Table 52. Health problems recorded for cattle used for grazing; numbers in brackets indicate the number of times that health problem was recorded if greater than one (there were no records for 21-30%, 31-40%, 51-60%, 81-90%). Cu def., Mg def. and Se def. represent copper, magnesium and selenium deficiencies respectively

Breed or Cross	Percentage of herd affected							
	< 10	11-20	41-50	61-70	71-80	91-100	Varies	Not recorded
Aberdeen Angus	Pneumonia[1] (2), Mg def., Se def., Liverfluke[1], Bloat					Cu def., Flystrike[1]		
Aberdeen Angus x Friesian	Mastitis[1], New Forest eye[1], Pneumonia							
Beef Shorthorn x							Mastitis, New Forest eye, Flystrike, Headfly[1]	
Belgian Blue	Pneumonia, Flystrike, Worms, Calving problems, Foot problems							
Belgian Blue x	Mastitis, New Forest eye, Pneumonia (2), Mg def., Se def., Liverfluke, Bloat[2]					Cu def., Flystrike		
Blonde d'Aquitaine	Pneumonia, Flystrike, Worms, Calving problems, Foot problems							
Blonde d'Aquitaine x	Mastitis, New Forest eye, Pneumonia (2), Mg def., Se def., Liverfluke, Bloat					Cu def., Flystrike		
British White				Flystrike, Dog attacks		Loss of condition	Mastitis, New Forest eye, Flystrike, Headfly	
Charolais	Pneumonia, Flystrike, Worms, Calving problems, Foot problems							
Charolais x	Pneumonia (2), Mg def., Se def., Liverfluke, Bloat					Cu def., Flystrike		
Charolais x Friesian	Mastitis, New Forest eye, Pneumonia							
Devon						Loss of condition		

Breed or Cross	Percentage of herd affected							
	< 10	11-20	41-50	61-70	71-80	91-100	Varies	Not recorded
Friesian	Pneumonia (2), Hypomagnesaemia, Mg def., Flystrike, Liverfluke, Worms, Bloat, Calving problems, Foot problems (2), Loss of condition					Cu def., Flystrike		
Friesian x						Loss of condition		
Friesian x Hereford	Mastitis, New Forest eye, Pneumonia, Liverfluke, Loss of condition							
Friesian x Holstein	Mastitis, New Forest eye, Pneumonia							
Friesian x Limousin	Mastitis, New Forest eye, Pneumonia							
Friesian x Simmental	Mastitis, New Forest eye, Pneumonia							
Galloway x	New Forest eye				Pneumonia			Flystrike
Guernsey	Pneumonia, Mg def., Se def., Liverfluke, Bloat					Cu def., Flystrike		
Hereford	New Forest eye, Liverfluke, Foot problems							
Hereford x	Pneumonia (2), Mg def., Se def., Flystrike, Liverfluke, Worms, Bloat, Calving problems, Foot problems					Cu def., Flystrike, Ticks		
Highland	New Forest eye, Pneumonia, Mg def., Se def., Flystrike, Liverfluke, Bloat	New Forest eye				Cu def., Flystrike, Foot problems		
Holstein	Mastitis, Trapped							
Jersey	Pneumonia, Mg def., Se def., Liverfluke, Bloat	Poison-ing				Cu def., Flystrike		
Limousin						Ticks		

Breed or Cross	Percentage of herd affected							
	< 10	11-20	41-50	61-70	71-80	91-100	Varies	Not recorded
Limousin x	Blackleg[3], Pneumonia (2), Mg def., Se def., Flystrike, Liverfluke, Worms, Bloat, Calving problems, Foot problems	Poison-ing				Cu def., Flystrike, Ticks		Redwater Fever[4], Hypomag-nesaemia
Longhorn	Liverfluke							
Murray Grey						Ticks		
Piemontese x	Pneumonia, Mg def., Se def., Liverfluke, Bloat					Cu def., Flystrike		
Red Poll	Liverfluke		New Forest eye			Loss of condition		
Saler x	Mastitis, New Forest eye, Pneumonia							
Simmental x	Pneumonia, Mg def., Se def., Liverfluke, Bloat					Cu def., Flystrike		
"Store" cattle			New Forest eye			Worms		Liverfluke
Sussex	New Forest eye				Overweight			
White Park		Poison-ing				Ticks		

[1] For descriptions of Pneumonia, Liverfluke, Flystrike, Mastitis, New Forest Eye, and Headfly see footnotes to Table 50. 'Summer mastitis' in cows is caused by the bacterium *Corynebacterium pyogenes* which develops when other bacteria invade through fly bites or other wounds on the teats.

[2] Bloat: an accumulation of gas in the rumen. This can be caused in various ways but in adult cattle is usually the result of grazing lush, young pastures with insufficient coarse fibre for correct rumen activity e.g. clover dominated pastures. The rumen gas may be treated with drenches but if these are ineffective it may be necessary to puncture the rumen to relieve the pressure if the animal is to survive.

