DEFRA (1) recommends the development of a written health and welfare programme for all animals within a flock or herd to cover the yearly cycle, incorporating appropriate veterinary and technical advice, and reviewed and updated annually. To include aspects of care such as parasite control and foot care.

- **Ageing or surplus stock** – efforts should be made to relocate stock if they are no longer needed or are no longer suited to grazing on a conservation site. However, if re-homing is not possible, surplus or ageing animals should be humanely destroyed.

- **Post mortem** – of dead stock provides a significant opportunity to improve understanding of how various aspects of animal health are affected when stock are kept within extensive grazing systems. Post mortem need not be restricted to finding the cause of death, but could investigate other important aspects of health such as parasite burdens, damage to organs from poisonous plants and so on.

Responsibilities to others

- **Insurance** - the owner of any domestic stock should have appropriate and current insurance, especially third party cover.

- **Information** – on sites with access, the public should be made aware of the presence of stock through the use of signs and a request for proper control of dogs to reduce stress to grazing animals. Emergency contact numbers should be clearly displayed.

CATTLE

- **Suitability for grazing public access sites** - cattle may offer one of the most suitable grazing options. They are far less vulnerable to dog attack than sheep, and unlike equines, are not generally prone to being fed titbits by humans, thus are unlikely to develop dangerous behaviour which often results from this practice.
- **Safety aspects** - cattle can provoke a negative response from the general public, especially dog owners. These concerns must be taken seriously as every year people visiting the countryside are injured by cattle. Dogs frequently cause cattle to become aggressive, particularly when cows are protecting young calves.
- **Legal considerations** – dairy bulls may not be grazed on public access sites. In addition, the keeper has a responsibility to ensure dangerous animals are not kept on sites which are open to the public, or which have a public right of way passing through them. If a beef bull is on a site with public access, it is advisable to display appropriate signs to warn the public. It is a legal requirement for a bull on a public site to be accompanied by heifers/cows.
- **Options to improve safety** –
  1. Avoid using suckler cows with calves if known to be aggressive towards people on sites where the public enjoy access.
  2. Avoid putting out cows with calves less than 12 weeks old, by which time the calf is more worldly wise and the dam is more tolerant of people/dogs.
  3. Younger store cattle can be curious and boisterous but are very seldom aggressive to people. They are usually fairly resistant to disturbance by noisy dogs although serious cases of worrying do sometimes occur.
  4. Most of the public concern can be dealt with by provision of information, advice and education.
  5. If possible, use animals which are of docile disposition and reassuring demeanour. Many visitors are disturbed by cattle with large horns, and polled animals are often more acceptable.

EQUINES

- **Reaction to dogs** – on sites with public access, where dog worrying may be an issue for stock such as sheep, then horses may provide a useful alternative. They are unlikely to be intimidated by the average dog and will usually see off those that actively chase them; some equines will pursue dogs. However, it is essential that there is somewhere safe for any animal to retreat to; the risk assessment process should particularly attempt to identify features which may be a hazard to fleeing individuals (e.g. cliffs, bogs, ditches).

- **Reaction to people** - most equines are quick to learn that people are likely to bring them titbits. This can lead to dangerous interactions as horses will learn to approach people and may kick out both at the people concerned as well as at one another in order to obtain the best snack. Use of individuals who do not associate people with food, along with visitor education, may help to alleviate this.

GOATS

- **Reaction to people** – feral goats are usually wary of the public and will normally keep a distance. They become bold when they are in the vicinity of rocks or steep slopes to which they will retreat if provoked.
- **Reaction to dogs** – particularly sensitive and apparently stressed by the presence of dogs, which should be kept on a lead where goats are used in enclosures. Goats have been attacked and killed by dogs in these situations. Many feral goats, especially billies, will lower their horns and attempt to butt in order to escape if cornered.
- **Suitability for use on public sites** – in extensive systems, goats can tolerate human presence provided they have steep/rocky ground as refuges.
- **Public perception** – as they are often highly visible, attractive and seemingly wild, feral goats draw considerable, usually positive, public attention. However, gathering and culling of animals in free-ranging breeding herds is usually necessary, and this can lead to negative publicity. Billy kids and yearlings, in particular, scream when handled, as if highly distressed.

PIGS

- **Reaction to dogs** – young/small pigs are vulnerable to attack when on sites with public access. Larger animals are more resistant and many dogs are frightened of pigs, at least initially.
- **Reaction to people** – pigs are often inquisitive and will readily approach people. Some pigs can be aggressive; usually these are boars or sows with young piglets but some breeds are more docile than others. Persistent feeding of palatable items by the public might become a problem as pigs quickly learn to come running for food; often though, pigs are not interested in scraps such as vegetable peelings which may be on offer. As it is illegal to feed pigs scrap food containing meat or animal proteins, it is advisable that such information is provided to the public to discourage feeding.
- **Public perception** – some people are frightened by pigs, especially large ones. However, most public concern can be dealt with by provision of information, advice and education. The interest generated by using pigs extensively on a site is usually far greater than any other grazing animal, so they can be beneficial as a public relations tool. It is also valuable to inform the public about the positive effects of rooting. Equines are often frightened by pigs and there may be considerable concern about using pigs in an area with a bridle path running through it.

SHEEP

- **Reaction to people** – generally ignore or move away from. However, docile breeds or tame individuals may be vulnerable to attack from vandals on some sites, particularly those close to urban areas. Rams can become aggressive, especially during the breeding season or with age.
- **Reaction to dogs** - all breeds of sheep will be vulnerable to attack by dogs when grazing on sites with public access, although breeds may respond in different ways. Some sheep stand up to dogs better than others, some readily panic or do not even attempt to seek cover from potential danger. See individual breed profiles for details (Tolhurst et al, 2001).
- **Importance of cover** - large sites with good natural cover, such as provided by dense scrub and Bracken may allow semi-feral behaviour to develop and thus opportunities for contact between dogs and sheep can be reduced.

The Risk Assessment Approach to the Five Freedoms

Grazing systems are infinitely variable, from the type of animal used to the area grazed, including factors such as vegetation, climate and topography. This variability can make it difficult to provide a precise set of prescriptions under which all grazing systems will function successfully and meet the welfare needs of the grazing animals being used. In order to provide a flexible but considered approach to grazing conservation sites it is proposed that site managers undertake an assessment of risk prior to introducing grazing animals to their reserves.

The Health and Safety Executive describes risk assessment as 'a careful examination of what (in your work place) could cause harm to people, so that you can weigh up whether you have taken enough precautions or should do more to prevent harm'. In appraising a grazing system we are trying to identify what could cause suffering to the grazing animals within it, so that we are able to decide if and what actions are required to prevent suffering. We use the term 'suffering' rather than 'harm' in order to assess the grazing system against the provision of the Five Freedoms (see the following section) which address both the physical and the mental well-being of animals.

Appraising a Grazing System using the Risk Assessment Approach
In order to undertake an assessment you will need to:

1. **Know your grazing system.** It is important to be clear on the grazing system that you are intending to assess. Completion of the risk assessment form, therefore, assumes that the following things have been considered and agreed:

   - The site requires grazing management to achieve ecological objectives
   - Proposed timing and duration of grazing
   - Stock type likely to be used (sheep, cattle, ponies, goats, pigs)
   - Site infrastructure, such as stock containment, water supply
   - Source of grazing animals – either own or grazier
   - Breeding or non-breeding

   This information will form the basis for the risk assessment of the (proposed) grazing system.

   If the grazing system changes the risk assessment will need to be re-visited. For example, if the type of grazing animal changes or the system moves from summer only to year round grazing, or if public access to the site increases. Since some hazards are likely to vary from year to year, the availability of food for example, it would be prudent to re-visit the assessment annually.

2. **Know the grazing animal.** Experience and/or knowledge of the welfare requirements of different grazing animals are essential to undertaking a meaningful risk assessment. If you do not have this information yourself, it is important to enlist the help of a competent person.
3. **Appropriate time frame.** In carrying out the risk assessment process, it is important to choose an appropriate time frame within which to consider risk. We suggest one grazing season or one grazing year.

The Five Freedoms

A series of *Codes of Recommendation for the Welfare of Livestock* have been produced by DEFRA (MAFF) (1) to provide advice and best practice on important matters relating to welfare. Codes are available for a number of different types of domestic animal including sheep, cattle, pigs, farmed deer and goats. Although previously these codes related essentially to housed livestock, DEFRA (1) is in the process of revising them using the concept of the Five Freedoms, to make them more relevant and applicable to all owners of farm animals.

The Five Freedoms are a concept developed by the Farm Animal Welfare Council (3). They form the basis for Welfare Codes produced by DEFRA (1) and are also the principles behind the RSPCA led 'Freedom Foods Scheme'. They are used as a foundation within this conservation grazing guide.

The freedoms are:

1. Freedom from hunger and thirst.
2. Freedom from discomfort.
3. Freedom from pain, injury or disease.
4. Freedom to express normal behaviour.
5. Freedom from fear and distress.

The following summary principles of the Five Freedoms (Webster 1995 and Webster 2001) should be taken into account when considering animal welfare:

- The Five Freedoms address both the physical and mental welfare of domestic animals.
- They should not be viewed as an impossible counsel of perfection but used as a pragmatic, comprehensive checklist to identify the strengths and weaknesses of any husbandry system.
- They should not be taken to indicate that animals in our care should be protected from any exposure to any stress, ever.
- Our aim must be to prevent *suffering* which may occur when an animal fails to cope or has difficulty in coping with stresses because they are too severe, too complex or too prolonged. Suffering may also occur when an animal is prevented from taking any constructive action to control its own welfare. For example, grazing animals on extensively managed ranges may be frequently exposed to some stress but they have considerable freedom to do something about it, although not to the extent of leaving the site.
- The critical issue to decide is at what point the intensity and duration of stress reaches the threshold of suffering.

The following section elaborates on and provides a rationale to some of the welfare and conservation issues pertinent to each of the five freedoms.

1 Freedom from hunger and thirst

"By ready access to fresh water and a diet to maintain full health and vigour." (DEFRA (MAFF) 1/FAWC 3)

The Welfare of Farmed Animals Regulations 2000 – state that animals shall be fed a wholesome diet which is appropriate to their age and species and which is fed to them in sufficient quantity to maintain them in good health, to satisfy their nutritional needs and to promote a positive state of well-being.

1.1 Food availability/limitations - rationale for risk assessment:

- **Hunger** - within the above parameters, some hunger is allowable, as this is the urge that drives all living beings to seek food and eat. However, hunger should not be prolonged so that an animal is obliged to eat that which is harmful to it or as to allow malnourishment. It is important to understand and to differentiate between food availability (quantity), palatability (tastiness) and quality (nutritional content).

- **Winter weight loss** – can be acceptable provided health is not compromised. Under natural circumstances animals lose weight during autumn/winter and then compensate in the spring/summer to prepare for the winter. Within some commercial systems, particularly those which use traditional breeds, stock are rationed in winter allowing for a calculated weight loss to reduce feed costs and allow for the maximum amount of 'compensatory' growth/weight gain the following spring.

- **Condition scoring** – a useful mechanism for assessing the health and well-being of individuals and groups of animals. For example, condition loss in one individual may be due to ill health; condition loss in several may indicate a shortage of food and can thus serve as an early warning to increase the grazing range or provide better quality grazing. Other physical factors such as a dull appearance of coat and eyes, as well as listless behaviour can also give an indication that health is compromised, possibly as a result of nutritional stress. Acceptable and unacceptable condition scores should be specified within a husbandry plan. Trigger scores must be decided. Condition scoring is not appropriate for goats as, unlike other stock, they tend to put on weight around the belly rather than on the back and rump.

- **Practicalities of condition scoring** – requires competent personnel, with experience in assessing condition both through palpation (hands on and have a feel) and visually. Some of the available literature relating to use of condition scores has been referenced in Appendix 2, along with condition score diagrams. Handling facilities will usually be necessary to undertake effective condition scoring.

- **'Natural' fluctuations in condition** – it is possible to run grazing systems wherein condition is allowed to fluctuate on a more 'natural' cycle and is not maintained at a more or less constant score. However, this technique requires careful interpretation to ensure its correct application. For example in a year-round system, a condition score of 2-3 (out of 5) may be of greater concern going into the winter, than the same score at the end of spring when food quality and quantity will be improving. Under these circumstances it may be particularly important to monitor individuals to build up a documented picture of 'natural' seasonal weight gain and loss.

- **Very thin animals** – below a pre-agreed trigger score (specified within a husbandry plan), should generally be removed from a free ranging situation to allow supplementary feeding and rehabilitation without competition. In some instances it may be necessary to accommodate animals; in others, particularly where semi-feral animals are concerned or animals that have never been housed before, it may be more beneficial to bring them into a sheltered location with good grazing, easy observation and company to reduce stress and to speed rehabilitation. If housed, animals must have company; this is a legal requirement under the Welfare of Farmed Animals Regulations (England) 2000. The exception to this is if an animal is being confined due to sickness or injury.

- **Suitability of livestock** – species (cattle, equine, goat, pig or sheep), breed, background, age and sex may all be crucial factors in developing grazing systems which are both effective at managing the habitat as required, and avoid placing the animal under unnecessary and unacceptable nutritional stress.

CATTLE

- **Feeding habits** – cattle graze most effectively by pulling long tufts of vegetation into the mouth with the tongue. On shorter pasture they can compensate by increasing the time spent grazing and more frequent biting. However, once the average sward height drops below a critical point in the range of 6-10cm (depending on the size of the cattle), the animals may begin to experience real shortages of supply and start to lose condition; however, in summer months they may be maintained in good condition on shorter herbage owing to increased seasonal nutritional content.

EQUINES

- **Feeding habits** – equines are monogastric, which means, unlike cattle and sheep, they have a single stomach, which is a relatively inefficient digestive system; however, the large hind gut, which has a slower throughput allows further digestion to occur, increasing efficiency. As a consequence of their single stomach, equines need to eat a lot and will ideally feed for 18 hours out of a 24-hour period. However, the requirement is more for bulk than quality feed.
- **Laminitis** – a painful and sometimes fatal condition, most frequently associated with equines, which manifests itself as acute lameness. It generally results from feeding on too much high quality grass. Most British native ponies are susceptible to laminitis if they are kept on or have access to improved grass swards.
- **Colic** – or severe bellyache, is another common condition in equines. It may be caused by a number of situations, but most commonly from a sudden change in diet, elevated parasitic burdens, or through over consumption of inappropriate feeds such as acorns, apples or grass cuttings.
- **Overfeeding** – unlike sheep, cattle, goats or pigs, which tend to eat to fulfil their requirements, equines can gorge and become overfull, which may result in Colic.

GOATS

- **Feeding habits** – goats are highly flexible, opportunistic grazers and browsers. As with sheep, goats eat by biting their lower teeth against a hard upper palate. They have narrower muzzles than sheep, a mobile upper lip and can adapt a bipedal stance when feeding. They tend to browse more than cattle or sheep; on average, browse comprises 60% of a goat's diet. Goats do best when they have access to a wide range of plant species and a structurally diverse habitat. A range of woody material including dwarf shrubs, young twigs, tree leaves and bark as well as grasses, rushes, sedges, ferns and herbs typically forms the diet of free-ranging goats.
- **Impact of age on grazing ability** – the condition of teeth can be used as a general indication of age. The incisor tooth eruption sequence and wear is the same as in sheep. Goats should have their full set of (8) incisiform teeth by their fifth year. In good conditions (where goats do not rely on hard grazing or bark), goats can be in active service in nature management schemes for at least a decade. However, their working life is usually less than 10 years because they become 'broken-mouthed'.

PIGS

- **Feeding habits** – pigs are monogastric omnivores. As well as rooting for invertebrates and fungi they will graze on grass and other vegetation. The impact of this is negligible in comparison to the rooting effect. Areas with abundant acorns, nuts and berries and areas of softer (but not waterlogged) soil are favoured first. If within reach, a limited amount of browse is also taken along with grass. Pigs lose condition quickly when food sources are depleted. Their food supply is not always obvious, so it is necessary to observe the animals closely for signs of weight loss.
- **Food availability** – on peaty or sandy soils a supplementary food rich in minerals might be necessary, especially for lactating sows. They should also receive normal supplementary food.

SHEEP

- **Feeding habits** – sheep graze by biting their lower teeth against a hard upper palate and thus are able to graze very close to the ground. If put on land 'to clean it up', they will often produce tight swards. Food availability can become an issue in these circumstances. In addition, broken-mouthed sheep (those who have lost teeth) may become malnourished in spite of apparently sufficient food, as they may be unable to 'bite off' sufficient plant matter to sustain themselves and so should generally not be used in conservation grazing situations.
- **Condition scoring** – DEFRA (1) suggests that a condition score in a significant number of the flock of less than 2 for lowland sheep, and of 1.5 for those on the hill, can indicate inadequate management and the need to rectify the situation.

1.2 Supplementary feeding – rationale for risk assessment

- **Supplementary feed** – many nature conservation sites are unsuitable for winter grazing and thus are usually only grazed during winter in extensive situations where there is considered to be adequate forage on the site to sustain the animals without supplementary feed. Prohibition of supplementary feed is accepted practice on some Commons including the New Forest and Dartmoor, on the basis that this leads to overstocking and thus degradation of habitat.

- **Emergency supplies** - any site with animals grazing in winter should have fodder and other nutritional supplements readily available and stored locally for emergencies, as in severe weather conditions.

- **Accessibility** – ensure that all individuals have access to food provided and not just dominant individuals. This may also be an issue where territories form and overlap within a site.

- **Minerals** – supplements may be necessary especially where there is a known local deficiency, during winter months or for pregnant or lactating animals. Advice should be obtained from vets and/or local farms concerning known deficiencies relating to locality.

- **Shelter** - to gain maximum benefit from supplementary feed, stock should be fed in a sheltered location, particularly during periods of prolonged rain. Research by the FAWC (3) has shown that stock cope best with heavy rain by finding shelter and then standing still.

- **Water requirement** – may increase substantially if mineral blocks or supplementary feed are provided.

CATTLE

- **Mineral deficiencies** – cattle can be particularly susceptible to mineral deficiencies, depending upon regional soil types. Advice may be obtained from local vets concerning local phenomena.
- **Supplementary feed** – may benefit from block supplements which assist cellulose breakdown in the gut and may enable consumption of more browse material.

EQUINES

- **Mineral deficiencies** – not known to be particularly susceptible.

GOATS

- **Salt** – provision of salt may be particularly important to goats and essential to maintain health in pregnant or lactating animals. However, there is some concern that the real requirement for goats is not salt, but a switch in management, from thinking that goats can thrive on anything, to ensuring a protein-rich diet especially during late pregnancy or lactation.

PIGS

- **Outwintering** – need to monitor pig condition carefully during very cold weather; can lose condition quickly just trying to stay warm. Sufficient supplementary feed is essential.

SHEEP

- **Supplementary feed** – may benefit from a mineral lick or block supplements which assist cellulose breakdown in the gut and may enable consumption of more browse material.
- **Mineral deficiencies** – sheep can be susceptible to mineral deficiencies, depending upon regional soil types. Advice may be obtained from local vets concerning local phenomena.

1.3 Water - rationale for risk assessment

- **Water availability** - all animals should have access to drinkable water at all times, with contingency plans for emergency water if normal supplies fail. The risk assessment process should identify any possibility of failure of the water supply and recommend checking time accordingly. Mains fed troughs will require daily checking unless there is sufficient on-site storage capacity for a longer time interval to pass.

- **Water quality** – important to consider factors such as salinity, pollution, eutrophic level and other factors which may affect health, such as waterborne diseases. Where there is doubt about any aspect of water quality, this should be tested before moving stock onto a site, or on a regular basis if stock are dependent on a varying source.

- **Water quantity** – there must be adequate storage on site to ensure that if there is a supply problem, animals have sufficient to drink until the site is next checked by the stockperson. Demand varies particularly between types of animal, types of habitat, seasonally and at different stages of the animal's reproductive cycle. All aspects must be carefully considered and calculated to ensure suffering due to an inadequate water supply does not occur. Ingestion of dry food (including hay) will lead to increased water requirements.

- **Access** - should be sufficient for the number of animals using it, with adequate safe drinking points if natural sources of water are being utilised. Where possible, animals should not have to form long 'queues' or have to wait a long time for automatic fillers to recharge the water supply. Watering systems which avoid or reduce competition between animals are particularly relevant on large sites, as less dominant members of the group may not get long to drink before the rest of the social group move away.

- **Distance to water** – this will vary between sites. An absolute maximum travelling distance of 1-1.6 km is suggested, although shorter distances are desirable.

CATTLE

- **Water requirement** - cattle have much higher water requirements than most other grazing livestock and should have ad-lib access to mains supplies or natural sources. Where it has to be brought onto site in a bowser, care must be taken to ensure that the supply is replenished before it runs out. The trough size should be large enough to allow good access for all the animals in the group to drink simultaneously; this is particularly important where the site is large and drinking points are few.

EQUINES

- **Water requirement** - equines have a high water requirement and can quickly become sick/fatally ill if deprived of it. They generally prefer natural sources of water. Most horses will avoid mains treated water if other sources are available; this may have something to do with the chemicals in treated water (e.g. chlorination).

GOATS

- **Water supply** – goats can recycle the urea they produce; they can go for long periods without drinking and are able to use moisture in forage if nothing else is available. In extensive situations it may not be necessary to provide water, especially if it is available naturally. However, managed (i.e. non-feral) goats should be treated like other livestock and supplied with fresh clean water. Provision of water is particularly important if goats are fed hard feed such as nuts or other concentrates.

