2. CHANGES IN AGRICULTURE AND NATURE CONSERVATION IN THE SAMPLE NATURAL AREAS: 1975 - 1994

Introduction

2.1 In this chapter, we summarise the findings from the Stage 1 study with particular reference to the changes in agriculture and nature conservation that the data suggested had taken place in the four sample NAs between 1975 and 1994. We then use the findings from Stage 2 to test whether the anticipated changes have taken place on our case study farms. We conclude the chapter by answering the first three questions listed in Paragraph 1.17.

Findings of the Stage 1 Study

2.2 **Table 2.1** and **Figures 2.1** and **2.2** (overleaf) summarise data about agriculture in the four sample NAs in 1994. These indicate that the two lowland areas have above average land quality relative to England as a whole, which is reflected in the proportion of the area in arable land uses. Also notable is that average farm size in the Lincolnshire Wolds, a predominantly arable area, is well above the average for England as a whole.

Table 2.1 : Basic Facts (Rounded)

	England	Lowland NAs		Upland NAs	
		Cotswolds	Lincoln-shire Wolds	North Pennines	Exmoor and Quantocks
Area (ha)	9,354,000	300,000	87,000	187,000	190,000
Number of farm holdings	153,426	4,055	635	1,870	1,860
Average holding size (ha)	61	74	137	100	102
Number of agricultural workers	430,900	9,046	2,138	4,160	3,900
% of land that is owner-occupied	63	68	57	50	75
% of holdings >50 ha	35[1]	37	52	39	36
% of full-time holdings	56[1]	44	60	57	45

2.3 Over the period 1975-1984, the data indicate a number of agricultural changes in each of the four sample NAs. Those which we consider might have had the most significant implications for nature conservation are listed below.

[1] : UK figures

Figure 2.1 : Land Quality by Agricultural Land Classification Grade

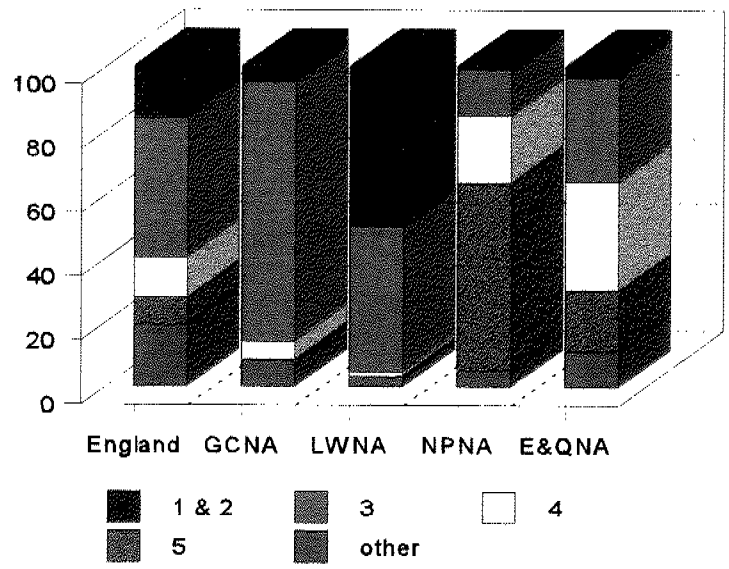
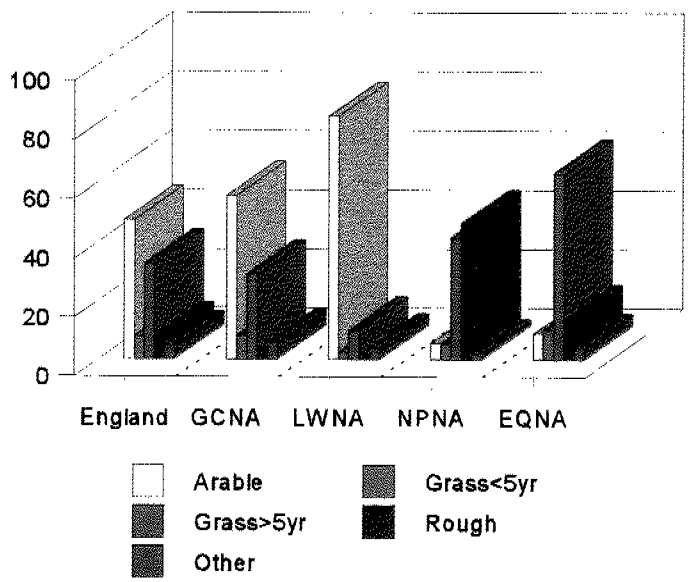