[3] Blackleg: a gas gangrene caused by the bacterium *Clostridium chauvoei* which invades through wounds including fly bites. Usually fatal within 36 hours but if detected early responds to treatment with antibiotics. Some sites are more prone to blackleg cases than others; cattle on the former may be vaccinated.

[4] Red Water Fever: caused by a protozoan *Babesia divergens* that is transmitted to cattle by ticks; thus the disease only occurs in 'tick areas'. Young cattle seem not to be affected but older cattle will suffer anaemia as the parasite destroys the red blood cells. This is shown by the characteristic red colouration of the urine (hence the common name). Veterinary treatment usually successful.

Table 53. Frequency of health problems recorded for cattle used for grazing; numbers in brackets indicate the number of times that health problem was recorded if greater than one. Cu def., Mg def. and Se def. represent copper, magnesium and selenium deficiencies respectively

Breed or Cross	Frequency of occurrence						
	Rare	Occasional	Annual	Several yr^{-1}	Often	Weather Dependent	Not Recorded
Aberdeen Angus		Se def., Liverfluke, Bloat	Pneumonia (2), Cu def., Mg def., Flystrike				
Aberdeen Angus x Friesian			Mastitis, New Forest eye, Pneumonia				
Beef Shorthorn x			Mastitis, New Forest eye, Flystrike, Headfly				
Belgian Blue		Flystrike					Pneumonia, Worms, Calving problems, Foot problems
Belgian Blue x		Pneumonia, Se def., Liverfluke, Bloat	Mastitis, New Forest eye, Pneumonia, Cu def., Mg def., Flystrike				
Blonde d'Aquitaine		Flystrike					Pneumonia, Worms, Calving problems, Foot problems
Blonde d'Aquitaine x		Pneumonia, Se def., Liverfluke, Bloat	Mastitis, New Forest eye, Pneumonia, Cu def., Mg def., Flystrike				
British White		Loss of condition	Mastitis, New Forest eye, Flystrike (2), Headfly, Dog attacks				
Charolais		Flystrike					Pneumonia, Worms, Calving problems, Foot problems
Charolais x		Pneumonia, Se def., Liverfluke, Bloat	Pneumonia, Cu def., Mg def., Flystrike				
Charolais x Friesian			Mastitis, New Forest eye, Pneumonia				
Devon		Loss of condition					

Breed or Cross	Frequency of occurrence						
	Rare	Occasional	Annual	Several yr^{-1}	Often	Weather Dependent	Not Recorded
Friesian	Loss of condition	New Forest eye, Pneumonia, Se def., Flystrike, Liverfluke, Bloat, Foot problems	Cu def., Mg def., Flystrike				Pneumonia, Worms, Calving problems, Foot problems
Friesian x							Loss of condition
Friesian x Hereford			Mastitis, New Forest eye, Pneumonia, Loss of condition	Liverfluke			
Friesian x Holstein			Mastitis, New Forest eye, Pneumonia				
Friesian x Limousin			Mastitis, New Forest eye, Pneumonia				
Friesian x Simmental			Mastitis, New Forest eye, Pneumonia				
Galloway x		New Forest eye, Pneumonia					Flystrike
Guernsey		Pneumonia, Se def., Liverfluke, Bloat	Cu def., Mg def., Flystrike				
Hereford		New Forest eye, Foot problems		Liverfluke			
Hereford x		Pneumonia, Se def., Flystrike, Liverfluke, Bloat	Cu def., Mg def., Flystrike, Ticks				Pneumonia, Worms, Calving problems, Foot problems
Highland	New Forest eye (2), Flystrike	Pneumonia, Se def., Liverfluke, Bloat	Cu def., Mg def., Flystrike			Loss of condition	
Holstein	Trapped						
Jersey		Pneumonia, Se def., Liverfluke, Bloat, Poisoning	Cu def., Mg def., Flystrike				
Limousin			Ticks				

Breed or Cross	Frequency of occurrence						
	Rare	Occasional	Annual	Several yr^{-1}	Often	Weather Dependent	Not Recorded
Limousin x		Pneumonia, Redwater Fever, Hypomagnesaemia Se def., Flystrike, Liverfluke, Bloat, Poisoning	Blackleg, Cu def., Mg def., Flystrike, Ticks				
Longhorn				Liverfluke			
Murray Grey			Ticks				
Piemontese x		Pneumonia, Se def., Liverfluke, Bloat	Cu def., Mg def., Flystrike				
Red Poll		New Forest eye, Loss of condition		Liverfluke			
Saler x			Mastitis, New Forest eye, Pneumonia				
Simmental x		Pneumonia, Se def., Liverfluke, Bloat	Cu def., Mg def., Flystrike				
"Store" cattle	New Forest eye			Liverfluke, Worms			
Sussex	New Forest eye		Overweight				
White Park		Poisoning	Ticks				

Table 54. Health problems, proportion of herd affected and frequency of occurrence for ponies used for grazing (there were no records for 11-20%, 21-30%, 31-40%, 41-50%, 51-60% or 61-90%)

