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# MANAGEMENT *of the* MARSHES

*An analysis of the intentions of  
farmers and landowners in respect of  
marsh management post ESA and  
Environmental Stewardship.*

Strumpshaw Fen, RSPB

Produced by Farm Conservation.

Funded by the Broads Authority and the Norfolk Biodiversity Partnership.

October 2014



**Broads Authority**  
The Broads - a member of the  
National Park family

The report is a Broads Authority and Norfolk Biodiversity Partnership initiative, undertaken by Farm Conservation Limited, supported by Broads Authority for mapping, and working with Natural England.

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## Purpose of this Report

Between 1930 and 1980, around 37% of grazing marsh was lost in the Broads<sup>1</sup>. Agri-environment schemes such as Environmentally Sensitive Areas (ESA) have contributed greatly to the protection and restoration of coastal and floodplain grazing marsh.

Given the risks to coastal and floodplain grazing marsh associated with the expiry of the ESA scheme, the Broads Authority and Norfolk Biodiversity Partnership (NBP) suggested this preliminary survey to:

- Determine the current extent of Coastal and Floodplain Grazing Marsh, in and outside agri environment schemes, to see whether the 2005 level of 29,500 ha is being maintained, as aspired to in the Norfolk Habitat Action Plan (HAP).
- Identify the most likely outcome for land out of Agri-Environment Agreements with particular focus on Tier 1 (Permanent Grassland) and Tier 4A (Arable Reversion to Permanent grassland).

These ESA Tiers have greater potential to be drained or intensively managed, either as grassland or reverted to arable land.

Over the last three years c.700-800 ESA schemes expired, covering 1,000km<sup>2</sup> in Norfolk. Many larger holdings have entered Higher Level Stewardship (HLS) agreements, whilst smaller holdings were referred to Entry Level Stewardship (ELS) (Henry Walker pers.comm<sup>2</sup>). However, not all ESA land was transferred into Environmental Stewardship Schemes. Although uptake of ELS and HLS was relatively high, the actual area of land under management options has reduced significantly (by 48%<sup>2a</sup>). This leaves land vulnerable to agricultural improvements as farmers respond to up to a 77% loss of AE support<sup>3</sup>.

There is a further risk of intensification due to the two year funding gap during the transitional period between the current and next RDPE funding rounds. Also, the new CAP greening measures which include an obligation for farmers to maintain all permanent pasture at the 2015 level, could have an adverse effect, encouraging farmers to plough before the regulations take effect.



*Grazing Marshes on Halvergate*

<sup>1</sup> Doarks, Clive (1998, revised 2005) Norfolk BAP: Coastal and Floodplain Grazing Marsh English Nature.

<sup>2</sup> Average size of ELS farm = 133ha. Average size of HLS farm = 200ha. NE Data.

<sup>2a</sup> ESA grassland options covered 19,423ha, ES grassland options 9,418ha. NE Data.

<sup>3</sup> ESA tier 1 payment = £130 per ha. ELS payment £30 per ha. Broads ESA Information Sheet.

## Executive Summary

The Broads Authority and Norfolk Biodiversity Partnership commissioned Farm Conservation to find out the intentions of farmers and landowners in respect of grazing marsh management post Environment Sensitive Area (ESA) and Environmental Stewardship (ES) Schemes.

Agri-environment income for farmers is dropping. The ESA scheme began to pay farmers to retain marshes in grass. It is not surprising that many are choosing to intensify management in some way in response to falling payments. This report seeks to tease out what form this intensification might take, and what are the driving factors behind it. It also looks at what farmers thought of the ESA scheme and how they feel about future schemes. An increase in inputs to the marshes, or drastic change in land use could have implications for water quality in the Broads.

The response to the survey was low (56 farmers or 12.2% of farmers grazing marshes who were sent the survey), so results are not definitive. However the authors believe the response rate was sufficient to give a flavour of the intentions for future management of the Broads marshes, and to draw some conclusions from this.

The survey indicates that there will be only limited ploughing of marshes. The reasons for this are complex, but include factors such as; tradition, ownership of stock, familiarity with this type of farming, unsuitability of land for arable, and love of the landscape and wildlife. Environmental Impact Assessment regulations and requirements to retain permanent pasture under Greening also play a part. However with volatile markets and further changes in beef and dairy sectors farmers may need to react quickly to future opportunities.

Although unlikely to disappear under the plough, the results suggest that there may be significant intensification in terms of management and inputs applied. While 54% of respondents intend no change to grassland management, 46% are intending to make some change, with increased fertiliser application being the most common planned change, and lower water levels in the marsh dykes also being a frequent response. Liver fluke was the common reason given for wanting to lower levels. Water level is affected by neighbouring land manager decisions. This means that landowners and the IDB need to invest in water management structures. This may include a network of smaller drainage areas where farmers who have similar water requirements are served by smaller pumps.

Some of the planned changes might be less drastic than predicted however. For example, some farmers said that following the ESA closure, they would be more likely to follow the ground conditions to make decisions on the timing of stock turn out. However only 16% said that cutting dates for hay and silage would change.

One factor which came out strongly in the survey, is the effect of wheat prices on this type of decision within the farm business. When this project was first conceived wheat was at £200 per tonne. At the time of writing wheat had halved to £100/tonne. This means the incentive to turn marshes to arable is significantly reduced at the moment, but in a volatile market this is unlikely to stay the case for very long. The situation may be compounded by the fact that prices remain high for bio-fuel crops such as Anaerobic Digestion (AD) Maize.

A further element of uncertainty is the precise payments and detail of the New Environmental Land Management Scheme (NELMS), which will replace the ESA and Environmental Stewardship. What is certain is that the budget for NELMS will be smaller and more tightly targeted than its predecessors. Former Tier 1, and Tier 4A grassland is unlikely to be eligible for the higher tier in NELMS, as much of this grassland was ineligible under HLS. Early indications are that the scheme will be targeted towards land supporting breeding waders, wintering birds and protecting biodiverse dyke communities, many of which are within nationally and internationally designated areas. There is possibly an assumption among farmers that land which had been eligible for lower ESA payments is going to be eligible for NELMS. If this turns out not to be the case, intensification may increase. One approach that may work is to facilitate complementary NELMS applications, encourage best practice in delivery through advice and training, and to secure non-NELMS resources to deliver supplementary measures that would maximise both NELMS priorities and other environmental outcomes. The Broadland Catchment Partnership is key in delivering this.

## The Marshes of the Broads

The UK Coastal and Floodplain Grazing Marsh Habitat Action Plan (2005) defined marshes as;

*“periodically inundated pasture, or meadow with ditches which maintain the water levels, containing standing brackish or fresh water. The ditches are especially rich in plants and invertebrates. Almost all areas are grazed and some are cut for hay or silage. Sites may contain seasonal water-filled hollows and permanent ponds with emergent swamp communities, but not extensive areas of tall fen species like reeds; although they may abut with fen and reed swamp communities”.*

## The Wildlife Value of the Broads marshes

The Broads drained marshes represent a considerable wildlife resource supporting internationally important populations of wintering waterfowl and raptors, aquatic plant and wet woodland communities. Nationally important populations of breeding waders and waterfowl and other plant and invertebrate communities, are also supported<sup>4</sup>.

Through the use of a network of dykes, water control structures and pumps, the system can be manipulated to allow a wide range of potential land uses on the marshes. With low water levels and high inputs, arable farming is possible. However, it is possible to raise water levels to give virtually no freeboard in the dykes and flooded scrapes, providing a summer grazing system with winter flooding. It is this very flexibility that makes the marshes so vulnerable to the vagaries of agri-environment schemes, government policy and cereal prices.

The marshes provide many ecosystem services including flood attenuation, nutrients sinks, carbon storage and landscape value. They also provide local jobs and food. The value of the services fluctuates according to the current land-use of the marshes. Broadly speaking the value rises in line with water levels, with low water levels giving low ecosystem service values, and high water levels correlating to high values.

### Box 1: Ecological & environmental risks of agricultural intensification

- Destruction of BAP habitat (Fen, Coastal & Floodplain Grazing Marsh, Lowland meadow etc.)
- Eutrophication of water courses through increased use of nitrogen and phosphate fertilisers leading to a loss of flora diversity & poorer water quality.
- Potentially jeopardises chance of meeting WFD targets.
- Oxidation of soils through drainage of wet grassland.
- Release of carbon locked up under low intensity grassland systems.
- Reduced flood water storage as lower levels are maintained for arable production.

<sup>4</sup> Pillow Nathalie, Brennan Sarah, Lucking Robert (2001) Broads Drained Marsh Strategy. Report commissioned by RSPB, Norfolk Wildlife Trust, English Nature and the Broads Authority

## Agri-Environment Schemes

The Broads were the birth place of agri-environment schemes, when public outcry at the draining and ploughing up of Halvergate Marshes led to the 1985 Broads Grazing March Conservation Scheme. There was increasing awareness of the ecological and environmental risks caused by agricultural intensification on the Broads (Box 1), coupled with the need to integrate sustainable food, environmental protection and economic stability. In response, DEFRA introduced the Environmentally Sensitive Areas Schemes in 1987 as an incentive for farmers to adopt agricultural practices which would conserve and enhance areas of high landscape, wildlife and/or historic value, and to help to protect and/or enhance habitats and species of importance in the designated area.

## The Broads Environmentally Sensitive Area

The Broads ESA was one of five ESAs launched in 1987, aiming to;

*“protect, and where possible, enhance the distinctive pastoral landscape character of the area and its wildlife and historic resources by encouraging extensive grassland and fen management”<sup>5</sup>*

The objectives of the 1992 Broads ESA were:

- 1 To maintain and enhance landscape quality by retention of existing permanent grassland and by increasing the area of permanent grassland.
- 2 To maintain and enhance the wildlife conservation value of permanent grassland without detriment to the landscape.
- 3 To maintain and enhance the wildlife conservation value of dykes and ditches without detriment to the landscape.
- 4 To enhance landscape quality through management of characteristic landscape elements.
- 5 To maintain and enhance archaeological and historic features.

In 1992 the Broads ESA was extended by 6,200 ha to 36,175 ha, and further extended in 1997 by 7,014ha. By 2001 it covered over 43,190 hectares of river valleys, arable areas, grazing marshes and fen in Norfolk and North Suffolk. Table 1 shows the uptake in hectares by Tier for the Broads ESA.

AESIS Tier	Description	Uptake 1995 (ha)	Uptake 2001 (ha)
001	Permanent Grass	8,371	8,994
002	Extensive Grass	6,331	7487
003	Wet grass	334	850
04A	Arable reversion to permanent grass	275	1133
04B	Arable grass margins	6	108
05A	Fen Tier		959
WLS	Water level supplement		665
TOTAL		15,317	20,196

Table 1: ESA Uptake statistics for the Broads ESA 2001<sup>6</sup>

<sup>5</sup> DEFRA (2002) *Environmentally Sensitive Areas Broads ESA: Guidelines for Farmers*. England Rural Development Programme

<sup>6</sup> *Review Of Agri-Environment Schemes - Monitoring Information And R & D Results (Ref: Rmp/1596) Final Report (2003) Technical Appendices. Report prepared for DEFRA by Ecoscope Applied Ecologists and CPM Environmental Planning and Design Ltd, CJC Consulting*



## The Transition to Environmental Stewardship

The ESA scheme was closed to new applications in 2004 and was superseded by the Environmental Stewardship (ES) Scheme, as a means to build upon and maintain the environmental benefits achieved through ESA. While the ESA scheme incentivised farmers through payments to safeguard land from harmful land management changes, the ES scheme offered payments to promote beneficial management of the same features through a range of Entry Level Scheme (ELS) and Higher Level Scheme (HLS) options.

ELS offered payments for a basic level of environmental land management that went beyond cross-compliance, and typically covered Tier 1 of the ESA scheme. It was available to land that could secure entry points determined through an assessment of existing features. HLS offered a wider range of management options (encompassing all ESA Tiers), with environmental outcomes measured through 'Indicators of Success' to supplement the prescriptions. Entry into HLS was determined by an assessment of the quality of key features on the land compared to other holdings in a particular funding year (See Annex Two).

Map 1 shows the full extent of the Broads ESA boundary which was extended to include the Wensum Valley. This surprised many Wensum Farmers, who had never considered themselves part of the Broads. Today this "catchment based approach" is seen as the way forward.

## New Environmental Land Management Scheme (NELMS)

Following a major review of the Common Agricultural Policy, new schemes have emerged and are well underway.

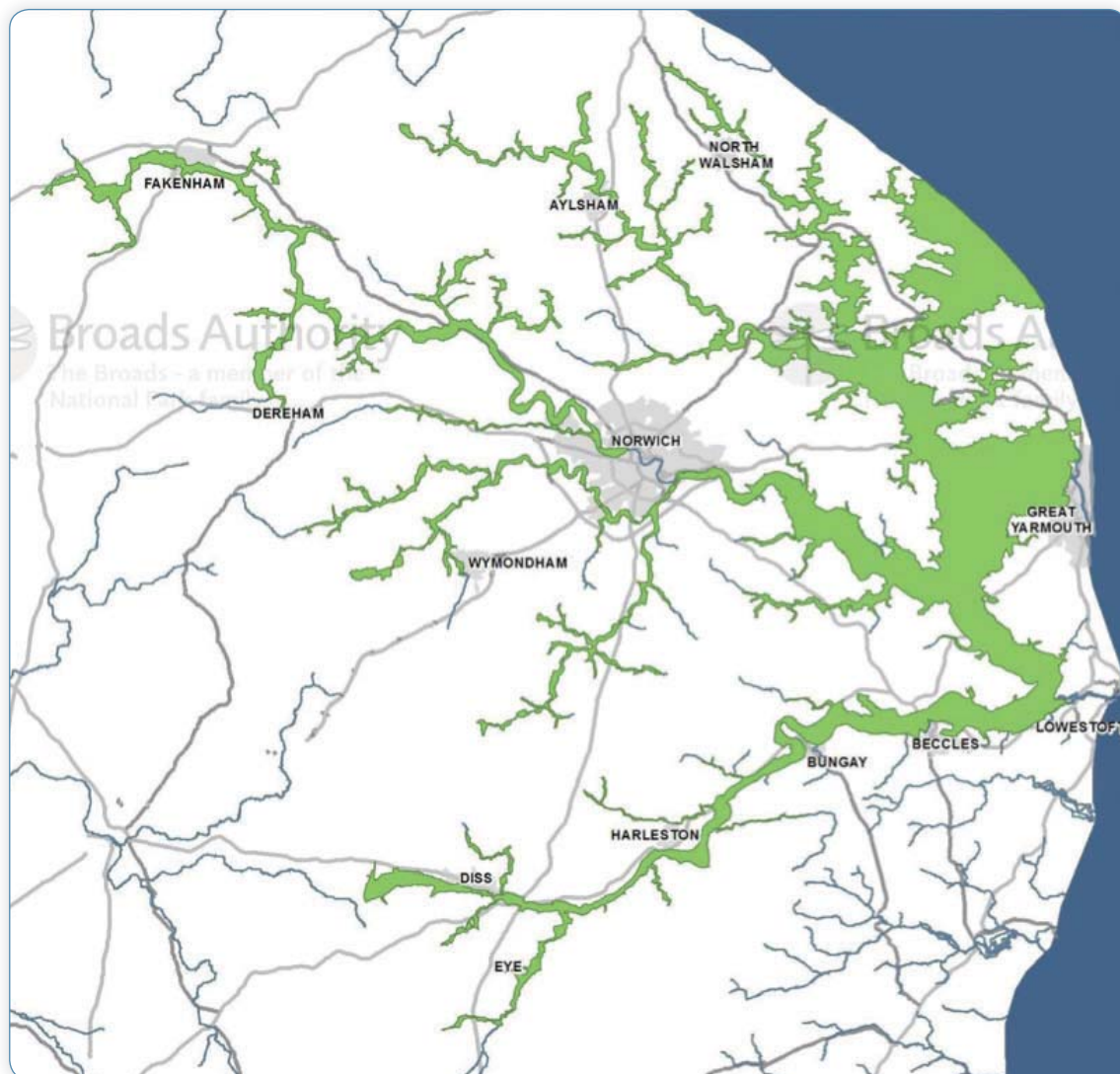
There are 3 major changes:

- *The Single Payment Scheme has been replaced with the Basic Payment Scheme*
- *Greening measures have been introduced which require farmers to follow specific environmental farming practices.*
- *The new Rural Development Programme for England (RDPE) has been announced and will begin on 1st January 2015.*

Under the RDPE, DEFRA will invest £3.5 billion to grow the rural economy and improve the environment. It is this strand, which goes by the working title of NELMS, which is essentially the replacement for Environmental Stewardship.