Figure 2.2 : Land Use By Percentage of Area



Greater Cotswolds

2.4 The most notable trends were as follows.

- The arable area increased by 25,000 hectares (ha), indicating a loss of other habitats which were potentially of greater nature conservation value.
- The area of grassland over 5 years old decreased by 19,000 ha, 17% of the 1975 total. Old grassland can contain a wide variety of plant and animal species.
- The area of farm woodland doubled to 5,700 ha (3.7% of the total land area). Where the areas planted were of low nature conservation value and the species chosen were locally native, nature conservation value will generally have been enhanced. In other circumstances there may have been a loss of value.
- For the NA as a whole, sheep numbers increased but cattle numbers decreased. But in the central part of the NA, cattle numbers increased despite the fact that there were huge losses of grassland.
- The proportion of holdings run on a part-time basis increased. The availability of a non-agricultural source of income may sometimes mean less pressure to manage the farm intensively and hence represent an opportunity for nature conservation enhancement.

Lincolnshire Wolds

2.5 The most notable trends were as follows.

- The arable area increased by 11,300 ha, 19% of the 1975 total. As in the Cotswolds, this may have been at the expense of more interesting habitats.
- The area of grassland over five years old decreased (by 4,900 ha) as did the area under five years old (by 5,400 ha).
- The number of livestock declined markedly. This reflects the reduction in grassland areas.
- The number of farms fell over the period. The proportion of part-time units increased, with the potential benefits described above.
- The agricultural work force fell by 39%.

All of these trends indicate an increased intensity of land use, especially arable, with consequent increases in fertiliser and pesticide inputs. Some of the remaining unimproved/semi-improved grassland appears to have been neglected or planted with trees.

North Pennines

2.6 The most notable trends were that:

- the area of arable cropping increased, though only slightly;
- the area of short-term ley grassland decreased;
- the area of rough grazing land declined slightly;
- total numbers of beef cattle fell, with the breeding herd down 18% and fattening cattle down 31%;
- sheep numbers increased by 67% to 1.1 million.

The changes in livestock numbers suggest that, over the NA as a whole, grazing pressure may have changed little. At the more local level, however, stocking levels may have increased or, even if they have remained the same, grazing pressure may have increased as a result of changes that have taken place in breeds, lambing rates and dates, and in aspects of livestock management.

Exmoor and the Quantocks

2.7 The most notable trends were as follows.

- The area of grassland over five years old increased by 10,000 ha (17% of the 1975 total).
- There were large losses of heath and moor over the 20 year period, although there were also some gains as a result of reversion from rough grazing. Overall there was a net loss of 5,000 ha.
- The area of farm woodland doubled.
- As in the North Pennines, cattle numbers fell but sheep numbers increased indicating, statistically, no overall increase in grazing intensity. Yet there is evidence of under-grazing within the Quantocks and over-grazing on parts of Exmoor, all indicating that the changes may be much more complex than suggested by bald statistics.

Findings from the Case Studies

2.8 In **Tables 2.2 - 2.5,** we summarise the agricultural changes and related environmental effects that were indicated by the Stage 1 data in relation to each of the farm types sampled as part of the Stage 2 study (these include the significant effects summarised above). We then summarise the evidence from the case studies that relate to these changes. Drawing on this evidence, we have looked for indications, both within and between each of the farm types that were sampled, of linkages between the attributes of the sample farms and the way that they are managed. For example, large farms of a particular farm type may demonstrate the expected change whilst smaller farms may not. This information, is used in our analysis of farm character in Chapter 3 and is included in the tables under the heading 'Farm character indicators'.