PIGS

- **Water requirement** – pigs should have ad-lib access to mains supplies or natural sources of water. In dry weather troughs may be turned over, so they need to be firmly fixed or refilled regularly.
- **Wallowing** – 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 try to adapt the area around their water trough, hence creating a problem with water supply by tipping up trough.

SHEEP

- **Water requirement** - sheep must have access to clean, fresh water at all times even though in winter they are likely to get their requirement from the sward. Natural water sources should have good access points as sheep are neither good at swimming nor do they find it easy to climb out of water once their fleeces have become waterlogged. In general, sheep have a lower water demand than other large herbivores, which can be an advantage on sites where water is being bowsered in.

2 Freedom from discomfort

"By providing an appropriate environment including shelter and a comfortable resting area." (DEFRA (MAFF) (1), FAWC (3))

The Welfare of Farmed Animals (England) Regulations 2000 **– states that animals not kept in buildings shall, where necessary and possible, be given protection from adverse weather conditions, predators and risks to their health and shall, at all times, have access to a well-drained**

2.1 Shelter - rationale for risk assessment

- **The importance of shelter** - it provides a microclimate for the animal which helps prevent heat losses through convection. In prolonged wet and windy conditions for instance, if an animal is unable to find shelter from at least one element of the weather, it will be unable to conserve heat and is likely to suffer prolonged heat loss which may cause suffering and compromise the animal's health. Young animals are particularly vulnerable to heat loss and hypothermia. Shelter is also essential in hot weather, both in terms of protection from the sun itself and through provision of a cooler place in which to rest.

- **Flies** – may make some areas ungrazeable during hot summer months, particularly if there are no open, breezy areas for animals to retreat to. Damp sites with tree cover may be particularly problematic for swarming flies, although they will often provide relief from some biting insects.

- **The provision of shelter** - may be artificial or natural, although some types of animal, for example, goats and donkeys, are liable to suffer if roofed shelter is not available. Careful thought is required to ensure that any shelter is of sufficient size or extent to accommodate all animals dependent on it. Shelter should be available on areas that are readily accessible, dry, and sufficiently flat and soft to lie down in comfort. Places for resting and sheltering should not be too far from the food source. This is more critical during the winter if energy is being used to move from one to the other, or if flooding could isolate resources.

- **Natural shelter** – a varied topography, trees and bushes play a vital role, particularly on exposed hills. Trees and scrub are especially important on flat lowland sites, where there is little unevenness of terrain to break the wind. Clumps, rather than single trees and bushes are more effective in the development of a microclimate, and provide greater benefits to animals as protection from both bad weather and excessive heat.

- **Artificial shelter** - where there are buildings or shelters they must be constructed to ensure that bullying within a group does not prevent weaker individuals from entering. It may be most appropriate, for example, to provide a roofed shelter which is open on all or most sides. Location of artificial shelters can be advantageously placed close to or within areas which require targeted grazing or browsing.

CATTLE

- **Hardiness** – most ages and breeds are able to tolerate outwintering provided they are well fed and can find shelter from the wind. However, young cattle (< 1 year old) are less energy efficient than adults, due to a combination of having immature rumen development and large surface area to body ratio, thus are less able to withstand cold wet weather.

EQUINES

- **Hardiness** – native breeds of equine are generally very hardy and will happily outwinter with shelter and sufficient food.
- **Rugs** – equines requiring rugs will not generally be suitable for conservation grazing. However, some sites are grazed by equines that are also used for recreational purposes and these equines may have rugs. If used, rugs should be removed and replaced daily to ensure that they are not causing injury or discomfort from rubbing or slipping.
- **Roofed shelter** – field shelters provide protection from wind and rain in winter and from the sun during summer. Shade from a shelter or stabling decreases the incidence of sweet itch; proximity to trees and shade is more likely to increase it.

GOATS

- **Hardiness** – goats are adapted to *dry* warm or cold, often semi-arid environments.
- **Shelter requirement** – goats require some form of shelter year round for protection from cold, wet weather and at night, whether natural (e.g. woodlands, the lee side of cliffs) or through built shelters. Any shelter should be large enough to accommodate all the goats. They prefer dry, well-drained ground.

PIGS

- **Hardiness** – most ages and traditional breeds are able to tolerate outwintering provided they are well fed and can find shelter from the wind. Very young piglets need more warmth during the winter months.
- **Shelter requirement** – although sites with good areas of scrub may provide enough cover, a watertight shelter is recommended.
- **Sunburn** – pale skinned breeds are vulnerable to sunburn and so shelter from the sun is essential during summer months.
- **Wallows** – are essential; pink-skinned breeds are easily sunburned.

SHEEP

- **Shearing** – an annual requirement for all sheep with the exception of the Soay and Wiltshire Horn. Risk of entanglement may make it preferable to use breeds with compact fleeces on sites where there is heavy bramble growth. Winter-shorn sheep should not be turned out on site.
- **Shelter requirement** – in general, sheep are tolerant to extremes of hot and cold, although heavy continuous rain can cause ill-health, particularly if there is other associated stress, such as a shortage of food.

3 Freedom from pain, injury or disease

"By prevention or by rapid diagnosis and treatment." (DEFRA (MAFF) (1), FAWC (3))

The Welfare of Farmed Animals (England) Regulations 2000 - requires that all animals kept in husbandry systems in which their welfare depends on frequent human attention shall be thoroughly inspected at least once a day to check that they are in a state of well-being; and that animals kept in systems other than husbandry systems in which their welfare depends on frequent human attention shall be inspected at intervals sufficient to avoid any suffering.

These regulations also state that any animals which appear to be ill or injured shall be cared for appropriately without delay; and where they do not respond to such care, veterinary advice shall be obtained as soon as possible.

3.1 Frequency of checking - rationale for risk assessment

- **Large, remote or inaccessible sites** – can cause difficulties in checking stock, particularly if a site supports woodland, scrub or other tall vegetation. These habitats provide invaluable shelter and on public access sites shy or vulnerable animals may use these areas to deliberately hide, making inspection a time-consuming and sometimes impossible process. Nonetheless, animals grazing extensively should still be carefully inspected at least once a week and preferably on a daily basis; this may be particularly important on public access sites where the possibility of gates being left open, animals being fed the wrong things or frightened by dogs may increase the potential for suffering to occur.

- **New circumstances** - no animal should be subjected to new, novel or unusual grazing situations without a period of frequent inspection whilst it becomes familiar with its surroundings, and to ensure its level of stress does not become unacceptable during this process.

- **Inspection** – the health and welfare of animals depends upon regular supervision. The person responsible for checking animals should inspect them at intervals appropriate to the circumstances in which they are kept. The frequency of inspection will depend on the number and intensity of factors which affect the animals' welfare. These may vary seasonally according to particular husbandry requirements, such as fly strike in sheep. Frequency of inspection will also be affected by the range of precautions taken to reduce any risks. However, daily checking is preferable.

- **Monitoring** – incremental change, such as gradual loss of condition, may be less noticeable in stock which are checked daily by the same person, than by someone who looks at the animals less frequently. Care should therefore be taken to ensure that daily checks do not just become head counts, and that less frequent, but regular monitoring of gradual change is taken account of.

- **Pregnant animals** – in the later stages of pregnancy (last one-third) must ideally be closely observed every day, particularly as they approach parturition. In some circumstances it may be necessary to remove pregnant animals from extensive situations into more convenient 'in-bye' locations.

- **The importance of background** - regularity of checking should take into account whether the same animals return to the site each season or are used year-round and therefore become knowledgeable about a site, or whether the animals used for grazing a site change seasonally or annually, in which case they may be inexperienced and more liable to need attention.

- **Resources** – management of conservation sites by grazing requires large amounts of time and this should be taken into account at the planning stage and sufficient resources allocated to ensure appropriate levels of checking. It may also be necessary on large sites to budget for a quad bike or riding horse to assist in checking stock.

3.2 Poisonous plants - rationale for risk assessment

- **Susceptibility to eating poisonous plants** - in general animals avoid poisonous plants unless short of quality feed. However, those lacking experience of grazing natural herbage, such as the very young or newly born, and animals which are totally new to a situation, such as those which have been intensively reared on an artificial diet, are vulnerable to eating poisonous plants.

- **Poisonous plant debris** – although tending to avoid poisonous plants whilst they are growing, animals will often eat cut or wilted plants and these are usually equally dangerous. Particularly with Ragwort and Yew, the precautionary approach should be adopted, and all debris produced from cutting or clearing these poisonous plants should be removed.

- **Severe weather** – most incidents of poisoning occur during severe weather conditions, such as when the ground is covered with snow or in drought conditions. Emergency procedures for dealing with such circumstances should be identified within the risk assessment process.

- **Photosensitisation or Yellowses** – involves the animal eating a plant and photodynamic substances entering the blood stream (e.g. St John's Wort is known to carry one such photodynamic substance). Once into the blood stream the toxin is carried around the body. Where the blood supply is close to uncovered skin, such as eyes, nose and ears, the skin becomes damaged and swollen with fluid. The animal rubs in discomfort, fluid begins to ooze, scabs over and becomes very dry and irritating. Ears can drop off and there is an increased risk of fly-strike. There is the potential for this condition to be more of a problem in conservation grazing, with the diversity of plants present, than in regular intensive agriculture.

- **Introducing animals to situations with poisonous plants** - new breeds or new types of animals should not be introduced to a habitat or vegetation type with which they are unfamiliar without an extended period of close observation, to ensure that they do not positively select a species which appears palatable but which is poisonous to them. 'Extended' in this instance should incorporate periods appropriate to the seasonal cycle within which the animals are being used on a site. The risk may also be reduced by ensuring that new animals have fed well prior to being introduced to a site.

- **Assessing the risk** - carry out a risk assessment of all poisonous and toxic plants within grazed area. Review this at least annually or whenever a change has occurred to the grazing system, such as an increase in stock density, a change in grazing season or introduction of a new type of animal.

- **Preventing poisoning** - if poisonous plants become a risk, then grazing animals should be excluded from these areas or the poisonous plant must be controlled, as the likelihood of incidental poisoning will become unacceptably high. To maintain grazed conservation sites free from poisonous plants is seldom practical and in nature conservation terms is rarely desirable.

CATTLE

- **Yew** – a precautionary approach is to fence or remove Yew where possible. However, some cattle may develop tolerance to it as long as other sources of food are available. Cut and wilted Yew, which may be more palatable, should always be removed or burned to avoid poisoning.
- **Bracken** – during drought years consumption of this plant causes most instances of poisoning in cattle. In order to reduce the risk, cattle should be removed from Bracken-infested sites when drought circumstances prevail.
- **Acorns** – massive ingestion of acorns can kill cattle.

EQUINES

- **Sensitivity to poisoning** - equines are highly sensitive to poisoning and will generally die from eating even very small amounts of poisonous plant.
- **Ragwort** – it is generally considered that even small amounts are highly fatal if consumed. However, the British Equine Veterinary Association (BEVA – see Appendix 6 for contact details) advise that small amounts are rarely fatal; however, over a period of time, the effect is cumulative and small amounts ingested over a period of time may be fatal. Particular care is needed to ensure hay is free from Ragwort.
- **Yew** – a precautionary approach is to fence or remove Yew where possible. Cut and wilted Yew, which may be more palatable, should always be removed to avoid poisoning.

GOATS

- **Rhododendron** – ingestion is rare, but is known to cause vomiting, convulsions and death; after tasting it they may become addicted to the plant and will selectively graze it. As a result, Rhododendron is probably the most common cause of plant poisoning in goats.
- **Sensitivity to poisoning** – goats appear to be more tolerant of tannins and other secondary plant compounds than sheep. It is thought that the quick through-rate of food through the rumen enables them to eat plants that may be poisonous or otherwise indigestible to other livestock, including ferns and Yew. However, they also appear to be more discriminating than sheep; using their narrow muzzles, mobile upper lips and agility (including feeding bipedally) may enable them to select plant parts with relatively low levels of plant defence chemicals.

PIGS

- **Rhododendron** – pigs have been used to break up the thick litter layer left after clearance of this plant. However, not enough is known on the effects of the plant on pigs and so care should be exercised and other food always available.

- **Bracken** – readily take bracken rhizomes in the autumn when other obvious food sources are finished. The various toxins and carcinogens in bracken do not seem to affect pigs as they do other animals, but thiamine deficiencies can be a real problem if no other food is available to them.
- **Acorns** – favoured by pigs. As acorns are poisonous to equines but not pigs, it can be beneficial to keep both types of stock together where acorns are abundant.

SHEEP

- **Instances of death by poisoning** - are rare amongst sheep and seem to occur only when grass is inadequate, as in times of drought, overgrazing, or when there is lying snow.
- **Ragwort** - individual sheep may preferentially graze Ragwort. Although they seem to be unaffected by the poisonous nature of the plant, it is likely to be causing them physiological damage which may take many years to manifest itself through obvious ill-health and so sheep should never be forced to eat Ragwort. Young or inexperienced animals of lowland breeds may be more vulnerable than hardy breeds or mature sheep.

3.3 Parasite control - rationale for risk assessment

- **Internal and external parasites** - every effort should be made to ensure that stock do not suffer as a result of parasites. Owners and keepers of conservation stock should have an effective prevention and control policy for both internal and external parasites.

- **Susceptible individuals** - young and old animals are most at risk because resistance to parasitic damage is undeveloped or weakened. In addition, individuals may be genetically predisposed to damage by worms, whilst others will have a certain level of genetic immunity. Breeding programmes should seek to breed replacement stock from individuals which demonstrate apparent immunity, rather than buying in new stock. Different types of stock may react differently to different types of parasite.

- **Visual checks** – scouring, coughing and loss of condition may also indicate a parasite problem and act as a cue either for checking egg counts or actual treatment. However, in some animals (notably young equines) irreversible worm damage may already have taken place by the time visual symptoms become apparent. (See appendix 3 for Indicators of health diagrams for cattle, equines and sheep).

- **Wormers** – include a group of chemicals called avermectins which have adverse effects on some dung-living invertebrate populations and subsequently on bird and mammal populations on wildlife sites. To avoid damage to vulnerable wildlife, animals removed from sensitive sites for worming should only be returned after a sufficient time period has elapsed to ensure the product has cleared from the animals' system. New alternatives to avermectins are being developed. Internal parasites may show degrees of resistance to the drugs used to control them.

- **Cleaner grazing systems** – may be achievable through low stocking densities and/or rotational grazing practices. Regular dung sampling of individuals (faecal egg counts) and analysis of pasture contamination of favoured grazing areas provide useful mechanisms for determining the existence of a parasite burden or the likelihood of one developing.

Thus is summary, three main approaches can be taken in the control of internal parasites:

1. Adopt a clean grazing system with 4-8 week sampling of dung, worm burden analysis (faecal egg count) and assessment of resistance to wormers, followed by treatment of individuals as necessary.
2. Target the use of wormers within a clean system, to control the main types of parasite within the type of stock being used.
3. Routine, regular administration of worming drugs, according to manufacturers' advice. Current research suggests this may lead to parasite resistance and is no substitute for good pasture management.

CATTLE

- **Parasites** – with the exception of juveniles, which may require worm control, cattle are able to develop a high level of resistance to intestinal worms and routine dosing should not normally be required in the extensively grazed situations applying to most nature reserves. Extensively grazed cattle that are in familiar territory with their usual companions suffer few health or welfare problems provided that they are maintaining their nutritional status. It is customary to treat commercially farmed cattle with a range of routine preventative medicines to combat internal and external parasites and a number of infectious diseases. Many of these will only be relevant in certain high-risk areas (e.g. liver fluke, which cannot be controlled by normal grazing techniques and is very debilitating) so advice should be sought from a local vet concerning necessary treatments.
- **Localised problems** – some health problems are very area specific, and whilst local animals may develop immunity, animals brought in from other regions may be very susceptible to developing the condition, e.g. Redwater.
- **Indicators of health** – see appendix 3.

EQUINES

- **Dung sampling** – a trigger level for worming needs to be agreed with vet or parasite advisor and then acted upon.
- **Liver fluke** – do not suffer from liver fluke if grazing on wet land.
- **Targeted use of wormers** – example of how approach 2 above could work. Three treatments are recommended for equines grazing in an extensive system: (i) Pyrantel (for tapeworm control) administered as a double dose during the summer; (ii) Ivermectin (for bot fly) in December; and (iii) 5 day treatment with Panacur (for redworms) between November and January. (Advice as of Spring 2001) However, the potential impacts on wildlife should always be considered before administering drugs and the animals removed from sites, before worming, where there are known to be species vulnerable to chemicals in wormers.
- **Indicators of health** – see appendix 3.

GOATS

- **General health** – goats are susceptible to a similar range of bacteria, parasites and viruses as sheep.
- **Worms** – goats foraging in relatively dry sites with a high structural diversity in the vegetation tend to have low worm burdens. When made to graze on short swards with little or no available browse or areas with a history of heavy grazing by other stock or where tethered for long periods, serious infestations can arise (Bullock 1982, 1991).

- **Fly-strike** – goats are not susceptible to fly-strike like sheep, although Angora goats with their long woolly hair may be an exception.

PIGS

- **Parasites** – extensively grazed pigs suffer few health or welfare problems provided that they maintain good nutritional status.

SHEEP

- **Fly-strike** – whilst the fleece offers some protection against normal biting insects, in damp warm conditions (May-October) sheep are vulnerable to fly-strike. This is a distressing condition which occurs when the Greenbottle fly lays eggs in the fleece and the hatching maggots feed upon the flesh of the sheep. Individuals with dirty fleeces from faecal scouring or discharges from unattended wounds are particularly vulnerable. The risk can be greatly reduced by dipping or treatment with approved 'pour-on' chemicals. Head fly harassment in horned sheep can lead to strike. Incidents of fly-strike on extensive, exposed upland sites are rare; during the course of the day hill sheep tend to gravitate to hill tops where the air movement is stronger to escape flies if the weather is warm and humid.
- **Internal parasites** – Sheep on extensively grazed systems (i.e. at low stocking densities) are unlikely to need regular worming. Lambs within intensively managed commercial flocks are often routinely dosed with anthelmintics on a 6-8 week cycle; the ewes usually twice per year. Liver fluke may cause problems on wet sites.
- **External parasites** – until the mid-1990s all sheep were required by law to be dipped for sheep scab. Many sheep farmers, particularly those with large numbers of stock, still routinely dip sheep once or twice a year to protect them from external parasites such as sheep scab, ticks and from fly-strike. However, there is now stringent legislation concerning the use of sheep dip, both to protect the operator (who must be licensed) and in order to protect water courses and ground water supplies from contamination. Several spray-on products are now available which are very effective in controlling external parasites, although not scab, and it is possible that compulsory dipping or some other form of treatment against scab may once again be introduced. Scab treatment is currently legislated for within the current Sheep Scab Order which places a clear burden on the producer to treat should any suspicion of the condition exist.
- **Indicators of health** – see appendix 3.

3.4 Injury and disease – rationale for risk assessment

- **Contagious conditions** – if bringing in new animals, the precautionary approach should always be taken, by isolating from existing healthy animals and/or treating new stock until it is certain that they are free of problems. Some conditions are transferable between types of stock, such as Foot and Mouth; others are issues within species, such as scab in sheep. It is a legal requirement to notify DEFRA (1) of listed contagious diseases. See appendix 5 for full list.

- **Disease prevention** – decisions by the keeper to use preventative medicines such as vaccinations should be based on a sound knowledge of the animals' husbandry for which the decision is being taken, and the system within which they are grazing.

- **Injury** – may arise from a variety of different causes, including fighting between individuals, exertions over difficult terrain or from contact with foreign objects such as debris from ramshackle sheds/buildings and inappropriate or derelict fencing. Fencing should be secure and appropriate for the type of grazing animal being used and debris should be removed from site or fenced off to remove the potential for injury.

- **Reducing the risk of road injury** – may be through a number of measures, including traffic calming measures, warning signs and increased enforcement following discussion with Traffic Police. This is an area currently under discussion and development.

CATTLE

- **Fencing** – needs to be strong, as cattle are easily capable of breaking through fencing that may be weakened through age. Standard stock fencing, one/two strand electric, or two strand barbed wire fencing will normally suffice; standard stock fencing (non high tensile), will be highly prone to fence posts being broken.

EQUINES

- **Tetanus** – it is generally recommended to vaccinate equines against tetanus.
- **Equine influenza** – most domestic equines are vaccinated against equine influenza. Those used in conservation grazing situations are unlikely to be at risk, unless grazing sites where ridden horses are visited, such as those crossed by bridleways. In such situations, vaccination against equine influenza may generally be recommended by vets.
- **Fencing** – post and rail fencing is most suitable. Alternatively, high tensile standard stock fencing or visible electric tape will also suffice, provided it is of such a gauge that the hoof will not fit through it. Equines kept within barbed wire may be prone to cuts and other injury. Fences must be sufficiently high to discourage jumping.

GOATS

- **Fencing** – where goats are in social groups, are provided with dry shelter and have a diversity of forage including browse, containment is not usually a problem. However, where any one of these factors is missing, particularly on relatively small sites (where the aim is to 'mob' graze in order to quickly bring scrub under control) fences and walls may be jumped, and animals may stray. Here, fences at least 1.5 m high are necessary. They should not be topped with barbed wire, and nearby objects that may provide launch pads should be removed. Deer fencing is effective although expensive and unsightly. Electric fencing can be effective, particularly if two or three strands or electric netting are used, topped by electric tape but goats can quickly detect when power is not turned on. All fences should be checked regularly.
- **Disease** - goats should not be turned out on totally wet ground, especially if in feral conditions as they are prone to developing pulpy kidney infection (*Clostridium welchii*) and death may be quick. However, it is possible to vaccinate stock against this condition.