The aim of this new scheme will be to support measures to restore, preserve and enhance our natural environment. The existing Environmental Stewardship and English Woodland Grant schemes will be replaced with a single new scheme. Farmers, foresters or other land managers (conventional or organic) will be able to apply. Early briefings from Natural England indicate the scheme will be targeted towards delivering improvements to biodiversity and water (both flooding and water quality).

Map 1: The Broads ESA (outlined in green)



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## Methodology

Farmers were invited to take part in an online survey through newsletters. Following low returns of completed online questionnaires, paper copies with return envelopes were sent to farmers within the Broadland catchment. Farmers who indicated in the questionnaire an interest in discussing the ESA expiries and consequent land management plans were interviewed either on farm or by telephone.

A second source of information was provided through various mapping exercises. The Broads Authority (BA) in conjunction with Natural England and Norfolk Biodiversity Information Service (NBIS) developed the following maps:

- *GIS analysis of historic and future coverage of BAP Habitats in AE Schemes;*
- *Sequential Broads ESA expiries and subsequent ELS & HLS coverage to identify the area of land in and outside of AE Agreements.*

## Sample size

A total of 458 questionnaires (Annex Three) were sent out by post or completed online, with a total of 56 responses sent back, giving a response rate of 12.2%. Telephone or face-to-face interviews were also conducted with farmers who expressed an interest (12 farmers total). The level of response is fairly low and can only be viewed as a sample, not a complete census. The survey does provide useful information about respondent's views about the expiry of ESAs and subsequent land management decisions within the Broads ESA.

The distribution of respondents by farm size and Tier 1 and 4A agreements is shown in Figure 1, with Tier 1

11-50 ha having the highest uptake. These tiers were selected as being the most vulnerable to reversion to arable. Tier 1 being drier marshes and Tier 4A having been arable before reversion to pasture.

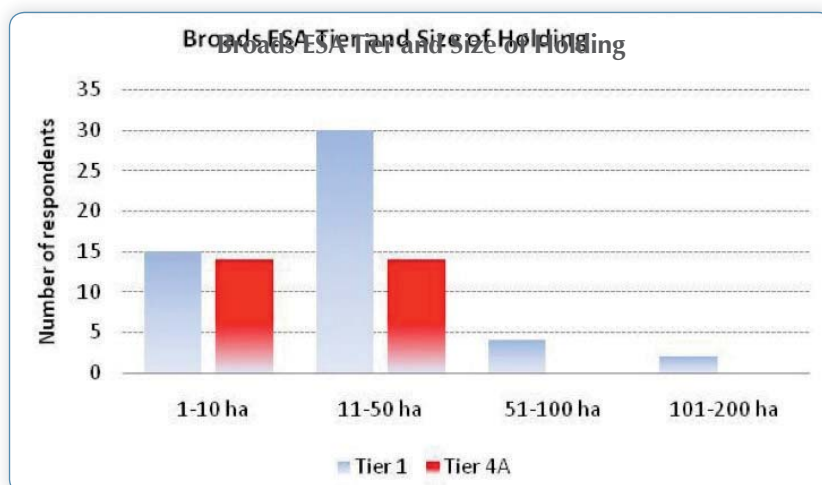
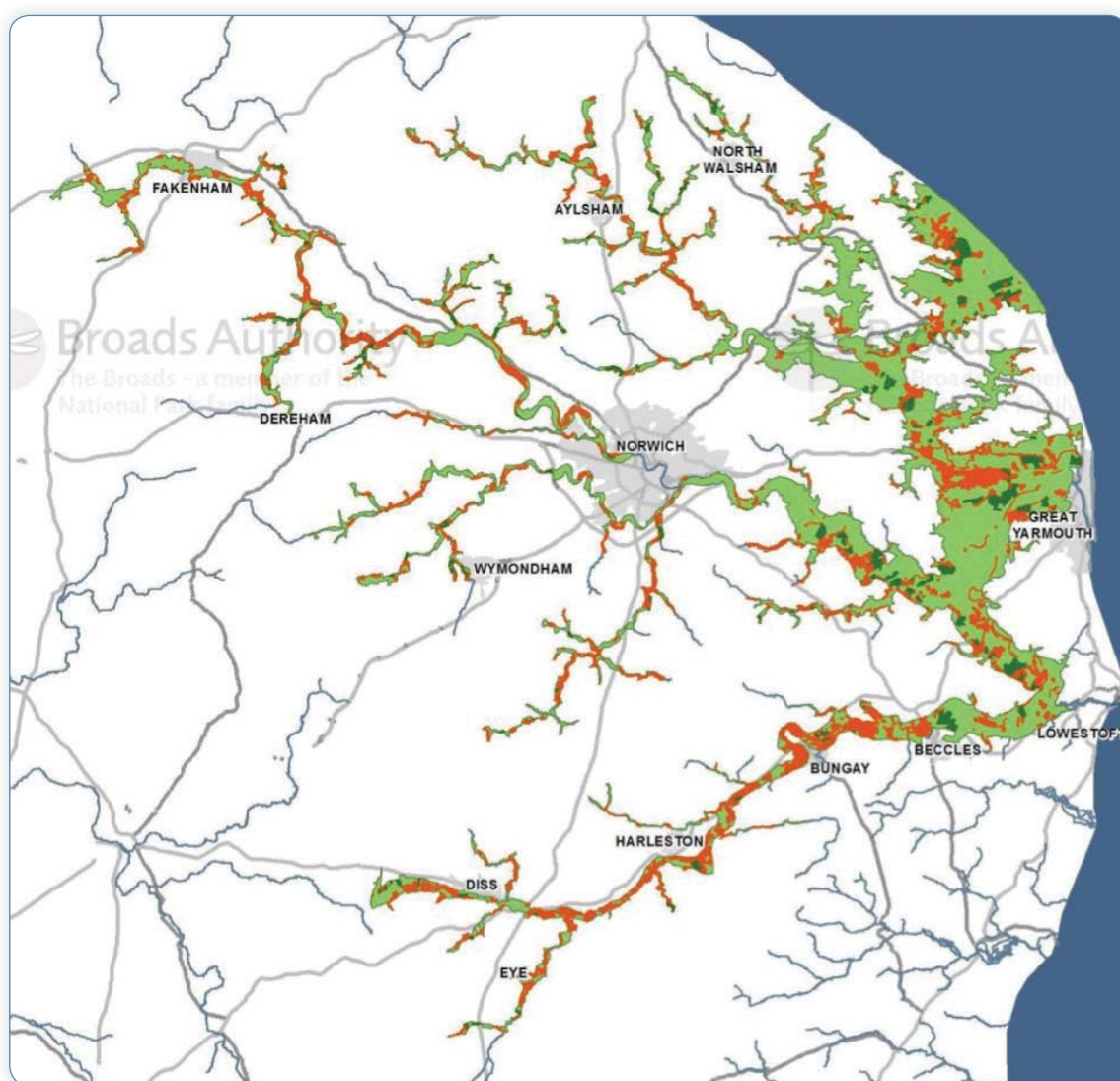


Figure 1: Uptake of Tiers 1 and 4A by percentage of respondents.

Map 2 presents the historical extent and cover of Tiers 1 and 4A in the Broads ESA. Tier 1 was a popular option for farmers in ESA agreements as it was the least prescriptive and allowed the greatest amount of Nitrogen/ha (125kg), with the other Tiers being more restrictive in terms of fertiliser application, stocking rates, turn out time and with higher water levels. This map shows that Tier 1 was popular in the river valleys.

Tier 1 is most vulnerable to intensification as it is not deemed to be of high enough value in terms of biodiversity to receive funding under either HLS or NELMS. Other ESA Tiers 2 & 3 were thought to be at lower risk of intensification due to their wetness and higher biodiversity value. However, telephone interviews have shown that Tier 2 and even Fen tier have been improved.

**MAP 2: Historical extent and cover of Tiers 1 and 4A in the Broads ESA**



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## Broads ESA Tier 1 & Tier 4A





## Results Of The Survey Questionnaire

The first section of the questionnaire (Q 1 to Q 5) asked whether farmers intended to manage grassland as they had under their ESA agreement, and if not, what changes they would make. Management changes here include mechanical operations, levels of fertiliser, reseeding and grazing. It also explored the historic and future levels of intensive management of grassland outside of ESA agreements.

### Q1 Do you intend to continue managing grassland as you have under the ESA?

Figure 2 shows that 54% of respondents intend to maintain grassland management as under ESA, with 46% intending to change management.

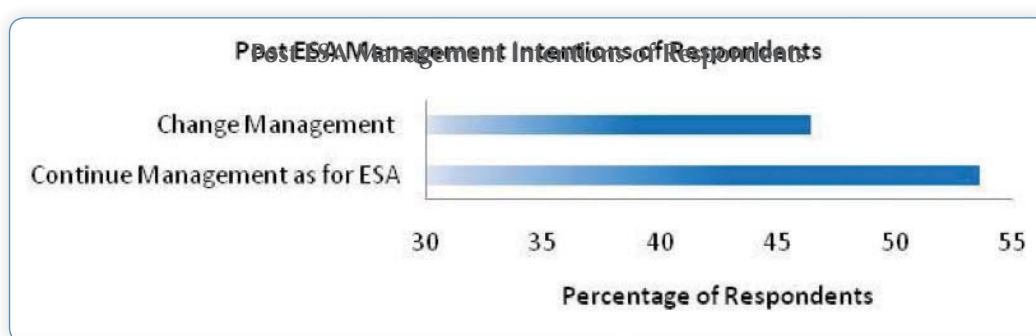


Figure 2: Intended changes in grassland management by percentage respondents.

### Q2 If you do not intend to continue managing grassland as under the ESA, what changes do you intend to make?

Permanent Grassland under Tier 1 and 4A were subject to management regulations which are presented in full in Annex One: (Scheme Prescriptions for the Broads ESA), summarised as follows:

*Tier 1 is designed to maintain the Broads's ESA landscape and grassland. Grassland is to be maintained and limited grazing and cutting is permitted. The use of fertilisers, fungicides, herbicides and insecticides is limited. Drainage systems are not to be altered and dykes are to be maintained and controlled. Hedges, ponds and reedbeds are to be maintained and care is to be taken not to damage or destroy any feature of historical interest. Permission is necessary before any future constructions or woodland management. Almost a half (48%) of eligible land was under Tier 1 agreements in 1995.*

*Tier 4A agreement is to revert arable land to permanent grassland. In the first year, certain practices which are 'prohibited' in Tier 1 are allowed to enable the grass sward to establish. Participants stop arable production and establish a new grass sward within 12 months of the start of the agreement. During the first 12 months of the agreement there must be no application of pesticides, organic or inorganic fertiliser, lime, slag or any other substance to reduce the acidity of the soil, without obtaining prior approval. After the initial 12 months participants follow the requirements of Tier 1.<sup>7</sup>*

A total of 46% of respondents indicated their intention to adopt intensification management practices not permitted under ESA, as illustrated in Figure 3. Increasing fertiliser application is the most popular option (30%), with 20% intending to crop the land, and 16% intending to either increase land drainage or stocking or reseed.

<sup>7</sup> DEFRA (2003) Review Of Agri-Environment Schemes - Monitoring Information And R & D Results (Ref: Rmp/1596) Final Report . Technical Appendices. Report prepared for DEFRA by Ecoscope Applied Ecologists and CPM Environmental Planning and Design Ltd, CJC Consulting

Telephone interviews revealed the reasons behind these intended changes and offered insight into the hard choices farmers have to make in light of the new CAP changes and falling agricultural income. Interviews with farmers who did not intend to change management options suggested that the land in question was either low quality grazing marsh, or in smaller parcels/holdings that would be too costly to improve. Respondents intending to intensify (4%) made the following comments;

- *Tenanted land not in HLS will have its productivity increased and land improved.*
- *Plough up everything.*

Telephone interviews revealed that where ploughing was the intention in most cases this has already happened. One respondent said they had ploughed 35ha of tier 1 and 32ha of tier 4A arable reversion. 6m margins left around the marshes had been entered into ELS while the middle of the field had been returned to the arable rotation- growing wheat, maize or sugar beet. The economic calculations and environmental impact assessment had been undertaken when wheat prices were still high.

While others are intending to retain grassland but manage it more profitably;

- *Grassland will be managed as before with the exception of a little increase in fertiliser to improve yield.*
- *In different fields, I have intensified slightly on grassland with the least environmental potential and compensated for this by de-intensifying other areas awhile adding features to encourage further the existing wildlife.*
- *Grassland areas will be managed more intensively to enable a new stock enterprise to be run economically.*

## Intensively Managed Grassland

A number of respondents had intensively managed grassland that was not included in their ESA Agreement. These questions were asked to ascertain the proportion of grassland outside ESA and therefore the area of intensively managed grassland.

### Q4 How much grassland has been intensively managed?

### Q5 How much grassland will be intensively managed in the future?

Figure 10 shows that under ESA 57% of respondents had no intensively managed grassland although 41% respondents indicate that in future they will have less low input grassland. Under all holding sizes intensive management appears to be on the increase. This indicates that management of grassland is likely to be intensified in areas that were previously under ESA, with a corresponding decrease in the area of land that was never intensively managed (0 hectares).

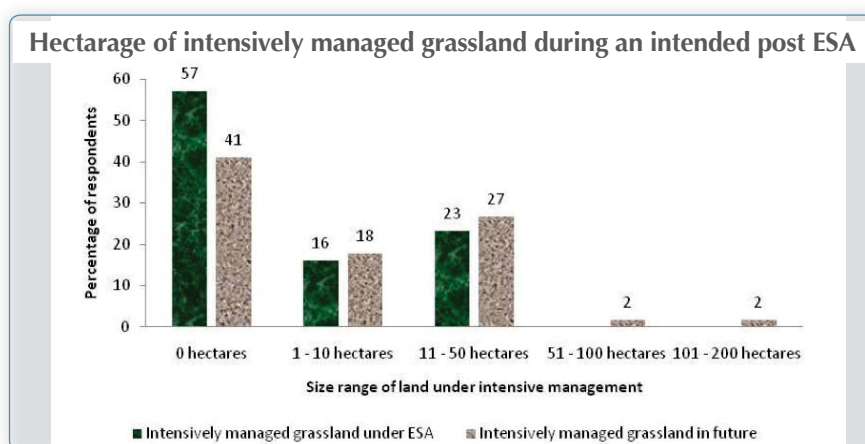


Figure 10: Intentions to change the amounts of intensively managed grassland post ESA

## Specific Management Changes

Questions 2 and 6 to 18 explored the changes that the 46% of farmers intended to make in specific aspects of grassland management, including changes to fertiliser and lime applications, reseeding, mechanical operations, grazing on marshland, and cutting of hay or silage.

**Q6 How much nitrogen fertiliser did you routinely apply to the marshes?**

**Q7 How much nitrogen fertiliser will you routinely apply to the marshes in the future?**



Figure 3 : Intended Changes to Grassland Management Following ESA Expiries.

Two prescriptions covered fertiliser use under ESA Tier 1 and 4A:

- Do not exceed your existing level of inorganic fertiliser and in any case do not exceed 125kg of nitrogen, 75kg of phosphate and 75kg of potash per hectare (100 units of nitrogen, 60 units of phosphate and 60 units of potash per acre) per year.
- Use no more than 94kg of nitrogen per hectare (75 units of nitrogen per acre) in any one application.

Figure 4 shows the changes in fertiliser application levels among the 46% of respondents intending to change grassland management. Of the respondents, 14% intend to fertilize previously unfertilized land, and

9% intend to increase the amount of land that with more than 50 kg/ha. Around 10% of respondents intend to increase the amount of land that previously had applications of between 50-100 kg/ha, with a further 11% of respondents stating that they intended to apply more than 100 kg/ha to land previously under ESA Tier 1 and 4A prescriptions.