Table 2.2 : Evidence of Changes in the Greater Cotswolds NA

Farm type	Change and anticipated effect/opportunity	Findings of survey	Farm character indicators
Cropping (5 farms)	Increased arable area: • resultant neglect or removal of boundaries; • increased use of flail cutters on hedges; • decrease in permanent pasture; • increased spray drift into hedges, reducing floristic and invertebrate interest with knock-on effects on farmland birds.	Four farmers reported that boundaries had been removed following an expansion of their arable area, although these changes had taken place in the early 1970s. All five farmers reported increased use of flail cutters which tied in with reduced labour availability. On the one farm in our sample which went out of livestock in the early 1970s, wall repair and hedge laying had been abandoned as they are not essential to arable cropping.	These changes relate to land use or land suitability for arable cropping and to agricultural policy. They show no obvious correlation with other attributes of the farms.
	Increase in autumn sown crops: • more chemical input with effects on field-edge weeds; • reduced winter stubbles, adversely affecting bird populations.	All farmers in the sample noted increased use of chemicals over the 20 years studied. But, in all cases, there had been a general reduction in use since the beginning of the 1990s caused by a combination of a need to make cost-savings due to decreased profitability and increased awareness of the environmental effects of chemical inputs. With more use of higher yielding autumn sown crops, winter stubbles were down in area.	Reductions in spray use relate to land use. Larger farms are more likely to have game cover, often beside hedges, which may reduce the risk of damage.
	Set-aside: • opportunity for conservation although most is rotational and, under management rules, offers little potential for nature conservation enhancement.	Set-aside was a lost opportunity on all sample cropping farms. Almost all is rotational and sprayed with herbicides in the early summer or grown as permitted crops. Only one farm had long term set-aside.	All big cereal farms rotated set aside. Larger farms with sporting interests are perhaps more likely to adjust their management to reduce damage to breeding birds (four of the five case study farms had some sporting interests; all four had planted game cover).

Table 2.2 Greater Cotswolds continued

Farm type	Change and anticipated effect/opportunity	Findings of survey	Farm character indicators
Cropping farms cont'd	Fall in the numbers of farm workers: • neglect of beneficial management e.g. hedge laying	There was a fall in the number of workers on four farms over this period. In these four cases, contractors are now used for hedge cutting. Whilst lack of labour was cited as the reason for lack of wall maintenance on two farms, tenancy agreements and personal interest ensured some maintenance on the three others.	A combination of economic pressure and mechanisation has reduced opportunities for beneficial management which is not essential for agriculture. On two farms where there were few livestock, there was, though, some labour availability in the winter which could be used for hedge/wall maintenance if funding and/or training could be provided.
	Part-time farms: • opportunities for conservation work (see Paragraph 2.4); or • potential for misguided management (where opportunities are taken but they are inappropriate).	The one part-time farmer intended to quit farming in the near future and did not have any interest in implementing conservation work	Not enough cases to determine indicators.
Mixed (1 farm)	Fall in the number of livestock: • loss of grassland to arable; • modern chemical or cultivation methods replacing fallows or ley grass breaks. Both of these changes are likely to result in a decline in nature conservation value. Where the grazing enterprise is abandoned, valuable habitats that cannot be ploughed may no longer be managed, with a resultant loss of their nature conservation value.	The arable case studies confirmed that grassland is often no longer being grown as part of a rotation with arable crops, and that associated grazing enterprises have been abandoned.	A reduction in grassland has occurred on all mixed farms. There was no clear correlation with other farm attributes.

Table 2.2 Greater Cotswolds continued

Farm type	Change and anticipated effect/opportunity	Findings of survey	Farm character indicators
Dairy (5 farms)	Increased stocking: • more intensive grassland use, resulting in decline in species-richness; • loss of grassland to arable, and a resultant decline in nature conservation value; • risk of water pollution.	Of our sample of five dairy farms, only one had reduced stocking intensity (due to imminent retirement). The other four had increased stocking intensities and chemical inputs, and three of these had increased arable cropping for stock feed by the growing of maize. On the four farms where grassland management had become more intensive, greater milk yields were being achieved and cows were generally larger than 20 years ago. Of all farms in the study, dairy farms have seen the greatest increases in intensity over the study period.	Two small family farms were pushing hard to intensify to provide for following generations. One was giving up and the sons were not intending to continue in farming.
Cattle and sheep (1 - included in the 5 dairy farms)	Increase in the number of holdings: • less intensive land use if replacing dairy, potentially leading to increased nature conservation value.	Our sample included a farm in the throes of changing from dairy to cattle and sheep, with the resultant expected reduction in intensity of grassland use.	The one farm in this category was not sustainable as a dairy unit.
	Fall in cattle numbers: • decreased grazing of marginal land, which in some cases will result in a decline in nature conservation value (e.g. due to scrub encroachment).	None of the farms in our sample that had beef cattle had significantly reduced stock numbers.	No evidence of this change having occurred.

