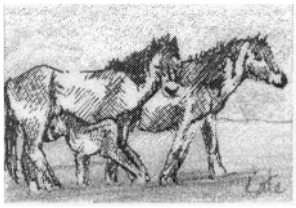

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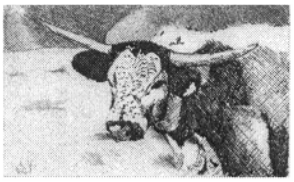
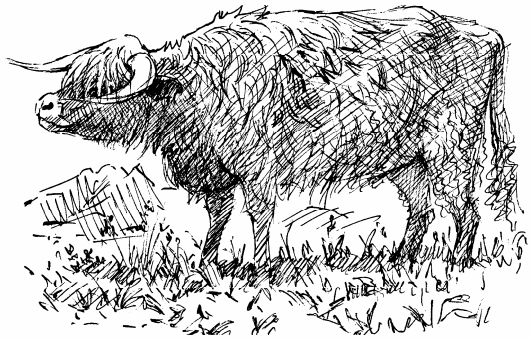


The Grazing Animals Project

Impact of the 2001 Outbreak of Foot and Mouth Disease on Conservation Grazing Schemes



A Report prepared for the Grazing Animals Project

by

Richard Small, Joanne Cross and Catherine Gillatt

Biological and Earth Sciences,
Liverpool John Moores University

from an analysis of a GAP questionnaire
completed by conservation grazing managers
in September 2001

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Available from: The GAP Office, Incentives & Advice Team, Natural England, Eastbrook, Shaftesbury Road, Cambridge, CB2 8DR

enquiries@grazinganimalsproject.org.uk

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Richard Small
On behalf of GAP

The Grazing Animals Project

Impact of the 2001 Outbreak of Foot and Mouth Disease on Conservation Grazing Schemes

This document is a summary of the main findings from a questionnaire survey designed by the Grazing Animals Project (GAP) to determine the impacts of foot and mouth disease (FMD) on conservation grazing schemes (i.e. the use of domestic livestock in the management of habitats for wildlife conservation). The results of the survey allow conclusions to be reached about the likely short and long-term impacts of FMD for conservation grazing throughout the U.K., although clearly the main impacts were in the areas worst affected by the 2001 outbreak of FMD. The report complements English Nature's interim assessment of the effects of FMD (Robertson *et al.*, 2001) which dealt only with England and concentrated on a series of case studies.

All percentages in the text are rounded to the nearest whole number.

1. **Basis**: questionnaires were distributed in early July 2001 to over 800 *GAP News* (the GAP newsletter) subscribers representing 270 organizations. However, not all subscribers, or organizations, were in a position to complete a questionnaire. The best estimate of the number of site managers able to complete a questionnaire was 530. Site managers were asked to return questionnaires even if their site had not been affected by FMD.

2. **Returns**: a total of 118 completed questionnaires were returned; some returns included information on more than one site so that the total number of sites for which separate information was obtained was 136. The majority of responses were received by the end of September 2001. Thus the results represent an early assessment of the impacts of FMD and will under-estimate later impacts.

3. **Site descriptions**: information supplied indicated that a wide variety of sites were represented in the returns – inland and coastal, wet/dry, above or below 250m altitude etc. Eleven habitat types (e.g. salt marsh, sand dune, heathland, moorland, pasture woodland) were included. Sites were owned and/or managed by various statutory and voluntary conservation agencies and private landowners. GAP considers that the returns are a representative sample of conservation sites managed by grazing, although in the nature of questionnaire surveys the respondents are to a degree self-selecting.

4. **Stock used**: over half the sites (54%) used cattle, 47% used sheep, 16% equines, 3% goats and 1% pigs. These figures include the 28% of sites that used more than one species, either at different times of year or on different compartments of the site. A wide variety of breeds and crosses of cattle and sheep were recorded.