PIGS

- **Fencing** - needs to be strong enough to withstand the strength of the pigs and low enough to prevent young animals from getting out under them. Their strong neck muscles enable pigs to lift surprisingly heavy or firmly fixed down fences high enough to escape. Electric fences are useful; pigs quickly learn to respect them.

SHEEP

- **Fencing** – the most suitable and safest form of fencing for sheep is permanent, high tensile, standard stock fencing (beware – ensure netting is correct specification for sheep, as larger holes will allow lambs and primitive breeds of sheep to escape), topped with one or two plain strands of high tensile wire. Most sheep are also responsive to electric fencing, although generally quick to learn when the current is switched off or has expired; hence mains electricity supply is best. Horned sheep must not be kept with electric flexinet fencing, due to the danger of entanglement.
- **Vaccination** – a range of vaccines are available which offer protection against some of the most common diseases affecting sheep. Veterinary advice should be sought on a site by site, and individual flock basis, as to the benefits or disadvantages relating to their use.

3.5 Foot care - rationale for risk assessment

All animals should receive trimming for excessively overgrown or misshapen hooves when such treatment is necessary or desirable. In grazing situations where foot trimming is not on a regular routine basis, hoof condition should be monitored closely.

- **Frequency of treatment** – hooves should be trimmed as often as is necessary to maintain the health of the foot. The necessity for hoof trimming will depend on such factors as age, season, nutrition, management, injury and whether the ground conditions are stony or soft.

- **Handling facilities** – to enable feet to be properly checked and treated, should be easily accessible.

CATTLE

- **Frequency of treatment** – in general, cattle kept out of doors will rarely need to have their hooves trimmed. Some cattle may need attention to their hooves once or twice a year; such individuals are often termed 'bad-footed'.

See DEFRA (MAFF) publications *Lameness in Beef Cattle and Dairy followers* & *Lameness in Dairy Cattle* (revised edition). See References at end of document for publication numbers.

EQUINES

The Farriers (Registration) Act 1975 and Farriers Registration (Amendment) Act 1977 – makes it an offence for anyone who is not registered to carry out farriery. Farriery is defined as any work in connection with the preparation or treatment of the foot of a horse for the immediate reception of a shoe thereon, the fitting by nailing or otherwise of a shoe to the foot or the finishing off of such work to the foot. The definition does not include trimming the foot if there is no intention of immediately fitting a shoe.

- **Frequency of treatment** – hooves grow continuously throughout the lifetime of a horse (> 20 years) and as a guide, the hooves of domestic horses should be checked and trimmed by a registered farrier every 4-8 weeks. Hardy ponies used for conservation situations may need less frequent trimming, particularly if kept on hard, dry ground. Feeding concentrates may result in more rapid growth of hooves and increase foot care requirements. However, all equines still require regular checking of condition of hooves, with trimming where necessary, which should be carried out either by a registered farrier or by a person competent to carry out an appropriate assessment.
- **Long-term monitoring** – of hoof condition, with and without trimming may be useful to allow identification of individuals with consistent problems, as well as those who have good hooves with little requirement for trimming. Animals with bad feet should not be used for breeding.
- **Laminitis** – requires regular and specialised foot care from an experienced farrier and veterinary advice, as well as changes in management. Equines with a history of laminitis may well be suited for grazing poor keep, and sites with any good grass keep should be avoided.

GOATS

- **Feet** – foot trimming is not necessary if hard ground is present and used within the hefting area of the animals. On soft ground this task may need to be undertaken sometimes several times a year. The provision of concrete block(s) or rubble (perhaps placed within or near areas used as shelter by the goats) may obviate the need to undertake trimming.

PIGS

- **Feet** – probably will not need trimming if extensively grazed. A possible problem to be aware of if kept in smaller areas for part of the year.

SHEEP

- **Feet** – sheep with access to dry, hard or rocky ground may only occasionally require foot trimming. On soft, damp sites, hoof trimming may become necessary 3-4 times per year; foot baths may also be required as sheep are prone to foot-rot on damp sites.
- **Chronic lameness** – see transport section 3.7.

See DEFRA (MAFF) publication: *Lameness in Sheep* Publication number 1149 for illustrated advice concerning hoof care in sheep.

3.6 Handling facilities – rationale for risk assessment

- **Handling facilities** – must be readily available to enable individuals to be contained, inspected and treated where necessary; they should also include an area accessible for loading. Facilities may be portable and shared between sites, provided that it is possible in emergencies to access these facilities immediately.

- **Design of handling facilities** - facilities should be well designed and appropriate for the type of animal they are being used for. They must provide safety to handlers as well as being designed and built so as to avoid potential injury to animals. Hence cattle will require a system which is strong, heavy and high, and where possible incorporating a cattle crush; smaller, lightweight hurdles will suffice for sheep; equines need handling facilities of similar height and strength to those used for cattle, but are also likely to need a treatment area/race which is fully lined with board to prevent the animal procuring leg injuries.

- **Portable or shared facilities** – should be designed so that they are easily cleaned and disinfected after use, or before being moved between sites.

- **Sedation** - the need for sedation is a decision to be made in conjunction with a vet who has been present where animals have been put through a handling system without sedation and where they feel no more improvements to the facilities can be made. Sedation may be through the use of a narcotised dart or through feeding of sedative in feed. The use of the darting technique will be limited by the availability of a vet with a licence who uses it regularly. Most areas with a zoo in the vicinity will have a vet licensed to use a narcotised dart gun. Use of a dart gun in open areas should only be for emergency procedures. Health and Safety procedures for people and animals must be in place.

CATTLE

- **The need for handling** - most of the cattle that will be useful for conservation grazing will be more than 1 year old and therefore of sufficient size (200-500kg) to require special handling procedures. The conditions and situations that will call for animals to be caught and treated are generally few, but it is a contingency that must be catered for before the animals are released onto a site.
- **Handling facilities -** a pen of static or portable design is needed for catching the animals and this is best made large enough to contain the whole group. A team of assistants may also be required, able to work in a calm and confident manner. Most cattle treatments will involve restraining the animal's head, a process that will need at least two people. This can be done with a rope halter, having first confined the animal to an individual stall. A safer arrangement is to use a cattle crush, a narrow space which prevents the animal turning round and allows the head to be held securely in a yoke. Only trained and experienced personnel should undertake such procedures. Most commercial cattle farmers will have access to or own a tractor and portable crush.

EQUINES

- **Handling** – as an animal which responds to the unknown by 'flight', handling can be very stressful for equines, particularly those which are semi-wild or unhandled, and as a result they can be liable to injury when contained in handling pens (known as 'a set of stocks'), and the 'flight' instinct may then be manifested as 'fight'. Equines which are head collar trained will not require a special handling system, and are unlikely to become distressed when routine treatment is necessary, provided they are always handled quietly, with care and patience.
- **Handling by constraint or sedation** - for equines unused to being handled, sedation within a closed area, or confinement in an appropriately designed and constructed handling system should be used in accordance with whichever better serves the welfare of the animal; and this will depend on individual circumstances.

GOATS

- **The need for handling** – in free-ranging breeding herds, numbers will eventually exceed those required, and animals surplus to requirement will need to be caught, given away or culled.
- **Domesticated stock** – in nature management schemes within confined areas goats tend to become tame and easy to handle; often more so than sheep.
- **Handling** – goats can become stressed and try to bolt, which means that they make for the nearest 'gap' and on rare occasions this may cause minor injuries to themselves (especially around the eyes) or the handler (especially to the legs and groin). Using horns for handling should be avoided, except for mature billies when it may be necessary for health and safety reasons.
- **Facilities and method** – ease of round-up depends on how much handling goats are used to; feral goats can be very difficult to catch, but goats that are occasionally fed and are used to humans in closer proximity can be easy to handle and transport. Wary of dogs, although sheepdogs have been used successfully on hillsides without much steep ground. Billies in particular may butt using horns if cornered. Round-ups of feral goats (e.g. Scotland, Wales) usually require fairly complex corralling systems and a small team of (fit) people.
- **Timing** - gathering should be avoided in the first half of the year to prevent potential miscarriages or for fear of orphaning kids, and is usually easiest in autumn during the rut, when animals are in best condition.

PIGS

- **Gathering** – pigs quickly learn to respond to food. Commercially available 'pig nuts', apples or acorns are suitable items to use to entice pigs. A rattle bucket is soon identified with food and pigs will usually follow this unless there are better items on the ground. Pig boards are also useful for moving pigs around and can be hand-made of strong board.
- **Handling equipment** – a small pen and catch up area with hurdles and race is necessary when dealing with numbers of animals. A crush is useful for administering any treatment necessary. Pigs are strong and so the crush and pen need to be strong enough to restrain them. However, some vets may prefer to use a twitch than a crush, due to the danger of injuries to forearms and wrists between the pig and crush.

SHEEP

- **Handling** – small size makes sheep relatively easy to handle, with few personal safety implications; with practice they are relatively easy to round-up, pen and transport. Using horns for handling should be avoided.
- **Handling facilities** - in comparison to the handling equipment required for large stock such as cattle, the basic facilities required for sheep are cheaper, lighter and much more easily portable. This can be a particularly useful consideration for conservation managers with a large number of sites to graze, as it is relatively easy to share equipment between sites.
- **Gathering and penning sheep** - on large sites or those with dense cover or varying terrain it may be essential to have the use of one or more good sheep dogs to enable round-up and capture of stock, whether for routine handling or transporting to another site. On small sites with semi-tame sheep, it may be possible to lure animals into an enclosure with feed.

3.7 Transport

The Welfare of Animals (Transport) Order 1997 forms essential reading for anyone involved with transportation of animals. Additionally, those transporting animals should be aware of the continued existence of the provisions of the Transport of Animals (Road and Rail) Order 1975. There are no exemptions from the general obligation to transport animals in ways which do not cause, or are likely to cause injury or unnecessary suffering. The Order sets out general and specific requirements for the transport of all vertebrate animals (other than man) and other cold blooded animals.

The Order includes provisions and requirements for the following: protection during transport; space allowances; fitness to travel; treatment of sick animals; feed, water and rest periods; duties of transporters; and documentation. A guidance book to accompany the Transport Orders and produced by DEFRA is also available from DEFRA's stationery office. Appendix 4 summarises stocking densities for travel by road. The following points summarise some key aspects relating to transportation of livestock.

- **Safety** – any vehicle or trailer used for transportation must be constructed in a way which ensures the safety of stock during loading, transport and unloading.

- **Comfort** – any vehicle or trailer must protect stock from injury, unnecessary suffering, inclement weather, excessive noise and vibration.

- **Size and strength** – any vehicle or trailer must be strong enough to withstand the weight of the animals and of suitable size to enable them to stand in a natural position.

- **Hygiene** – animals should be loaded into a clean vehicle which has been disinfected where appropriate. Sufficient litter should be used to absorb urine and droppings.

Movements over short distances

The following information for different types of grazing animal relates specifically to the movements of animals for short distances within or between conservation sites, and does not in any way abdicate the keeper from his/her responsibility to read and observe the law as set out in the 'Welfare of Animals (Transport) Order 1997'. Copies of the Order can be obtained from: The Stationery Office Publications Centre, PO Box 276, London SW8 5DT, and guidance from DEFRA HQ, Nobel House, 17 Smith Square, London, SW1P 3JR, telephone 0207 238 6000 or by e-mail from the DEFRA helpline: **helpline@defra.gsi.gov.uk** ; the Scottish Executive for Environment and Rural Affairs, telephone 0131 556 8400 or e-mail **ceu@Scotland.gov.uk** or the National Assembly for Wales, telephone 029 20 825111, e-mail **webmaster@wales.gsi.gov.uk** .

CATTLE

- **Moving cattle on foot** – cattle can be walked during daylight hours, preferably in established groups, along roads for short distances if sufficient help can be found to safeguard against traffic.
- **Transporting cattle** - normally they are loaded into a lorry or towed trailer and carried as passengers. Loading can be stressful for cattle, especially when first experienced. They quickly adapt to it however and will be much more cooperative after experiencing it a number of times, especially if they have been treated quietly and confidently. It is illegal to transport horned and polled animals together in the same compartment, unless the horned ones are haltered and tied.
- **Making transporting easier** – use same trailer and loading routine each time. A shallow gradient and non-slip ramp will also facilitate loading.

EQUINES

- **Moving equines on foot** – if head collar trained and biddable it is possible to lead equines along roads for short distances if sufficient help can be found to safeguard against traffic. In some circumstances it may also be possible to herd small groups of unhandled equines between sites or grazing areas.
- **Moving equines by vehicles** – regularly handled equines may be led onto and transported by lorry, livestock trailer (provided it is tall enough) or horsebox. Unhandled horses may be transported by the same methods, but will require herding onto the vehicle from an appropriate handling system; once loaded, such horses will travel best in small areas, either alone or in small social groups. When transported by lorry, equines should be allowed sufficient space to spread their weight evenly over all four legs and to hold their head in a comfortable position to aid balance.

GOATS

- **Transporting goats** – as with sheep, goats are most commonly transferred between sites using a livestock trailer or lorry, both of which will often have a double deck facility, which is convenient for moving larger numbers in one go. However, care must be taken particularly in warm weather to ensure that animals have sufficient ventilation and room to avoid overheating. Although being loaded onto a trailer may cause some initial stress, animals which are regularly moved are likely to become easy to load as they will begin to associate a trailer with new grazing opportunities. Goats tend to be more biddable when trained to a bucket and person, than sheep are.

- **Sex and age** – mixed sex and age groups of horned sheep should be avoided. Mature horned males should not be transported in the same compartment as young animals. Goats are also prone to piling up in corners of trailers with the little ones at the bottom.

PIGS

- **Moving pigs** – even over very short distances, moving pigs on foot can be difficult. Normally, they need to be loaded into a lorry or towed trailer and carried as passengers. Pigs can be reluctant to load the first time, but they quickly adapt to it especially if they have been treated quietly and confidently. Food can provide a useful incentive. If in difficulties, a sack held around the rump by two people one either side of the flank is wonderful encouragement. Also use of 'pig board' to block view on opposite side of preferred route.

SHEEP

- **Transporting sheep** – most commonly sheep are transferred between sites using a livestock trailer or lorry, both of which will often have a double deck facility, which is convenient for moving larger numbers in one go. However, care must be taken particularly in warm weather or after dipping to ensure that animals have sufficient ventilation and room to avoid overheating. Although being loaded onto a trailer may cause some initial stress, animals which are regularly moved are likely to become easy to load as they will begin to associate a trailer with new grazing opportunities.
- **Herding sheep between locations** - sheep can be moved short distances on foot with the help of people to control traffic and dogs or more people to keep the sheep as a flock and to block potential escape routes.

3.8 Emergency arrangements

The Protection of Animals Acts 1911-1988 contain the general law relating to cruelty to animals. Broadly it is an offence (under Section 1 of the 1911 Act) to be cruel to any domestic or captive animal by anything that is done or omitted to be done.

The Welfare of Farmed Animals (England) Regulations 2000

- State that any animals which appear to be ill or injured shall be cared for appropriately without delay; and where they do not respond to such care, veterinary advice shall be obtained as soon as possible.
- State that, where necessary, sick or injured animals shall be isolated in suitable accommodation with, where appropriate, dry comfortable bedding.

The Welfare of Animals (Transport) Order 1997 – provides that an unfit animal may be transported *only* if it is being taken for veterinary treatment/diagnosis or is going to the nearest available place of slaughter, and then only provided it is transported in a way which is not going to cause it further suffering.

The Welfare of Animals (Slaughter or Killing) Regulations 1999 as amended by the **Welfare of Animals (Slaughter or Killing)(Amendment) Regulations 1999** state that it is a general offence to cause or permit any avoidable excitement, pain or suffering to any animal during slaughter or killing. The general offence applies in all cases, but the detailed provisions in respect of the method of slaughter or killing do not apply when an animal has to be killed immediately for emergency reasons.

Article 5 of the **Animal By-Products Order 1999 (S.I. 1999 No. 646)** requires that fallen stock are disposed of by:

- despatch to a knacker's yard, hunt kennel or similar premises;
- incineration;
- rendering in approved premises;
- in certain circumstances, burial in such a way that carnivorous animals cannot gain access to the carcass, or burning.

Requirements for legal compliance:

- **Contingency facilities** - provision must be available for the immediate removal or accommodation of an animal requiring rehabilitation on the request of a competent person. It may be more beneficial in some instances to bring semi-feral animals to a sheltered location with good grazing, easy observation and company, rather than isolate them in unfamiliar surroundings or a building, which may increase stress and slow rehabilitation.

- **Movement restrictions** – during and following the foot and mouth outbreak (Spring 2001) and the potential imposition of rest periods between movements, a range of welfare and conservation management issues are being raised. This is a developing area of debate which will need careful consideration by those grazing conservation sites.

- **Emergency destruction** – in some instances it may be necessary to kill an animal immediately to prevent suffering. This should always be carried out humanely, and wherever possible, by a person experienced and/or trained in the techniques. The permitted methods of humane destruction are contained within **The Welfare of Animals (Slaughter or Killing) Regulations 1995,** as amended by **the Welfare of Animals (Slaughter or Killing)(Amendment) Regulations 1999.**

- **Staff availability** – in emergencies, both for handling and for destruction of an animal which is suffering. Depending on the location of the site, there may be a need for staff within an organisation to be trained in the use of the pistol and methods of humane destruction. This may be of particular relevance for remote sites. The risk assessment process should identify the need for staff training in this area of welfare.

- **Self certification/veterinary certification** – the keeper must be able to justify his/her actions and know when to seek veterinary advice; the ability to make appropriate decisions will depend on training and experience.

- **Disposal of carcasses** – the principal legislation applying to the disposal of carcasses is Council Directive 90/667/EEC (the Animal Waste Directive) as implemented by The Animal By-Products Order 1999 (SI 1999/646) (which is available on the HMSO website at www.legislation.hmso.gov.ul/si/si1999/19990646.htm). For a summary of the relevant part of this act, see boxed text above. Other legislation also has a bearing on disposal, for example the Groundwater Regulations which need to observed when carcasses are buried on-farm or in purpose designed mass burial sites.

4 Freedom to express normal behaviour

"By providing sufficient space, proper facilities and company of the animals' own kind." DEFRA (MAFF) (1), FAWC (3)

- **Non-breeding situations** - animals should have the freedom to express normal patterns of behaviour, including feeding, resting, ruminating and social ranging. On public access sites this must be within the parameters of human safety. For this to be possible, animals need to be in social groups with others of their own kind. The extent to which the full range of normal behaviour can occur will have limitations depending on each site and the type of animal involved.

- **Breeding herds** – on large sites without public access may allow the greatest opportunity for freedom to express normal behaviour. Under these circumstances a range of social groups are likely to develop, thus providing individuals with the opportunity to become established in a group most suited to their age, sex and character. However, breeding herds require more management than non-breeding grazing systems.

- **Ethical considerations** – in a non-breeding situation the animals cannot express all normal patterns of behaviour. However, breeding requires a strategy in place to deal with surplus stock. This should be an early consideration and it is the responsibility of the breeder to re-home or humanely destroy unmarketable stock.

CATTLE

- **Bullying** – not generally considered an issue with cattle, except when being fed supplements or when access to water or shelter is restricted. However, the dominance position of individuals changes with age and onset of infirmity. Removal of older ones at this time has minimal impact on social order. Important to be aware of the social structure of a particular group.
- **Horned cattle** – particular care needs to be taken when horned and polled cattle are kept together, to ensure that supplements are fed widely spaced apart, to reduce the chances of injury being caused by jostling for best access to food.

EQUINES

- **Intervention within breeding herds** – if numbers need to be reduced within herds of extensively ranging horses, research suggests it is less traumatic to a social group to remove young stock rather than older animals. However, it is also generally considered good practice within any breeding system to remove older animals in order to maintain a young and healthy population. Thus breeding within a herd of equines requires careful planning in order to maintain a healthy population, with a well-balanced social structure and to avoid inbreeding.
- **Bullying** - as social groups with distinct hierarchies and pecking orders develop, weaker members may be subject to bullying from stronger individuals. Large sites will allow individuals which may suffer bullying to distance themselves, but careful observation and consideration is necessary to ensure that no individual is bullied so that its health is endangered.
- **Age** - Very young stock (i.e. no younger than 6 months, preferably 12 months, but depending on maturity and condition of young animals) should only be used for conservation grazing if they are with their mothers.

GOATS

- **Bullying** – generally only an issue when feeding supplements, although may also occur if especially mixed age and sexes are pushed together. However, in groups of breeding ferals, care must be taken to ensure that billies do not overharass nannies in heat. Deaths have occurred from such harassment or 'gang rape'.
- **Impact of social behaviour** – goats are social animals and become lonely if separated. 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 the 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.
- **Intervention to social structure** – it is less traumatic to a social group when individuals are removed if the matriarchs are left.
- **Breeding** – if range quality is poor, as may be the case in some nature management schemes, goats may not breed successfully.
- **Hefting** – goats within extensive systems form widely dispersed social groups which establish and maintain home ranges (hefts), which may then be handed down from generation to generation.

PIGS

- **Bullying** – can be an issue if feeding supplements. Make sure the food is spread about so that all animals have access to it.
- **Fighting** – can occur if left a restricted space.
- **Boars** – need to be kept singly; but can be easier to handle than sows if treated gently.