Table 2.2 Greater Cotswolds continued

Farm type	Change and anticipated effect/opportunity	Findings of survey	Farm character indicators
Cattle and sheep cont'd	Rise in sheep numbers: • beneficial to calcareous grassland areas (e.g. on the Cotswolds scarp, where areas can be under-grazed);.	There was no calcareous grassland on the sample farm in this farm type but there was a sheep grazed area of calcareous grassland (designated as an SSSI) on a sample farm in the cropping farm category. Sheep numbers on this farm had increased over the study period to such an extent that the nature conservation value of the grassland had declined. EN is considering de-notification of the SSSI.	Not enough cases to determine indicators.

Table 2.3 : Evidence of Changes in the Lincolnshire Wolds NA

Farm type	Change and anticipated effect/opportunity	Findings of survey	Farm character indicators
Cropping farms under 100 ha (3 farms)	Increased arable area: • resultant neglect or removal of field boundaries or ponds; increased use of flail cutters on hedges; • decrease in permanent pasture; • increased spray drift into hedges, reducing floristic and invertebrate interest with knock-on effects on farmland birds.	All three farms in this category had increased their arable area over the study period. There was no evidence of hedgerow or pond removal, although two of the farmers noted that significant hedgerow removal had taken place prior to 1975. All three farmers were carrying out minimal hedgerow management. One farmer had planted a new hawthorn hedge along the farm track.	Hedgerow management is influenced by farmers' habits, costs and the ease of access after harvest. Crop shading is not so much of an issue. There may be more potential for improved management on larger farms where finances allow payment of contractors to carry out management.
	Increase in autumn sown crops: • more chemical inputs with effects on field edge weeds; • decreased winter stubble, adversely affecting birds.	The results in the Lincolnshire Wolds mirrored those from the Cotswolds, with a big swing to autumn sown cropping resulting in reduced winter stubbles and increased chemical use (but the latter trend had been reversed in the last few years).	There was no clear correlation with farm attributes (other than the presence of arable land).
	Set-aside: • limited opportunity for conservation (see Table 2.2).	All farms had rotational set-aside with management by herbicides limiting the wildlife opportunities.	Not enough cases to determine indicators.
	Part-time farms: • opportunities for conservation management (see Paragraph 2.4); • or, potential for misguided management (where opportunities are taken but they are inappropriate).	The one part-time farm in our sample was cropped for cereals and was being farmed as intensively as possible. Under the current arable subsidy regime it offers limited potential for enhancement.	Not enough cases to determine indicators.

Table 2.3 Lincolnshire Wolds continued

Farm type	Change and anticipated effect/opportunity	Findings of survey	Farm character indicators
Cropping farms over 100 ha (6 farms)	Increased arable area: • resultant neglect or removal of field boundaries or ponds; • increased use of flail cutters on hedges; • decrease in permanent pasture; • increased spray drift into hedges, reducing floristic and invertebrate interest with knock-on effects on farmland birds.	Of the six farms in this category, all had increased their arable area by the cultivation of grassland. Four noted that most hedge removal was pre-1975; two had replanted in recent years. One had removed about 1.5 kilometres of hedge since 1975. Short stretches of hedge had been laid on two farms. New ponds had been constructed on the five largest farms (up to 16 on one farm).	There may be more potential for conservation management on large compared with small arable farms (see above), perhaps because finance is less restricted.
	Increase in autumn sown crops: • more chemical inputs with effects on field edge weeds; • decreased winter stubble, adversely affecting birds.	All noted the expected trend towards winter cropping and greatly increased fertiliser and chemical inputs. But all noted more selective use of inputs in recent years.	None.
	Set-aside: • limited opportunity for conservation (see Table 2.2).	Set-aside on all six sample farms is rotational, providing limited nature conservation benefits.	None.
	Areas not intensively farmed: • opportunities for beneficial management to enhance nature conservation value.	On one of our case study farms, an area of scrub had been cleared and planted with trees. Areas around ponds received different management from annual cutting to cutting on rotation every 3-4 years. On another farm, one of the last areas of grassland was an SSSI managed by the county wildlife trust.	Scrub and pond areas are quite common on the large farms. Management is influenced by farmer's awareness as much as by the availability of finances.