5. **MAFF (DEFRA) Zones**: 24% of sites were in a FMD Infected Zone and a further 17% were in a FMD Protected Zone. As all the U.K. was a FMD controlled zone most (88%) of sites had been affected by FMD controls e.g. livestock movement regulations.

6. **Impacts of FMD**: a tick list of 20 possible impacts of FMD was provided. These included direct effects (e.g. culled stock) and indirect effects such as inability to complete routine site management and monitoring, loss of income from grazing rental, sale of stock, visitors etc. and additional costs such as supplementary feeding and disinfectant purchase. Responses are shown in Table 1. Some of these effects would not apply to all sites (e.g. possible loss of new members would not apply to sites managed by statutory agencies). Most impacts were evaluated by further detailed questions.

Table 1. Recorded effects of FMD identified in the questionnaire returns

Effect of FMD	Number of Sites	Percentage of total
Animals culled as infected with FMD	7	5.1
Animals culled as dangerous contact	5	3.7
Animals culled as a contiguous holding	8	5.9
Animals culled under welfare provisions	3	2.2
Unable to conduct surveys/monitoring	63	46.3
Unable to carry out practical management tasks	74	54.4
Unable to use volunteer labour through site closure	67	49.3
Possible change in vegetation condition	53	39.0
Possible compromising of management objectives	66	48.5
Possible loss of new members to your organization	20	14.7
Unable to move animals off site at end of grazing season	38	27.9
Unable to move animals on to site at start of grazing season	68	50.0
Unable to obtain grazing animals	25	18.4
Loss of income from grazing rental etc.	31	22.8
Loss of income from sale of stock or their products	9	6.6
Loss of income from closure of site to visitors	18	13.2
Financial cost of measures to prevent spread of FMD	42	30.9
Additional costs (£ / time) incurred (e.g. extra supplementary feeding)	35	25.7
Additional costs (£ / time) incurred in movement of animals	34	25.0
Additional costs (£ / time) incurred in visitor management	37	27.2

7. **Direct Impacts**: only 5% of the sites had had stock culled as infected with FMD, but a further 12% had had stock culled as dangerous contacts, as a contiguous holding or on welfare grounds. Twelve sites gave details of the stock culled (Table 2). Only three sites put a value on the culled stock: £490, £1200 and £6380. This wide range on just three sites makes extrapolation risky, but if the mean of £2690 is applied to all 23 sites that lost stock to culls the total would be of the order of £61,870.

8. **Impacts on Site Management**: the most widespread impact (54% of sites) was the inability to carry out practical management tasks, usually as the sites were closed to staff, contractors or volunteers (Table 1). This also prevented surveys and monitoring on 46% of sites. The inability to move stock onto the site at the start of the grazing season affected 50% of sites; conversely, inability to move stock off the site at the end of the grazing season affected 28%. 18% of sites had been unable to obtain the stock required for grazing. Almost half (49%) of respondents indicated that the management objectives of their sites might be compromised and 39% considered a change in vegetation condition was possible.

9. **Loss of Income from Grazing Rental/Licence**: the outbreak had financial effects on sites both through loss of income and additional costs incurred (Table 1). Loss of grazing rental income affected 23% of sites. Of these, 28 sites gave details of the losses, which ranged from £100 to £35,000. The reported losses totalled £54,218, representing a mean of the 28 sites of £1936.

Table 2. Stock losses to culls and grounds for cull for the 12 sites for which details were given. (A '?' indicates animals of that species were culled but numbers were not given, a '-' indicates no stock of that species culled at that site)