Breed	Percentage of Herd Affected					Frequency of occurrence			
	< 10	61-70	71-80	91-100	Not recorded	Rare	Occasional	Annual	Several yr^{-1}
Dartmoor	Hair loss, Loss of condition					Hair loss	Loss of condition		
Exmoor			Footrot[1]				Footrot		
Fell		Sweet itch[2]						Sweet itch	
Konik					Flystrike[1] Loss of condition			Flystrike Loss of condition	
New Forest	Poisoning			Loss of condition	Death	Poisoning	Death	Loss of condition	
Shetland	Hoof abscesses, Colic[3], Laminitis[4]						Hoof abscesses, Colic, Laminitis		
Welsh Section A					Hoof growth				Hoof growth

[1] For description of Footrot and Flystrike see footnotes of Table 50. Footrot in horses may refer to another infection (thrush) caused by the bacterium *Spherophorus necrophorus.*

[2] Sweet itch: an irritation caused by bites of the midge *Culicoides pulicarius* which particularly attacks the withers and haunches. Occurs April to October and the midges bite for an hour either side of sunset.

[3] Colic: a general term for abdominal pain which in equines may be caused by flatulence, obstruction or twisting of the gut.

[4] Laminitis: inflammation of the lamellae of the hoof giving rise to lameness. Most frequent cause is too much food, especially young, lush pastures but other causes are possible e.g. allergy or standing too long during transportation.

with which they personally inspected the animals with others (e.g. volunteer wardens or local residents) making more frequent checks. However, if these suggestions are not the explanation for the long intervals between checks the stock could be at risk of injury or disease and the stock owners may be open to prosecution on animal welfare grounds.

Table 55. Frequency of checks on health of stock

Frequency	Number of Records	Percentage of Total
Twice daily	3	2.5
Daily	77	63.1
Several times per week	16	13.1
Weekly	3	2.5
Every two weeks	2	1.6
Once every 1-2 months	1	0.8
Regularly	3	2.5
Infrequently	2	1.6

3.6.6 Veterinary Treatment of Stock used for Grazing

Box 22 shows all the veterinary treatments or procedures recorded by respondents for all species of stock. These included single occasion procedures such as castration and de-horning and repeated procedures such as hoof trimming, dagging (removal of dung-soiled fleece) and dipping. Shearing is arguably not a veterinary treatment and would apply to almost all sheep breeds, Wiltshire Horn and possibly Soay being the only exceptions. The only clearly identified preventative vaccination was against clostridial and *Pasteurella* diseases (available as a combined vaccine) although undefined 'vaccination' was also cited. Foot bathing / treatment is probably to treat footrot, in sheep at least; the only other treatment for a microbial disease was for Pink-eye.

Box 22: Veterinary treatments used on grazing livestock; numbers in brackets indicate number of records of that treatment

1. Castration (8)
2. Clostridial / Pasteurella Vaccine (13)
3. Vaccination (6)
4. Worming (106)
5. Drenching (1)
6. Treatment for liver fluke (6)
7. Ivermectin (1)
8. Anti-sheep scab injection (3)
9. Vetrazin spray (9)
10. Dipping (12)
11. Spraying (12)
12. Hoof trimming (32)
13. Foot bathing / treatment (21)
14. De-horning (8)
15. Dagging (3)
16. Shearing (4)
17. Lice control (3)
18. De-ticking (7)
19. Treatment for fly strike (14)
20. Treatment for head-fly (4)
21. Treatment for pink-eye (1)
22. Copper bolus (20)
23. Cobalt bolus (1)
24. Prescribed drugs (5)
25. Drying-off (1)
26. General check (2)

By far the most common treatments were for external (8) and internal (3) parasites, with Ivermectin effective against both; the 'anti-sheep scab injection' may also refer to Ivermectin. It is not clear whether treatment for fly-strike and head-fly is preventative (e.g. Vetrazin spray) or post-infestation. Similarly, treatment for liver fluke and 'worms' may be routine, preventative dosing or in response to a perceived condition; worming was by far the most common procedure accounting for 22% of all records. Copper (and, at one site, cobalt) boluses were used to counter specific dietary deficiencies, but the frequency of use of mineral and vitamin blocks (see Section 3.5.3) should also be considered. There were no records of veterinary treatments for 176 (36.7%) of site/breed combinations.

Table 56 shows the veterinary treatments used on the various breeds of sheep and the frequency with which they were applied where this was specified by respondents. Worming was mentioned for all breeds and crosses except Berrichon du Cher x and Hebridean x Berrichon du Cher; whether this represents a genuine absence of need to treat Berrichon du Cher crosses against intestinal parasites is unclear. Ten breeds and crosses were vaccinated against Clostridia and *Pasteurella* diseases; four others were vaccinated against unspecified diseases but none of these were also vaccinated against Clostridia and *Pasteurella* diseases, lending credence to the assumption that these diseases were the target of the vaccination. Vaccinations tended to be annual as did dipping or injecting against sheep scab, and treatment with copper and cobalt boluses. On some sites Clostridia and *Pasteurella* vaccinations were carried out several times per year; this may refer to the need to give in-lamb ewes a booster dose prior to lambing and lambs two further doses to maximise protection.