Table 2.3 Lincolnshire Wolds continued

Farm type	Change and anticipated effect/opportunity	Findings of survey	Farm character indicators
Cropping farms over 100 ha cont'd	Grass verges either planted or not managed: • dominance of taller, rank grasses or trees at the expense of species-rich plant communities.	There were wide verges on three farms. In all cases hay was no longer cut as stock numbers had declined. One verge was managed by the county wildlife trust, another was managed by the farmer and the third was unmanaged.	Bigger arable farms may be more likely to retain some livestock which could be available to graze verges, but there was no evidence of this (verges were being mown on farms with livestock).
	Fall in worker numbers: • neglect of beneficial management.	As in the Cotswolds, falling farm employee numbers had resulted in a decrease in traditional hedge management and an increase in flailing which is less labour intensive and is convenient to carry out in the autumn after the harvest.	Bigger farms may have more labour spare in winter, but no trend discernible.
Cattle and sheep (0 farms)	Fall in numbers: • reduced intensity of grassland use; • under-grazing and scrub encroachment.	We were unable to secure any interviews with the few farms we could identify in this category and therefore the assumptions remain untested.	Not enough cases to determine indicators.
Dairy (1 farm)	Increased stocking: • more intensive grassland use, resulting in decline in species-richness; • risk of water pollution.	Grassland management had been intensified on the dairy farm in our sample.	Not enough cases to determine indicators.

Table 2.4 : Evidence of Changes in the North Pennines NA

Farm type	Change and anticipated effect/opportunity	Findings of survey	Farm character indicators
Family farms, 40-120 ha (5 farms)	Increased sheep numbers: • over-grazing leading to poaching and erosion, spread of nettles and thistles and loss of species that are susceptible to trampling damage (i.e. an overall decline in the nature conservation value of the sward); • agricultural improvement of moorland and rough grazing leading to decreased plant species richness and adverse effects on fauna.	Sheep numbers had increased over the study period on all five farms (in three cases following cessation of dairying), although on one farm the increase was limited by SSSI designation of moorland. All farms still lamb outdoors with three farms noting an increase in breed size (i.e. ewes) plus larger lambs. Lambing success has enabled an extra half a lamb per ewe per year to be reared on three farms, and grassland is more intensively fertilised. Poor grazing on two farms meant that lambing rates had not increased. None of the farms in this size category has actively improved rough areas in the last 20 years (although some improvements were carried out before 1975, which in one case had resulted in the loss of heather vegetation). One farm still grips (i.e. drains) the moorland.	Differences were related to the character of the land and whether it had been notified as an SSSI. The farm with an SSSI is also the farm where gripping still occurs (on areas outside of the SSSI)
	Decrease in cattle numbers: • loss of structural diversity in the grassland (which results from selective grazing by cattle) leading to a reduction in value for breeding birds.	All farms had reduced the numbers of cows and other grazing cattle. Grasslands were now more tightly grazed by sheep, either because of increased sheep numbers or increased numbers of lambs.	None.
	Fall in the numbers of farm workers: • neglect of beneficial management; • or, potential benefits if resources are not available to improve marginal areas.	Numbers of farm workers had declined over the period on three of the five farms, yet none of the sample considered that this was resulting in the abandonment of any areas or in the cessation of management of important features. Walls were generally repaired rather than left to decay.	Larger farms are increasingly undertaking grouse moor management through co-operatives using non farm labour. The fall in the number of farm workers had not therefore had any effect on moorland management.

Table 2.4 North Pennines continued

Farm type	Change and anticipated effect/opportunity	Findings of survey	Farm character indicators
Part-time farms <50 ha (1 farm)	Increased number of part-time farms: • opportunities for conservation management (see Paragraph 2.4); • or, potentially, a threat from misguided enthusiasm (where opportunities are taken but they are inappropriate).	The only farm in our sample to fall into this category had diversified into tourism and taken the opportunity to extensify the grassland use, with less fertiliser and reduced stocking. There was no evidence of misguided enthusiasm.	Not enough cases to determine indicators.
Large owner-occupied hill farms (0 farms)	Sheep farming replacing beef: • reduction in value of grassland for breeding birds.	All the farms we were able to identify in this category declined to take part in the study.	Not enough cases to determine indicators.
	Increased stocking: • overgrazing with effects as described under increased sheep numbers above.	All the farms we were able to identify in this category declined to take part in the study.	Not enough cases to determine indicators.
	Reduced labour availability: • reduction in active shepherding leading to overgrazing in some areas and under-grazing elsewhere; • reduction in other beneficial management practices; • marginal areas left to regenerate to scrub/woodland.	All the farms we were able to identify in this category declined to take part in the study.	Not enough cases to determine indicators.