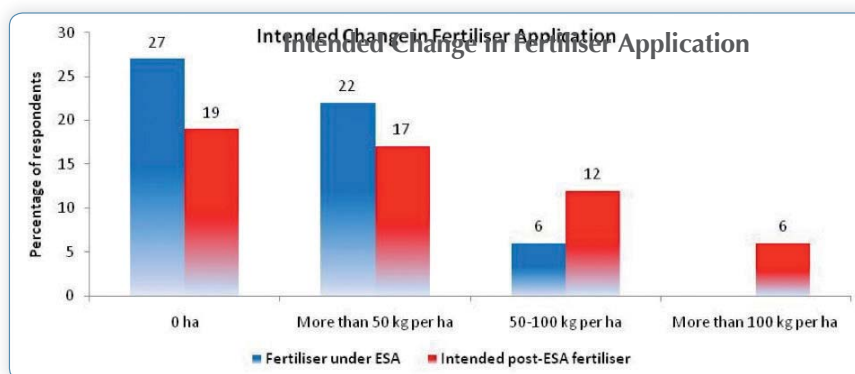


Figure 4

Telephone interviews with farmers who have increased fertiliser show that on the whole, this increase is minimal:

- *I have applied fertiliser on some land but less than 50kg/ha to improve productivity.*
- *On 15 ha I have increased fertiliser, but there is no change on the rest of my holding.*
- *The increased N in some fields is still below 50 kg/ha, to increase yield for hay in some areas, compensating for my wetter HK15 land.*

#### Q8 Has lime been regularly applied to reduce acidity?

ESA prescriptions for lime under Tier 4A:

- *During the first 12 months of the agreement do not apply any of the following without obtaining prior approval: organic or inorganic fertiliser; lime, slag or any other substance to reduce the acidity of the soil; pesticides.*

Only 7% of respondents had previously applied lime to reduce acidity on grassland under ESA agreements. One respondent indicated in an interview that he intended to reintroduce the “traditional” practice which had stopped under ESA restrictions.

#### Q9 When did you last reseed?

#### Q10 By what means did you reseed?

Tier 1 & 4A prescriptions for reseeded and mechanical operations were as follows:

- *Maintain grassland and do not plough, level or re-seed the land. You may use a chain harrow or roller but no other form of cultivation is allowed.*

The majority of farmers (61%) have never reseeded their ESA land, and only 2% of respondents reseeded in the last five years. Table 2 shows the means of reseeded by the seventeen farmers who have reseeded in the last 15 years.

Date of last reseeded	% responses	Means of reseeded
Less than 5 years ago	2	Spray, plough and reseed (2 %)
6 - 10 years ago	9	Slot Seed (5 %) Spray, plough and reseed (2 %) Spray, disc and reseed (2 %)
11 - 15 years ago	27	Slot Seed (5 %) Spray, plough and reseed (16 %) Plough and reseed without spraying (2 %) Spray, disc and reseed (4 %)
Never	61	(61 %)

Table 2: Dates and means of reseeded by respondent (n=99%)

One farmer said he had already reseeded 100 acres of silage land, half direct drilled into existing sward, and half was sprayed off and drilled into the aftermath. This was former Tier 2 land. Nitrogen application has doubled. A further 300 acres will receive a similar treatment over the next 5 years. His AE payments have decreased by £47,000 (36%) post ESA.

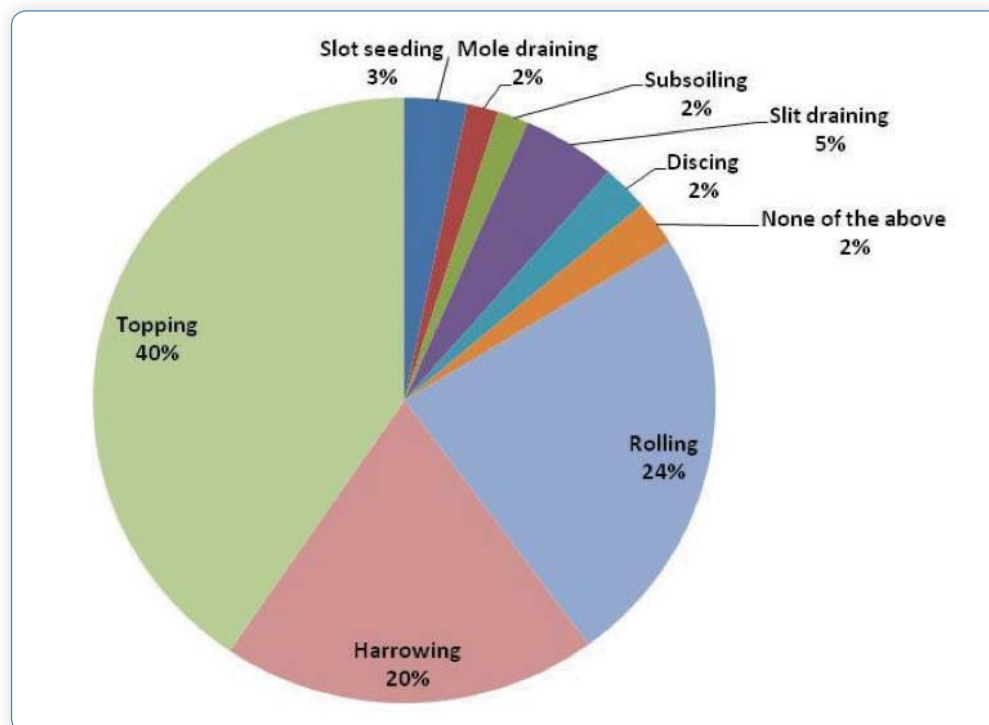


**Q11 What mechanical operations have been carried out on the grassland in the last 15 years?**

Figure 5 shows that most respondents kept to the regulations for mechanical operations on ESA Tier 1 and 4A land. A combined 84% have only used mechanical operations (topping, rolling and harrowing) as permitted under ESA in the last 15 years.



*Species rich fen disced prior to re-seeding*



*Figure 5: Mechanical operations carried out by respondents in the last 15 years (1998-2013)*

### Q12 Do you graze your marshland?

Tier 1 & 4A prescriptions for grazing had restrictions on stocking rates, grazing periods and under Tier 1 and 4A;

- *Graze with livestock other than pigs or poultry, but avoid poaching, under-grazing or over-grazing.*
- *If you cut the grass for hay or silage, graze the aftermath.*

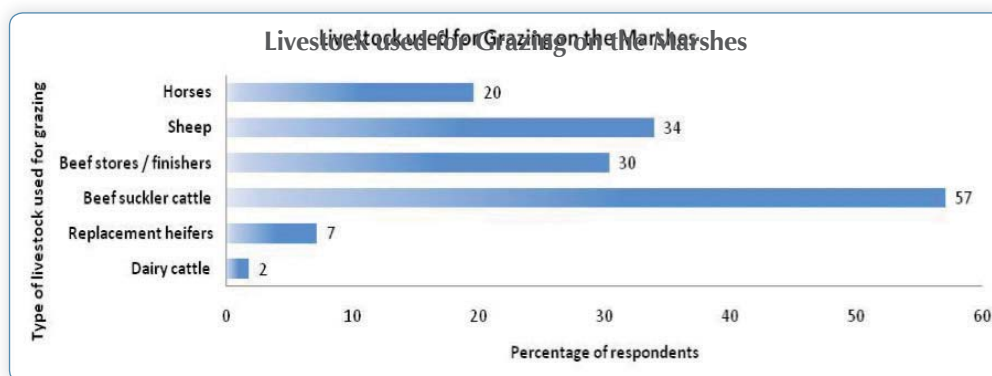


Figure 6: Types of livestock used to graze in the Broads ESA

Around 68% of respondents used their own livestock used for grazing, with 30% using the livestock of others. Only 2% did not graze their marshes, instead using it solely for hay-making. Figure 6 shows that the majority of respondents used beef suckler cattle, although several farmers (45%) use more than one type of livestock for grazing. 13% of respondents intend to stop grazing.

Telephone interviews provided more information on farmers' intentions and the reasons for making these choices. Several farmers commented that they would not be changing their grazing regime as the land used is of too low quality for arable crops, and is more profitable to keep as grazing marsh.

- *ESA allowed me the option of keeping a small beef herd on small parcels of land*
- *Stocking density may increase a little as we now have additional small numbers of sheep with our beef suckler cattle, this additional livestock means that we will still maintain ESA land as permanent grassland*
- *We will keep grazing as generally the same depending on weather and soil conditions. We use our suckler herd in adequate quality boggy areas and overwinter cows. Stocking on all grassland is marginally down, but we do bring in additional grassland either for silage or extra grazing.*

13% of respondents intend to, "Stop grazing, keep topping or hay crop".



Cattle on Halvergate Marsh

**Q14 When do you normally turn out?**

Figure 7 shows that the majority of respondents turned their animals out in April (68%) as specified under ESA prescriptions. In telephone interviews, farmers stated that they preferred to follow seasonal changes, since regulations under ESA or ELS/HLS options sometimes made grazing more difficult.

- an early spring meant that grass was overlong for sheep to graze easily but we had to wait to turn them out
- ESA gave guidance on how to manage grazing, but on Tier2 we were not meant to graze until May and the grass got too long for sheep and when they come in early in autumn they leave long grass. This was troublesome as seasonal differences weren't taken into account.

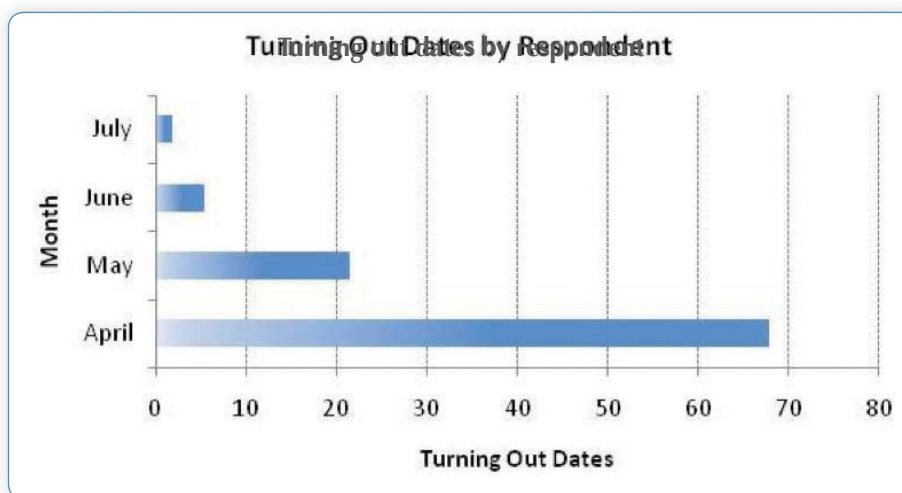


Figure 7: Turning Out dates by respondent in the Broads ESA

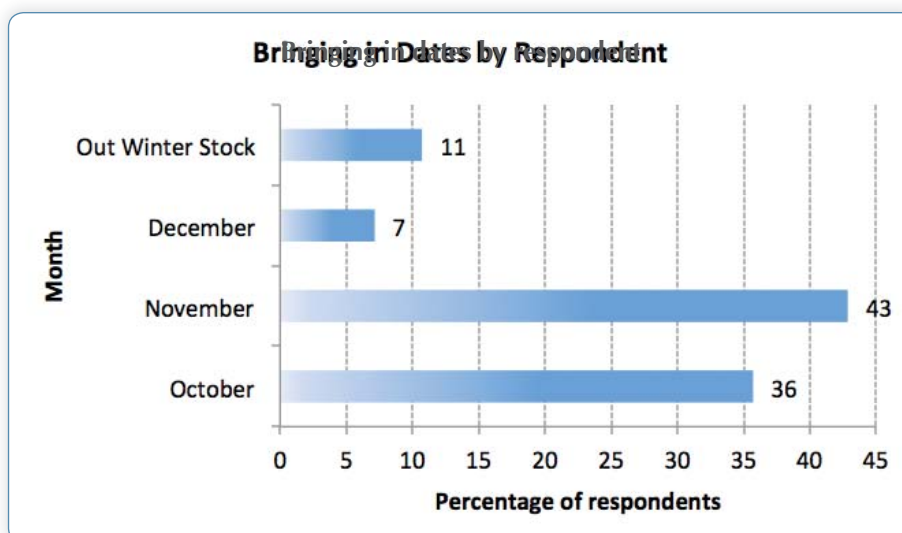
**Q15 When would you normally bring livestock in off the marshes?**

Figure 8



Figure 8 shows that the majority of respondents brought in livestock in November (43%), with 36% bringing them in during October.

The changes that respondents intended to make included:

- *I will winter out beef suckler cattle that had previously been brought in.*
- *Some beef sucklers and beef finishers/starters will stay out until November or maybe later*
- *I will no longer out winter beef starters/finishers*
- *Horses will come in at night from October and go out during the day*



*Soay Sheep on Limpenhoe Marsh*

#### **Q16 Do you make hay or silage from your marshland?**

ESA Prescriptions for hay and silage were simple;

- *Take no more than one cut of hay or silage each year.*

Some respondents (25%) made both hay and silage, while 18% only made hay and 14% only made silage. The largest percentage of respondents (39%) made neither from their ESA Tier 1 and 4A land.



*Hay bales on grassland, Hickling*



**Q17 When would you normally cut hay / silage?**

Figure 9 shows the dates of cutting hay and silage by percentage of respondents. June is the most popular month for these activities, although telephone interviews confirmed that seasonal weather was often the determining factor in cutting dates.

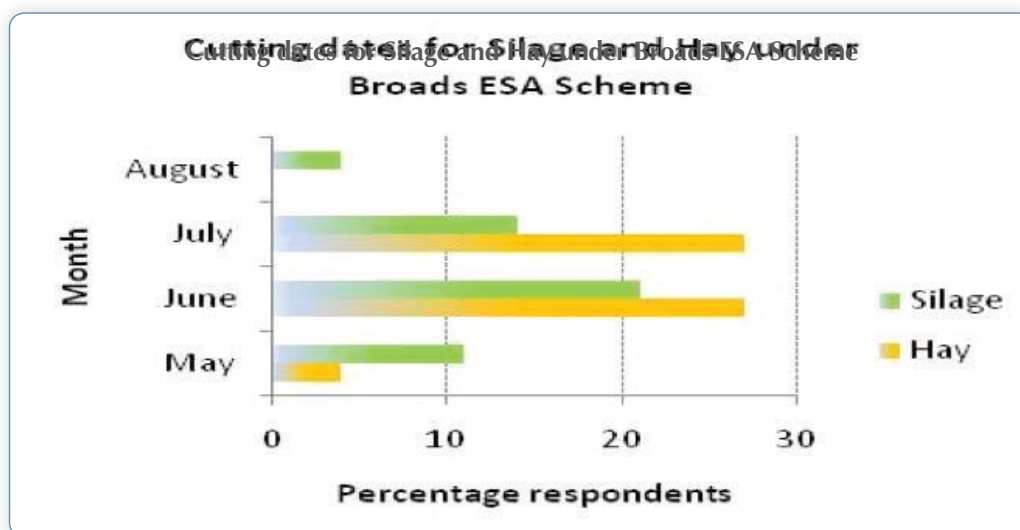


Figure 9 Cutting Dates for Hay and Silage in the Broads ESA

**Q18 Are cutting dates likely to change in the future, and if so how?**

Of the respondents who answered this question, 16% said that cutting dates would change in future. Several stated that cutting would be slightly earlier, depending on the seasonal weather, while 14% cutting dates would not change. Telephone interviews produced reasons for this answer.

- Cut in July as land now in HLS option
- Yes, to be more in keeping with season rather than dates.
- It will all be ploughed up for arable.