Dipping against sheep scab is no longer a statutory requirement but in recent years there has been a resurgence of the disease so that most of the country is now considered as infested. However, there are concerns over human health in using organophosphate based dips and the alternative of a synthetic pyrethroid is extremely toxic to freshwater invertebrates. Disposal of dip may have considerable environmental consequences, especially on sites of conservation importance where disposal by spreading over land could be extremely damaging. One alternative is to use ivermectin (or similar compounds) injections but these too have consequences in that they are excreted in the dung where their residues are sufficiently potent to interfere with the development of dung dwelling invertebrates. Dips are also effective against other external parasites including sheep-strike blowflies, but if the flock is free of sheep scab pour-on formulations of cypermethrin or deltamethrin control blow fly, lice and tick infestations; cyromazine pour-ons act as a preventative for fly-strike but do not control established attacks or other parasites. These pour-on formulations may be less damaging as there is no problem of disposal of spent dip.

Most breeds required hoof trimming, foot bathing or other foot treatment. The first may be considered a routine management practice needed wherever sheep are kept on non-rocky ground as the hooves receive insufficient wear and was required several times per year for most breeds on most sites (Table 56). Foot bathing suggests treatment for scald or footrot. Five breeds or crosses were treated for liver-fluke, but this may reflect more the habitat in which they were grazing than a particular susceptibility.

Copper boluses were used for six sheep breeds and crosses (although three of these were Bleu du Maine crosses); cobalt boluses were only recorded for Manx Loghtan. Copper boluses were much more frequently used for cattle (Table 57) for which 12 of 34 breeds were so treated. The only other widely used veterinary treatments for cattle and ponies (Table 58)

Table 56. Veterinary treatments and frequency of use on sheep used for grazing; numbers in brackets indicate number of reports of use where greater than one

Breed or Cross	Occasionally	Regularly	Annually	Several Times yr^{-1}	When Required	Not specified
Berrichon du Cher x				Foot bath/treatm. (2)		
Beulah Speckled Face			Clostridia / Pasteurella vacc. (2), Worming, Dipping, Hoof trimming, Pink-eye treatm.	Clostridia / Pasteurella vacc., Vaccination (2), Worming (3), Vetrazin spray, Hoof trimm. (2), Foot bath/treatm., Fly-strike treatm. (2)	Worming	Dipping
Bleu du Maine x Cheviot		Worming	Vaccination, Copper bolus	Vetrazin spray		
Bleu du Maine x Lleyn		Worming	Vaccination, Copper bolus	Vetrazin spray		
Bleu du Maine x Mule		Worming	Vaccination, Copper bolus	Vetrazin spray		
Dorset		Worming, Hoof-trimming			Clostridia / Pasteurella vacc., Worming, Foot bath/treatm., Prescribed drugs	
Exmoor Horn					Worming	
Hampshire Down		Worming, Hoof trimming				
Hebridean	Hoof trimming		Clostridia / Pasteurella vacc., Worming (2), , Fly-strike treatm.	Clostridia / Pasteurella vacc., Worming, Vetrazin spray, Dipping, Hoof trimm. (2), Foot bath/treatm. (5), Fly-strike treatm.	Worming	Castration, Worming, Shearing
Hebridean x Berrichon du Cher				Foot bath/treatm.		

Breed or Cross	Occasionally	Regularly	Annually	Several Times yr^{-1}	When Required	Not specified
Herdwick			Clostridia / Pasteurella vacc., Worming (2), Dipping, Hoof trimming, Copper bolus	Worming, Vetrazin spray, Hoof trimming, Foot bath/treatm.		
Jacob				Worming, Hoof-trimming, Foot bath/treatm., Lice control, Fly-strike treatm., Head fly treatm.		
Kent						Worming, Copper bolus
Lleyn		Worming	Vaccination, Copper bolus	Worming, Vetrazin spray (2)		
Manx Loghtan			Worming, Dipping, Cobalt bolus	Drenching, Hoof trimming, Head-fly treatm.		
Masham					Clostridia / Pasteurella vacc., Worming, Foot bath/treatm., Prescribed drugs	
Mule					Worming, Foot bath/treatm., Prescribed drugs	
Northumberland Blackface			Liver-fluke treatm. Dipping	Worming		
Scottish Blackface			Dipping	Worming, Liver-fluke treatm De-ticking		