Table 2.4 North Pennines continued

Farm type	Change and anticipated effect/opportunity	Findings of survey	Farm character indicators
Large tenanted hill farms (3 farms)	Increased pressure to intensify stocking rates: • over-grazing and land improvements with effects as described above under increased sheep numbers.	There was considerable financial pressure to intensify farming and carry more stock on all three farms. However, landlords' restrictions relating to grouse management on two farms and EN's requirement relating to an SSSI on the third have limited any increase in stock numbers on moorland or any other intensification on these areas. One of the moorland areas was being exceptionally well managed. Moor management was perceived by the farmers to have improved over the twenty year period to the benefit of grouse and other wildlife.	Moor management beneficial to wildlife is associated with active grouse moor management as well as designations.
	Reduction in labour: • lack of management and maintenance of areas of interest; • reduction in active shepherding.	There had been a decrease in labour on all three sample farms with the result that walls and other areas are repaired on an 'as needed' and 'as possible' basis. On all farm types, the walls closest to the farmstead that enclose fields used for paddocking stock, received most attention. Lack of shepherding was an issue on one farm where there was a long narrow stretch of moorland. The result was that heather close to the farmstead was grazed. Further away, it was virtually ungrazed.	None.

Table 2.5 : Evidence of Changes in the Exmoor and the Quantocks NA

Farm type	Change and anticipated effect/opportunity	Findings of survey	Farm character indicators
Cattle and Sheep > 100 ha (3 farms)	Increased area of agriculturally improved land: • loss of heath and moor.	This change was not been borne out by our sample, which included land voluntarily entered into the ESA scheme (two farms) and Countryside Stewardship (one farm). There was, though, evidence on one farm of extensive ploughing and re-seeding in the past which had resulted in large areas being of low nature conservation value. On the two farms with moorland, out-wintering of livestock on the moors has ceased as a result of an increase in the provision of housing for over -wintering livestock.	None.
	Increased sheep numbers but reduced cattle numbers: • over-grazing leading to poaching and erosion, and decline in the nature conservation value of the sward; • agricultural improvement of moorland and rough grazing leading to decreased plant species richness and adverse effects on fauna; • loss of structural diversity in the grassland (which benefits from selective grazing by cattle) leading to a decrease in value for breeding birds. .	The numbers of breeding cattle and sheep have not increased greatly on sample farms over this period. However, the number of lambs raised per ewe has increased on all farms and the size of animals has generally increased. This leads to greater grazing pressure.	None.

Table 2.5 Exmoor and the Quantocks continued

Farm type	Change and anticipated effect/opportunity	Findings of survey	Farm character indicators
Cattle and sheep 50-100 ha (6 farms)	Increased area of agriculturally improved land: • loss of heath and moor.	None of the six sample farms had lost enclosed moorland or rough grazing over the period and therefore our sample did not enable identification of the reasons for the increase in improved land indicated by the data for the NA as a whole.	None.
	Increased sheep numbers but reduced cattle numbers with effects as described above under increased sheep numbers.	Sheep had been favoured over cattle for economic reasons on all six farms, which will have led to tighter grazing of some grassland areas with a potential decline in their value for birds. However, over-grazing was not a widespread problem within our sample. On three of the six, stocking intensity had been reduced in recent years under the ESA scheme.	None.
Cattle and sheep < 50 ha (1 farm)	Increased number of part-time farms: • opportunities for conservation management (see Paragraph 2.4); • or, potentially, a threat from misguided enthusiasm (where opportunities are taken but they are inappropriate).	Our sample farm in this category had taken up grant opportunities under the ESA scheme to improve sympathetic management.	Not enough cases to determine indicators.
Dairy (2 farms)	Increased stocking: • loss of grassland to arable, and a resultant decline in nature conservation value; • more intensive grassland use, resulting in decline in species-richness; • risk of water pollution.	Both sample farms had intensified grassland use over the period and had introduced maize silage. One farm was notable for the amount of poached ground, resulting from over-stocking (one field had virtually no vegetation cover).	No trends other than that the sample farms illustrate a trend that was recorded in other NAs.