## Water Level Management

Questions 19 to 21 focused on water management on holdings with ESA Agreements. Ditches or dykes are man-made structures which are important and characteristic features of the Coastal and Floodplain Grazing Marsh Biodiversity Action Plan (BAP) Priority Habitat. ESA agreement holders were expected to manage and maintain ditches and dykes and enhance their value for biodiversity, as set out in the ESA prescriptions for Tiers 1 & 4A below:

*"Maintain water at a suitable level for livestock to graze on grazing marshes by ensuring that; at least 30 cm (12") of water in the dykes between 31 October and 1 March, and to increase dyke water levels to summer levels no later than 1 March to ensure adequate dyke water during the summer."*

**Q19 Are you able to control water levels on your land?**

A total of 46% of respondents have the ability to control water levels on their land.

**Q20 At what height do you maintain dyke water levels in reaction to mean marsh level?**

Figure 11 shows the seasonal water levels retained by farmers with water control in dykes in relation to mean marsh levels. However, it is hard to extrapolate whether farmers abided by the ESA prescriptions which are measured from the base of the dyke. It appears that summer marsh levels were in general lower than those prescribed in the ESA agreements.

Liver fluke was a common theme among stakeholders, in relation to raised water levels. High water levels were seen to bring elevated risk with cows calving in puddles seen as a particular breeding ground for fluke.

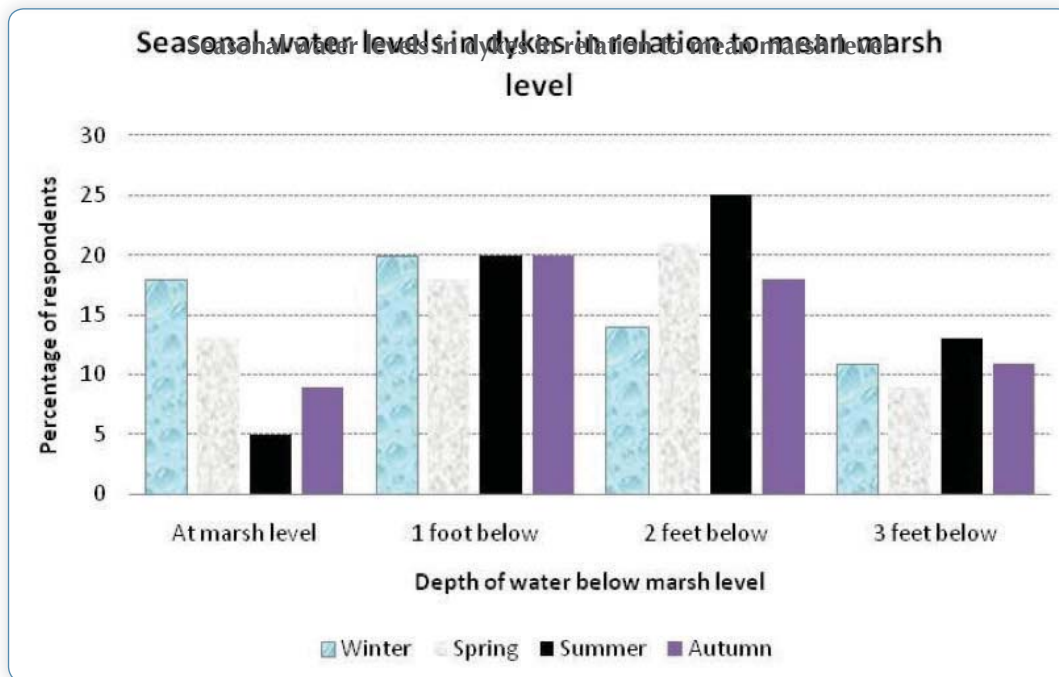


Figure 11: Water level management by 46% respondents with water control



Dyke at Halvergate Marshes

**Q21 How is water level management likely to change in future?**

Figure 12 shows the intended changes to water level management from all respondents (those who do and don't have control of water levels). While the majority (42%) state that there will be no change, half of these respondents have no control over water levels.

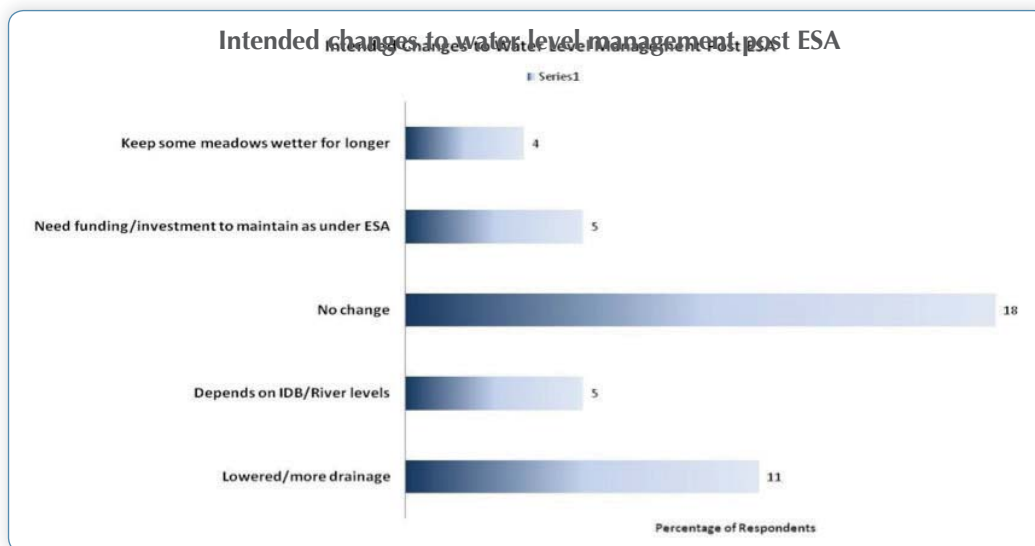


Figure 12: Intended changes to water management post ESA

Only a quarter of the respondents who stated that water levels will be lowered/more drained, actually have control of water levels on their land. This might be explained by the comments of two of the 52% who could not control water levels, who said that the IDB tended to set water levels to suit arable land, rather than to maintain grazing marsh.



Breydon water

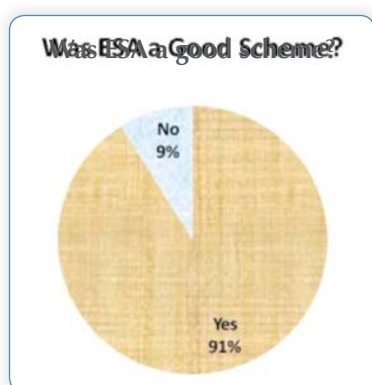
The next section of questions (Q 22 to Q24) sought farmers' attitudes towards the ESA scheme. Telephone interviews helped to substantiate some of the comments from the survey questionnaire.

#### Q22 Do you think the ESA was a good scheme?

The majority of farmers felt ESA was a good scheme (91%) citing ease of management that worked well with the farming calendar, and the help and encouragement that ESA offered farmers to maintain the marshes as low-input grazing.

Those who thought it was a good scheme gave a number of reasons. A common theme that respondents mentioned was the efficacy of ESA as a landscape approach;

- *ESA was at a landscape scale, allowing farmers more space to play with the prescriptions which suited both farming and conservation*
- *ESA was a good scheme, very much a landscape over a single habitat approach, and flexible. HLS does incur greater management and planning and it is harder to make the balance between the loss of return on some land compared to the subsidy for environmental payments-that is getting the options balance right while still farming cost-effectively.*



A few farmers mentioned that the ESA payments allowed for environmental conservation that fitted well with farming;

- *ESA worked well and added fairly tightly into our farming system as it was at the time. Also it was comparatively simple to implement.*
- *It helped to make keeping stock on the ESA marshes a viable option on land that could otherwise have turned to arable. It also made de-intensification of the remaining land an option.*
- *It enabled us to keep the meadows without intensive grazing*
- *We had a dairy herd until 14 years ago (2000). We had ESA from the start and it worked very well for us.*
- *Conservation worked better on marginal land, and the ESA allowed farmers more space to play with prescriptions to suit both farming and conservation.*

*"ESA certainly made a difference to biodiversity but may have been seen as expensive by public. I regret the passing of the ESA scheme because it allowed us to maintain grasslands and also provided capital funding for hedgerows, fencing, water management and coppicing, which helped to improve the whole habitat. Since ESA funding has stopped a lot of this work has slowed down, and ELS did not offer this type of funding".*



Among the 'Yes' votes there were some reservations about the overall effectiveness of the ESA schemes:

- *Brilliant scheme initially. We took enormous pride in maintaining nesting lapwing, oystercatchers, snipe and redshank. The floristic value of the marshes was enormous when we entered the ESA. It saved our grassland from the plough in 1985. The lower tiers were equally important to tier 1. The scheme lost its way as time progressed, with a fixation on cutting cost, and downgrading the lower tiers; and*
- *It was a bit of a blunt instrument at times and could not be tailored to fit as well as it should have been*

Two of the 9% who did not think ESA was a good scheme were graziers who highlighted the disadvantages of ESA transfers into ELS/HLS, as follows:

- *To start with it was a good scheme, but now land owner has SFP/ELS & HLS and grazier gets nothing but has all the costs. The Subsidy rates are worked out on income foregone. Hence marshes deteriorate under environmental stewardship. Supplementary feeding is common place now grass is poor*
- *SFP, ELS & HLS go to landlord. Grazier manages marshes but is not paid to do so.*



*Strumpshaw fen*

## **Q23 Do you consider the ESA to be a cost effective scheme? Did it deliver value for tax payers' money?**

Around 73% of respondents felt it was cost effective, and did deliver value for tax payers' money. However, several respondents felt the scheme could have been better organised, both in terms of measurable outputs, and in terms of the relationship between farmers and graziers or reed and sedge cutters, who did not profit as well as farmers from the scheme.

- *Needs to consider WFD issues as well as Habitat Directive issues and needs to be more joined up between claimants and graziers. Also on reed options there needs to be on going agreements between claimants and reed & sedge cutters to get best value for money.*
- *RSPB are a big claimant, do they use any of this subsidy for lobbying work? This money does not end up in the farming community and therefore the scheme is not working*
- *ESA could have been cleverer at delivering more precise and measurable outcomes*
- *It was only effective in some areas*

Other respondents commented on the effect on wildlife as a benefit to taxpayers but also on the negative impact of prescriptions on species and habitats;

- *It delivered huge value to the taxpayer on this farm initially. However, the constraints of Tier 1 meant that benefits to plants (such as orchids and quaking grass) and nesting waders were diminished. Sedge and rush became widespread because of lack of flexibility in water levels. Marshes that would have been converted to arable were not ploughed in 1985/6/7 because of the ESA (formerly Broads Grazing Scheme). Designation of SSSI has subsequently robbed us of the option of reverting to arable. We feel let down by the abandonment of the ESA scheme, even though the financial benefit from ESA fell, year on year, in the later years.*
- *ESA has definitely helped wildlife*
- *Bird life that was already good has been maintained or enhanced*
- *ESA stopped farmers from ploughing up grassland and grazing marshes-which was a good thing!*

As regards the future sustainability of the ESA scheme;

- *After all the money that has been spent on the scheme it is a shame to see it abandoned*

There was only one comment from those respondents that felt it was not cost effective (16%);

- *ESA was probably more worthwhile than a lot of what taxpayer's money is spent on!*

#### **Q24 How do you think the ESA scheme benefitted the general public?**

Four out of 56 respondents (7%) felt ESA had not benefitted the public. Most of these felt that ESA was for environmental reasons and benefitted claimants more than the public. Comments in this category included;

- *It has not its only benefitted claimants. Are there really more birds in the ESA than 20 years ago - No. So it has not benefitted the general public*
- *We would plough if we were allowed*
- *It did not benefit the public as such but has been a very big benefit to conservation in the Broadland area.*

Around 12% of respondents questioned the interest or awareness of the public concerning conservation or farming management, while others found the public to have a negative impact on conservation, suggesting a need for better public engagement and education (See Box 2).

#### **Box 2: Comments from respondents who felt the public were not aware of the ESA Scheme's Aims**

- *The general public has no idea, specialist knowledge is needed*
- *I don't think they do as they don't know what they are for or about*
- *Yes, if they are interested in wildlife or rural matters at all.*
- *It was what a lot of the public wanted to see*
- *My ESA had a public footpath through the middle, although it was hard to tell if the public enjoy the conservation work. People allowed their dogs to chase hares and they are all killed now.*
- *or those that were interested it delivered continuity of landscape and habitat and for those that were disinterested it was inoffensive.*

The majority of respondents (23 %) felt that the general public benefitted from the conservation of grassland and grazing marsh habitats and landscapes and the accompanying improvements in species diversity.

- *Great on the eye – green fields and cattle- a delight to see!*
- *On our farm the wildlife is much appreciated by the school and village generally*
- *Looked nice! & the grass got grazed. Grazing cattle look a lot nicer than arable crops. Today's heavy machinery would have made a mess of these low lying areas.*
- *The ESA helped to control the changing countryside for the general public*
- *ESA allowed us to revert arable to grassland and improving biodiversity in the broads area*



*Strumpshaw Fen, RSPB*

Some linked the environmental benefits to the public with the economics of farming grazing marsh and livestock rearing.

- *The scheme was landscape based which in turn produced habitat and species benefits, the funding also supported grazing livestock systems which experienced economic downturn, this slowed down the migration of livestock from the marshes and helped to maintain a pastoral landscape setting much valued by the public and the tourism industry.*
- *The ESA scheme benefited the public by retaining a huge block of grazing marshland, in an area noted for arable farming, much of which would have otherwise been ploughed up. In 1985 the profitability of grazing livestock collapsed, along with marsh rents. Arable farming was profitable, particularly for marsh owners who had upland arable farms, as we do. Assuming that the general public prefer to see grazing livestock, tumbling lapwing, wild flowers, Norfolk Hawker dragonflies, skeins of pinkfoot geese, as opposed to fields of wheat and sugar beet, then they benefited hugely.*
- *There was more likelihood of a diverse sward compared with intensively farmed grass grown purely for production for which the farmer was compensated for.*
- *If the general public is more interested in low food prices than bio-diversity, then they lost out to the ESA.*
- *I think the public benefited. Sadly the cost was eventually borne largely by owners, not by the public taxpayer. The ESA ran out of steam, largely because self-interested lobbies failed to compromise sufficiently.*
- *Provided a fantastic habitat both for the wildlife and visually for the general public. It is with regret that I will plough up the vast majority of my ESA land this summer and drill with wheat next Autumn but the economics of farming make it a necessity.*



*Hare and Marsh Harrier on Haddiscoe Marshes*

A further group of respondents made the connection between good farming, conservation, and landscape enhancement, as follows:

- *Grassland was kept tidy and works better, good grazing land for quality beef and plant life*
- *ESA maintained an important landscape that can only be like it is with grazing animals*
- *ESA allowed for protection of precious Broadlands environment, protecting carbon storage on peat marshes, and increased wildlife habitat and biodiversity*
- *It maintained the marshes in a state that was very good for conservation besides being very useful keeping reasonable levels of stock*
- *ESA: Maintained pasture. Encouraged grazing. Ditch profiling - which helped flora. Helped breeding waders. Good for invertebrates. Grant aid assisted graziers. Water quality should have improved a bit - or at least levels of nutrient ingress should have been reduced. Soil ingress should have been reduced. Probably carbon storage too - but that's a bit technical for me.*

## ELS/HLS Options

Questions 25 to 28 looked specifically into ELS/HLS Management Options, following on from ESA.

### **Q25 Have you entered Entry Level Stewardship (ELS)?**

In 2004 Natural England introduced the Environmental Stewardship Scheme, giving 'rationales' for transfers of agreements under ESAs into ES; "almost all ESA land can be transferred into ES, but there is no automatic right to enter into HLS, with HLS being designed to support delivery of priority environmental benefits". Key habitat and species opportunities for ES in Broadlands ESAs were identified, and ES equivalents for ESA Tiers were identified (See Annex Two)

Questions 24 to 28 look into the decisions respondents made about whether to transfer ESA land into ELS/HLS options, and their reasons behind these decisions.

Seventy-five per cent of respondents had entered into ELS, while 18% had not. Of this latter 18%, some had entered into HLS. Figure 13 shows the proportion of respondents that entered or considered entering ES schemes.