Breed or Cross	Occasionally	Regularly	Annually	Several Times yr^{-1}	When Required	Not specified
Scottish Blackface x						Worming, Dipping, Hoof trimming, Dagging, Shearing, Fly-strike treatm.
Scottish Halfbred						Worming, Head-fly treatm.
Shetland			Anti-sheep scab injection	Clostridia / Pasteurella vacc., Worming (2), Liver-fluke treatm		
Soay				Worming (2), Hoof trimming (2)		
Southdown				Worming, Foot bath/treatm., Hoof trimming, Lice control, Fly-strike treatm., Head-fly treatm.		Worming, Dipping, Hoof trimming, Dagging, Shearing, Fly-strike treatm.
Southdown x Jacob				Worming, Foot bath/treatm., Hoof trimming, Lice control, Fly-strike treatm., Head-fly treatm.		
Suffolk			Anti-sheep scab injection	Clostridia / Pasteurella vacc., Worming, Liver-fluke treatment		
Suffolk x				Worming, Hoof trimming		
Teeswater			Anti-sheep scab injection	Clostridia / Pasteurella vacc., Worming, Liver-fluke treatment		
Texel			Clostridia / Pasteurella vacc., Worming	Vetrazin spray, Foot bathing / treatment		

Breed or Cross	Occasionally	Regularly	Annually	Several Times yr^{-1}	When Required	Not specified
Texel x						Worming, Dipping, Hoof trimming, Dagging, Shearing, Fly-strike treatment
Welsh Mountain			Dipping, Foot bath/treatm.	Worming		
Wiltshire Horn			Clostridia / Pasteurella vacc.	Worming (2), Foot bath/treatm.	Dipping	

Table 57. Veterinary treatments and frequency of use on cattle used for grazing; numbers in brackets indicate number of reports of use where greater than one

Breed or Cross	Occasionally	Regularly	Annually	Several Times yr^{-1}	When Required	Not specified
Aberdeen Angus		Worming	Copper bolus	Copper bolus, Worming	Spraying	
Aberdeen Angus x Friesian				Worming		
Beef Shorthorn x				Foot bath/treatm.		
Beef Shorthorn x Hereford						Worming, Fly-strike treatm.
Belgian Blue	Castration, De-horning			Worming		
Belgian Blue x				Worming (2), Copper bolus	Spraying	
Blonde d'Aquitaine	Castration, De-horning			Worming		
Blonde d'Aquitaine x				Worming (2), Copper bolus	Spraying	
British White				Foot bath/treatm.		
British White x Friesian				Hoof trimming		
Charolais	Castration, De-horning			Worming		
Charolais x	Hoof trimming, De-horning			Worming (2), Copper bolus	Spraying	Prescribed drugs
Charolais x Friesian				Worming		
Friesian	Castration, De-horning			Copper bolus Worming (2)	Spraying	Worming, Copper bolus
Friesian x Hereford				Worming (2)		
Friesian x Holstein				Worming		
Friesian x Limousin				Worming		
Friesian x Simmental				Worming		
Galloway x			Worming			

Breed or Cross	Occasionally	Regularly	Annually	Several Times yr^{-1}	When Required	Not specified
Guernsey				Worming, Copper bolus	Spraying	
Hereford x	Castration, De-horning	De-ticking		Worming (2), Copper bolus	Spraying	Worming
Highland			Worming (2)	Worming (2), Liver-fluke treatment, De-ticking, Copper bolus	Spraying	Worming
Jersey				Worming, Copper bolus	Spraying	Worming, Fly-strike treatm.
Limousin			De-ticking			
Limousin x	Castration, De-horning (2), Hoof trimming		De-ticking	Worming (3), Copper bolus	Spraying	Prescribed drugs
Longhorn			Worming	Worming		
Murray Grey			De-ticking			
Piemontese x				Worming, Copper bolus	Spraying	
Saler						Worming
Saler x				Worming		
Simmental x				Worming, Copper bolus	Spraying	
Sussex			Hoof trimming, Drying-off	Worming, Fly-strike treatm.		Worming
Welsh Black				Worming		
White Park			De-ticking			Hoof trimming

Table 58. Veterinary treatments and frequency of use on ponies used for grazing; numbers in brackets indicate number of reports of use where more than one

Breed	Occasionally	Regularly	Annually	Several Times yr^{-1}
Dartmoor				Worming, hoof trimming
Exmoor			Worming, General check	Worming, Hoof trimming (2)
Fell				Worming
Konik	Castration			
New Forest			Worming	Worming, Hoof trimming
Shetland		Worming, Hoof trimming	General check	Worming, Hoof trimming
Welsh Section A			Worming (2)	

were worming and hoof trimming; in many sites cattle needed 'de-ticking' annually. The only veterinary treatments recorded for goats were worming of Bagot and Golden Guernsey and foot trimming in the latter; each of these treatments was required several times per year. There were no recorded veterinary treatments for pigs.

3.7 Marketing of Progeny of Stock

Three questions (24 - 26; see Appendix 2) explored the economics of keeping stock on conservation sites.

In response to the question 'Do you sell the progeny of your animals?' 27 respondents (22%) answered no, 47 (39%) yes and 48 (39%) gave no response. As the question was 'closed' it is not apparent what happened to the progeny of animals from sites for which the answer was no; possibly the stock did not belong to the manager or managing agency (see Section 3.2.11), or the flock/herd was not used for breeding or the flock/herd was in the establishment phase in which numbers were expanding.