SHEEP

- **Bullying** – only likely to be an issue when feeding supplements.
- **Hefting** – sheep within extensive systems form widely dispersed social groups which establish and maintain home ranges (hefts), which may then be handed down from generation to generation.

5 Freedom from fear and distress

"By ensuring conditions and treatment to avoid mental suffering." DEFRA (MAFF) (1), FAWC (3)

Definitions:

Fear is an anxiety that something bad may happen, and for many animals this induces the flight response, allowing them to remove themselves from potential danger. For example, animals grazing areas frequented by the public with dogs may be fearful or frightened. The level of fear and whether the animals react by moving away depends on the extent to which they are used to dogs and whether the dogs are under control or roaming free. If there is no threat the level of fear is likely to decrease.

Distress is the mental or physical anguish of coping with something that becomes a reality, for example, as may be caused by isolation in a member of a herding species like the horse.

Rationale for risk assessment:

- **Indicators** of fear and distress may be behavioural, including a constant state of alert, always in hiding or quick to flee or pacing of perimeters, as well as physical, such as loss of condition or sweaty coat (where visible).

- **Handling and transport** – may cause fear and distress; the more extensive the system, the more likely that handling will cause fear and distress. Handlers should aim for a calm and confident approach with any animal or group of animals. All handling events should be well planned to avoid unnecessary stress to the animals. Refer to sections 3.6 and 3.7 for more information.

- **Suffering -** complete freedom from fear and distress is unlikely to be achievable; our aim must be to prevent suffering which may occur when an animal fails to cope with fear or distress because it is too severe, too complex or too prolonged. It may also occur when an animal is prevented from taking any constructive action to control its own welfare. Grazing animals on extensive areas may frequently be exposed to some stress, but they have considerable freedom to do something about it.

- **Home range** – the concept of a home range, where animals are provided with a variety of habitats to seek food, shelter, avoid fearful or irritable situations and to develop social groups, allows opportunities for coping with stresses and making choices. In developing grazing schemes a risk assessment approach should identify and assess whether there are adequate resources and whether the risks and stresses are minimised. In practice, however, many nature management schemes will be too small in area to allow large herbivores to express their home range requirements.

This is the end of the Five Freedoms. A worked example of the risk assessment process follows. Each section of the risk assessment forms relates to one or more of the five freedoms; these are indicated within the risk assessment charts as appropriate.

It is essential that the guidance on page 15 ‘The Risk Assessment Approach to the Five Freedoms’ is revisited each time before commencing the process of risk assessment.

See Appendix 1 for a complete set of forms for carrying out a Risk Assessment of a grazing system.

1. Proposed Grazing System

You should complete as much of the information in this section as possible. Err on the side of caution. For example, if you think you may have 30-40 grazing animals on site, assess the risks as if there were 40 animals within the grazing unit.

4a Probability of Suffering

This reflects the probability that suffering will actually result from the identified hazard during the grazing season. If the animals are on site year round, assess the probability that in any one year suffering will actually result from the identified hazard.

Probability of Suffering	Description	Ranking
Improbable	Physically possible, but never known to happen, therefore very surprised	1
Possible	Occasional instances known or heard of, therefore little surprised	2
Likely	Known of with some frequency or might well happen	3
Very Likely	A common occurrence or surprised if didn't happen	4

4b Severity of Suffering

This reflects how many grazing animals will be affected and to what degree during the grazing season. If the animals are on site year round, assess the probability that in any one year suffering will actually result from the identified hazard

Severity of Suffering	Ranking
Minor suffering to one or more grazing animal	1
Major suffering to one grazing animal	2
Major suffering to several grazing animals	3
Death of one grazing animal	4
Death of several grazing animals	5

4c Evaluate the Level of Risk

Risk is the likelihood (high or low) that the hazard will result in suffering. Once the hazards are identified, evaluate the level of risk in terms of likelihood, severity and number s of grazing animals affected. Use the tables below to make and record your initial assessment of risk (score between 1 and 20) – the assessment should relate to the hazard before appropriate precautions are applied to reduce the risk.

EXAMPLE The probability of harm from water bodies on site may be possible, 2, and could lead to the death of one or more grazing animal, 5, giving a risk level of 10 out of a possible 20.

A ranking of 0 is not given as this would infer absolute certainty that the event would not happen or cause suffering, which is an unlikely position.

Grazing System Risk Assessment

Proposed Grazing System	Date		Timing or duration of grazing	
	Assessor		Perimeter Security	
	Site (map)		Water Supply	
	Stock Type and breeding or not		Stock checking proposals	
	Number, age, breed		Handling Facilities	
	Grazing Area		Access	
	Stocking Density		Emergency (e.g. foul weather, ill-health	

Type of hazard	Written Assessment of Hazard	Assessment of risk (score 1-20) Probability x	Severity =	Risk Level	Location(s) on map (✓)	Actions to be taken to reduce risk	Re-assessment of Risk
PHYSICAL HARM FROM NATURAL ELEMENTS							
Water bodies (e.g. drowning, exposure, injury entering/exiting							

2. Look for the Hazards

The risk assessment form is a guide only. Walk around the area to be grazed and look for what could reasonably be expected to cause suffering (injury, ill-health etc.) to the grazing animal or to the system, which will subsequently present a hazard to the grazing animal

3. Decide which animals are at risk and how

For example, are younger, less experienced animals at greater risk from water bodies than older animals? Are older animals at greater risk from extremes of weather? All hazards which can be foreseen with thorough prior thought, by considering current knowledge and noting experience from both within your own organisation and other related bodies, must be included.

5. Identify actions that are reasonably practicable

Practicable means those actions that are possible in the light of current knowledge and available technology. Reasonable concerns the balance of resources (time, effort, cost) committed to reducing a risk compared to the level of that risk.

Ask yourself:

- How can I remove the hazard altogether?
- If not; how can I reduce the hazard so that suffering is reduced?

Where actions are required/proposed a date for the action should also be given

EXAMPLE To remove the risk from water bodies they could be fenced out. This may not be practicable due to the physical nature of the site or unacceptable due to habitat management constraints. Therefore, possible actions would look to reduce the risk, such as altering the profile of the water body.

6. Re-evaluate the level of risk

Once all actions are in place, re-assess the remaining risk. Is the remaining risk high, medium or low – use this to feedback into procedures such as the frequency of checking.

Grazing System Risk Assessment

Proposed Grazing System	**Date**	2001	**Timing or duration of grazing**	*Year round*
	Assessor	Member of Broads Authority Staff	**Perimeter security**	*Permanent fencing (no barbed wire) and dykes*
	Site (map)	Norfolk Nature Reserve	**Water supply**	*Natural water supply on site*
	Stock type and breeding or not	Konik Polski Breeding herd	**Stock checking proposals**	*At least once a week. Thorough monthly check of condition. More frequent checks during winter months*
	Number, age, breed	5 Females (Ages 2-15) 6 Males (2 Geldings, I Stallion (Age 12), 5 colts)	**Handling facilities**	*No permanent structure – system of mobile hurdles and gates – sedation through darting*
	Grazing area	Total area of grazing unit 36 hectares, ¾ wooded (but wood pasture), approximately 11 hectares open fen/grass	**Access**	*Vehicle access to grass field, on foot for most of site*
	Stocking density	1 equine per 1 hectare of fen/grass, plus patchy grass, fen and browse within woodland	**Emergency (e.g. foul weather, ill-health**	*Woodland grazing / shelter in poor weather. Hay held in reserve*

Type of hazard		**Written assessment of hazard**	**Assessment of risk (score 1-20)**			**Location(s) on map (✓)**	**Actions to be taken to reduce risk**	**Re-assessment of Risk**
			Probability x	**Severity =**	**Risk Level**			
BASIC REQUIREMENTS (refer to first freedom)								
Food	**Lack of availability (Quantity and Quality)**	*Breeding herd and number of grazing animals within grazing unit has doubled since 1996 and there is now less winter food available.*	*3*	*3*	*9*		*Increase winter grazing area (temporary measure). Investigate opportunities to increase size of site. Vasectomise Stallion and castrate other entire males to prevent further breeding. Reduce numbers – re-home to other suitable sites. Increase checking frequency during autumn/winter.*	*(2x1)=2*
	Impeded accessibility (e.g. snow, flood)	*Tree cover and high ground mean access to good quality grazing even during times of heavy snowfall and rising water levels. There is limited bracken (and no yew) on site, so animals unlikely to graze poisonous plants even when accessibility reduced.*	*2*	*1*	*2*		*Increase checking during times of anticipated snow and rising water levels.*	
	Known mineral deficiencies (consult local vet /DEFRA)	*Literature indicates equines are not prone to deficiencies in extensive systems. However, increase in the number of grazing animals may mean that they are more prone to mineral and nutrient deficiencies.*	*2*	*2*	*4*		*Reduce numbers and limit breeding.*	
Water	**Lack of availability (Quantity)**	*Wetland site – unlikely that there will not be sufficient available – even during the summer water is present on site.*	*1*	*5*	*5*			
	Quality (Salinity, Pollutants)	*Slightly saline water so must consider the possibility of increased salinity during drought. Water from outside site passes through.*	*1*	*5*	*5*		*Test salinity. Estimate likelihood of detrimentally high salinity levels. Produce action plan for supplying water or removing animals (by May 2001).*	
	Accessibility (Physical access, freezing, drought)	*Recent winters have shown that not all water on site freezes. There is extensive availability so all have sufficient access to the resource.*	*1*	*5*	*5*		*In times of extreme weather, increase checking frequency.*	

Type of hazard	Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
		Probability x	Severity =	Risk Level			
PHYSICAL HARM FROM NATURAL ELEMENTS (refer to second and third freedoms)							
Fire	*Large site to escape fire. Wet site with natural fire breaks. Not known on site.*	*1*	*3*	*3*			
Flood	*Topography of site means only localised flooding likely. Recent high levels have shown animals are not cut off high dry feed or each other.*	*2*	*1*	*2*			
Poisonous plants	*No yew. Bracken on site. Ragwort appeared. Food is in shorter supply approaching the winter. Animals not forced to take ragwort but young or hungry individuals may take wilting remains late summer.*	*3*	*4*	*12*		*Pull ragwort in 2001 to eradicate from grass field. Monitor success in 2002. Ensure that this action is entered into site management brief. Monitor bracken to see if any is grazed.*	*(1x4)=4*
Ground conditions (injury)	*Clay site, no hover. There are some boggy areas across the site. Greater numbers mean increased use of more treacherous ground likely, but animals know site and are sensible.*	*2*	*1*	*2*		*Continue current frequency of checking grazing animals.*	
Lack of / insufficient suitable resting areas	*Plenty of dry flat ground within and adjacent to grazing areas.*	*1*	*1*	*1*			
Water bodies (e.g. drowning, exposure, injury entering/exiting)	*Risk to older animals that know the site perceived to have declined but new-born and young animals still exposed.*	*2*	*4*	*8*		*Dyke system is currently in good condition and poses low risk as visible. Need to ensure dykes are maintained. Re-profiling of main boundary dyke has reduced risk of falling in and increased opportunities for getting out should animals fall into dyke.*	
Weather (extremes of heat, cold, wet) / Shelter	*Woodland provides a great deal of shelter and cover.*	*1*	*1*	*1*			
Insects	*Dry woodland and airy grass field provide refuges. Breed known to be placid; thick hide; cuts heal quickly. A sub-group has formed within the herd that spends less of its time on the airy field and more in the wetter woodland where they are exposed to a greater number of insects.*	*4*	*1*	*4*		*Reduced number of grazing animals and increased grazing area in 2001 should provide sufficient refuges from biting insects for all animals.*	
PHYSICAL HARM FROM MAN-MADE ELEMENTS (refer to third freedom)							
Fences	*Limited fencing on site, short length of barbed wire put up by adjacent cattle grazier.*	*1*	*1*	*1*		*Remove barbed wire and replace with plain in 2001.*	
~~Bridges~~/crossing points	*No man-made bridges, wide earth crossing points/dyke endings with firm substrate.*	*1*	*1*	*1*			
Debris/materials	*Site has been opened up and well-explored – there is no evidence of debris that would cause injury or harm.*	*1*	*2*	*2*			
Electricity supply	*NO ELECTRICITY SUPPLY/WAYLEAVES ON SITE*						
Shooting	*One person has shooting rights on part of site; very low levels of shooting occur.*	*2*	*4*	*8*		*Shooter aware of presence of grazing animals on site.*	
Vandals	*Although the potential remains high there have been no incidents or evidence of vandalism on the site.*	*2*	*5*	*10*		*Gates kept locked and presence of grazing animals not publicised.*	
Dogs	*No public access. Reaction from Koniks likely to stand up to dogs as a group.*	*2*	*2*	*4*			
Other							

Type of hazard		Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
			Probability x	Severity =	Risk Level			
DISEASE (refer to third freedom)								
Internal (e.g. parasites)	**worms**	*Number of grazing animals has increased, less extensive, greater exposure to parasites. Animals not wormed; have no history of worming or parasite related disease.*	*2*	*3*	*6*		*Reduce number of grazing animals and increase grazing area to reduce potential exposure to parasites. Continue to monitor level of contamination in dung and pasture.*	
External (e.g. fly-strike, sweet itch)	**sweet itch**	*Not known in breed. No evidence or experience of problems .*	*1*	*3*	*3*			
	fly-strike	*Not common in horses. Veterinary advice and experience of the rapid healing of injuries demonstrates that risk is low.*	*1*	*1*	*1*			
Other (e.g. common and/or local ailments)	**tetanus**	*Breed background and history may reduce risk. Substrate soft, so puncture wounds likely to be very rare. No debris on site. No deaths from tetanus or other ailment experienced during ownership/animals grazing on site despite potential opportunity from injuries.*	*2*	*4*	*8*		*Decision taken not to vaccinate owing to controversy over effectiveness and necessity of vaccine. Risk remains low. Continue reassessing and discussions with vet re new evidence.*	
	flu	*Isolated herd with no known incidents either here or in Holland prior to arrival on site.*	*1*	*3*	*3*			
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM NATURAL FACTORS (refer to fourth and fifth freedoms)								
Inability to demonstrate natural patterns of behaviour		*Large area, mixed breeding herd made up of family group members.*	*1*	*1*	*1*			
Negative social interaction (e.g. bullying)		*As numbers have increased the social structure has become more complicated. 3 animals 'pushed' from main group but still have sufficient resources to meet needs.*	*3*	*1*	*3*		*No direct bullying of the sub-group has been witnessed, but reduction of numbers should ease the potential – the site is large and there is a sufficient range of social contact for all individuals.*	
Fear or distress caused by other animals (excluding dogs)		*Deer remain only other grazing animals within unit. No known predators.*	*1*	*1*	*1*			
Weather (extremes of heat, cold, wet) / Shelter		*Considerable natural shelter over whole site. Plenty of dry land with good shelter.*	*1*	*1*	*1*			
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM MAN-MADE FACTORS (refer to fifth freedom)								
General Public		*No public access on site, but footpath nearby. Ponies not particularly visible from the footpath so any interaction would be incidental.*	*2*	*1*	*2*			
Dogs		*Koniks likely to stand up to dogs as a group.*	*2*	*2*	*4*			
Noise (e.g. shooting, aircraft)		*Some occasional shooting on adjacent land.*	*2*	*1*	*2*			
Vehicles/machinery		*Only vehicles on site will be conservation staff. All staff know that there are grazing animals on site.*	*1*	*1*	*1*			
Vandals		*Remote site, so it is possible that ponies would be disturbed/troubled.*	*2*	*1*	*2*		*Gates kept locked. Presence of grazing animals on site not publicised.*	

Suitability of animals

> "*If any change in breed or type is contemplated, particularly if farming in difficult, extensive conditions, replacement should only be with a breed or type [of animal] that is suitable for the location."*
>
> Extract from *Code of recommendations for the welfare of sheep*.

A large number of problems affecting the health and welfare of animals can be avoided through choosing the right type of stock for the situation. 'Type' in this context goes far beyond the obvious parameters of species and includes other aspects such as breed, background, age, sex, conformation and husbandry, as well as the habitat and vegetation type which the chosen animals are required to manage. These factors are outlined below.

a) Species

The most effective nature conservation grazing regimes involve use of an appropriate 'type' of stock. Within the context of this Guide, the different species considered are cattle, equines, goats, pigs and sheep.

Until recently, equivalent stocking rates or densities have been given much more emphasis in determining the outcome of grazing, than any consideration of the impact and importance of species or breed of grazing animal used. Within extensive, unimproved conservation grazing systems, choice of species and breed may be paramount to the success or failure of that scheme, both in terms of the nature conservation objectives and the welfare of the animal.

Choice of stock will have a profound influence on a whole range of factors, both those affecting the wildlife of the site, such as vegetation structure, plant composition, impact on rare species, and tree or scrub cover, but also on the practicalities of keeping stock, such as method of enclosure, staff or grazier involvement to manage the animals, handling systems and so on. Informed choices can reduce welfare problems arising, reduce stock management tasks and costs, and dramatically increase the chances of success of any chosen grazing scheme.

The major differences and similarities between different species and breeds of stock in terms of their grazing and browsing abilities are covered in the Grazing Animals Project publication *"The Breed Profiles Handbook: A guide to the selection of livestock breeds for grazing wildlife sites"*. The Breed Profiles Handbook also provides information on 55 different breeds used in conservation grazing situations.

b) Breed

This is not a simple matter. For a start, some of the animals used in conservation grazing situations became unpopular with commercial producers long ago and can scarcely now be classified as agricultural breeds. Moreover, new breeds are developed from time to time, of which a recent example is the 'Easycare' sheep.

Various definitions of 'breed' are summarised by Mercer, Lewis and Alderson (1997). Perhaps the most comprehensive definition is provided by Clutton-Brock (1987): *'A group of animals that have been selected by humans to possess a uniform appearance that is inheritable and distinguishes it from other groups of animals within the same species. It is a product of artificial choice of characters that are not necessarily strategies for survival but are favoured by humans for economic, aesthetic, or ritual reasons, or because they increase the social status of the owner'*.

A simpler definition is provided by Hall & Bradley (1995), who state that a breed is *'a group of animals selected by man to have a uniform appearance that distinguishes them from other members of the same species.'*

It is important to note that breeds are seldom stable; rather they are generally in states of flux which can include periods of radical change. This is because of evolutionary processes coupled with, in the case of agricultural stock, man's desire to improve and enhance in order to secure advancement. Most of the older, 'traditional' agricultural breeds have been subjected to considerable alteration and improvement over recent time. There are few exceptions to this.

There can be considerable differences between groups of animals within a breed. This results from the development of bloodlines and what can loosely be termed local races. This is particularly true of breeds which have been through periods of scarcity and have been rescued, preserved or reconstituted by different people in different places. The implication for nature conservation here is that in some situations it is essential to utilise appropriate races or bloodlines within specific breeds, exhibiting particular grazing attributes, and avoid others.

c) Background

Background incorporates factors such as whether the stock have originated from an intensive or extensive farming system, whether they have been reared on improved pasture or unimproved nature conservation land, whether they have been wintered in or out, and in the case of individual animals, what they have learnt from their mothers, social groups and general experience. Breed bloodlines, as explained above, can be another key component of background, for it may be that stock need to be from an appropriate genetic background.

d) Husbandry

The development of husbandry skills may be the most important research area relevant to the conservation of grasslands, heaths and pasture-woodlands in the UK. In many situations it may well be far more important than choice of breed, for good husbandry can ensure that grazing animals perform to the best of their potential. It will also ensure that welfare problems are minimised.

e) Age and sex

Age and sex are further key components, as young, pregnant or lactating animals will have more demanding nutritional requirements than older or non-breeding animals. Thus, for example, significant feeding differences have been found between male and female Soay sheep in free-ranging situations (Bullock & Oates, 1998). Breeding animals are likely to demand a more intensive management input and will usually be unsuitable for using on hazardous sites during advanced stages of pregnancy. Different mental behaviour will also be demonstrated depending upon the age and sex within a group of animals. Thus, for example, a group of castrated male equines are likely to be more peaceful than a group of entire (uncastrated) equines.

f) Conformation

Using animals with bad conformation should be avoided in most conservation situations, particularly in challenging environments. Difficult terrain can be hazardous to animals with incorrect structural conformation, and deformities of the teeth and mouth, such as an undershot or overshot jaw, may have a significant impact on an animal's ability to cope with tough or woody vegetation. This applies to all stock used for grazing and such animals should not be bred from.

g) Habitat and vegetation type

There are fundamental differences in the feeding behaviour, and impact on habitats and vegetation, of the major species-groupings of grazing stock available in the UK – cattle, equines, goats and sheep. These differences are especially important where grazing and browsing are required, and where major elements of the vegetation are nutritionally poor or are armoured (e.g. thorny), and are consequently avoided by many kinds of livestock. In such situations many grazing animals will feed highly selectively, favouring certain elements of the vegetation and avoiding others.

There are difficulties here for nature conservationists in that many of the 'problematic' elements of the vegetation, such as scrub, some coarse grass and ruderal herbs, which conservationists seek to control, are selectively avoided by many grazing animals. Worse, in the absence of control, and where the more palatable herbs and grasses are heavily grazed, many of the less desirable vegetation elements will readily increase. A good example here is provided by sheep grazed Tor-grass swards; in the majority of such situations the sheep heavily graze the finer grasses but avoid the Tor-grass, and thus provide this coarse grass with ideal conditions for expansion.