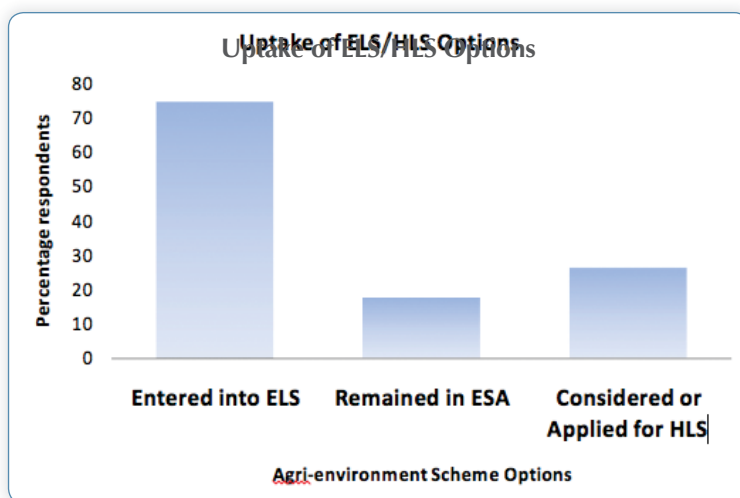


Figure 13: Proportion of entry into different agri-environment schemes from ESA

Telephone interviews with farmers gave more insight into farmers' attitudes towards different agri-environmental schemes;

- *We were tempted not to (enter into ES), because we had to take a little arable land out of production. However, we decided to sacrifice some marginal land, as we believed that such schemes could become compulsory, and largely uncompensated. Time has proved us correct.*
- *Because I was considering applying for HLS. I had the entry all ready on-line to submit and was advised not to submit it by my Natural England advisor.*
- *Our ESA scheme finishes on August 2015*
- *You need to pay people well to stop them ploughing. Lots of famers have no passion for wildlife and are all money people because of past years funding agreements. RSPB are buying marsh to stop it being ploughed up, good, but now **nature organisations are conserving habitats not farmers.***

#### Q26 What proportion of your grassland is under an ELS management option?

The largest proportion of respondents (29%) had moved all of their ESA grassland into an ELS Option. However, 20% of respondents had only moved 10% of their ESA land into ELS.

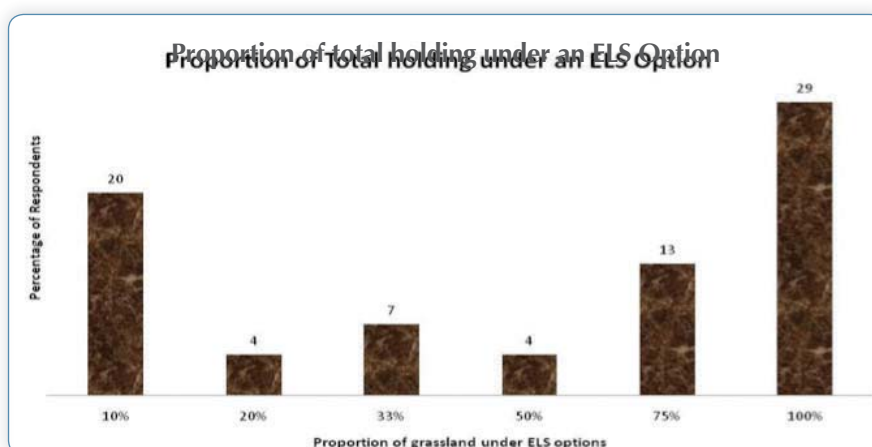


Figure 14: Percentage of respondents and the proportion of their land under ELS Options



Telephone interviews with farmers gave more insight into farmers' attitudes towards different agri-environmental schemes;

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#### Q27 Have you considered or applied for Higher Level Stewardship (HLS)?

ESA land could also be transferred into HLS. In the survey, 61% of respondents said they had applied (but not necessarily been accepted), while 36% said they had not entered (but may have applied). Respondents who had not entered into an HLS Scheme were asked to explain why, using a predetermined list of reasons, as shown in Figure 15. The main reason given was the complexity of the scheme (29 %), followed by the lack of flexibility of the scheme (25 %).

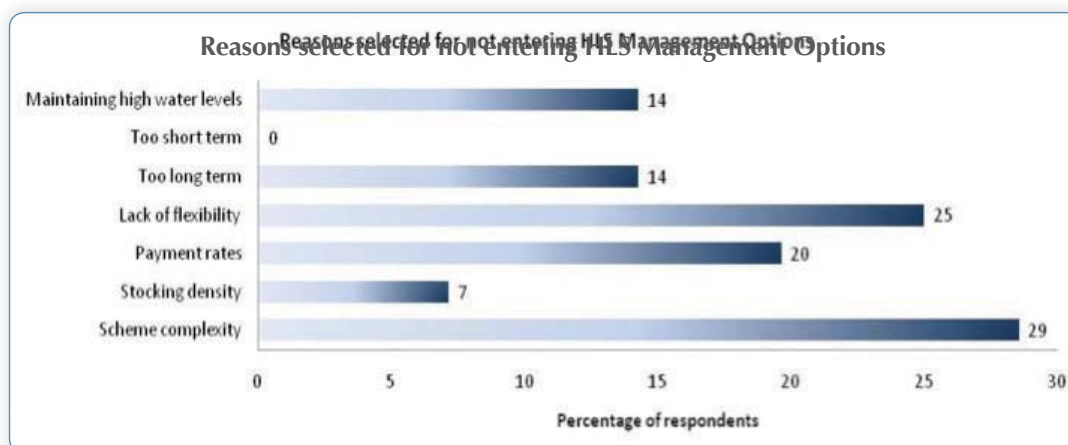


Figure 15: Respondents' Key Deterrents to opting into HLS

Respondents were asked if there were any other reasons why they chose not to enter HLS. Three responded that they had received no communications on transferring either into ELS or HLS. Five of the respondents had prepared their plans but were refused when they applied. Several respondents mentioned that it would have required extra management, or did not compensate enough for the restrictions being applied;

- *We drew up a scheme, and decided not to apply. The nature of HLS meant that we would have to take more arable land out of production. With fixed costs of machinery and labour attached to our business, and the social responsibility of employing rural labour, we could not afford to go into the HLS, as it may have meant making labour unemployed, and reducing our ability to run our own machinery.*
- *Would have liked to have entered this but too much arable land required - 7%?! Way too much.*
- *Too prescriptive and requiring extra management for areas in the farm.*
- *Too much of this going on we are farmers not full time conservationists. We have looked after the countryside well in the past without going overboard.*

- *I had existing headlands but ES expected me to plough up and replace with headlands, but I preferred to allow natural regeneration. No flexibility in HLS schemes which want to start a new rather than work with what is there.*
- *Income stream still spending money on maintaining HLS started in 2007 to maintain features - what will happen when HLS ends?*
- *HLS takes a lot more work, thought and planning to make it work – you work harder for the money you receive.*
- *Post ESA rules are tighter, funding boundaries not so generous. ELS scheme was easier to manage and fitted well with farm plan.*
- *DEFRA seems to promote jobs for the boys so a lot more policing happen. It seems there are more DEFRA people on the farm than farmers!*

One respondent who had entered the scheme said it fitted well with his farm management plan;

- *HLS fit was not too bad, main focus on marshland/lowland grazing with some enhanced wild bird seed mix and floristically enhanced grass margins in areas that don't grow much and look good. HLS Options may enhance the shoot but that's not its not main purpose.*

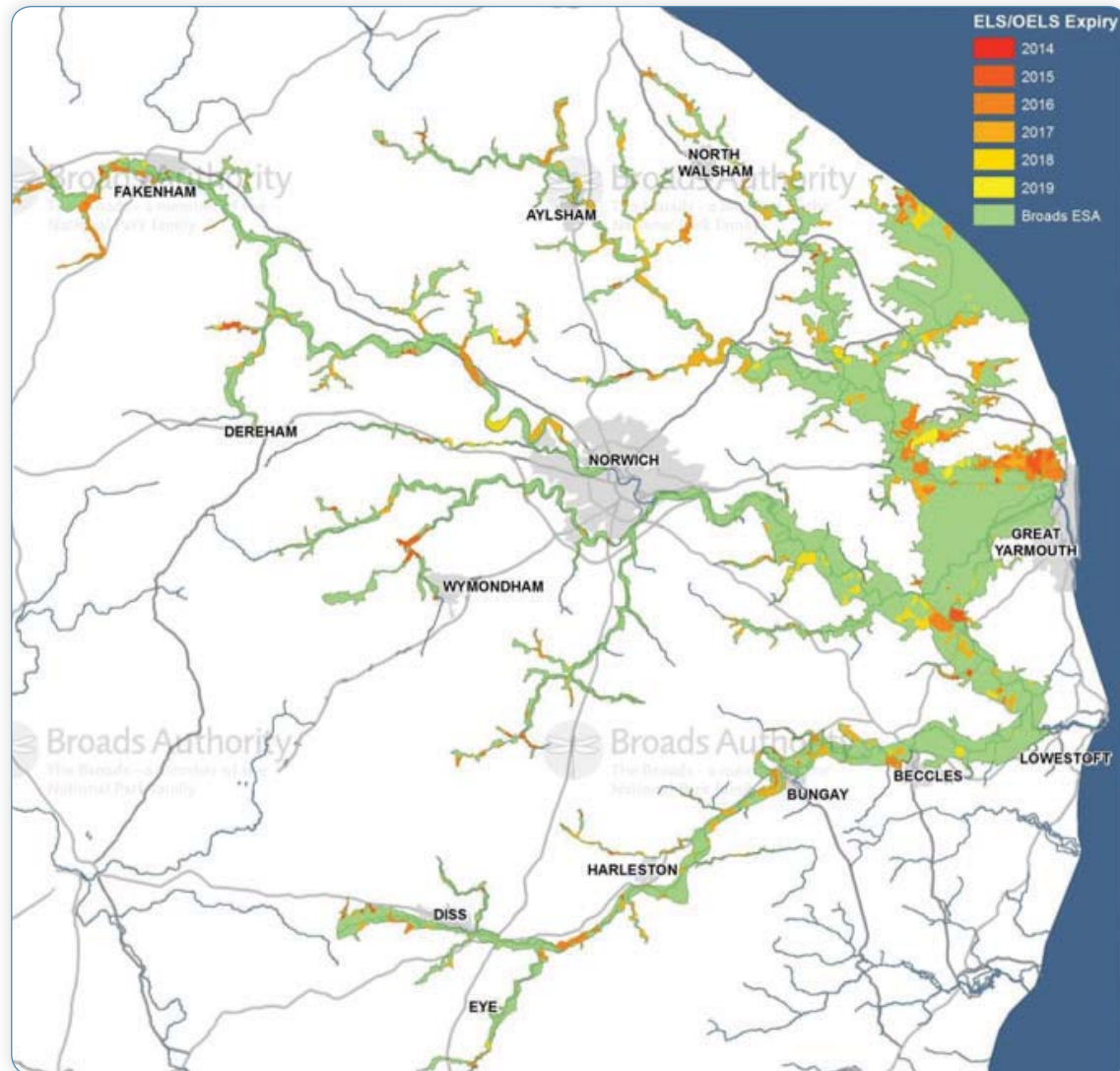
## The Future of the Marshes on the Expiry of Environmental Stewardship Agreements

Maps 3 and 4 show the sequential expiry dates of Broads ELS/OELS and HLS Agreements, within the previous ESA boundary, starting from the present day (2014) until 2019 for ELS five year agreements and 2024 for HLS ten-year agreements.

Map 3 [pg32]: In general, ESA Tier 1 land transferred into ELS/OELS Options, or underpinned HLS Options. These marshes were often smaller parcels, or of low agricultural value (in arable terms). It is difficult to predict what will happen to these marshes on ELS expiry. The 149 ELS agreement holders whose schemes expire in 2015 will have to wait until January 2016 for an agreement under NELMS. A few will be selected by NE for the Higher Tier - whilst the remaining will have to make an application themselves using a new online system. With single annual start dates, there is a risk that rather than wait and lose a year's cropping, farmers will plough up options that exceed the Greening requirements. These small, low environmental quality land parcels seem unlikely to meet the NELMS targeting criteria, from the NE briefings attended so far. Pasture of this nature was not eligible under HLS. Perhaps the only solution to this is to return to the landscape concept, with farms combining land under joint agreements to increase the chances of entering NELMS, and managing water levels across whole levels instead of on individual holdings.

Map 4 [Table 4]: The Broads ESA was a high priority area for HLS, requiring specialist management to conserve habitats and species and retain beneficial water levels. As these agreements expire, it is hoped that much of this land will enter into new NELMS agreements, but that which remains outside the agri-environment system is at risk of intensification.

Map 3: Sequential Broads ELS Expiries

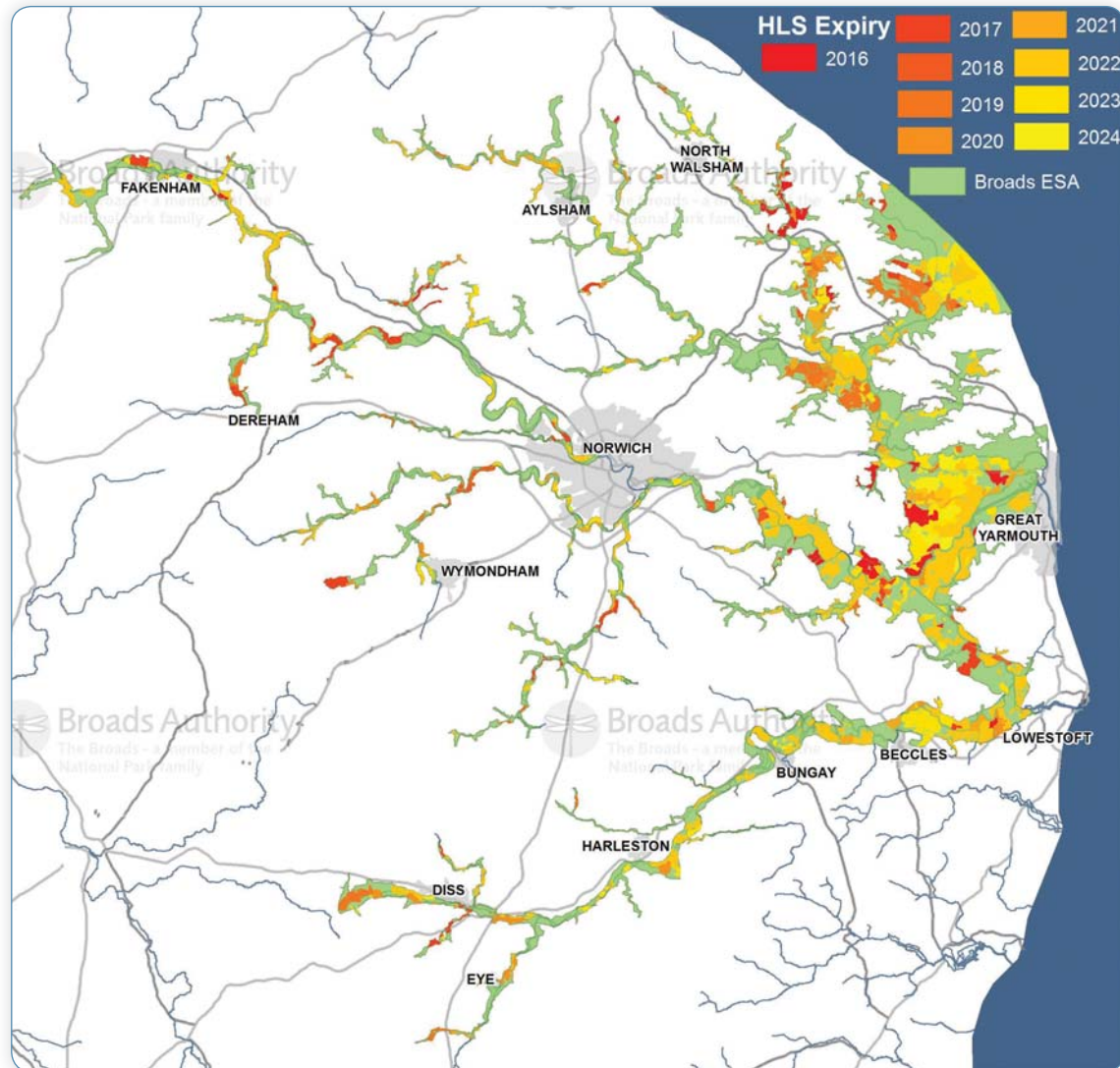


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Table 3: Sequential Broads ELS Expiries

Year	Agreement Count	Area (ha)
2014	12	2,542
2015	149	77,007
2016	327	276,027
2017	319	240,735
2018	131	980
2019	10	21,128

Map 4: Sequential HLS Agreement Expiries



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Table 4: Sequential Broads HLS Expiries

Year	Count	Area (ha)
2016	79	1142.86
2017	105	1042.17
2018	73	456.21
2019	140	1709.02
2020	91	933.87
2021	112	1035.44
2022	538	7592.44
2023	274	3901.57
2024	30	678.46



## The Future of Agri-environmental Schemes

The next section focussed on farmers' opinions about future agri-environmental schemes, in particular the CAP Greening measures and the upcoming transition period.