Only 13 respondents (11%) used a premium marketing scheme; 43 (35%) did not and 66 (54%) did not respond. This suggests that just over a quarter (13/47) of those respondents who sold the progeny of their animals did so through a premium marketing scheme. There were no indications as to the nature of the premium marketing schemes used, but examples which may be appropriate to some sites are the Rare Breeds Survival Trust's Traditional Breeds Meat Marketing Scheme and the various 'organic' or 'welfare' schemes. Premium marketing schemes generally refer to meat sales and some respondents may have been selling offspring of their stock live for breeding or to other grazing schemes.

The division between grazing schemes which made a profit (17, 14%) and those that made a loss (18, 15%) was remarkably even; a further 4 (3%) schemes broke even. However 83 respondents (68%) gave no answer to this question; perhaps this reflects the difficulty of determining costs such as staff time when the management of the stock is just one of many tasks undertaken by site management personnel. Costs of fencing and transport of stock can also be difficult to estimate. As shown in Section 3.3.1 income or other financial considerations were an objective on just nine conservation grazing schemes (and then rarely the primary aim) so it may be that some respondents had not undertaken an analysis of profits or losses.

In retrospect there was scope for further investigation of whether a scheme made a profit of at least the 'if not, why not?' variety. There is growing interest in the potential for marketing of products from animals kept on conservation sites either as a new and separate scheme or within existing schemes. The questions may also have referred to the sale of live stock and to other products e.g. wool or milk.

3.8 Grazing of Other Sites

Respondents were asked to provide a summary of any other sites that they (or their organisation) were grazing which they considered would be of interest to the survey; 56 respondents (46%) indicated that they were grazing other sites and only six (5%) stated that they were not grazing other sites, although it may be safe to assume that most of the 60 (49%) non-responses were also not grazing other sites.

The number of other sites grazed is shown in Table 59; up to six other sites under the management of the respondent were grazed, although it is not clear whether this is under the direct control of the respondent or more widely within the respondent's organisation. In total 129 additional sites were noted and the mean number of additional sites grazed was 2.3 for the 56 positive responses, or approximately 1.0 overall if the assumption that non-responses represent 'No' answers is correct. Thus 1-2 other sites were grazed 'on average'. It should also be borne in mind that some managers completed full questionnaire returns for more than one site, in some cases up to three or four sites.

Table 59. Number of other sites grazed

Number of Other Sites Grazed	1	2	3	4	5	6	Total Other Sites
Number of Records	20	20	2	8	5	1	129

Of the additional sites described 93% included an indication of the habitats present. Generally these were similar to those of sites in the main survey, but a higher proportion (39%) were calcareous grasslands whereas only 6% were acid grasslands. Other grasslands included seven described as neutral, six as wet meadows or grasslands, two washes and four fens. There were 13 acid heaths and two chalk heaths. Three sites included some woodland and ten included scrub. Coastal habitats were represented by three saltmarshes, two sand dunes and two maritime heaths. Of the 44 sites for which NVC codes were given the only additional community to those shown in Table 4 was SD9. However there were also some restored habitats: one native flower resown pasture, one ex-arable grassland and one restored gravel pit.

The reasons given for grazing these additional sites (Table 60) were similar to those for the 'main' site (see Table 16, Figure 8) with conservation/restoration or habitat maintenance/vegetation control being the reason cited for over two-thirds of the sites. Conservation also featured as one of two reasons cited in a further 10% of sites. Expediency (availability of stock or use of locally available stock) and financial reasons (including food production) accounted for less than 10%.

Table 60. Reasons for grazing 'other' sites managed by grazing and their frequency of citation by respondents

Reason	Frequency of Citation	Percentage of Total
Availability of stock / Local Stock	2	3.0
Conservation / Restoration	33	49.3
Habitat maintenance / Vegetation Control	13	19.4
Habitat maintenance & as part of Agreement	1	1.5
Conservation and Public Relations	2	3.0
Conservation and Food	1	1.5
Conservation, Amenity and Income	1	1.5
Conservation and Income	2	3.0
Conservation, Fleece, Food and Fun	1	1.5
Food Production	1	1.5
Finance	1	1.5

The species of livestock used to graze these additional sites included all the main species (sheep, cattle, ponies and goats) but no further examples of the use of pigs were identified (Figure 12). In addition two sites were grazed by horses (compared to just one instance in the main survey). The rabbit was identified as a grazer at one site; although not strictly livestock (assuming the rabbits were wild) they are included as rabbits are important grazers on many sites. Indeed, as noted in the Introduction, the reduction of rabbits following the introduction of myxomatosis was one of the main reasons for the need to introduce (or re-introduce) grazing by domestic livestock on many sites.

In this summary of additional grazed sites cattle alone grazed 30% of the sites and sheep alone almost a quarter; sheep and cattle together grazed a further 20% of sites and were contributers to the grazing at further sites. In comparison the other species were relatively unimportant in numerical terms, but where they contributed to mixed grazing they may have a valuable role.