Site Name / Area	Nos. Cattle Culled	Nos. Sheep Culled	Nos. Goats Culled	Reason for Cull
Braunton Burrows (MoD)	20 cows + 11 calves	130	-	Dangerous Contact
Halton Lea Fell (RSPB)	-	8	-	Dangerous Contact
Various (Bedfordshire)	-	3	-	Welfare*
Ingleborough NNR	?	?	-	Contiguous Holding
Hadrians Wall Estate (NT)	160 120	1200 1430	-	Infected Contiguous Holding
Brockhole (Lake District NP)	-	1	-	3km Protection Zone
Teesmouth NNR	24	-	-	Welfare
Elmley (RSPB)	-	357 + 287 lambs	-	Dangerous Contact
Devon Wildlife Trust sites	80	-	-	(Some) Infected
MoD Estates, N. Yorks Site 1 Site 2	-	450 450	-	Dangerous Contact Dangerous Contact
Coed-y-Bwnydd (NT)	-	-	39	Infected
Finlandrigg Wood NNR	?	>40	-	Dangerous Contact Infected
Gowk Bank NNR	-	?	-	Infected

* Not strictly a welfare cull in DEFRA terms but inability to treat animals on site led to need to cull on general welfare grounds.

10. **Costs of Prevention of FMD Spread**: a very wide variation in the costs incurred in efforts to prevent the spread of FMD was recorded. The minimum was £50.00 averaged over 9 sites described in one return (i.e. £5.50 per site), the maximum £5000. Costs were estimated for 51 sites and this totalled £21,784.62, representing a mean of £427.15.

11. **Impacts on Visitor Numbers**: over half (54%) of sites reported that visitor numbers had been affected during the FMD outbreak compared to a 'normal' year. Most reported reduced numbers ranging from –5% to –100%; the latter was the most commonly recorded value (32 of the 63 sites reporting a decrease) and 67% of sites reporting a decrease had lost more than 75% of their visitors. However, 10% of sites suffered a decrease of <25% and 6 sites (mainly in the urban fringe) reported an increase in visitors ranging from 30% to 100%. Visitors were excluded from 113 sites (83%); only 8 sites (6%) were open to visitors throughout the outbreak. Exclusion had been implemented in February 2001 (i.e. shortly after the outbreak started) for 72% of sites with a further 18% excluding visitors from March. Many (50% of sites from which visitors had been excluded) had re-admitted visitors by the end of June 2001 but almost a third (31%) had not re-opened to visitors at the time the completed questionnaire was returned.

12. **Impacts on Visitor Income and Costs**: loss of visitor income was experienced on 13% of sites. Losses ranged from 5% to 100% of normal visitor income, with a mean of 49% for 19 sites for which a value was given. Additional precautions for access by visitors had been implemented by 55% of sites; the precautions included various combinations of path open/closed signs (35% of all sites), footwear disinfectant baths (18%), stock removed from site (13%), stock moved to a more isolated area of the site (7%) and 'other' (17%). Additional costs for visitor management were reported by 27% of sites and 31% reported additional costs (money or time) incurred in

preventative measures (Table 1). 18% of sites reported a decrease in membership recruitment, which is more significant as it would apply only to the voluntary conservation sector; 10% of sites stated that membership recruitment was unaffected but none recorded an increase.

13. **Stock Movements**: a quarter of sites reported additional costs (money or time) arising from movement of animals. Respondents were also asked whether DEFRA movement licences had been applied for: 34% had made such an application, mainly for a local movement licence. This had sometimes been the task of the conservation site manager, but was more often the livestock owner or grazier. Of the 50 licences applied for 44 had been granted, but the time taken to grant the licence varied from 2 days to 8 weeks. Most were granted within 7 days. 38 (28%) of sites had moved stock under licence. Additional costs as a result of stock movement during the FMD outbreak (e.g. for cleaning and disinfecting of trailers) were reported by 17 sites and ranged from £35 to £500. The total cost for the 17 sites was £3238, a mean of £190.47.

14. **Other Costs and Loss of Income from Sales**: 28% of sites reported incurring other costs, such as supplementary feeding of stock, as a consequence of FMD. These ranged from £10 to £2250 for 24 sites that gave details and totalled £12,298, a mean of £512.42 for the reporting sites. Only 14 sites (10%) reported loss of income from sales (of stock, hay etc.). Few details were given.

15. **Impacts on Use of Volunteers, Contractors and Consultants:** 59% and 54% of sites reported being unable to use volunteers or contractors/consultants respectively. This had affected the routine monitoring of 57% of sites and the routine practical tasks (other than monitoring) of 63% of sites.