One of the main challenges for nature conservation grazing is how to overcome selective feeding. Obviously, factors such as the timing and intensity of stock grazing are vital, as is the 'type' of stock used, especially when animal welfare factors are, correctly, taken into account.

Cattle in conservation

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 the 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 production.

The following table represents a categorisation of breeds according to commercial use, with characteristics 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.

CATEGORY	**SPECIAL CHARACTERISTICS AND SUITABILITY IN CONSERVATION SITUATIONS**
Upland Beef Examples include: Highland, Galloway, Welsh Black, Beef Shorthorn and Vaynol (Welsh)	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.

CATEGORY	SPECIAL CHARACTERISTICS AND SUITABILITY IN CONSERVATION SITUATIONS
Lowland Beef Examples include: Hereford, Aberdeen Angus, Sussex, South Devon and Lincoln Red Continental examples include: Limousin and Charolais	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: Holstein, Ayrshire, Jersey, Guernsey and Kerry	1. Reliant on high quality pasture 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 graziers 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. Holstein 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 the small-medium category; examples include 360 kg (Dexter) to 450 kg (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 coming off conservation grazing with little supplementary feed. Those used for milking produce moderate-high milk yields. 5. Moderate - good conformation (carcass quality).

Equines in conservation

Different types of equine

- **Domestic horses** – equines above 14.2hh at the withers (hh = hands high; one hand = 4 inches/10cm). 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 14.2hh 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 uneven 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 use.

- **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.

TYPE OF EQUINE	SPECIAL CHARACTERISTICS AND SUITABILITY IN CONSERVATION SITUATIONS
Native ponies in a free-ranging environment Highland, Exmoor, Dartmoor, Dales, Fell, Shetland, New Forest, Welsh Mountain	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 no 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	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,
Donkey	1. May not be very hardy, particularly in wet weather conditions. 2. Donkeys in extensive systems show no signs of mineral deficiency when grazed year-round without supplements. 3. Very thrifty and adaptable to a range of food types.
Domesticated horses Domesticated native ponies, warmbloods (e.g. Arabs and thoroughbreds), cross-breeds	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. Those with thin skins (e.g. Arabs and thoroughbreds) are unlikely to be tolerant of biting insects.

Goats in conservation

Different types of goat

The goats, *Capra* species, are not native to northwest Europe. They originate from an area which extends from the 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 goat 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 the 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 a long history (70/80 years) of being present in particular locations. For example, populations such as those in the Moffat Hills have very little recent 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 of 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.

Breed examples	Special features relevant to conservation grazing
Bagot Historic feral goat Feral goat	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, independent existence. 5. Feral goats are readily available from 'gathers'.
Dwarf/Pygmy	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.
Alpine Saanen Toggenburg Nubian	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 not be so agile as other goat breeds.
Angora Cashgora Cashmere Golden Guernsey	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 may be able to keep warm better than other breeds. 4. Longhaired, so liable to becoming tangled in thorny vegetation and brambles. 5. The Angora grazes more than other goat breeds. 6. The Angora 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 a similar size.
2. Free-ranging goats and some 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.

Pigs in conservation

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

Different types of pig

Within the UK, pigs are largely kept for the 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 scrofa*). 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 of a 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 unit, such as the Traditional Breeds 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. There 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 traditional breeds 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 wider countryside in parts of southern England and the numbers may rise with increased interest in farming them. The meat is very lean, quite a different flavour to domestic pig and there is an expanding niche market for it.

The following table below provides a comparison of some of the characteristics of different types of pig breeds, which may affect their suitability for use on conservation sites.

TYPE OF PIG	SPECIAL CHARACTERISTICS AND SUITABILITY IN CONSERVATION SITUATIONS
Traditional breeds e.g. Tamworth, Berkshire, Gloucester Old Spots, Middle White	1. Generally very hardy, live outside all year, need minimal shelter. 2. Are well able to forage for a variety of food in a range of habitats. 3. Less suited to commercial pig production as usually more fatty carcasses than commercial breeds. 4. Generally docile in character.
Wild Boar	1. Very hardy, live outside all year, need minimal shelter. 2. Are well suited to foraging in wild conditions for their food. 3. Produce lean carcasses of meat different in flavour to domestic breeds. 4. Not easy to handle and retain a more wild nature.
Introduced pet breeds e.g. Vietnamese Pot-bellied, Kune Kune	1. Are usually less able to live outside all year, need warmer housing and more care. 2. May be suited to foraging in natural conditions, but more information is needed on how these respond to British conditions. 3. Usually easy to handle.
Commercial Breeds e.g. Large White, Landrace, Welsh, Duroc	1. Are able to live outside all year with good shelter. Are less suited to winter conditions than the traditional breeds. 2. Are less suited to foraging in natural conditions but few have been used on nature reserves as yet. 3. Have been bred for the commercial market so produce lean carcasses in a short time with good feeding. High productivity. 4. Are relatively easy to handle.

Sheep in conservation

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
Primitive breeds e.g. Soay, Hebridean, Shetland	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** e.g. Swaledale, Cheviot, Welsh Mountain, Scottish Blackface, Herdwick	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 long-wool rams, and the resultant ewes (often called 'Mules' – see below) 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.

TYPE OF SHEEP	SPECIAL CHARACTERISTICS AND SUITABILITY IN CONSERVATION SITUATIONS
Upland breeds e.g. Beulah, Clun, Hill Radnor, Kerry Hill	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 Suffolk, Romney Marsh, Hampshire Down, Poll Dorset, Shropshire, Texel	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 produce 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.

***** The term 'hill' refers to mountainous areas and mountain breeds.

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Glossary

Anthelmintics	a group of natural or pharmaceutical substances that reduces or eliminates parasitic worm populations
Billy	a male goat
Bipedal	able to stand on hind legs
Bloodline	relates to ancestral origins; thus within animals of the same breed there may be distinctly different bloodlines, particularly in situations where herds have been geographically isolated for many generations
Boar	a male pig that has not been castrated
Bovine	relating to or belonging to the genus of ruminant animals that includes cattle. Genus *Bos*
Bowser	a mobile tanker used for transporting and delivering water
Breed	a strain of animal with identifiable characteristics that distinguish it from other members of its species and which tend to be transferred from generation to generation
Broken-mouthed	missing incisor teeth; particularly relates to the loss of teeth in older sheep and goats
Browse	term used to describe the leaves, flowers and twigs of woody vegetation and the act of animals feeding upon such vegetation ('browsing')
Brucellosis	a chronic infectious disease of some domestic animals, including cattle, that is caused by bacteria and may lead to spontaneous abortion
BSE	Bovine Spongiform Encephalopathy; also commonly known as 'Mad Cow' disease
Calcareous	soils containing calcium carbonate including substrates such as limestone and chalk; commonly relates to plants and communities associated with such conditions
Caprine	relating to or like a goat
Carcinogen	a substance or agent that can cause cancer

Cellulose	the main constituent of the cell walls of plants and algae
Colic	severe abdominal pain in equines caused by a variety of factors; most commonly, worm burdens or over-consumption of certain food, e.g. acorns. Colic can sometimes lead to fatal intestinal blockage
Colt	a young uncastrated male horse usually under four years of age
Conformation	structure or form of an animal; physical shape. Amount and distribution of muscle on a meat animal
Convection	the upward movement of heat into the atmosphere
Equine	belonging to or characteristic of the family of mammals (the Equidae) that includes horses, ponies, zebras and donkeys
Eutrophic	used to describe a body of water whose oxygen content is depleted by organic nutrients
Equine influenza (flu)	a highly infectious disease of the horse associated with high fever and a severe dry cough which lasts one or two weeks
Ewe	an adult female sheep
Extensive grazing	low stocking density which effectively under-utilizes the available sward; often refers to a few animals within a large area
Fecund	fertile; prolific
Feral	livestock once domesticated but now living and breeding unconstrained by artificial boundaries in the wild state. As with wild populations of other species, there may be some control on numbers through culling or removal
Filly	a female horse usually under four years of age
Fly-strike	a distressing condition caused by flies which lay eggs in the wool of sheep (and occasionally on other species); the hatched maggots burrow into the skin and effectively start to eat the animal alive. Animals suffering from diarrhoea or with open wounds are most susceptible, although strike may occur on any area of the body which has become soiled or infected by bacteria. Although a number of flies can cause strike in sheep, in the UK the most important by far is the greenbottle

Foot-rot	an infectious bacterial infection of sheep that causes inflammation between the cleats or digits of the foot, resulting in pain and lameness. Fields with foot-rot in sheep are not a threat to cattle, as 'foul in the foot' in cattle is caused by a different bacterial infection
Free-ranging	able to move about within a sufficiently large and varied area to enable choices relating to diet, shelter and other aspects of well-being, but constrained in terms of range, breeding etc
Gelding	a castrated male horse
Gilt	a young female pig that has not yet had piglets
Habitat	the natural or semi-natural home of a plant or animal or groups of plants or animals; it is the place where all the requirements of a plant or animal occur. Thus for example, trees may be part of a woodland, hedgerow or wood-pasture habitat and a reedbed may be classed suitable habitat for Reed Buntings or Marsh Harriers
Hardy	sufficiently robust to withstand the stresses resultant from adverse physical conditions; capable of enduring very wet, cold, hot or windy conditions
Heft	sheep and goats 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)
Historic feral	a term which relates to goats. Historic feral goats are those with a long history (>70/80 years) of being present in particular locations, e.g. populations such as those in the Moffat Hills have very little recent human interference and show phenotypic characteristics typical of ancient populations
Home range	the area used by a feral or wild animal in pursuit of its routine activities. A heft is the equivalent of a group home range
Improved pasture	land with a history of agricultural improvements, usually including reseeding and fertilizing; other associated practices may include liming and drainage improvements
In-bye	land close to the homestead or farm, often with improved pasture and commonly used for lambing or calving animals. Used for hay/silage production.
Indigenous	native; belonging naturally

Intensive farming	requiring high inputs such as fertilizers and irrigation of crops, or supplementary feed and other additives in animals, to allow rapid high outputs and turnover, and high stocking rates
Kid	a young goat; its first year of life
Lactation	period during which milk is produced by the mammary glands
Laminitis	a serious equine hoof disorder where inflammation of the sensitive plates of tissue in the hoof occurs. Caused by a variety of factors including ingestion of excess protein. Usually causes lameness and can be severe. Also called 'founder'
Liver fluke	a parasitic worm (Fasciola hepatica) that infests the liver
Mare	an adult female horse
Matriarchal	a social hierarchy in which the dominant individual in a social group is the mother or grandmother of a group of females
Microclimate	the climate of a confined space or minute geographical area. Microclimates are particularly important in terms of shelter (as opposed to local climates)
Monogastric	relates to the single, fast through-put stomach found in equines
Nanny	an adult female domestic goat
Native	born or originating in a particular place
Oestrus	a regular period of sexual excitement in many female mammals during which the animal seeks to mate and can conceive
Omnivore	an animal that will feed on any kind or many kinds of food, including both plants and animals
Overgrazing	damage to a habitat or its associated species assemblage, due to too many animals being kept on a site, or for too extended a period
Ovine	relating to or like a sheep
Parturition	the act of giving birth
Phenotypic	the visible characteristics of an organism resulting from the interaction between its genetic makeup and the environment

Physiological	relating to the way that living things function rather than to their shape or structure
Piglet	a newborn or immature pig
Poaching	a ground condition where animal movements/trampling causes the ground surface to become disturbed and muddy
Polled	a hornless animal
Pulpy kidney	a bacterial disease caused by *Clostridium welchii*
Primitive	having characteristics which indicate ancient origin
Race	group of plants or animals connected by common descent; in the context of this document, this may apply to groups of animals within the same breed, but who have descended from different bloodlines, thus forming races
Ram	an uncastrated male sheep – used for breeding. Also termed 'tup'
Reconstituted	built up from parts. A term applied to breeds which have become extinct or close to extinct and have been carefully bred from surviving individuals or those with similar genetic material, to recreate an animal which contains a high percentage of the original genetic material
Redwater	a locally prevalent cattle disease characterized by the passage of reddish urine and transmitted by ticks. Calves are immune and immune older stock can be developed
Ruderal	a plant which usually grows on bare ground, rubbish heaps or waste places
Rumen	first stomach of a ruminant in which microorganisms break down plant cellulose before food is returned to the mouth as cud for additional chewing
Ruminant	any cud-chewing hoofed mammal with a stomach with multiple chambers. Food is partially digested in the rumen and regurgitated for additional chewing
Rut	a period of sexual excitement that recurs annually in some male ruminants e.g. deer
Sheep Scab	a skin disease of sheep and other animals that resembles mange, caused by a mite

Scouring	another term for diarrhoea
Scrub	small trees and bushes, forming the seral stage of succession between open habitat and woodland. Highly valuable for invertebrates and birds, but often invasive and can threaten the survival of other rarer habitats if left unmanaged
Selective	favouring certain elements of the vegetation and resisting others
Semi-feral	living and breeding in the wild state, although with constraints on ranging behaviour due to artificial boundaries; human intervention restricted to administration of husbandry and control of numbers
Shearling	a sheep, either male or female, which has been shorn only once; indicative of age 1-2 years
Sow	an adult female pig
Species	a population of organisms sharing many characteristics that can reproduce amongst themselves but cannot produce fertile offspring when mated with other organisms
Stallion	uncastrated adult male equine – used for breeding. Also termed 'entire'
Stocking density	number of animals per acre/hectare, over a given period of time
Suckler herd	a breeding herd of cows, usually kept with a bull, with calves raised by mother-in-herd situation
Sweet itch	a seasonal problem caused by a midge called *Culicoides pulicaris* which breeds in wet muddy areas. A small proportion of horses develop a hypersensitive reaction to a protein in the saliva of the female midge and will itch the bitten areas; sores can develop. The midges are prevalent from May to September; no known cure
Tannin	a brownish or yellowish substance found in plants (extracted and used for tanning, dyeing and as an astringent)
Terminal sire	a lowland breed of ram, which is used to mate with crossbred ewes, to produce a table lamb
Tetanus	an acute infectious disease usually contracted through a penetrating wound that causes severe muscular spasms and contractions. Spasms caused by a toxin released by the bacterium *Clostridium tetani*. Also called 'lock jaw'

Thiamine	one of the group of B vitamins. Prevents diseases of the nervous system
Thrifty	able to maintain condition on poor quality vegetation; often in situations of difficult topography
Toxins	plant defence chemicals
Tuberculosis	an infectious disease that causes small rounded swellings (tubercles) to form on mucous membranes
Twitch	a restraint used on a horse during a veterinary procedure, consisting of a cord loop that can be pulled tight around the animal's upper lip
Undergrazing	sub-optimal management of a habitat or its associated species assemblage, due to too few animals being kept on a site, or for too short a period
Unimproved pasture	vegetation which has not been subjected to reseeding or fertilization, but which exists as 'old' grazing
Urea	a constituent of urine
Wallowing	rolling about in mud, sand, water etc.
Wether	a male sheep or goat that has been castrated before becoming sexually mature
Wild	non-domesticated grazing animals, living and breeding in the wild state, unconstrained by artificial boundaries
Withers	ridge between the shoulder bones of a horse or other four-legged animals forming the highest part of its back
Yoke	a 'u-shaped' bar which forms part of a cattle crush; used to hold the head of the animal still for handling

Appendix 1

Risk Assessments

The Risk Assessment Approach to the Five Freedoms

Grazing systems are infinitely variable, from the type of animal used to the area grazed, including factors such as vegetation, climate and topography. This variability can make it difficult to provide a precise set of prescriptions under which all grazing systems will function successfully and meet the welfare needs of the grazing animals being used. In order to provide a flexible but considered approach to grazing conservation sites it is proposed that site managers undertake an assessment of risk prior to introducing grazing animals to their reserves.

The Health and Safety Executive describes risk assessment as 'a careful examination of what (in your work place) could cause harm to people, so that you can weigh up whether you have taken enough precautions or should do more to prevent harm'. In appraising a grazing system we are trying to identify what could cause suffering to the grazing animals within it, so that we are able to decide if and what actions are required to prevent suffering. We use the term 'suffering' rather than 'harm' in order to assess the grazing system against the provision of the Five Freedoms (see page 16) which address both the physical and the mental well-being of animals.

Appraising a Grazing System using the Risk Assessment Approach
In order to undertake an assessment you will need to:

1. **Know your grazing system.** It is important to be clear on the grazing system that you are intending to assess. Completion of the risk assessment form, therefore, assumes that the following things have been considered and agreed:

   - The site requires grazing management to achieve ecological objectives
   - Proposed timing and duration of grazing
   - Stock type likely to be used (sheep, cattle, ponies, goats, pigs)
   - Site infrastructure, such as stock containment, water supply
   - Source of grazing animals – either own or grazier
   - Breeding or non-breeding animals

   This information will form the basis for the risk assessment of the (proposed) grazing system.

   If the grazing system changes the risk assessment will need to be re-visited. For example, if the type of grazing animal changes or the system moves from summer only to year round grazing, or if public access to the site increases. Since some hazards are likely to vary from year to year, the availability of food for example, it would be prudent to re-visit the assessment annually.

2. **Know the grazing animal.** Experience and/or knowledge of the welfare requirements of different grazing animals are essential to undertaking a meaningful risk assessment. If you do not have this information yourself, it is important to enlist the help of a competent person.

3. **Appropriate time frame.** In carrying out the risk assessment process, it is important to chose an appropriate time frame within which to consider risk. We suggest one grazing season or one grazing year.

1. Proposed Grazing System

You should complete as much of the information in this section as possible. Err on the side of caution. For example, if you think you may have 30-40 grazing animals on site, assess the risks as if there were 40 animals within the grazing unit.

4a Probability of Suffering

This reflects the probability that suffering will actually result from the identified hazard during the grazing season. If the animals are on site year round, assess the probability that in any one year suffering will actually result from the identified hazard.

Probability of Suffering	Description	Ranking
Improbable	Physically possible, but never known to happen, therefore very surprised	1
Possible	Occasional instances known or heard of, therefore little surprised	2
Likely	Known of with some frequency or might well happen	3
Very Likely	A common occurrence or surprised if didn't happen	4

4b Severity of Suffering

This reflects how many grazing animals will be affected and to what degree during the grazing season. If the animals are on site year round, assess the probability that in any one year suffering will actually result from the identified hazard

Severity of Suffering	Ranking
Minor suffering to one or more grazing animal(s)	1
Major suffering to one grazing animal	2
Major suffering to several grazing animals	3
Death of one grazing animal	4
Death of several grazing animals	5

4c Evaluate the Level of Risk

Risk is the likelihood (high or low) that the hazard will result in suffering. Once the hazards are identified, evaluate the level of risk in terms of likelihood, severity and numbers of grazing animals affected. Use the tables below to make and record your initial assessment of risk (score between 1 and 20) – the assessment should relate to the hazard before appropriate precautions are applied to reduce the risk.

EXAMPLE The probability of harm from water bodies on site may be possible, 2, and could lead to the death of one or more grazing animal(s), 5, giving a risk level of 10 out of a possible 20. A ranking of 0 is not given as this would infer absolute certainty that the event would not happen or cause suffering, which is an unlikely position.

Grazing System Risk Assessment

Proposed Grazing System	Date		Timing or duration of grazing	
	Assessor		Perimeter Security	
	Site (map)		Water Supply	
	Stock Type and breeding or not		Stock checking proposals	
	Number, age, breed		Handling Facilities	
	Grazing Area		Access	
	Stocking Density		Emergency (e.g. foul weather, ill-health	

Type of hazard	Written Assessment of Hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions to be taken to reduce risk	Re-assessment of Risk
		Probability x	Severity =	Risk Level			
PHYSICAL HARM FROM NATURAL ELEMENTS							
Water bodies (e.g. drowning, exposure, injury entering/exiting)							

2. Look for the Hazards

The risk assessment form is a guide only. Walk around the area to be grazed and look for what could reasonably be expected to cause suffering (injury, ill-health etc.) to the grazing animal or to the system, which will subsequently present a hazard to the grazing animal.

3. Decide which animals are at risk and how

For example, are younger, less experienced animals at greater risk from water bodies than older animals? Are older animals at greater risk from extremes of weather? All hazards which can be foreseen with thorough prior thought, by considering current knowledge and noting experience from both within your own organization and other related bodies, must be included.

5. Identify actions that are reasonably practicable

Practicable means those actions that are possible in the light of current knowledge and available technology. Reasonable concerns the balance of resources (time, effort, cost) committed to reducing a risk compared to the level of that risk.

Ask yourself:

- How can I remove the hazard altogether?
- If not; how can I reduce the hazard so that suffering is reduced?

Where actions are required/proposed a date for the action should also be given.

EXAMPLE To remove the risk from water bodies they could be fenced out. This may not be practicable due to the physical nature of the site or unacceptable due to habitat management constraints. Therefore, possible actions would look to reduce the risk, such as altering the profile of the water body.

6. Re-evaluate the level of risk

Once all actions are in place, re-assess the remaining risk. Is the remaining risk high, medium or low – use this to feedback into procedures such as the frequency of checking.