### Q29 How will the CAP greening measures influence your decision making in regards to grassland?

Since the online survey was sent out before DEFRA issued more concrete details on CAP Greening, it was natural that a number of farmers were uncertain and needed more information. The paper surveys were sent out after DEFRA's Guidance sheets on Greening, with answers in this batch showing that respondents appeared to be more informed. However, Figure 16 shows that there appears to still be a degree of uncertainty about the details of Greening (21%). Around 14% intend to keep management as it was under ESA, regardless of the new Greening measures.

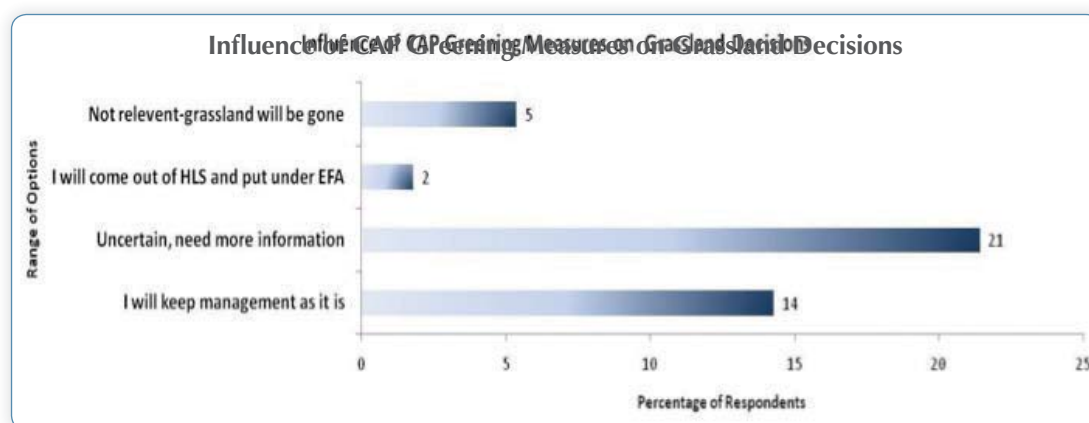


Figure 16: Decisions for future Grassland management based on CAP Greening measures

Telephone interviews provided insight into farmers' indecision on the new CAP Greening;

- As yet unknown, a decision will be made when the measures are defined, there is a limit to how much greening/environmental services a holding can carry!
- We are trying to work out the implications at the moment, without all the information that we need.

25% of respondents with ELS Options and 5% of HLS Options holders planned not to change management until these schemes expire;

*"Management will change very little as most of our grassland is in some scheme or another."*

A further 5% of HLS holders said they would move HLS into EFA or decide when CAP Greening becomes clearer;

- *It depends very much how the rules dovetail with stewardship requirements and payment levels*

A couple of farmers who had not transferred from ESA into ES noted that the new CAP Greening may penalise those who did;

- *"We are, however, vindicated in our decision making regarding ELS/HLS, as compulsory greening measures MAY disadvantage us further".*
- *"Cannot say until details of letter from NE and issues regarding double funding"*



*High water levels in the Yare Valley*

**Q30 Would you be interested in seeing how others are managing the transition period between the ESA schemes and forthcoming new environmental land management schemes?**

Of those farmers that responded, 52% would be interested and 41% not interested in seeing how others are managing the transition period.

**Q31 What do you consider to be the outlook for agri-environment schemes?**

Comments in this section range from the positive, "If driven by a balanced view between the environment and production they have a great future", to the more pessimistic, "Bleak. They are much less accessible to many farmers, thereby destroying the benefits of previous schemes. They will pay less too".

Overall, around 48% of respondents felt the future of AE was "bleak, grim, or poor", with 21% unsure of the future. Some of the comments from those that felt the future was bleak included;

- *Bleak. Now greening is coming up it may not be quite so bleak but appears to be less generous, and less on a landscape level.*
- *Good nationally poor locally*
- *At risk from the likes of Owen Patterson*
- *Unless the payment rate significantly increase for the management and inconvenience involved the outlook looks bleak. If I was not in HLS I would be seriously thinking about not entering a new stewardship agreement.*
- *They will not last much longer given the way they are managed now*
- *Dependent on EU funding*

**“You can’t be green while you’re in the red!”**

The Broads ESA was managed as a landscape plan so it was easier for neighbours to achieve its aims, even if they didn’t specifically work together. The HLS was more restrictive and it was not easy to link up with other farmers as each HLS plan was not joined and quite restrictive. If you were willing to work with NE advisors and there was no conflict you could end up with a good scheme, but it seemed if you rubbed them up the wrong way the shutters came down and you couldn’t get on the scheme. The scheme should have been made available to all and funded, maybe by modulating between pillars 1 and 2? Otherwise it was a postcode lottery.

The new NELMS is not worth the paper it’s written on and may end up creating wildlife deserts since it will not ensure the right habitats are in place to encourage biodiversity. If it was regionalised it might have a better chance. If the return on putting in place environment schemes is poor, why would a farmer do it?

Comment in telephone interview.

Several respondents referred to the need for balance between food security and conservation:

- *OK while food is plentiful*
- *Reasonable bearing in mind we are farmers producing very needful produce*
- *If driven by a balanced view between the environment and production they have a great future.*
- *Disaster as all land will be needed to produce food for the world in the future*
- *They have their place but good agricultural land should not be taken out of production just because a civil servant says we have to. One rule does not fit all and I think food security is being over looked and there is too much emphasis on environment matters. If the country side is to environmentally sustainable it also has to pay for farmers to take land out of production.*
- *New Agri environmental schemes must focus on food security and environment equally!!*

Some respondents suggested ways to improve the outlook for AE schemes:

- *More targeting, more competition for less funding, more elements of the scheme a basic unfunded requirement, tighter prescriptions.*
- *I was hoping you would tell me! I have a big HLS and will be looking to renew/into NELMS in 2017*
- *Positive but probably administered in a formulaic and therefore inappropriate manner and consequently less attractive and productive than they could be.*
- *Reduced spend, more regulation, hopefully more targeted to beneficiaries, value*

Others linked environmental conservation and agricultural economics:

- *Unknown. As agricultural profitability currently falls rapidly, it highlights the need for environmental schemes to enable farmers to show profit. Too often it seems that they are geared to do no more than break even.*
- *Many farmers have been happy to subsidise the environmental work that they do, because of love of the environment that they live and work in. They have always done this when they could afford to. They take pride in seeing wild animals, birds and plants flourish on their farms. But, unless properly rewarded in times of falling income, such as the present, they must be allowed to adjust their environmental work to what can be afforded. Thankfully some small amount of flexibility has crept in to the EU greening measures (such as the viable growing of nitrogen fixing crops).*
- *All based on commodity prices. If farmers can manage without them I am sure that they would prefer to do so. With low commodity prices all sources of income have to be taken advantage of to make ends meet.*

- *Probably will continue so RSPB will benefit greatly!*
- *Good if one owns an SSSI. If not it looks like money is destined for NGO's!*
- *They need to continue to maintain the positive environmental biodiversity they bring*

### **Q32 Would you be willing to work with neighbours to deliver wider conservation work at a landscape scale?**

The ESA was essentially conservation on a landscape scale. This question was asked to gauge farmer's opinions about this approach, and to find out the degree of connection between farms in terms of wider environmental conservation.

Most farmers (63%) would be interested in conservation at landscape scale, while 27% would not want to work this way. A number of the answers seemed to depend on the relationship farmer's had with their neighbours, rather than the concept of landscape conservation.

Comments from those that answered that they would work with neighbours;

- *Landscape delivery will be important and has exciting possibilities*
- *I will do anything that enhances the natural beauty of the Broads; Wildlife management etc*
- *We already try to do this*
- *The Broads are at risk from too much water abstraction. No one is paying attention*
- *Yes, in the exact locality*
- *To provide a corridor for wildlife*
- *Always possibilities in the future*
- *we are already involved with neighbours to achieve a wider scale effect*
- *we do now*
- *have always worked with them in the past*
- *The marshes are in a conservation area, so we already work to a greater plan*
- *Our farm is surrounded by like minded enterprises who recognize that interactive planning gives more bang for the buck*
- *Voluntary co-operation, underpinned by financial incentive, must be a good way forward for farming and the environment. We all gain.*
- *Provided there is an economic benefit*
- *We have a larger area to offer.*

Others highlighted the difficulties in working with neighbours:

- *I have one river bank. My hands are tied if the occupier of the other river bank does not want to join*
- *But not willing to be dominated by short term environmental decision. Decisions must be made on long term profitable business basis*
- *There is a huge conflict between farmers/landowners over RDPE money. Changes to catchment management must be done on landscape scale and environmentalists must draw back from the current position*
- *We do not have the required kit, so could only work with neighbours willing to share resources*
- *This would be like getting Turkeys to vote for Christmas! Who would be in overall control? Who would be willing to have more invasive management options on their land when your neighbours could have easier options?*
- *My neighbours are all arable so it would be hard to find a way to work for environmental benefits*
- *It complicates it more*
- *The river and two SSSI nature reserves are my neighbours or boundary, one neighbour has little engagement with active conservation the other has little physical common boundary.*



Comments from those who voted “No” highlighted the following issues;

- *The competition for land is too strong in this area*
- *Too beaurocratic for the payments involved*
- *My bigger neighbours were wanted for HLS, I wasn't, so why should I?*
- *As a tenant I have less choice*
- *No need*
- *Farmers have different opinions*
- *I don't approve of some conservation methods*



*Marshes at Hickling Broad*

#### **Sources of Information concerning AE Schemes and Conservation**

How do farmers get the information they need to make decisions about the future of the marshes, and where do they find the answers? Questions 33 to and 34, as well as telephone interviews tried to answer these questions.

#### **Q33 Do you feel you have received enough information about future funding opportunities and legislation to know which way to take your business next?**

Thirty-nine percent of respondents felt they had not received enough information, while 50% felt they had. The remaining 11% did not answer this question.

#### **Q34 What information do you require / would you like to receive and who do you seek advice from regarding future options?**

A large proportion of respondents wanted greater clarity on the new CAP Greening regulations:

- *Conservation is a long-term thing. So is stock management. We need to know what the future holds and we need a much longer term approach from the government so we understand where these schemes are going into the future so we can plan.*
- *Quicker clarification on greening of CAP would help look when looking at realistic options*
- *Further options if available*
- *Actual clarity of what is going on. Get Natural England to pull their finger out and finally decide on the new schemes. (next 2 months)*
- *We all need clarification on double funding*

Others needed more information about the transition from ELS/HLS into Greening and NELMS:

- *Already in ELS + HLS. Is there any long term government strategy?*
- *I will need help when my ELS finishes*
- *I have an HLS scheme with 3 years to run and I need to have some idea of what will succeed it and how that will fit in with the needs of my holding. I would seek that advice from all the sources that I can find that have the ability to see the bigger picture.*
- *I'm a bit worried to know what's beyond HLS, what will remain and how it will pick up earlier ESA land. A lot of the features on the farm appear to satisfy the new greening requirements so I think we will be OK.*

More general information required by respondents included:

- *Help to be cleverer at integrating the options with the farm business needs*
- *All that is available, in particular: more information about the adverse effects of water abstraction*
- *Have little information on funding opportunities and legislation but that's probably due to me!*
- *Grants*

A number of respondents mentioned the fragmented and often over-whelming amount of information they receive:

- *We get bundles of information from all corners:- From the NFU, the CLA, Land Agents and more – it's all too much information to sort out! Today received a letter from NE on CAP reforms as we have double funding for our ELS on one holding- yet more paperwork!*
- *Natural England should coordinate agri-environment information, like the Forestry Commission do for woodland management grants, which provides links to other information.*
- *Those that benefit from all these AE schemes are the land agents, unless farmers do the work for themselves. There is just too much information for elderly and small farmers to deal with. All advice differs a bit, I just want to be a farmer not a bookkeeper.*

Figure 17 illustrates the range of information sources where respondents seek advice on AE schemes. The majority use on-line resources, although this includes the home pages of organisations such as the NFU, CLA and others. Where specific organisations are mentioned, the information comes either through direct phone calls, postal information or workshops/seminars.

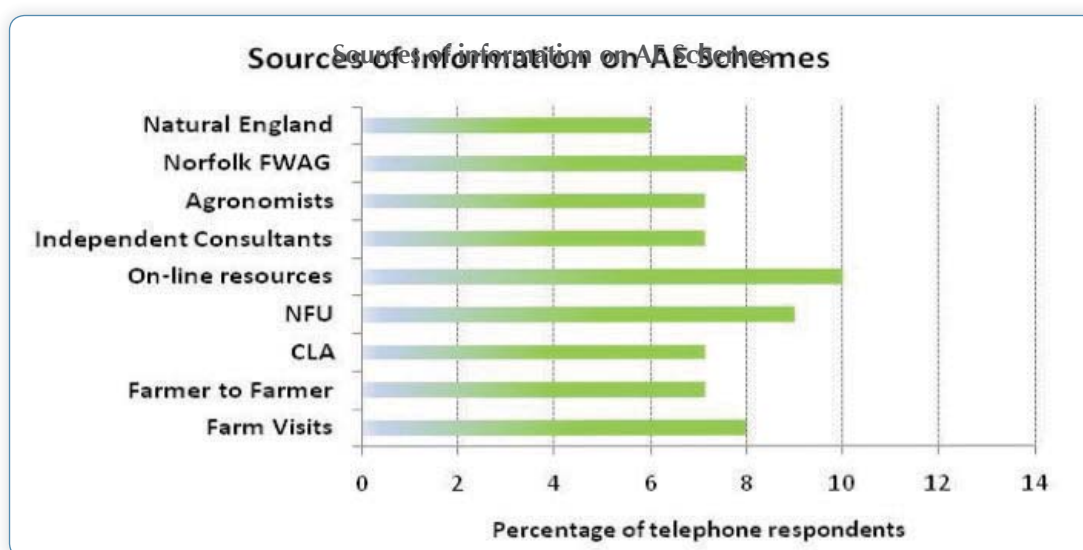


Figure 17: Respondents selection of information sources (Telephone interviews)

The telephone survey found that farmers received their information on conservation from a range of sources, with the predominant organisation being Norfolk FWAG (although this might be biased since questionnaires were posted to farmers were either FWAG members or members of Anglia Farmers, where FWAG is based. Other sources of information for conservation advice are shown in Figure 18. It must be remembered that this is a very small sample, and potentially not representative of all farmers in the Broads.