16. **Implications for Site Management Objectives**: respondents were asked to identify the main conservation objectives of their sites from a list of ten (plus 'other') and to indicate whether they considered these objectives might be affected either by changes in grazing period, inability to move stock etc. or by efforts to minimize contact between stock and visitors. Table 3 summarizes the responses. All the management objectives were considered to have been affected by changes in grazing period etc., with a minimum of one-third of sites affected. For the small number of sites in which single species management was a priority all the sites had been affected. However, the >50% of the larger number of sites recording affects on maintaining or improving vegetation structure or development of a vegetation structure were probably more significant. Minimization of contact between stock and visitors was far less likely to have affected conservation objectives, especially for the more frequent objectives, but in some instances these may be additional to the effects of changes in grazing regime.

17. **Alternatives to Grazing**: 34% of sites stated that one or more alternatives to grazing were possible; conversely grazing was the only feasible option on 39% of sites. Of the 47 sites for which one or a combination of alternatives were identified cutting was the most frequent (91%), with 11% for each of herbicides (for control of unwanted species), use of stock unaffected by FMD (e.g. equines) and 'other'.

18. **Changes to Vegetation and Habitats**: noticeable changes to the vegetation of 38% of sites had already been observed by the time of return of the questionnaire. Of the 47 sites where vegetation changes had been noticed only 2 (4%) and 5 (11%) were considered to have suffered long-term and medium term changes, respectively; for the remainder (85%) the changes were believed to be short-term. Noticeable changes to the habitat were recorded for 25 sites (18%); these were all considered to be short-term.

Table 3. Management objectives recorded for sites and percentage of those sites reporting that management objectives had been affected by changes in grazing period etc. and by efforts to minimize stock-visitor contact.

Management Objective	Number of sites	% Sites affected (grazing period etc.)	% sites affected (minimize contact with visitors)
Elimination of trees/shrubs	23	43.4	8.7
Control trees/shrubs invasion by taking seedlings etc.	63	33.3	4.8
Maintain vegetation structure (maintenance grazing)	89	50.6	6.7
Improve vegetation structure (restoration grazing)	82	51.2	7.3
Develop vegetation mosaic	61	55.7	6.6
Increase amount of bare ground	8	62.5	0
Control of invasive grasses/rushes	66	45.5	6.1
Control of bracken	18	38.9	11.1
Reduce fire risk	5	40.0	40.0
Single species management	6	100	0
Other	7	85.7	71.4

19. **Changes to Wildlife Abundance/Behaviour/Visibility**: Respondents were asked if they had noticed any changes in wildlife that might be attributed to a 'quieter' (i.e. fewer visitors and/or less management activity) countryside e.g. abundance of flowers, breeding success of birds, changes in behaviour of deer, rabbits etc. Although many respondents were careful to emphasize that survey and monitoring had been precluded by FMD precautions, and that their observations were not quantified, over half (55%) had noticed such changes compared to 19% who stated they had not. Amongst the changes recorded were ground nesting birds nesting nearer to footpaths and birds, deer and rabbits much more visible and utilizing 'public' areas. Absence of dogs was more frequently cited as a probable cause than absence of people *per se.* Fewer effects on vegetation were noted, but some respondents recorded greater densities of flowers and/or taller vegetation.

20. **Preferred Species and Breeds in post-FMD era**: for the majority of sites respondents specified a preference for similar species and breeds as were used pre-FMD. Numbers of sites are difficult to state as often options were given (e.g. Devon/Red Poll/British White/Angus/ Hereford was given for one site). However, preferences for hardy cattle (Angus, Belted Galloway, British White, Dexter, Hereford, Highland, Longhorn and Welsh Black) were frequently cited, in some cases for sites where sheep had been the previous grazers. Where sheep were preferred breeds such as Hebridean, Soay, Manx Loghtan and generic 'hill' or 'mountain' breeds were identified. Exmoor ponies were the most frequently identified equine but Dartmoor, Fell and Highland were also mentioned. Feral goats were specified for four sites.