Grazing System Risk Assessment

Proposed Grazing System	**Date**		**Timing or duration of grazing**	
	Assessor		**Perimeter security**	
	Site (map)		**Water supply**	
	Stock type and breeding or not		**Stock checking proposals**	
	Number, age, breed		**Handling facilities**	
	Grazing area		**Access**	
	Stocking density		**Emergency (e.g. foul weather, ill-health**	

Type of hazard		**Written assessment of hazard**	**Assessment of risk (score 1-20)**			**Location(s) on map (✓)**	**Actions**	**Re-assessment of Risk**
			Probability x	**Severity =**	**Risk Level**			
BASIC REQUIREMENTS (refer to second freedom)								
Food	**Lack of availability (Quantity and Quality)**							
	Impeded accessibility (e.g. snow, flood)							
	Known mineral deficiencies (consult local vet/ DEFRA)							
Water	**Lack of availability (Quantity)**							
	Quality (Salinity, Pollutants)							
	Accessibility (Physical access, freezing, drought)							

Type of hazard	Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
		Probability x	Severity =	Risk Level			
PHYSICAL HARM FROM NATURAL ELEMENTS (refer to second and third freedoms)							
Fire							
Flood							
Poisonous plants							
Ground conditions (injury)							
Lack of / insufficient suitable resting areas							
Water bodies (e.g. drowning, exposure, injury entering/exiting)							
Weather (extremes of heat, cold, wet) / Shelter							
Insects							
PHYSICAL HARM FROM MAN-MADE ELEMENTS (refer to third freedom)							
Fences							
Bridges/crossing points							
Debris/materials							

Type of hazard		Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
			Probability x	Severity =	Risk Level			
Electricity supply								
Shooting								
Vandals								
Other								
DISEASE (refer to third freedom)								
Internal (e.g. parasites)								
External (e.g. fly-strike, sweet itch)								
Other (e.g. common and/or local ailments)								

Type of hazard	Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
		Probability x	Severity =	Risk Level			
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM NATURAL FACTORS (refer to fourth and fifth freedoms)							
Inability to demonstrate natural patterns of behaviour							
Negative social interaction (e.g. bullying)							
Weather (extremes of heat, cold, wet) / Shelter							
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM MAN-MADE FACTORS (refer to fifth freedom)							
General public							
Dogs							
Noise (e.g. shooting, aircraft)							
Vehicles/machinery							
Vandals							

Appendix 2

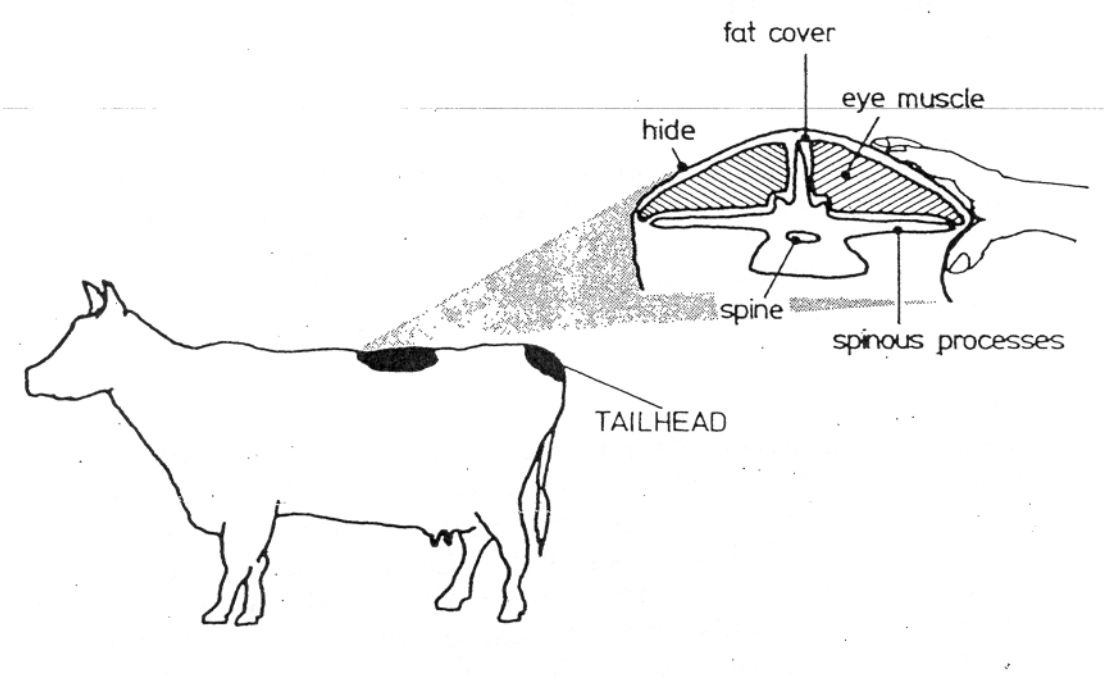
Condition Score Diagrams

In order to help with condition scoring, we have obtained sample condition score diagrams for cattle, equines, pigs and sheep; none were available for goats.

Condition scoring for cattle

(Obtained from the Meat and Livestock Commission)

The condition scoring system is based on handling two areas of the cow to assess the level of fat cover. These are the loin area (i.e. between the hip bone and the last rib) and around the tail head. The fat cover over the loin area is the major area for condition scoring, especially thin animals. However, above a condition score of 3, the bones around the loin can no longer be felt and the amount of fat cover around the tail head is also used to assess the condition score of the cow.



Condition score 1 The individual spinous processes are sharp to the touch and easily distinguished.

Condition score 2 The spinous processes can be identified individually when touched, but feel rounded rather than sharp.

Condition score 3 The spinous processes can only be felt with very firm pressure and the areas either side of the tail head have some fat cover.

Condition score 4 Fat cover around the tail head is easily seen as slight mounds, soft to the touch. The spinous processes cannot be felt.

Condition score 5 The bone structure of the animal is no longer noticeable and the tail head is almost completely buried in fatty tissue.

The technique is easily learned and with experience can be used with consistent results.

Condition scoring for equines

(Obtained from the British Horse Society)

Condition scoring is recognised as a method of providing an assessment of the bodily condition of farm animals and therefore gives an indication of the welfare status during the production cycle. Body condition score is an estimate of the amount of fatty tissue under the skin and is an indication of body reserves. There is a need for a standard agreed method to be recognised for equines and the method described here has been evaluated in the field. Condition scoring is particularly useful for free ranging native breeds that extensively graze upland and moorlands, but the method can be applied to all types of equine.

Why condition score?

Loss of condition during late winter and spring in native free ranging breeds, particularly in pregnant mares, is a recognised factor associated with unnecessary suffering and sometimes death. As the new-born foal grows through the spring, the drain of nutrients to the milk can outstrip the supply even in an improving food situation. In this way, poor condition at foaling can continue well into lactation.

Condition scoring in the autumn or early winter is a useful management tool which can provide an indication to the necessary nutritional management of horses and ponies and help to prevent welfare problems. Scoring can be useful in monitoring the effects of parasitism, other debilitating diseases or problems such as dental irregularities. It can also be used in preventing obesity.

How to condition score

Condition scoring has been developed using a score of 0-5, but since condition score 0 denotes an animal so emaciated that death is inevitable, it will not be used further. Condition score 1 denotes a very thin animal and condition score 5 an excessively fat one.

In any event, it is a procedure which requires practice. It is perhaps easier and more accurate to estimate the condition score of a group of animals whilst at the same time picking out odd animals which are above or below the average of that group.

With the aid of diagrams, it should be possible to judge the condition score accurate to the nearest half score unit. With farm animals, condition scoring is carried out by a combination of visual and “hands on” methods. For obvious reasons “hands on” is not always an option with semi-feral ponies.

Hands on method

When it is possible, this method is undoubtedly better than relying on observation alone, as long coats, manes and tails can obscure an otherwise sparse covering of body fat. Even when ponies are gathered, it is not always possible or safe to use a hands on technique. Animals must always be handled in a calm and careful way.

There are two main areas of the body which are useful indicators of condition. Firstly, the main part of the trunk including the rib cage and the spine and secondly the pelvis and tail head area. Ideally, if ribs can be felt but are not obvious visually, then the condition score would be about right – i.e. between 2.5 and 3.5.

If the ribs cannot be felt even with finger tip pressure, then the condition score is likely to be greater than 4.

If the spinal processes can be felt as individual entities, then the condition score would be 2. If the spinal processes are prominent then the condition score will be less than 2.

Visual method

Even with the visual only option, it is not always possible to approach the animal from the ideal angle. If possible, an appraisal from all directions is necessary. Body outlines can be more defined when the animal's coat is wet so that, unfortunately, this task may be easier in the rain!

From the side it may be possible to see an outline of ribs. If this is so, then the condition score will be less than 2. If the ribs are sharply outlined, the condition score could be as low as 1.

From the rear, especially from a slight height, it is possible to make out the amount of fat either side of the spinal processes and around the lateral processes of the spine. At the same time, the amount of fat over the pelvis can be seen. If the outline either side of the spine is concave, the score is probably 2, but if it is very concave, the score could be as low as 1.

If the bony processes of both the spine and pelvis are obvious, then the condition score is likely to be less than 2.

If the haunches of the animal are covered so that no bony process is obvious, the condition score will be 4 or more.

If the back is "flat" with a depression the length of the back over the spine, the condition score would be 5.

Target condition scores

For spring foaling mares it is generally considered that a minimum target score should be 3.5 in the autumn. It has been shown that the mean body condition score will decrease by one unit score through the winter and this will ensure that the mare ends the winter on a body score of 2.5. These are also useful target figures for all types of equine. In groups of any size, it is highly unlikely that all animals will attain the ideal at any one time.

Conclusion

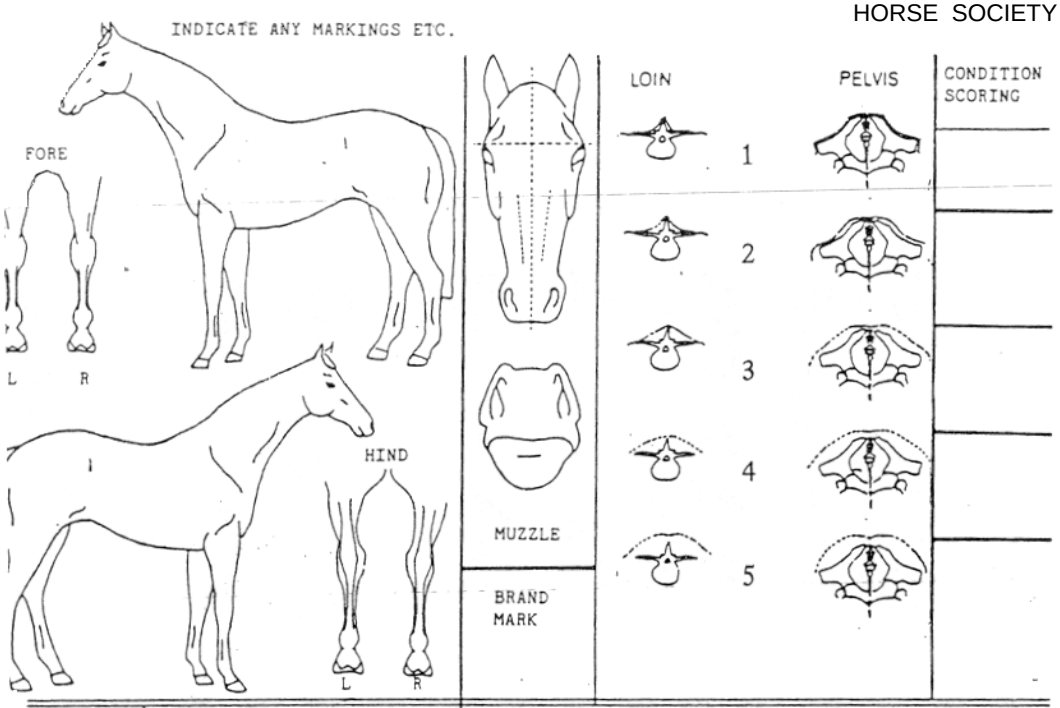
It can be seen that condition scoring can aid early identification of animals that may require supplementary feeding or removal from poor grazing. Conversely, over fat ponies could be managed in a way that would reduce the risk of laminitis. It is a simple and cost free method of assessing the welfare status of both individual animals and groups. If records are kept every time scoring is carried out, trends or changes will be more easily identified.

Sample Condition Scoring Form – British Horse Society

MEMORANDUM

TO.

THE BRITISH
HORSE SOCIETY



COLOUR		LOCATION	
SEX			
AGE			
HEIGHT		TIME	DATE

REMARKS

FROM.

Passed to:

Signed
Date

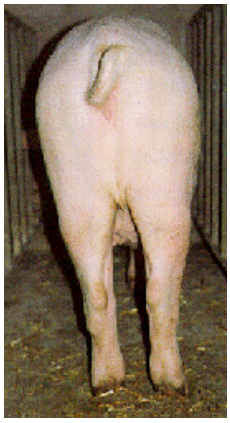
Condition scoring for pigs
(Obtained from DEFRA)

How to condition score

Condition scoring is a hands on technique: it is not sufficient to just examine the sow by eye, it is essential to feel the amount of fat she has covering her bones. The main areas to feel are the hips or “aitch bones” and along the back bone. It can also be useful to feel the two pointed bones on either side of the tail, the “pin bones”, and observe how much of a cavity there is, if any, under the base of the tail. The best way to feel is with the palm of the hand rather than with the fingers.

The condition scoring system for sows covers a five point scale:

Condition score 1:
The sow is visually thin with hips and backbone very prominent and no fat cover over hips and backbone.



Condition score 2:
The hip bones and backbone are easily felt without any pressure on the palms.

Condition score 3:
It takes firm pressure with the palms to feel the hip bones and backbone.

Condition score 4:
It is impossible to feel the bones at all even with pressure on the palm of the hands.

Condition score 5:
The sow is carrying so much fat that it is impossible to feel the hip bones and backbone even by pushing down with a single finger.

Half points

This scale of 5 points gives the full range of condition but it should be very rare to find sows in condition 1 or 5. (A sow in condition 1 could not be found for this booklet).

Once the technique has been practised, and is in use, it is permitted to use half points to indicate mid-point scores.

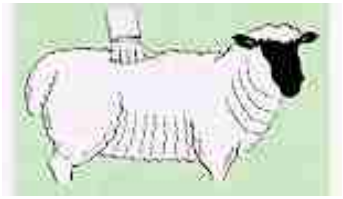
Although each of the scale points has a definite description, the system still has an element of subjectivity as different stock-people may score the same sow slightly differently within the half-point system. However, the important point is to arrive at a consistency of scoring on the unit. Then use an external visitor, your vet or consultant, to check your scores to ensure you are somewhere “in line” with common practice.

Condition scoring for sheep

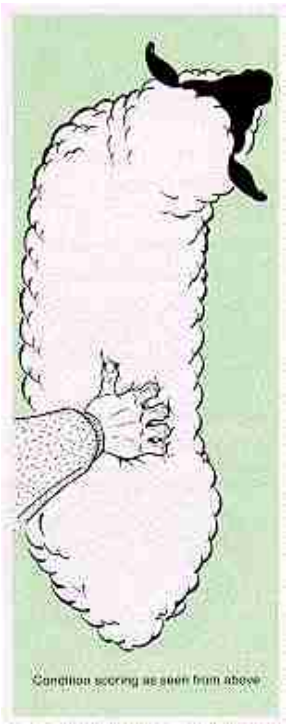
(Obtained from DEFRA)

How to condition score ewes

Body condition is assessed by handling the ewe over and round the backbone, in the area of the loin behind the last rib.



Condition scoring from the side

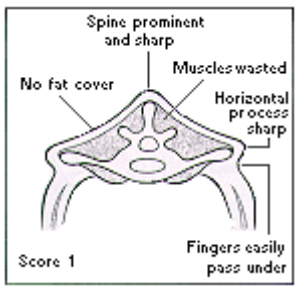


Using the finger tips, first feel the degree of sharpness or roundness of the lumbar vertebrae. Secondly, feel and assess the prominence and degree of cover over the horizontal processes. Then assess by feel the amount of muscle and fat under the ends of these bones. Finally, assess the eye muscle and its fat cover, by pressing the fingers into the area between the vertical and horizontal processes.

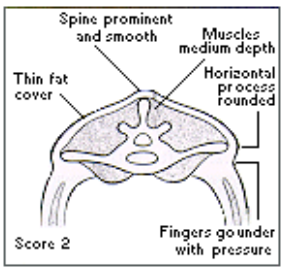
Taking these assessments into account, it is usual to score all ewes on a scale of 0-5, using half scores as intermediate points along the scale.

Score 0 This is seldom used as it only applies to ewes which are extremely emaciated and on the point of death. It is not possible to feel any muscle or fatty tissue between skin and bone.

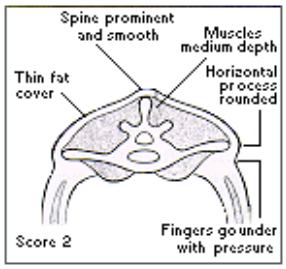
Score 1 The vertical and horizontal processes are prominent and sharp. The fingers can be pushed easily below the horizontals and each process can be felt. The loin muscle is thin and with no fat cover.



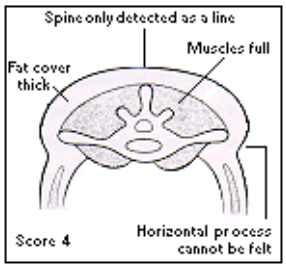
Score 2 The vertical processes are prominent but smooth, individual processes being felt only as corrugations. The horizontal processes are smooth and rounded, but it is still possible to press the fingers under. The loin muscle is of moderate depth but with little fat cover.



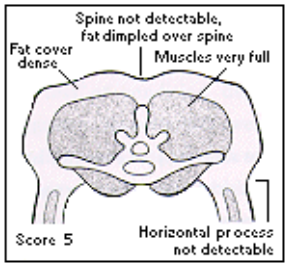
Score 3 The vertical processes are smooth and rounded; the bone is only felt with pressure. The horizontal processes are also smooth and well covered; hard pressure with the fingers is needed to find ends. The loin muscle is full, with a moderate fat cover.



Score 4 The vertical processes are only detectable as a line; the ends of the horizontal processes cannot be felt. The loin muscles are full and have a thick covering of fat.



Score 5 The vertical processes cannot be detected even with pressure; there is a dimple in the fat layers where the processes should be. The horizontal processes cannot be detected. The loin muscles are very full and covered with very thick fat.



Appendix 3

Indicators of Health

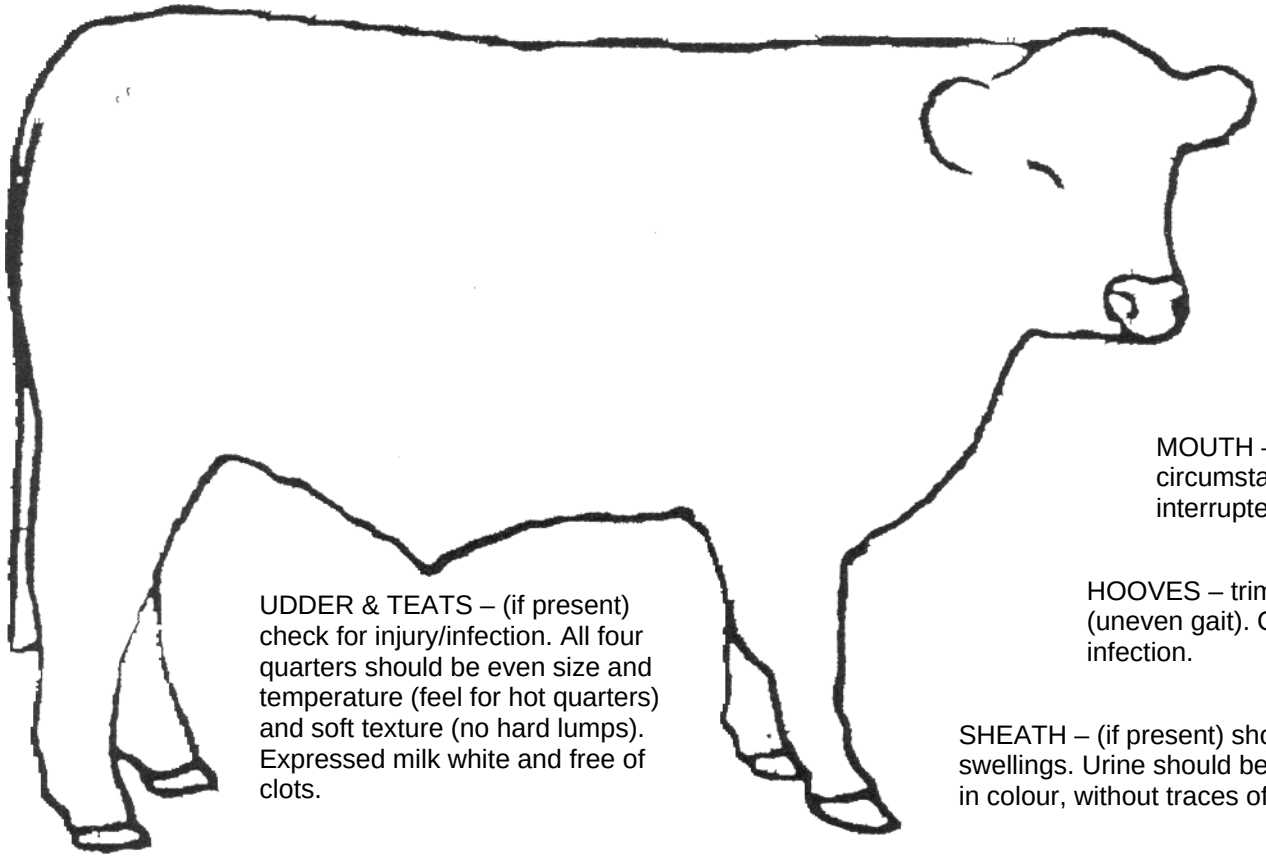
Cattle: Indicators of Health

RUMP, LOIN, RIBS – points for condition scoring; observe and feel regularly to monitor change. Rise and fall of ribs at normal breathing rate: 15-20/minute.