Conclusions

2.9 By comparing the findings from Stage 1 with those from Stage 2, we are able to address the three questions relevant to this chapter (see Paragraph 1.17).

1. Are the MAFF data a useful reflection of changes in agriculture in the sample NAs?

2.10 Before embarking on Stage 2 of the study, we knew that the MAFF data that had been analysed as part of Stage 1 reflected real changes that have occurred in each of the sample NAs. What we did not know was whether the direction of any particular change was the same throughout each NA. If not, we could simply have been recording the net result of changes pulling in opposing directions in different parts of the Area. If this were the case, the information about recorded changes for the NA as a whole would not be a very useful tool for use in the development and achievement of nature conservation objectives. Our Stage 2 survey results provide a means of investigating this. As the sample of farms is small and cannot be assumed to be representative, the results must, however, be applied with some caution.

2.11 The comparisons between the findings from Stages 1 and 2 (see Tables 2.2 - 2.5) suggest that the Stage 1 findings provide a generally accurate picture of what is happening to farms within the sample NAs. As such they provide a valuable perspective on recent land use change that the relevant EN staff have found very useful for their work on NAs. In the light of this, we have concluded that the MAFF data provide a very useful way to start an investigation of the agricultural character of an NA. Based on this finding, EN may carry out analyses of MAFF data for other NAs, using the methodology that we developed for this study. This is set out in a separate report (see Paragraph 1.7).

2.12 We found that it was very useful to augment the MAFF data with information from published and unpublished sources. We have therefore recommended that such sources are used to complement the MAFF data in future studies (see LUC et al., 1996).

2.13 Our findings also show, however, that there are instances where a recorded change in the NA as a whole is obscuring differences within the Area. For example, we know that for the Greater Cotswolds NA as a whole, there was a decline in beef cattle numbers over the study period, but in the Cotswolds Area of Outstanding Natural Beauty, which makes up a part of the NA, beef cattle numbers increased. We also failed to find evidence of some of the changes indicated by the MAFF data, for example the increase in the area of agriculturally improved land in Exmoor and the Quantocks NA. This could reflect an incorrect interpretation of the Stage 1 data, differences across the NAs or simply the unrepresentative nature of our sample farms.

2.14 It is therefore important to apply caution in the interpretation of findings from analyses of MAFF data, particularly when the results are unexpected. In such cases, additional research may be needed to investigate whether the trend reflects changes throughout the NA, in distinct geographical areas or in only certain sections of the agricultural industry. With this information, it would then be possible to identify opportunities to influence the trend or its effects on nature conservation.

2.15 It is also important to be aware that significant changes might have occurred in an area since the agricultural data were collected. For example, several of the Exmoor farms in our sample had changed their management following entry into the ESA scheme, which first became available in the Area in 1993. The 1994 farm data only reflected some of these changes.

2. Have the data provided a good basis for predicting effects on nature conservation?

2.16 The MAFF data do not enable analysis of environmental effects. We therefore predicted these on the basis of the effects that we would expect to occur coupled with reported effects from other studies and the local knowledge of EN staff. We tested these predictions against the findings from our sample farms. These findings were limited by the fact that we did not have past survey information for most farms and, through our surveys, were only able to obtain information about vegetation.

2.17 Our surveys showed that, where a predicted agricultural change had occurred, the effects on vegetation often were or appeared to be as we had predicted. This suggests that, with the caveats set out in Paragraph 2.14, the MAFF data can be used as a reasonable basis for predicting effects on nature conservation.

3. Is 20 years the most appropriate period over which to review trends?

2.18 Our study showed that many major land use changes in the sample NAs had occurred prior to 1975. These included, for example, large scale grassland improvement and hedgerow removal. Thus a longer time horizon is needed to understand the main changes that have taken place within the sample NAs. However, statistical data equivalent to that obtained for the period 1975 - 1994 are not available for previous years. Furthermore, many of pre-1975 changes are already well understood. On this basis we have concluded that 20 years is the most appropriate period over which to review trends.