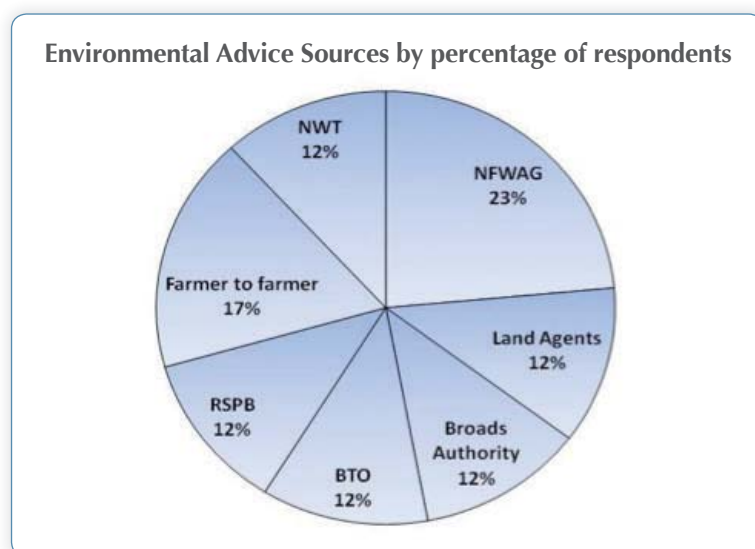


Figure 18: Sources of Conservation Information from telephone interviews

Some respondents provided comments on conservation advice they had received:

- We found the RSPB "Making Conservation Work" advice is helpful, but feel their agenda to secure funds is a deterrent.
- Our farm borders [a large} Estate which has a very knowledgeable Estate Manager, Our connection also allows for some conservation on landscape scale under HLS
- I get most of my information by networking and talking to other farmers in an informal way informal
- Farm visits have been a useful source of information
- Norfolk FWAG has a clear agenda and has offered lots of helpful advice and guidance.

## Attitudes Towards Ecosystem Services And Conservation

Questions 35 to 38 explored whether farmers felt they were delivering ecosystem services by maintaining low intensity grazing systems through AE schemes such as ESA. Agri-environment schemes to date have not been based on Payments for Ecosystem Services (PES), although there is a considerable body of work on the efficacy of this approach. The Millennium Ecosystem Assessment (2005) identified twenty-four specific ecosystem services, of which the big three include climate change mitigation, watershed services and biodiversity conservation. (Constanza et al 1997) estimated that the annual value of global ecological benefits at \$33 trillion. The Economics of Ecosystems and Biodiversity (TEEB) draws attention to the economic benefits of biodiversity including the growing cost of biodiversity loss and ecosystem degradation, and encourage policy-makers to recognize, demonstrate and capture the values of ecosystem services and biodiversity.

### Q35 Would you be interested in being paid for delivering ecosystem services?

Most of the respondents (68%) stated that they would be interested in being paid for ecosystem services, while 20% were not interested.

### Q36 Is increasing food production a priority when considering the future of the marshes?

This question related to the decisions respondents might make in terms of future use of their land, either as low input grazing marsh or for arable crop production. The results were evenly split, with 46% saying yes and 46% saying no. These results reflect the comments under Question 31, which highlight the split in opinions about the purpose and outcomes of agri-environment schemes.

### Q37 Do you think that by maintaining low intensity grazing systems you are providing ecosystem services and contributing to climate change mitigation?

Figure 21 shows that most respondents felt that the main ecosystem services they provided by low input grassland management were flood alleviation (54%), improved water quality (71%), improving habitat connectivity (82%) and increasing biodiversity (64%). Only 25% felt that their ecosystem services had an impact on IDB payments, which would be less if there was less need to drain and pump water out of dykes.

Just under half the respondents understand the connection between the importance of conserving habitats and species for tourists (41%), as well as between low intensity grassland and carbon sequestration (41%). Currently farmers are not compensated directly for the delivery of ecosystem services under NELMS, although the value of their engagement in ESA and subsequent ES schemes is huge in terms of ecosystem services.

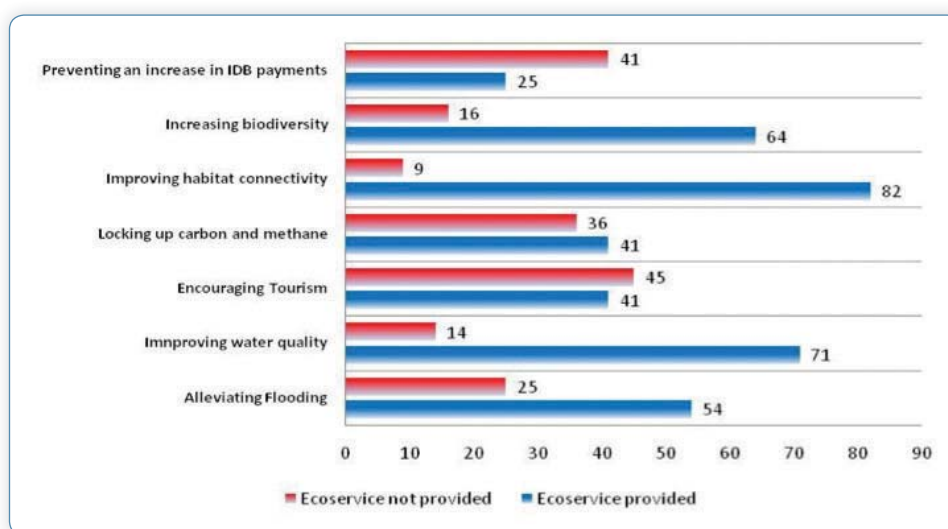


Figure 21: Ecosystem Services respondents provide through low intensity grazing marsh maintenance.



**Q38 Who do you think should be paying for the services you offer by maintaining low intensity grazing marshes?**

Figure 22 shows that the majority of respondents (70%) feel that Natural England should be paying for these services, with 59% feeling DEFRA should pay. A lower percentage, (46%) thought the EU should pay, with 36% citing the Broads Authority. These answers imply that taxpayers should be behind payments for ecosystem services. It is interesting that private companies and individual tourists, who benefit indirectly from ecosystem services, are not seen as accountable in paying for these free services.

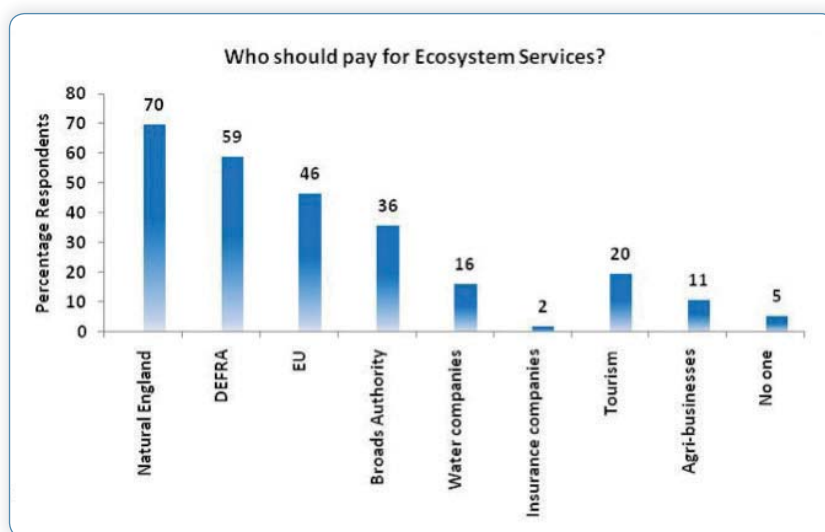


Figure 22: Respondents opinions on sources of payments for ecosystem services.

## Knowledge of Regulations Pertaining to Changing Grassland Management

Changing grassland management is subject to a number of regulations. Questions 36 and 39 to 45 explored what decisions farmers intend to make in light of regulations on changing grassland management.

### Q39 What measures will you take before making a decision on the future of the marshes?

The majority of respondents (68%) said they would carry out a business assessment, illustrating the need to be economically viable yet savvy about the best way to balance farming and environment considerations in the light of new CAP Greening measures, AE schemes and ecological priorities. The fact that 36% mention ecological assessment (including EIA), and 27% chose land drainage, with 25% choosing soil testing may be an indication of respondents intention to consider intensively managing or cultivating ESA grasslands in future. Figure 19 present the responses given for this question.

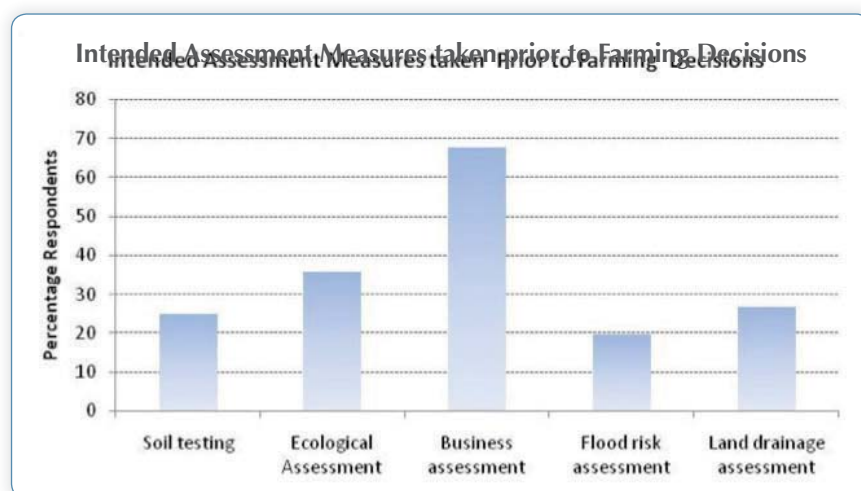


Figure 19: Intended Assessment measures prior to respondents farming decisions

### Q40 Are you aware of Environmental Impact Assessment (EIA) regulations for uncultivated land?

### Q41 Have you heard of coastal and floodplain grazing marsh BAP habitat and its role in the EIA decision making process?

Farmers who wish to agriculturally improve over 2ha of unimproved or semi-natural land (Coastal Floodplain & Grazing Marsh) that have not been cultivated (physically or chemically) in the last 15 years must apply to Natural England for an EIA screening decision. Agricultural improvements include increased levels of fertiliser or soil improvers; sowing seed; physically cultivating soil (e.g. by ploughing, tine harrowing, rotavating); draining land; or clearing existing vegetation either physically or using herbicides.

Thirty-seven percent of respondents were aware of EIA regulations, whereas 17% said they were not. Figure 20 presents respondents levels of awareness of the regulations mentioned in questions 40 to 45.

Permanent grassland is land that has been used to grow grasses or other herbaceous forage (that has not been included in the crop rotation of the holding) for 5 years or more. It can be self-seeded or sown.

If the percentage of permanent grassland in England – compared to the area of agricultural land – falls by more than 5%, farmers who have ploughed permanent grassland may have to re-instate it. It would also mean that there would be restrictions on any further ploughing of permanent grassland.

In the recent Defra CAP reform guidance there is a new rule around what is counted as permanent grassland, which will increase the national area. "If the land has been re-sown with grass or other herbaceous forage during the past 5 years, it is still permanent grassland. Therefore large areas of temporary grass will suddenly be classified "permanent" in 2015. In reality though as it will have had chemical or physical cultivation in the last 15 years- it is still unlikely to be subject to an EIA.

Areas of permanent grassland covered by the Wild Birds and/or Habitats Directives (Natura 2000), can't be ploughed up.

#### Q42 Do you think that EIA Regulations apply to you?

A total of 25% thought EIA regulations applied to them, while 19% felt they did not. As this was an anonymous survey it is not possible to double-check whether the respondents' assessment of EIA application is correct.

#### Q43 Are you aware that the Campaign for the Farmed Environment (CFE) now includes grassland options?

The Campaign for the Farmed Environment (CFE) published a seven-point conservation management plan to guide lowland farmers on how they can best improve their farmed environment most effectively "Conservation Management Advice for your Livestock Business"(2013). It aims to protect or improve habitats while fitting into business plans, drawing on best practice in soil management, crop nutrition and fertiliser and pesticide use. 31% of respondents were aware of this, while 24% were not.

#### Q44 Are you likely to take up voluntary measures for low input grass?

With the introduction of greening under the reformed Common Agricultural Policy (CAP) and changes to England's agri-environment schemes, farmers will need to decide how best to combine productive farming with environmental management. The CFE voluntary environmental measures are an unpaid form of environmental land management which benefit the environment whilst being agronomically practical. Environmental measures go beyond those required by cross compliance and agri-environment schemes. In March 2013, CFE carried out a survey to assess the uptake of voluntary measures in lowland farms involving

5,500 holdings with a response rate of 39%. They found that 45% of lowland holdings had land within one of the 22 listed voluntary measures. They found that a strong link with the level of understanding of CFE; uptake rose from around 30% of those with limited understanding or little/no idea about CFE to 67% of those with a good understanding. (DEFRA 2013)

Table 6 shows that 36% said they would take up voluntary measures against 52% who said they would not. Of these, 20% were aware of CFE and would take voluntary measures; 36% were aware but would not take voluntary measures. Those who were not aware of the CFE options, 8% would still take up voluntary measures, while 10% would not.

	Would take voluntary measures	Would not take voluntary measures
Aware of CFE voluntary measures	20%	36%
Not aware	8%	10%

Table 6: Uptake of Voluntary Agreements by Respondents

This survey found that there was no correlation between awareness of CFE Grassland voluntary measures and uptake. In fact a number of respondents who did not know about grassland measures were considering taking up voluntary measures. It is not possible to assess which voluntary measures farmers are considering, since this study was anonymous.

#### Q45 Are you aware of Nitrate Vulnerable Zone (NVZ) regulations?

The EC Council Directive 91/676/EEC concerns the protection of waters against pollution caused by nitrates from agricultural sources (Nitrates Directive). Nitrate Vulnerable Zones are areas of land which drain into polluted waters or waters at risk of pollution and which contribute to nitrate pollution. Most of The Broads are designated as NVZ and subject to Codes of Good Agricultural Practice and limitation of fertilizer application (mineral and organic), taking into account crop needs, all nitrogen inputs and soil nitrogen supply, maximum amount of livestock manure to be applied (corresponding to 170 kg nitrogen /hectare/year). An impressive 91% of respondents are aware of NVZ regulations, with only 7% stating they are not aware.

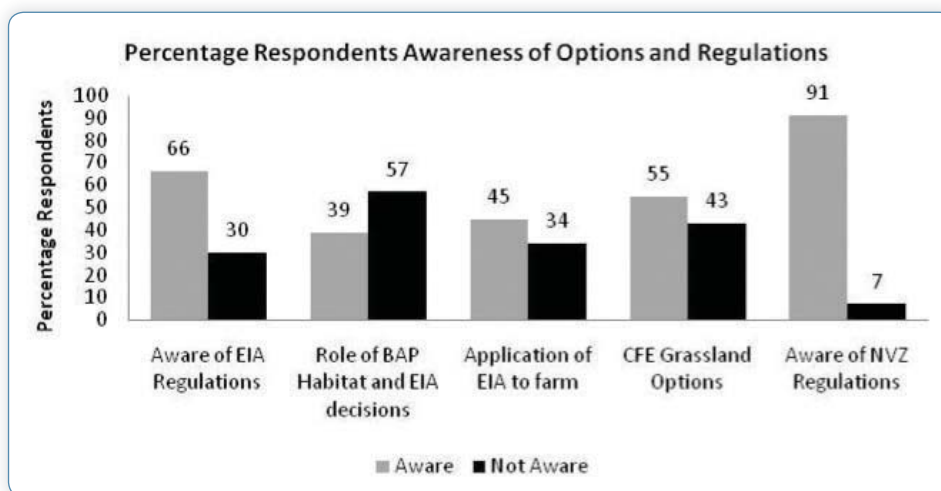


Figure 20: Awareness of regulations and options by percentage of respondent.

As expected, the majority of respondents were aware of NVZ (91%), as these farmers were also regulated on fertiliser applications under the ESA Tiers. It is interesting that awareness of the EIA Regulations, particularly in relation to BAP Habitat regulations is lower. Only 45% felt that EIA Regulations applied to their farm, which may be because a number of ESA Agreements fell below 2 hectares, or may signify a need to better inform farmers of their obligations under EIA.



## Impact of the ESA on Habitats and Wildlife

The Broads ESA sought to conserve Broads landscapes, habitats, wildlife and species of importance. These aims were reflected in the Norfolk Coastal and Floodplain Grazing Marsh HAP (1998), revised in 2005, as follows;

- *Maintain the existing habitat extent (29,500 ha) and its quality.*
- *Rehabilitate 2,950ha (10% of the total resource in Norfolk) of grazing marsh habitat in intensive management by 2010*
- *Aim to create 350 ha of grazing marsh from arable land on the North Norfolk Coast by 2010. (This target is in addition to any habitat creation that may be necessary as a result of changes in coastal management).*

What has been the impact of the Broads ESA on habitats, species and wildlife? An RSPB report in 2004<sup>8</sup> concluded that 86% of fields complied with the agri-environmental scheme prescriptions (combined ESA and Countryside Stewardship data), yet only 35% complied with a set of ideal breeding wader habitat criteria.