SKIN & COAT – coat smooth, even textured and glossy in summer; thicker and duller in winter. Not staring or balding. Skin pale pink and clear of scurf or scabs.

EARS – usually held semi-erect and responsive to sounds. Check for loss of ear tags and injuries or infections arising from tags.

TAIL/VULVA – traces of discharge on tail/flanks should be clear or colourless (check for oestrus and early stages of calving). Observe for excessive bleeding or signs of infection after calving. Urine should be clear and pale in colour, without traces of blood.



EYES – clear and properly open. Minimal discharge of clear fluid. Responsive to visual cues.

NOSE – moist and shiny; clear of any discharge.

MOUTH – minimal salivation under normal circumstances. Normal cudding movement interrupted by c.1 belch per minute.

TAIL/ANUS – faeces normal for type of diet (semi-liquid on lush grass, to solid stools on rank herbage). Even consistency and lacking blood clots. Normal rectal temperature in adult animal at rest: 101.5°F, 38.6°C.

UDDER & TEATS – (if present) check for injury/infection. All four quarters should be even size and temperature (feel for hot quarters) and soft texture (no hard lumps). Expressed milk white and free of clots.

HOOVES – trim and even claws. No lameness (uneven gait). Check for signs of injury or infection.

SHEATH – (if present) should be free from swellings. Urine should be clear and pale in colour, without traces of blood.

Equines: Indicators of Health

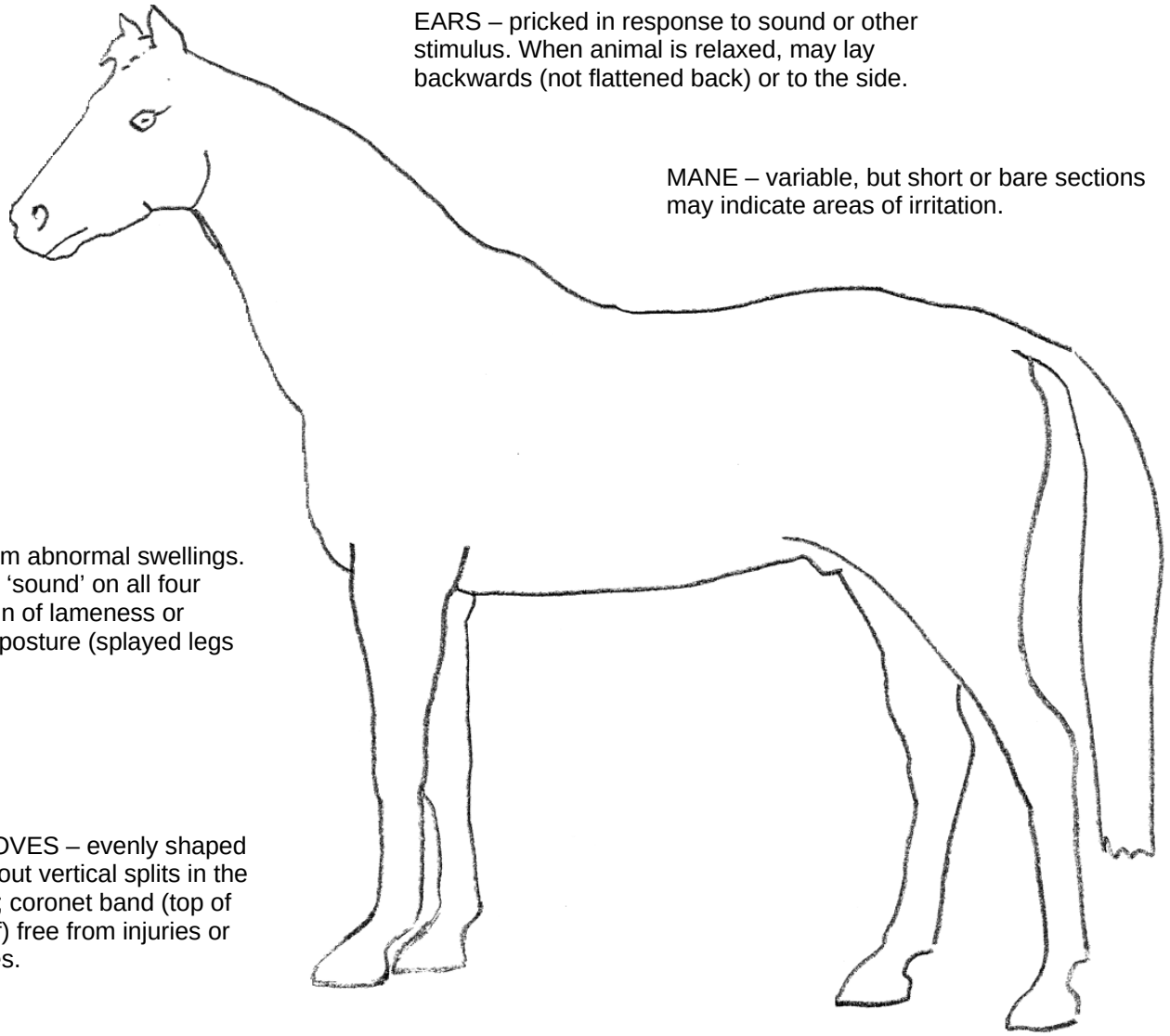
EYES – bright, alert, fully open and clear of discharge.

EARS – pricked in response to sound or other stimulus. When animal is relaxed, may lay backwards (not flattened back) or to the side.

MANE – variable, but short or bare sections may indicate areas of irritation.

NOSTRILS – clear from coloured discharge. Regular breathing rate (nostrils not flaring at rest) and free from noises (wheezing, coughing).

TAIL/VULVA – traces of discharge on tail/flanks should be clear or colourless (check for season in mares). Top of tail standing up with broken hairs may indicate discomfort and potential problems (e.g.worms). Urine should be pale in colour, without traces of blood.



LIMBS – free from abnormal swellings. Horse should be 'sound' on all four limbs with no sign of lameness or limping. Upright posture (splayed legs suspicious).

TAIL/ANUS – faeces should not be fluid. On lush grass, or with change of diet or circumstances, stools may become very soft; generally, each stool comprises a series of nuggets.

HOOVES – evenly shaped without vertical splits in the wall; coronet band (top of hoof) free from injuries or sores.

SHEATH – (if present) should be free from swellings. Urine should be clear and pale in colour, without traces of blood.

Sheep: Indicators of Health

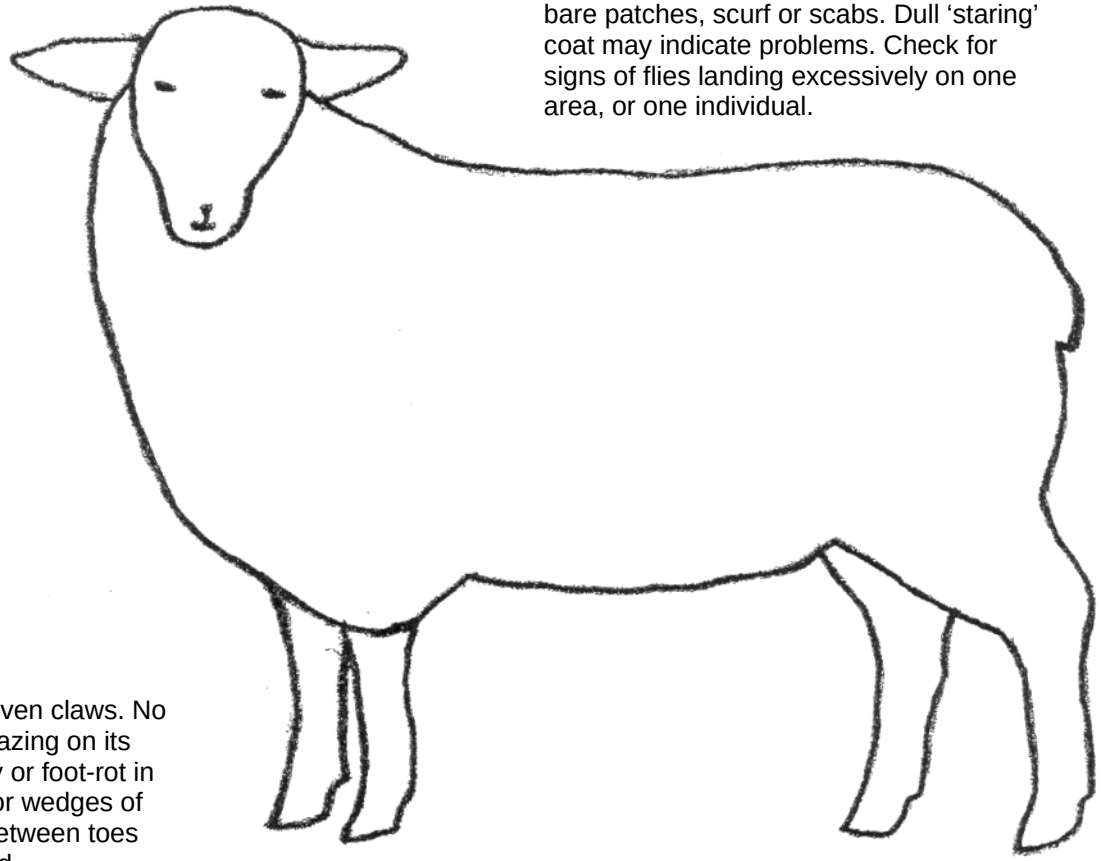
EARS – erect or semi-erect. Responsive to stimuli.

EYES – clear, bright and fully open. Free from discharge. Check for opaque colouring or blistering.

NOSTRILS – free from coloured or excessive amounts of clear discharge.

MOUTH – free from swellings or sores.

HOOVES – trim and even claws. No lameness. A sheep grazing on its knees may have injury or foot-rot in front hooves. Check for wedges of vegetation and mud between toes which may cause scald.



FLEECE – clean, even texture. Free from bare patches, scurf or scabs. Dull 'staring' coat may indicate problems. Check for signs of flies landing excessively on one area, or one individual.

TAIL/ANUS – clean, free from dags (sheep poo/scouring). Stools should be semi-solid and consist of loosely compacted pellets; may become softer with change of diet.

General demeanour of healthy sheep: alert, but not agitated. Able to rest, but quick to respond to stimuli.

UDDER – both halves of even size and temperature; free from hard lumps. (A sheep lame in rear leg(s) may have a sore udder/mastitis). Urine in both sexes should be clear and free from traces of blood.

Appendix 4

Transport Space Allowances

Extract from:

Guidance on The Welfare of Animals (Transport) Order 1997

Stocking densities for transport by Road (as set out in Chapter VI of Directive 95/29)

By Ministry of Agriculture, Fisheries and Food
Scottish Executive Rural Affairs Department
National Assembly for Wales Agriculture Department

Revised April 2000

CATTLE

Category	Approximate Weight (in kg)	Area in m2 per animal
Small calves	55	0.30 to 0.40
Medium-sized calves	110	0.40 to 0.70
Heavy calves	200	0.70 to 0.95
Medium-sized cattle	325	0.95 to 1.30
Heavy cattle	550	1.30 to 1.60
Very heavy cattle	>700	[>1.60]

These figures may vary, depending not only on the animals' weight and size but also on their physical condition, the meteorological conditions and the likely journey time.

EQUINES

Adult horses	1.75 square m (0.7 x 2.5m)
Young horses (6-24 months) (for journeys up to 48 hours)	1.2 square m (0.6 x 2m)
Young horses (6-24 months)(for journeys over 48 hours)	2.4 square m (1.2 x 2m)
Ponies (under 144cm)	1 square m (0.6 x 1.8m)
Foals (0-6 months)	1.4 square m (1 x 1.4m)
NB During long journeys, foals and young horses must be able to lie down.	

These figures may vary by a maximum of 10% for adult horses and ponies and by a maximum of 20% for young horses and foals, depending not only on the horses' weight and size but also on their physical condition, the meteorological conditions and the likely journey time.

GOATS

Category	Weight (in kg)	Area in m2 per animal
	<35	0.20 to 0.30
	35 to 55	0.30 to 0.40
	>55	0.40 to 0.75
Heavily pregnant goats	<55	0.40 to 0.50
	>55	>0.50

The surface area indicated above may vary depending on the breed, the size, the physical condition and the length of fleece of the animals, as well as the meteorological conditions and the journey time.

PIGS

All pigs must at least be able to lie down and stand up in their natural position.

In order to comply with these minimum requirements, the loading density for pigs of around 100kg should not exceed 235 kg per square metre.

The breed, size and physical condition of the pigs may mean that the minimum required surface area given above has to be increased: a maximum increase of 20% may also be required depending on the meteorological conditions and the journey time.

SHEEP

Category	Weight (in kg)	Area in m2 per animal
Shorn sheep and lambs of 26 kg and over	<55	0.20 to 0.30
	>55	>0.30
	<55	0.30 to 0.40
Unshorn sheep	>55	>0.40
	<55	0.40 to 0.50
Heavily pregnant ewes	>55	>0.50

The surface area indicated above may vary depending on the breed, the size, the physical condition and the length of fleece of the animals, as well as the meteorological conditions and the journey time. As an indication: for small lambs, an area of under 0.2 square metres may be provided.

Appendix 5

Notifiable Diseases

NOTIFIABLE DISEASES – GREAT BRITAIN
(Revised January 1999)

Notifiable Disease	Species Affected	Occurred Last
African Horse Fever	Horses	Never
African Swine Fever	Pigs	Never
Anthrax	Cattle and other mammals	1997
Aujeszky's Disease	Pigs and other mammals	1989
Avian Influenza (Fowl plague)	Poultry	1992
Bovine Spongiform Encephalopathy	Cattle	Present
Blue Tongue	Sheep and goats	Never
Brucellosis (Brucella arbortus)	Cattle	1993
Brucellosis (Brucella melitensis)	Sheep and goats	Never
Classical Swine Fever	Pigs	2000
Contagious Agalactia	Sheep and goats	Never
Contagious Bovine Pleuropneumonia	Cattle	1898
Contagious Epididymitis (Brucella ovis)	Sheep and goats	Never
Contagious Equine Meteritis	Horses	1997
Dourine	Horses	Never
Enzootic Bovine Leukosis	Cattle	1996
Epizootic Haemorrhagic Virus Disease	Deer	Never
Epizootic Lymphangitis	Horses	Never
Equine Viral Arteritis	Horses	1999
Equine Viral Encephalomyelitis	Horses	Never
Equine Infectious Anaemia	Horses	1976
Foot and Mouth Disease	Cattle, sheep, pigs and other cloven hoofed animals	2001 (previous 1981)
Glanders and Farcy	Horses	1928
Goat Pox	Goats	Never
Lumpy Skin Disease	Cattle	Never
Newcastle Disease	Poultry	1997
Paramyxovirus of pigeons	Pigeons	Present
Peste des Petits Ruminants	Sheep and goats	Never
Rabies	Dogs and other mammals	1970
Rift Valley Fever	Cattle, sheep and goats	Never
Rinderpest (Cattle plague)	Cattle	1877
Scrapie	Sheep and goats	Present
Sheep pox	Sheep	1850
Swine Vesicular Disease	Pigs	1982
Teschen Disease	Pigs	Never
Tuberculosis (Bovine TB)	Cattle and deer	Present
Vesicular Stomatitis	Cattle, pigs and horses	Never
Warble Fly	Cattle (deer and horses)	1990

Appendix 6

Useful Welfare Contacts

Useful Welfare Contacts

BEVA (British Equine Veterinary Association)
5 Finlay Street
London
SW6 6HE
0207 610 6080
www.beva.org.uk

BHS (British Horse Society)
Stoneleigh Deer Park
Kenilworth
Warwickshire
CV8 2XZ
0870 120 2244
www.bhs.org.uk

Blue Cross
Head Office
Shilton Road
Burford
Oxon
OX18 4PF
01993 822651
www.thebluecross.org.uk

DEFRA (Department of Environment, Farming and Rural Affairs)
Nobel House
17 Smith Square
London
SW1P 3JR
0207 238 6000
www.defra.gov.uk

FAWC (Farm Animal Welfare Council)
FAWC Secretariat
5th Floor
1A Page Street
London
SW1P 4PQ
0207 904 6534
www.fawc.org.uk

FWAG (Farming & Wildlife Advisory Group)
Scottish Head Office
Scotland Rural Centre
West Mains
Ingliston
Newbridge
Midlothian
EH28 8NZ
0131 472 4080/1
www.fwag.org.uk

FWAG (Farming & Wildlife Advisory Group)
English Head Office
National Agricultural Centre
Stoneleigh
Kenilworth
Warwickshire
CV8 2RX
0247 669 6699
www.fwag.org.uk

FWAG (Farming & Wildlife Advisory Group)
Northern Ireland Head Office
National Agricultural Centre
Stoneleigh
Kenilworth
Warwickshire
CV8 2RX
0247 669 6699
www.fwag.org.uk

ILPH (International League for the Protection of Horses)
Anne Colvin House
Snetterton
Norfolk
NR12 2LR
01953 498682
www.ilph.org

MLC (Meat and Livestock Commission)
PO Box 44
Winterhill House
Snowdon Drive
Milton Keynes
MK6 1AX
01908 677577
www.mlc.org.uk

National Assembly for Wales
Cardiff Bay
Cardiff
CF99 1NA
0292 082 5111
www.wales.gov.uk

NEWC (National Equine Welfare Council)
c/o Blue Cross Head Office

NFU (National Farmers Union)
Agriculture House
164 Shaftesbury Avenue
London
WC2H 8HL
0207 331 7200
www.nfu.org.uk

Rare Breeds Survival Trust
National Agricultural Centre
Stoneleigh
Kenilworth
Warwickshire
CV8 2LG
0247 669 6551
www.rbst.demon.co.uk

RSPCA (Royal Society for the Prevention of Cruelty to Animals)
Causeway
Horsham
West Sussex
RH12 1GH
0870 333 5999
www.rspca.org.uk

SEERAD (Scottish Executive for Environment and Rural Affairs Department)
Pentland House
47 Robb's Loan
Edinburgh
EH1 3DG
0131 556 8400
www.scotland.gov.uk

SSPCA (Scottish Society for the Prevention of Cruelty to Animals)
Braehead Mains
603 Queensferry Road
Edinburgh
EH4 6AE
0131 339 0222
www.scottishspca.org

UFAW (Universities Federation for Animal Welfare)
The Old School
Brewhouse Hill
Wheathampstead
Hertfordshire
AL4 8AN
01582 831818
www.ufaw.org.uk

USPCA (Ulster Society for the Prevention of Cruelty to Animals)
PO Box 103
BT6 8US
Belfast
Northern Ireland

Appendix 7

Discussion Paper for the Conservation Grazing Animal Welfare Working Group (CGAWWG) meeting on 26 July 2005 (8 February 2006)

Discussion paper for The Conservation Grazing Animal Welfare Working Group (CGAWWG) meeting on 26th July 2005. (8 February, 2006).

Introduction

This discussion paper presents nine points discussed at a previous meeting of CGWAWG on 30 September 2004. It is intended that following discussion at the CGAWWG meeting on 26th July and subsequent editing or amendment, this material will be incorporated into an updated edition of GAP's Welfare Guide (Tolhurst, 2001). The structure of the Guide may be changed to include a subsection on extensive grazing if this is thought necessary.

The Guide will then be made available to Defra for use as the basis of a code of recommendations for conservation grazing under the provisions of the new Animal Welfare Bill.

CGAWWG Statement of Intent:

CGAWWG: Grazing Animals in Conservation Grazing
Agreed 'Statement of Intent' as at 20th December 2004.
Conservation bodies and welfare organisations, including equine organisations represented by NEWC, are working together to review the guidelines for animal welfare in nature conservation produced by the Grazing Animals Project (GAP, 2001) and to identify and address issues that need further consideration or inclusion.

Members of the public and some animal welfare organisations have raised concerns about the welfare of grazing animals in certain conservation grazing systems in the UK. The aim of this collaboration is to establish a greater understanding of both the issues surrounding these concerns and also the mutual benefits of grazing animals in conservation grazing systems.

A new Animal Welfare Bill is being drafted which will update the law on animal welfare. The Bill imposes a 'duty of care' and makes provision for the production of Codes of Practice. The CGAW Working Group recommends that a Code of Practice be produced that is specific to the welfare of grazing animals, including equines, on land managed for conservation.

Tolhurst, S (ed.) 2001. A guide to animal welfare in nature conservation grazing. Grazing Animals Project. www.grazinganimalsproject.org / publications.
Defra, 2004 Launch of the Draft Animal Welfare Bill. www.defra.gov.uk

Conservation grazing:
The phrase '*conservation grazing*' is used here to refer to grazing schemes where the primary purpose of introducing livestock to a site is the maintenance or enhancement of wildlife features reliant on disturbance such as vegetation removal, trampling and dunging. There may also be agricultural objectives e.g. the production of meat, dairy products or wool, or the creation of swards suitable for other animals to do this. However, purely agricultural grazing, or grazing of companion animals, is not relevant here. Conservation grazing may often be carried out in the context of compliance with subsidy payment requirements.

The welfare debate currently revolves around two areas of concern: (a) The increase in size of grazing systems, albeit still using the same grazing models as current systems, and (b) those where the proposals are for more natural processes to be allowed.