Figure 12. Species of livestock used to graze 'other' sites

Sheep	Cattle	Ponies	Horses	Goats	Rabbit	Number of Sites	Percentage of Total
■						31	24.0
	■					39	30.2
		■				10	7.8
			■			2	1.6
				■		1	0.8
■	■					26	20.2
■		■				2	1.6
■					■	1	0.8
	■	■				4	3.1
	■			■		1	0.8
■	■			■		2	1.6
■		■		■		2	1.6
■	■	■				2	1.6
■	■		■			1	0.8

Combining the reasons for grazing with species used (Table 61) confirms that stock were chosen mainly for conservation / restoration purposes with a total of 103 citations. Habitat maintenance or vegetation control were cited for a further 27 so that these reasons accounted for 84% of the total. The pragmatic availability of stock applied to only seven and production (food and finance) was only mentioned at another seven sites. This supports the contention made in Section 3.7 that production and profit is not a major aim of conservation grazing schemes.

Table 61. Reasons for grazing in relation to livestock species for 'other' sites managed by grazing

Reason	Sheep	Cattle	Goat	Pony	Horse	Rabbit	Total
Availability of stock / Local Stock	1	6					7
Conservation / Restoration	39	48	3	11	1	1	103
Habitat maintenance / Veg. Control	14	8	1	3	1		27
Habitat maintenance / Agreement					1		1
Conservation and Public Relations				2			2
Conservation and Food	2	2	2				6
Conservation, Amenity and Income		2					2
Conservation and Income	2						2
Conservation, Fleece, Food and Fun	2						2
Food Production	1	1					2
Finance		1					1

3.9 Satisfaction with Current Grazing Animals

In answer to the question 'Would you prefer to be using a different breed, age or sex of animal?' 23 respondents (19%) replied no, 39 (32%) replied yes and 19 (16%) stated that they did not know; there were 41 (34%) nil responses which may perhaps be interpreted as satisfaction with the current grazing animals.

Of the 22 replies expressing a preference for a different grazing species the numbers preferring each species were as follows:

Cattle: 11, Ponies: 4, Sheep: 3, Goats: 1, Horses: 1

There were two unspecified preferences, one preference for sheep or cattle and one for giraffe (for high level browsing!).

A total of 22 breeds were identified as being preferred to the currently used grazing animals (Box 23); in addition to these named breeds preferences were expressed for 'any' (in relation to cattle and, separately, sheep), for a beef breed, for native or hill x breeds (cattle and sheep) and for a hardy species (goat).

Box 23: Breeds of grazing livestock identified as being preferred to the current breed/species used; numbers in brackets indicate number of times that preference was expressed if >1

Cattle Breeds	Sheep Breeds	Pony Breeds
Devon[2]	Derbyshire Gritstone[1]	Camargue
Dexter	Hebridean *(3)*	Exmoor *(2)*
Galloway *(6)*	Herdwick *(3)*	New Forest
Hereford/Old English Hereford *(3)*	Manx Loghtan	Polish[a]
Highland *(2)*	North Ronaldsay	
Highland[3]	Romney Marsh[b]	
Longhorn	Soay	
Red Poll	Whitefaced Woodland	
Sussex *(2)*	Whitefaced Woodland[1]	
Sussex[2, 4]		
South Devon x [4]		
Welsh Black[3]		

[a] Polish probably refers to the breed called Konik in the discussion of currently used breeds

[b] Romney Marsh probably refers to the breed called Kent in the discussion of currently used breeds

[1,2,3,4] Breeds bearing the same superscript number were given as alternatives; a breed named both as a single choice and as an alternative appears twice in the list. Thus Sussex cattle were given as a single choice by one respondent, as an alternative to Devon by another and as an alternative to South Devon x by a third. Number of times the preference was expressed is recorded separately.

Most of the identified preferred breeds were breeds that were already in use in other conservation grazing schemes, including those described in this survey (Tables 6-9). The only 'new' breeds suggested were North Ronaldsay and Whitefaced Woodland sheep and Camargue ponies (Romney Marsh sheep and Polish ponies may also be breeds unrecorded in this survey but are taken as referring to Kent sheep and Konik ponies respectively).

North Ronaldsay sheep are a very small, primitive breed on the Rare Breeds Survival Trust's priority list. They are hardy and those on their native Orkney islands have developed the ability to survive on a diet of seaweed, although mainland flocks will eat grasses and other herbs. They have a variety of fleece colours and rams are horned whereas most, but not all, ewes are polled. Whitefaced Woodland sheep are also on the Rare Breeds Survival Trust's priority list. They are characteristic of the South Yorkshire dales around Penistone (which is an alternative name for the breed) and are medium sized, white and horned in both sexes. They are well adapted to their native environment and are a hardy, thrifty breed. Camargue ponies are the wild white horses of the Camargue marshes where they are important determinants of the vegetation structure and mosaic (Bassett, 1980; Duncan, 1992). The use of these three breeds for conservation grazing in the U.K. is unknown to the authors and their adoption would be largely experimental, but each has useful attributes that would suit some sites.