21. **Effect of Proposed 20-day 'Standstill'**: respondents were asked if they thought the DEFRA proposal for a 20 day standstill period following movement of stock on to a holding was likely to affect conservation management. Only 18% of respondents answered in the affirmative whereas 61% considered that their sites would not be adversely affected by the proposed regulation.

Discussion

It is thought that there are at least 600 nature conservation sites that utilize grazing for management in the U.K. (Small *et al.*, 1999) and the number may be considerably greater. Taking the minimum of 600, the survey reported here represents 23% of the grazed sites and extrapolation from the sample would suggest that well over 500 sites would have been affected by the 2001 FMD outbreak in some way. However, there may be a natural tendency for managers whose sites had not been affected to be less inclined to complete and return the questionnaire; conversely managers with serious difficulties arising from FMD may not have had time to complete the questionnaire. Overall 500 affected sites could be considered a reasonable approximation.

As noted above (Para. 2), the impacts recorded should be considered a minimum for the sites making a response as the FMD outbreak had not ended when returns were made. By August-September, when most responses were received, the number of confirmed or suspected FMD cases, and hence culls, had declined and it is probable that there were few further sites that lost stock to culls. As only 10 of 23 sites losing stock to culls reported the numbers of animals lost it is difficult to assess the total losses, but these clearly exceeded, and could possibly double, the 415 cattle, 4356 sheep and 39 goats reported. The estimated financial loss from culls of £61,870 (Para. 7) may be an under-estimate.

Other financial impacts arising from FMD are also difficult to quantify, but the estimates reached £54,218 from loss of grazing income, £21,784 for measures to prevent the spread of FMD, £3,238 from stock movements and £12,298 from other costs and loss of income from sales are also the best available. Unlike losses to culls, these were likely to have been experienced by all the 120 sites affected by FMD. Thus the average loss for these sites would be £763 which, if applied to all 500 sites estimated to have been affected, would amount to a loss of £381,408 to wildlife conservation. Again, this is likely to be conservative, not only because the returns were made before the outbreak was over, but also because it does not include staff time spent on FMD-related activities, additional costs of precautions relating to visitors or loss of visitor income. This last was reported to be approximately halved during the FMD outbreak (Para. 12). Non-statutory conservation organizations may also have suffered from loss of member recruitment (Para. 12). If these additional losses were included the total non-cull loss may approach £500,000.

The inability to move stock on to or off sites at the appropriate times, or at all, affected all the management objectives identified in the questionnaire. Although this would delay the achievement of those objectives, the changes in vegetation and habitat noted were generally considered to be short term. Alternatives to grazing were feasible on 39% of sites but cutting and/or herbicide application may incur additional costs in machinery, fuel and staff time. It is to be expected that grazing is used where it is considered most cost-effective in achieving the management objectives and, while not itself cost-free, alternatives are likely to be more expensive.

Applications for movement licences involved considerable staff (or grazier) time and in some instances resulted in unacceptable delays in moving stock, with possible adverse impacts on conservation objectives. Movement licences and additional animal identification regulations are a consequence of the outbreak that will continue to absorb conservation staff time; they may also further inhibit farmers and graziers participation in conservation grazing schemes. Whilst such mechanisms may make tracking future outbreaks easier, they do little to reduce the long distance movement of livestock which led to the rapid spread of FMD from one end of the country to the other before the outbreak was even detected. GAP believes that its concept of Local Grazing Schemes (Grayson, 2001) offers a model which would deliver the objectives of conservation grazing whilst reducing long distance movements of stock and the associated risks of disease spread.

Routine practical tasks, monitoring and surveying were all affected by FMD. In most instances this resulted from closure of the sites to all but essential personnel and tasks (e.g. animal welfare). At best this put back work programmes by 1-12 months, but in the case of long-term monitoring a year's data may have been lost. Although not assessed by the questionnaire survey, time-limited projects may have been abandoned and funding may have been lost; however, anecdotal evidence suggests that funding agencies were generally sympathetic to the plight of site managers and held over funding until agreed work could be completed.