A. Extensive grazing systems for species and habitat conservation objectives:
Increasing interest in extensive conservation grazing within the conservation community has meant there is a need to address welfare issues that relate specifically to extensive grazing. The existing GAP Welfare Guide (Tolhurst, 2001) is still relevant to most conservation sites within the UK. However, the move to more extensive grazing systems covering larger areas of land has meant that some sections of the guide would benefit from updating and expansion. The points that follow in this paper will be used to update and develop topics already within the Guide. This will be Phase 1 of the CGAWWG remit.

B. Systems where the objectives are to allow greater scope for 'natural processes' to act, (cf: 'natural areas', 'wilderness'):
The practical implications of this approach have not been fully explored in the UK, and may in some cases be unacceptable in terms of both conservation of biodiversity and animal welfare (Hodder *et al*., 2005). The State Forest Service in the Netherlands commissioned a working group to draw up ethical guidelines (Tramper *et al*., 1999) for conservation grazing. These ethical guidelines may be helpful to our discussions but are not directly relevant to the animal welfare legislation in the British Isles. Therefore, it is recommended that the role of large herbivores in such systems and their welfare management require further research, debate and careful consideration before schemes are set up. Further work and discussion on this area will be completed as Phase 2 of the CGAWWG remit.

PHASE 1.

Discussion points relating to extensive conservation grazing to be included within the GAP welfare guide

The following discussion points are to be incorporated into the relevant places within the GAP welfare guide to help ensure that welfare aspects particularly pertinent to extensive conservation grazing are addressed. The legal obligations to all stock are given on pages 4 – 6 of the GAP Welfare Guide. These are not reiterated here, but will be updated to include changes resulting from the new (draft) Animal Welfare Bill (e.g. the inclusion of non-agricultural animals).

(The text in brackets against the title of each point indicates firstly where it is to be inserted within the GAP Welfare Guide (GWG) and secondly the reference location in the September 04 meeting notes).

1. Extensive conservation grazing *(CWG Introduction).*
In nature conservation grazing, *extensive grazing* refers to situations in which less spatial control is exerted on livestock. This can result in a more variable vegetation structure over large areas, which may often have a complex topography or include varied habitats. Many such sites with nature conservation designation are of substantial size, and may be grazed as single units. The principles of extensive grazing may also be applied to smaller sites through adjustment of the stocking density and timing. This approach is likely to result in greater diversity across the site than compartmentalised

grazing, although it also means that less control is possible on the part of the site manager.

Extensive grazing may have positive implications for the grazing animals welfare, in particular it is likely to allow them greater freedom to express natural behaviour. However, freedom from hunger and thirst, discomfort, and pain injury and disease must still be addressed. On extensive sites, animals may have further to travel to reach shelter or water from places where they are feeding. Checking stock is more difficult, but appropriate checks must of course still be carried out. Animals are likely to be much less habituated to human handling, and may become stressed should the need for handling arise. Extensive grazing may expose animals to more stresses, but correspondingly they have a greater opportunity to do something about them.

2. Selection of suitable stock (GWG - New section of choosing stock within introduction. *See 3b in Sept 04 meeting notes*)

The background of individual animals, such as previous experience, age and breeding policy, is likely to be as important as breed, provided that a suitably hardy breed is chosen.

There is ongoing debate over the best breeds to use for extensive conservation grazing. GAP's Breed Profiles Handbook gives a starting point for the selection of appropriate breeds. In less challenging situations, breed may not be so important. A GAP review paper outlines the discussion on the extent to which conservation grazing managers should be supporting native breeds, and the arguments are not reiterated here, beyond stating that GAP endorses the policy of prioritising native breeds for conservation grazing, as part of a holistic concept of conservation, where these will deliver the required site objectives. (Ref: A GAP Discussion Document "The use of native or non-native grazing animals". Oct 2004.). (*See 3b in Sept 04 meeting notes).*

It is worth noting that while local breeds may be well adapted to the local terrain and vegetation type, this is not always an advantage for very targeted conservation management. For example, work in the Yorkshire Dales looking at control of purple moor-grass *Molinia caerulea* found that Hebridean sheep removed a greater percentage of this grass than the local Swaledale sheep, resulting in an increase in heather (Newborn, 2000).

In some circumstances, mixed species grazing may be a useful way of obtaining both additive and complementary grazing effects. For example, on the Isle of Rum, species diversity of grassland was reduced after cattle were removed, leaving only red deer as the main grazer. When cattle were reintroduced not only did the grassland diversity recover, but the reproductive performance of the red deer also increased (Gordon, 1988). However, caution is needed as mixed grazing may in some siutations have a negative effect on livestock condition. For example, work by ADAS found that heifers grazing with sheep on matt grass *Nardus stricta* dominated moorland for two months in the summer did well in the first summer (in terms of liveweight gain) but not so well the second year. Whereas heifers grazing on their own had similar gains each year. In contrast, at another site mature dry cows grazing purple moor-grass dominated pasture did maintained adequate body condition when grazing with Sheep (Barbara McClean, pers. comm.)

3. The development of self-reliance and use of available forage. (GWG - New section of choosing stock within introduction. Also, *See 3e & 3f in Sept 04 meeting notes*)

The term *self-reliance* is used to describe situations where the animal can obtain from within the site all that they need to satisfy the five freedoms. Additionally, because all their needs are available on the site, they are not 'trained' to interact with or depend on people, and their behaviour is less influenced by people.

The use of more self-reliant animals for conservation grazing will generally reduce the welfare concerns. To some extent self-reliance will be a genetically inherited attribute, but is also a learnt attribute. Practical measures can be taken to maximise effective self-reliance, for example introducing livestock to a site before the winter, so that they have time to familiarise themselves with resources available – although they may not explore a site fully until food, water or shelter becomes limited. However, once they have been motivated to move around, they will use this knowledge. Maintaining or introducing more experienced animals may also increase the self-reliance of a herd. Allowing animals to roam at will on large sites will allow them to optimise their dietary intake in terms of both quality and quantity. It is important that sites are not too heavily stocked, so that dietary choice does not become limited. However, for stock prone to obesity or laminitis, stocking at very low density may be a problem - body condition must be managed appropriately. Breeds that are adapted to particular environments may show better use of forage in that environment according to their requirements.

It should be borne in mind that, on conservation grazing sites, the type of livestock chosen needs to have attributes that will enable it to cope with a quality of diet that for less well adapted types would be sub-optimal for at least part of the year. Reassessment and monitoring of the animals' welfare is nevertheless necessary once grazing has started, to confirm that the animals are coping satisfactorily.

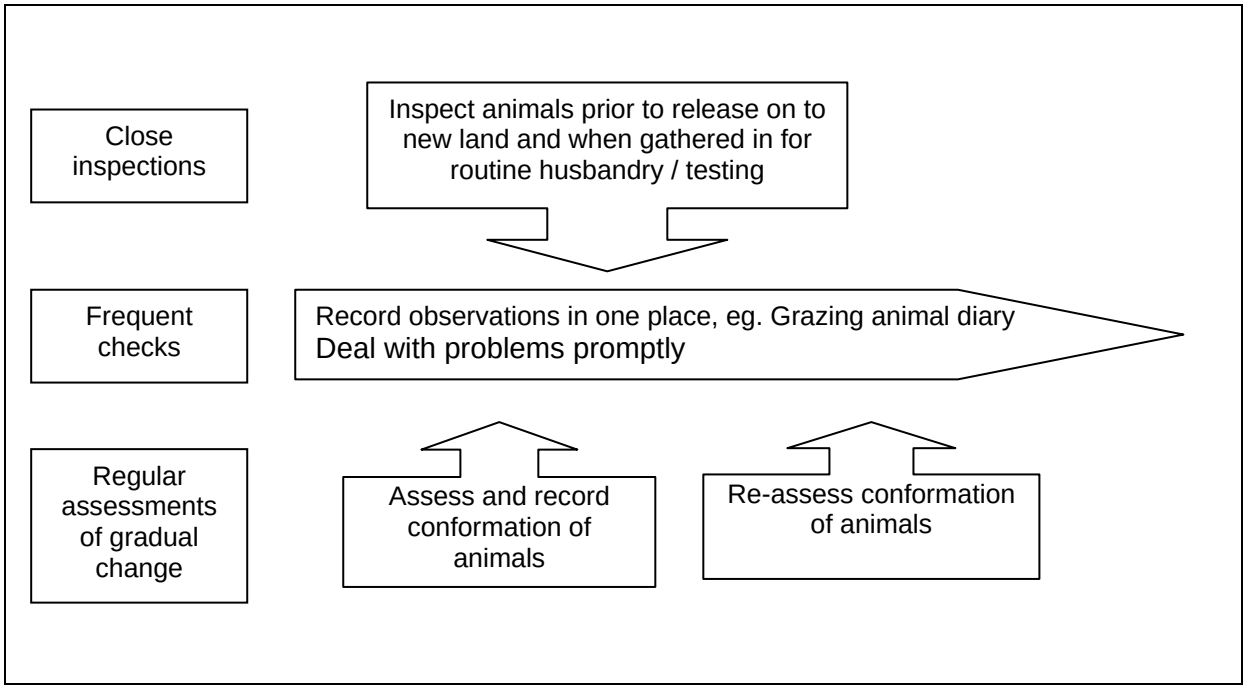


Figure 1. Different kinds of livestock checking required ensuring healthy animals in a conservation grazing system.

4. Population control (GWG - Introduction *See 3g in Sept 04 meeting notes*)

In natural systems, population size is controlled by mortality and migration, and by breeding output. Natural population control through mortality occurs from disease and from density-dependent starvation as resources become depleted, resulting in the death of the least resilient individuals. In the case of animals introduced and confined to a site and unable to migrate, for example between wintering and breeding sites, this is considered to involve an unacceptable level of suffering. Therefore, natural population control is not a suitable population control mechanism for extensive conservation grazing.

Population control may also occur through a reduction in reproductive success. Reproductive success is influenced by factors such as site quality and weather. Reproductive success may also be density-dependent, with breeding output reducing as population size increases. A reduction in breeding output does apparently limit healthy populations of free-ranging livestock on some reserves (for example, goats on Lullington Heath). However, the point at which the mechanism comes into effect, and the relationship between this and the point at which suffering due to resource depletion occurs, is not sufficiently well understood on individual sites for it to be relied on as a means of population control. Note that both mortality and breeding success can also be influenced by behaviour such as territoriality and interference, which may be seen in free-ranging livestock.

An appropriate breeding policy needs to be decided on *before* acquiring livestock for a site. To avoid unnecessary suffering, this must include a population control policy if unrestricted breeding is to take place. A clear policy on both breeding and culling needs to be agreed and instigated, and forward planning is needed if breeding is to be stopped once carrying capacity is reached, due to the time lag involved. Culling (i.e. removal or killing of animals) may be based on a euthanasia policy (e.g. removing those least able to cope) or on the basis of fertility (taking out fertile animals to have a greater impact on population growth). These two options may have very different genetic consequences, with potentially only the first resulting in the more resilient animals remaining. Harvesting (i.e. the removal of animals for commercial purposes) does not specifically involve taking out fertile animals.

It should be remembered that the duty of care for livestock is for life. If animals are no longer required, they must be transferred to a similar grazing system or other purpose to which they are suited, or humanely killed if this is not possible.

5. The formation of particular social groups and the interaction between individuals and groups (GWG - *Page* 41, Freedom to express natural behaviour. See 3d in Sept 04 meeting notes).

Extensively grazing livestock often have more opportunity to exhibit natural behaviour than in more intensive systems. This may include territoriality and the formation of social groups. This will be dependent on the number of animals introduced to a site, and may vary as numbers change. It is important to be aware of social groups when managing livestock, and to consider the best location and best time to intervene if disruption is to be minimised. Removing particular individuals who are dominant in the herd hierarchy can cause particular disruption. Optimal population size may also be influenced by the nature of social interactions (see section 4).

6. Monitoring the welfare of extensively grazing animals (GWG - Freedom from pain, injury or disease, p25. See 3i in Sept 04 meeting notes)

The livestock risk assessment (see GAP Welfare Guide) undertaken before stock are introduced to a site will determine the inspection interval necessary to ensure the welfare of the stock (see also the Defra codes of recommendation). Current legislation likely to be most relevant to extensive conservation grazing requires that "all animals kept in husbandry systems other than those in which their welfare depends on frequent human attention should be inspected at intervals sufficient to avoid any suffering". The risk assessment process then recommends assessment at the start of grazing, followed by re-assessment at frequent intervals – both of individuals and the grazing system. This may vary according to the time of year, the terrain, the breeding status of the animals and other foreseen periodic occurrences. It may be possible to use technology such as satellite tagging to help locate animals on very extensive or difficult sites. Risks can be reduced by choosing a grazing system and stock type (see above) that minimize welfare problems, plus the proper preparation and use of action plans in the case of any incident. Assessment should include a review of the 'unexpected' and contingency plans should be made. It is important that everyone concerned in checking the welfare of animals on a site understands their own responsibility and who has overall responsibility for those animals. Appropriate training should be undertaken as necessary e.g. GAP's Stock management and Lookers courses for conservation grazing, approved by LANTRA.

7. The criteria for human intervention (GWG - p?. See 3j in Sept 04 meeting notes)

The new Animal Welfare Bill will require action to be taken where an animal, although not currently suffering, is in a situation where it is likely to suffer unless corrective action is taken. If, therefore, the denial of any of the five freedoms results in potential suffering, intervention should take place at a point *before* that suffering occurs. This highlights the need for experienced animal keepers and suitable consultation, risk assessment and recording procedures.

8. Removal/disposal of injured/diseased/dead animals (GWG - Responsibilities of the keeper, p12. See 3k in Sept 04 meeting notes)

The Animal By-products Order (1999) requires the removal of fallen stock if the carcasses can be reached. Some areas classified as "remote" (e.g. in the Highland and Western Isles, Isles of Scilly and Lundy) are exempt from this requirement. Under the EU Food Hygiene Regulation 2006 Fallen Stock Removal Scheme, the registered owner/keeper of livestock will have to pay for the removal of livestock. The burial or burning of fallen stock is permitted when it is in a place where access is difficult (this is likely to mean land to which suitable wheeled vehicles cannot gain access). There are obvious benefits to nature conservation in leaving carcasses, but any site manager wishing to leave fallen stock would need to apply to the Home Office.

PHASE 2. Discussion paper on animal welfare and large-scale, minimum-intervention systems

By large-scale minimum intervention systems we are referring to those where the objectives are to allow greater scope for 'natural processes' to act, generally with the idea of minimum human intervention. In some countries this is also with the objective of providing sufficient space for the conservation of large wild herbivores and their predators. This is less relevant in the UK where our native wild cattle and ponies and their predators are extinct. Therefore the emphasis is on the important role such animals play in ecosystem dynamics

1 .Notes on the distinction between wild, feral, and de-domesticated animals and how the law relates to these: (GWG - Legal obligation pp 4-5. *See 3a in Sept 04 meeting notes).*

(n.b These interpretations seek to clarify how the above terms are generally applied within conservation grazing. They are not intended to be definitive interpretations of the terms).

A. Wild herbivores

Wild species experience their full life cycles without deliberate human intervention. In the UK the only wild grazing animals relevant to conservation grazing are deer, hares and rabbits.

Large herbivores play a key role in ecosystem dynamics. Wild cattle and ponies are extinct in the UK, and the lack of appropriate wild herbivores means that alternative efforts must generally be made to replicate their effects if wild systems are to be restored. There is therefore increasing interest in using feral or de-domesticated animals to replicate the effects of wild herbivores

Note that not all animals considered wild are necessarily native, but may have been introduced by humans (e.g. Sika, Fallow and Muntjac deer; rabbits).

The lack of natural predators of large herbivores presents a major problem to their use in minimum intervention grazing schemes. Predators play a key role both in population dynamics and in the distribution of prey species. Therefore unless or until predators are reintroduced, humans must replicate this role.

Wild animals are currently covered under welfare legislation in the same manner as domestic animals if they are considered to be held in captivity (Protection of Animals Act 1911, England and Wales). The Act makes it an offence generally to treat an animal cruelly or to cause it unnecessary suffering. In Northern Ireland, the corresponding legislation makes no distinction between domestic, captive, or wild animals.

Under the draft Animal Welfare Bill (England and Wales), wild animals will fall within the remit of welfare legislation where they are being kept by humans, ceased to be kept but not (yet) living in a wild state, or temporarily in the custody or control of humans. This is expected to include wild animals that are confined to a site to meet conservation objectives. Similarly in Scotland, proposed revision to the Protection of Animals (Scotland) Act 1912 would "aim to prevent cruelty on any animal and promote the welfare of all animals, where an animal is defined as any animal owned, managed or dependent on people". The consultation process has however produced queries as to the definition of "managed".

Where animals are unknowingly confined to a site, they will probably not fall with the remit of the legislation until the landowner becomes aware of their presence, from which point on they do. Wild animals whose behaviour is manipulated in some way for conservation ends (e.g. strategic provision of feed) but who are not prevented from leaving the site do not become the legal responsibility of the landowner.

We suggest there is also a ***moral*** duty of care on wild large herbivores on a conservation site where human action has resulted in suffering (e.g. if a deer breaks its leg on a fence, even if the fence is not tall enough to contain it within the site).

B. Feral herbivores

A feral animal is defined here as one that has reverted from the domesticated state to a stable condition more or less resembling that in the wild. Feral animals are able to successfully breed and persist beyond the original escaped generation. The term semi-feral is sometime used to describe otherwise feral animals that are not breeding. Feral animals do not have registered owners or keepers.

In the UK the main grazing animal to fall within this category is the goat. There are also feral sheep, and possibly a small number of feral cattle. There are not known to be any feral ponies. However, the term feral pony is sometimes used to refer to native breeds such as the New Forest and Welsh Mountain that run free. However these ponies are all owned and to some extent managed, and are not feral in the sense that the word is used here. Note that the Abandonment of Animals Act (1960) makes it an offence of cruelty to "abandon any animal without reasonable excuse in circumstances likely to cause it unnecessary suffering" e.g. intentionally leaving unattended an animal in circumstances where suffering is likely and where there is sufficient evidence to prove that the person involved had given up his/her duty to care for the animal.

Feral animals may be considered as a suitable substitute for wild animals in minimum intervention schemes, as they are more self-reliant than most domestic stock. However, the wild species that feral animals were originally domesticated from are not necessarily native (e.g. goats which were domesticated in the Middle East). Two key questions relating to the use of feral animals to replace wild herbivores are:

1. Are long-standing feral populations comparable with the pre-domestication species, or with other never-domesticated animals?
2. What are the differences between a fully established feral population and its domestic ancestors in terms of the role they play in ecosystem dynamics?

Feral animals may be collected and introduced to a site for the purposes of minimum intervention grazing. However, they then come under the control of humans, and fall under the proposed welfare legislation. Animals allowed to become feral for minimum intervention conservation grazing must not be abandoned in the sense of the Abandonment of Animals Act. [Animals that have ceased to be kept by humans but are not yet living in a wild state will also be considered as protected animals under the draft Welfare Bill. This is meant to cover the rehabilitation of previously injured, sick or orphaned wild animals].

C. (de-)Domesticated herbivores:

Domesticated animals are those which have been bred and raised under human control for multiple generations and are substantially altered as a group in appearance

or behaviour. As all domesticated stock originated from wild animals, it is possible that a group of domesticated animals "returned to the wild" will, over a period of time, become 'de-domesticated'. It is generally intended that, by allowing natural evolutionary processes to occur, the population concerned will eventually become adapted to their particular site and circumstances, and may become suitable alternatives to wild herbivores in minimum intervention schemes. How long this process takes, and the full implications of this process, are not yet understood. It is likely that de-domestication would occur phenotypically before it did so genotypically.

However, de-domestication cannot occur without some degree of suffering, as it must by definition involve either death or sufficient loss of condition to prevent successful reproduction. This is unlikely to occur in such a manner as to be acceptable under proposed new Animal Welfare legislation in the UK. A herd of more adapted stock could be achieved if individuals which appeared to be less well adapted to their environment were removed before any suffering due to loss of condition occurred, and any offspring not returned to the group. This would require close monitoring over key periods.

It can be argued that the greater the degree of intervention undertaken to manage a population (for example through fencing, feeding, selective culling or disease control) and the greater the extent to which this is for human benefit, the greater the moral responsibility those involved have for the welfare of the animals. As far as is reasonable, those upon whom this moral responsibility falls (i.e. the owner/occupiers whose land the animals range upon and those who undertake management) interventions should:

- aim to prevent welfare problems from occurring e.g. by keeping population size comfortably within the maximum that the habitat can sustain even in stressful periods; and
- strive to remedy welfare problems that may arise e.g. by culling or offering supplementary feed to prevent death by starvation if this is threatened by extreme climatic events. Subsection 6 of clause 3 of the draft Animal Welfare Bill (England and Wales) clarifies that the killing of an animal is not in itself inconsistent with the duty to ensure its welfare, if done in an appropriate and humane manner.

2. Longer term population dynamics: *(GWG - To be decided. See 3h in Sept 04 meeting notes).*

The long-term population dynamics of de-domesticated and feral stock are not well understood. Until we have a better understanding of how population control factors will act on any given de-domesticated or feral population, the welfare implications cannot be adequately predicted. A summary review is needed of likely changes in population dynamics and welfare implications. Long-term monitoring looking at the welfare implications of low or minimum intervention grazing schemes that are being set up should be carried out.

References

Animal By-Products Order (1999) see www.defra.gov.uk/animalh/by-prods/publicat/dispguide.pdf

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