In eight of the responses the 'preference' for another breed was not as a replacement for existing species or breeds but as an additional grazing animal; thus Hebrideans were to complement Wiltshire Horn sheep and Aubrac and Galloway cattle on one site, Highland cattle were to augment Welsh Section A ponies at another and the giraffe were needed to browse the scrub beyond the reach of a mixed flock of sheep, goats and cattle! Where a preference for a different breed to replace the existing was expressed the breeds to be replaced are shown in Box 24.

Box 24: 'Breeds' of grazing livestock which would be replaced if the preferred alternative(s) were available

1. Beulah Speckled Face & Suffolk x
2. Jacob
3. Lleyn
4. Lleyn & Rabbit
5. Scottish Blackface
6. Soay
7. Welsh Mountain
8. Wiltshire Horn & Welsh Mountain x
9. Sheep / cattle / rabbits
10. Heavy cows
11. Mixed stores
12. Various cattle
13. X breeds
14. Young animals
15. Beef Shorthorn x
16. Friesian
17. Hereford / Friesian x
18. South Devon
19. Horse
20. None (i.e. preferred breed(s) are in addition to existing stock)

There are no unifying characteristics to the 'breeds' identified in Box 24, although several categories appear to be descriptions of readily available, but perhaps not ideal, stock e.g. "heavy cows", "mixed stores", "various cattle" and "x breeds". However there are also some breeds with known conservation grazing ability such as Beulah Speckled Face, Jacob, Scottish Blackface, Soay and Welsh Mountain sheep or Beef Shorthorn x cattle. Although these breeds have useful attributes that can be exploited on many sites it appears that they may not be suited to all sites and this is an area that needs further investigation.

Six of the eight respondents expressing a preference for a different sex of grazing animal to that currently used favoured females and the other two stated male and female. Eleven respondents indicated they would prefer to be using grazing animals of a different age. Numbers expressing a preference for other ages were:

<1 year: 1, 1-2 years: 4, 2-4 years: 1, >4 years: 5, Various: 3

Numbers expressing a preference for a different number of grazing animals were as follows:

<25: 13, 25 - 50: 10, 75-100: 2, >100: 2

Preferred grazing periods to those used currently were recorded by 17 respondents and these preferred periods are depicted in Figure 13. All year grazing was preferred most commonly; otherwise there was little difference in the frequency with which preferred periods were stated, suggesting that site specific criteria were the main determinants.

Figure 13. Preferred periods of grazing; shaded areas are periods of grazing. Numbers in final column indicate number of times that preference was recorded

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	No. of Records
■	■	■	■	■	■	■	■	■	■	■	■	4
		■	■	■				■				1
			■	■	■							1
				■	■	■	■	■	■	■		2
				■	■	■	■					1
					■	■	■					1
						■	■	■				1
						■	■	■	■			1
■	■	■	■	■				■	■	■	■	1
								■	■	■		1
								■	■	■	■	1
■	■	■								■	■	1
VARIABLE												1

Where both a preferred replacement breed and the breed to be replaced were specified cross-tabulation of these preferences is possible (Figure 14). Thus Beulah Speckled Face and Suffolk x (number 1 in Box 24) would, if possible, be replaced by Hebridean, Manx Loghtan and North Ronaldsay on at least one site; similarly, Lleyn (number 3 in Box 24) would be replaced by a hardy goat. Figure 14 suggests that respondents would prefer any breed to "heavy cows", "young animals" and horses as well as in addition to existing stock. The two most frequently identified replacement breeds were Herdwick sheep as replacements for Scottish Blackface, Soay and Welsh Mountain sheep and Sussex cattle as replacements for 'various cattle', Friesian and Hereford/Friesian. No alternatives to Jacob or Wiltshire Horn/Welsh Mountain x were suggested despite the expressed dissatisfaction. Otherwise there was a general tendency to express a preference for a named, traditional, hardy breed in favour of the readily available mixed commercial cattle herds.

Figure 14. Cross-tabulation of 'preferred' and 'replacement' breeds. Numbers in first row refer to the list of breeds to be replaced in Box 24; there were no suggested alternatives to Jacob (number 2) or Wiltshire Horn/Welsh Mountain x (number 8)

Replacement 'Breeds'	Breeds to be replaced																	
	1	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20
Any								■				■					■	■
Native/ Hill x				■										■				
Beef breed													■					
Devon															■			
Dexter																		■
Galloway										■						■		■
Hereford							■											■
Highland																		■
Longhorn											■							
South Devon x									■									
Red Poll														■				
Sussex										■				■	■			
Hebridean	■		■															■
Herdwick				■	■	■												
Manx Loghtan	■																	
North Ronaldsay	■																	
Romney Marsh				■														
Soay										■								
Exmoor																		■
New Forest																		■
Hardy goat		■																