Whilst not quantified, it is of interest, and possibly of significance, that over half the respondents reported changes in abundance, behaviour or visibility of wildlife during the period the countryside was 'closed'. In this respect the FMD outbreak provided a unique opportunity to assess the effects of people (visitors and managers) on conservation sites. The impression is gained that wildlife benefitted from the reduced disturbance and some taxa (e.g. birds) quickly took advantage by nesting in areas normally avoided. Many managers reporting such changes associated them with absence of dogs.

The answers to questions relating to preferred stock in the post-FMD era suggested that many managers were content with the stock in use at the time of the outbreak. However, others expressed a preference for the traditional, hardy breeds of cattle, sheep and equines. Where conservation agencies lost their own animals to culls the loss may provide an opportunity to re-stock with these preferred breeds. The publication in 2001 of GAP's Breed Profiles Handbook (Tolhurst and Oates, 2001) is timely in providing information on suitable breeds. Similarly, farmers and graziers providing stock for conservation sites may be encouraged to include traditional, hardy breeds when re-stocking. There may also be links to grazing in the wider countryside where FMD may provide an opportunity to reduce stocking density on sensitive areas.

In conclusion, the 2001 outbreak of FMD had significant conservation and financial impacts on wildlife sites utilizing grazing as a management technique. Although long-term damage to the sites' conservation interest is not expected, the outbreak disrupted site management and delayed achievement of the conservation objectives. It may, however, provide an opportunity to review the stock used and the management of visitors to enhance conservation of the U.K.'s wildlife.

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Post-FMD Consultation Points

- Grazing is a well-established management technique for many nature conservation sites; many others might benefit from the introduction of grazing.
- The 2001 FMD outbreak had significant consequences for nature conservation sites employing grazing for management.
- Significant financial losses to the nature conservation sector were incurred through culls and, particularly, through losses of grazing income and measures to prevent the spread of FMD. It is conservatively estimated that these losses exceeded £500,000. Whilst conservation agencies, or their graziers, may have received compensation for culled animals these other losses were not compensated. Consideration should be given to the need to compensate for such losses in future outbreaks.
- Conservation management objectives may be compromised by livestock movement restrictions during outbreaks; where possible, consistent with prevention of disease spread, special consideration should be given to the need to move stock on to or off reserves.
- There is a need for further research on the direct effects of the outbreak on particularly sensitive or vulnerable species and on the longer-term implications of the re-structuring of the livestock industry that may follow FMD. GAP agrees with the research priorities identified in Robertson *et al.* (2001).
- The process of issuing movement licences must be made rapid and consistent to avoid the delay of up to 8 weeks experienced by conservation managers wishing to move stock.
- GAP believes that its concept of Local Grazing Schemes (Grayson, 2001) offers a model which would not only deliver the objectives of grazing for landscape and wildlife management but would also reduce long distance movements of stock and the associated risks of disease spread.
- The Interim Animal Movements Regime 2002 (IAMR2002) has consequences for conservation grazing of sites where stock are moved seasonally or annually between sites that may not be in a Sole Occupancy Authority. In order to comply with the IAMR2002 the managing agency would have to ensure that all animals are individually identified, even if those animals are not in the ownership of that managing agency. This may prove difficult to achieve and consideration should be given to special arrangements for such instances.
- Conservation managers would prefer to use hardy, traditional breeds capable of thriving on relatively poor forage. Support for such breeds, especially those that are rare, including assessment of their attributes, should be considered and their use in grazing sensitive areas outside reserves promoted to farmers. GAP's Breed Profiles Handbook (Tolhurst and Oates, 2001) provides guidance on the selection of appropriate stock.
- The proposed 20-day standstill period would be a constraint on a minority of conservation sites; special exemptions should be considered for 'flying flocks' used in conservation management.