With regard to creating ideal conditions for breeding waders, fields failed mostly on sward condition and water levels. Incorrect sward condition accounted for more failures than water levels. This is perhaps surprising, as sward may be seen as potentially more controllable. Many sites were under-grazed or had swards with too much ruderal vegetation or rush.

The survey questions 46 to 49, focussed on the first-hand knowledge and observations of farmers to provide further insight into the impact of the ESA scheme on wildlife and habitats over the past 25 years.

### **Q46 Do any of your marshes contain wildflowers e.g. orchids, ragged robin, iris, etc?**

The impact of the ESA on maintaining species appears to have been effective, in that 48% of respondents state that their marshes contain wildflowers, while 20% say they do not, although there were no comments on this question to clarify why they gave the answers they did.

### **Q47 Has wildlife increased on your farm over the last 25 years?**

Not all respondents answered this question. Of those who did, 48% said that they had seen an increase in wildlife over the past 25 years. Figure 23 compiles the species that have increased according to respondents' observations as a result of the ESA and subsequent ES schemes. It is clear there has been an increase in species richness overall although linking this increase to the quality of habitats on different farms is not possible from this study.

8 Dutt, Philip (2004) An assessment of habitat condition of coastal and floodplain grazing marsh within agri - environmental schemes. RSPB and DEFRA

**Wildlife perceived to be increasing**

- Hares, Squirrels, Foxes, Badgers, Rabbits, Otters, Red Deer, Muntjacs, Chinese Water Deer, Roe Deer, Red Deer
- Owls, Barn Owl, Crows, Jackdaws, Rooks, Magpies, Buzzards, Marsh Harriers, Kestrels, Sparrowhawks, Jays
- English Partridge (Grey Partridge), Pigeons
- Oystercatchers, Little Egret, Egyptian Geese, Greylag Geese, Canada Geese, Pink-Footed Geese, Bittern, Common Crane, Avocet, Lapwing, Redshank, Snipe, Teal, Wigeon, Heron, Shelduck, Sand Martin, Curlew, Black-Tailed Godwit
- Green Woodpecker, Fieldfares, Woodcock
- Skylark, House Sparrow, Tree Sparrow, Finches, Turtle Dove, Yellowhammers, All Species Of Tits
- Mud Snails
- Swallowtail Butterflies, Dragonflies

Figure 23: Respondents observations on species that have increased during the ESA Scheme

Comments from telephone interviews backed up the lists of increasing species from the questionnaires;

- *I feel it in my bones.*
- *Water quality has improved and therewith the relevant plants*

**Q48 Has wildlife decreased on your farm over the last 25 years?**

Of those that answered this question, 20% stated that they had seen a decrease in the species, as shown in Figure 24. Telephone interviews gave some insight into these observations;

- *Nesting waders have decreased because of too much plant growth under Tier 1 management*
- *Some drying has occurred from abstraction*
- *With reduced stock we have fewer small birds in the yards*

**Wildlife perceived to be decreasing**

- Redshank, Green Plover's nests, Snipe, Lapwing
- Kestrels
- Sparrows, Various tits, Thrushes, Corn Buntings, Wildfowl, Starling, Skylark, Wrens, Finches
- Mallard, Kingfisher
- Water vole, Hares
- Some weed species

Figure 24: Respondents' observations of species that have decreased during the ESA

**Q49 What wildlife would you like to see more of in the Broads?**

Figure 25 provides a list of wildlife that respondents would like to see more of in the Broads. Two farmers mentioned the importance of good quality habitats as an attraction for wildlife;

- *We just have to hang on to the habitat we have got. No good worrying about the species too much - just provide good habitat*
- *Make the habitat and they will come!*

**Wildlife Wish List**

- Red shank, Greenplovers, Snipe, Newts and Frogs
- Indigenous non-fish eating species.
- No more otters or mink
- Kestrels
- Butterflies
- Wildfowl, Bittern, Water vole
- Non-predator species
- Red squirrels, Lapwing chicks that survive!
- Everything apart from deer!
- More hares-dogs have killed them all
- Barn Owls
- Ducks, geese have decreased recently-wh ?

**Q50 Are you considering improving or creating habitats for wildlife over the next five years?**

Around 52% of respondents planned to improve habitats for wildlife, while 34% had no plans to do this. Some of those who did plan were under HLS options.

- *The Owl man came round to put boxes up, but they haven't moved in.*
- *Have been doing this through HLS. Currently got a digger putting in a scrape*
- *Not sure if I can continue the wildlife work made possible under ESA given loss in income and agricultural finances these days.*



*Common Cranes on Hickling Marshes*

## Maintenance of Coastal and Floodplain Grazing Marsh

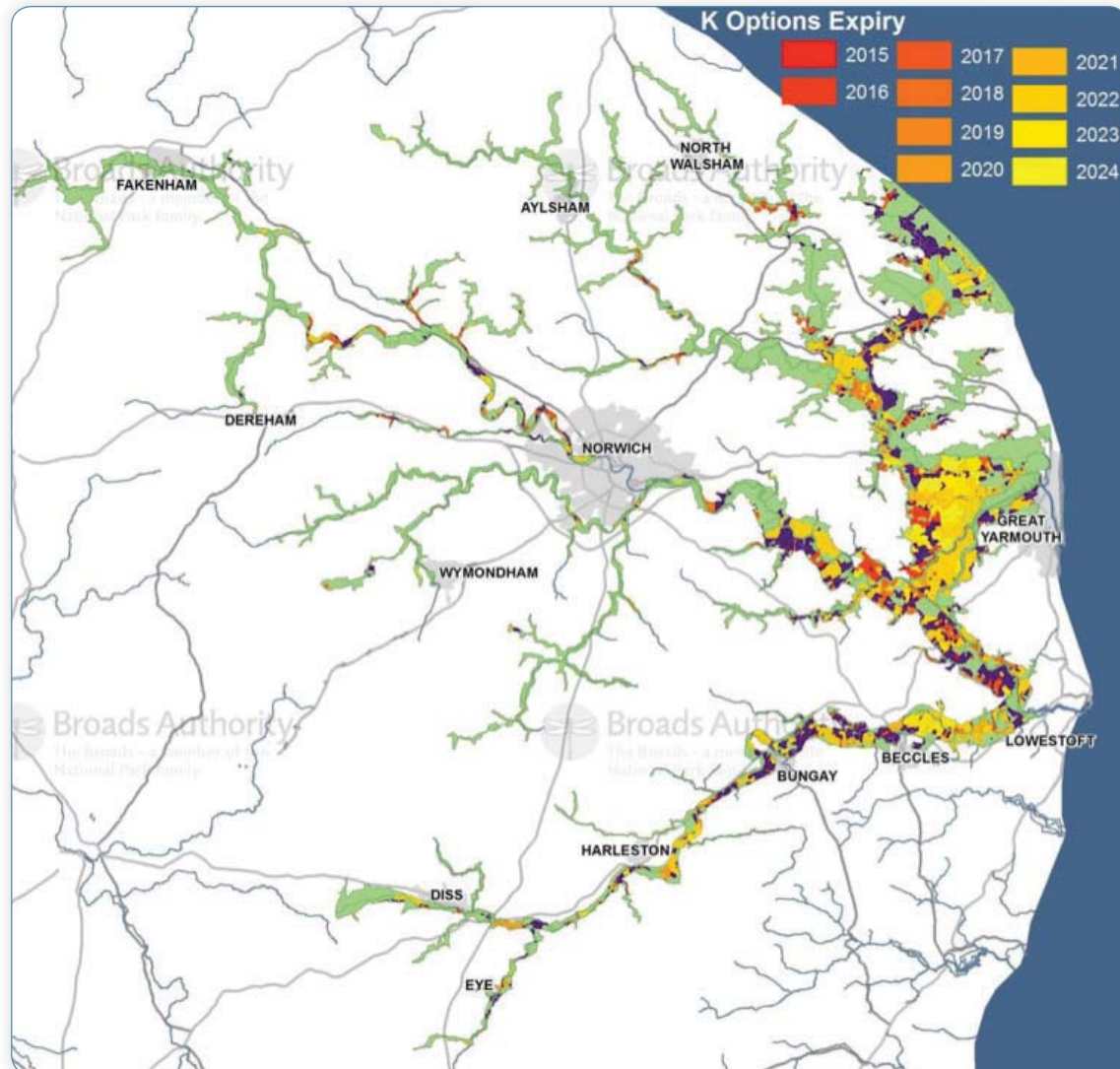
Map 5 (overleaf) shows the K Options - ELS EK Options for grassland and HLS HK Options for grassland (merged) covering Priority Habitat (Coastal and Floodplain Grazing Marsh), adapted to show the ESA boundary. Table 7 shows the amount of priority habitat coming out of agreement each year.



*Dykes are an integral part of marshland landscape and biodiversity*



Map 5: Expiring K Options within the ESA Boundary.



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Year	Area (ha)
2014	5426.80
2015	40.63
2016	697
2017	843.57
2018	292.22
2019	269.58
2020	191.12
2021	432.22
2022	4421.37
2023	1723.24
2024	510.78

Table 7: Coastal & floodplain grazing marsh not managed under ES grassland options.

**Q51 What do you love about farming on the broads?**

Almost all the respondents mentioned the landscape or wildlife as one of the main reasons the loved farming on the Broads:

- *We just have to hang on to the habitat we have got. No good worrying about the species too much - just provide good habitat*
- *Make the habitat and they will come!*

- The wildlife that is part of everything I do
- The variety of wildlife, the landscape in different seasons
- The open spaces. The clean environment, the biodiversity, the big skies.
- The open space and large vistas with secret little corners
- The contrast between intensive agriculture and stunning wild life habitats surviving side by side
- Managing the close proximity of productive farming alongside sensitive habitat
- The outstanding beauty of the area
- The natural mix of livestock and birds
- Beautiful landscape and tranquillity
- The ecology
- The unspoilt countryside environment
- Beautiful and productive environment
- Grass marshes growing good food for livestock, and wildfowl.
- The beauty of the open landscape and all the local idiosyncrasies that exist in its diversity

Other joys of farming on the Broads included;

- *I love farming and everything I do*
- *The isolation and the fact the grass always grows however dry it is*
- *Fresh air, not every day is a rainy day, no hills to climb & not dependant on sheep.*
- *Everything*
- *The peace and harmony*
- *A unique place to be*
- *The people and the landscape*
- *Sights, sounds, views*
- *Not really a farmer but run small expanding business and I love it, also part of our family heritage*
- *Historical landscape*
- *It is so lovely*

## Conclusion

The report is based on quite a low sample size (56 questionnaire responses from 458 surveys sent out, plus 12 telephone interviews and 4 face-to-face interviews) but the study revealed some interesting findings.

The principle message from the farming community was how they, in common with all businessmen, need to maximize income. Following the cessation of the Environmentally Sensitive Areas (ESA) scheme, farmers have been faced with the following choices:

- 1 maintain marshes as low input systems for a low return under Entry Level Scheme (ELS)
- 2 Try and gain entry to a competitive and targeted Higher Level Scheme (HLS).
- 3 Intensify the management to maximise grassland productivity.
- 4 Plough and crop.

Though the details of the NELMS scheme are still emerging, what is clear is that the total available budget will be less than was available under the forerunner scheme. The agri-environment budget over the next six years is £3.1 billion, similar to the current period, but £2.2bn of this is committed to completing existing ELS and HLS agreements, leaving around £900 million for new schemes. Environmental Stewardship saw 70% of utilisable arable area in agri-environment schemes. Natural England's own briefings state that NELMS will be more like 30-40%. Changes in support levels are likely to result in agricultural improvements as some farmers respond to reduced agri-environment income.

The results of the questionnaire show that 46% are intending to make some change, with increased fertiliser application being the most common planned change to increase productivity.

The survey indicates that there will be only limited ploughing of marshes. The reasons for this are complex, but include factors such as; tradition, ownership of stock, familiarity with this type of farming, unsuitability of land for arable, and love of the landscape and wildlife. Environmental Impact Assessment regulations and requirements to retain permanent pasture under Greening also play a part. However with volatile markets and further changes in beef and dairy sectors farmers may need to react quickly to future opportunities.

Although unlikely to disappear under the plough, the results suggest that there may be significant intensification in terms of management and inputs applied. While 54% of respondents intend no change to grassland management, 46% are intending to make some change, with increased fertiliser application being the most common planned change, with reduced water levels also being a frequent response. Water level is affected by neighbouring land manager decisions. This means that landowners and the IDB need to invest in water management structures. This may include a network of smaller drainage areas where farmers have similar water requirements served by smaller pumps.

A few farmers indicated that cutting dates for hay and silage may change, and following coming out of ESA they would be more likely to follow the ground conditions to make decisions on the timing of stock turn out.

The study highlighted the effect of wheat prices, beef and dairy sector changes have on decision making within the farm business. When the Broads Authority commissioned this project wheat was at £200 per tonne. During the data collection phase wheat price halved to £100/tonne. This means the incentive to turn marshes to arable is significantly reduced at the moment, but in a volatile market this is unlikely to always remain the case. Another factor that has changed is the fact that prices remain high for bio-fuel crops (particularly maize).

There was some interesting feedback on the ESA scheme. Generally this was well liked, with its simplicity and flexibility being highlighted as the main reasons, as well as the good payment rates.

## Next Steps

- 1 The Broads Authority, the Norfolk Biodiversity Partnership, the Broadland Catchment Partnership and all farm advisers have a role to communicate and facilitate access to the new Rural Development Programme.
- 2 Remote sensing, when repeated, can be used to monitor intensification of marshes. Also any future surveys of ditch communities, marsh plants and wintering and breeding birds will help assess any environmental change and compare this to any management changes.
- 3 Natural England and farm advisors should continue to disseminate soil protection advice and best practice to farmers in the catchment area through the farm advisory network, for example; provide free on farm fertiliser spreader calibration and ensure sufficient buffer zones are enforced beside ditches to protect this internationally important habitat.
- 4 Collaborative working is key. The Broadland Catchment Partnership and Brograve Partnership are seeking agreement and funding for innovative ways to manage water holistically (such as farming, flood, drought and wildlife), whilst protecting productive farming business and the values of the Broads historic landscape. The funding of this report supports this model of working.
- 5 The new EU Rural Development Programme recognises the scope for collaborative working. Ministers are keen to see the types of collaboration, which have been well delivered within National Parks for decades and more recently the Defra funded Nature Improvement Areas.
- 6 The purpose of collaborative working is to enable and facilitate delivery of NELMS priorities and outcomes via complementary NELMS agreements with individual farmers, foresters and/or land managers.
- 7 There are three key principles to achieving this that will enable the cooperation approach to build on and go beyond what is possible through a standard individual-farm approach. These are:
  - Landscape scale delivery
  - Supporting and empowering groups of farmers, foresters, and/or other land managers and, where desirable/feasible, other organisations
  - Integrating delivery of a range of environmental outcomes (biodiversity, water quality, carbon storage, access etc.).
- 8 All partners should use the evidence in this report to feed into the Natural England targeting work to prioritise areas for NELMS.
- 9 Partners should work with Internal Drainage Boards to help deliver whole-level management of water levels to facilitate joint farm applications to NELMS.

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## Glossary

AE Agri-environment

AES Agri-environment scheme

AONB Area of Outstanding Natural Beauty

BA Broads Authority

CAP Common Agricultural Policy

DEFRA Department for Environment, Food and Rural Affairs

EIA Environmental Impact Assessment

ELS Entry Level Stewardship

EN English Nature

FBI Farm Business Income

HLS Higher Level Stewardship NCA National Character Area NE Natural England

NNR National Nature Reserve NVZ Nitrate Vulnerable Zone NWTY Norfolk Wildlife Trust

RDP Rural Development Programme

SAC Special Area of Conservation

SFP Single Farm Payment SPA Special Protection Area SPS Single Payment Scheme

SSSI Site of Special Scientific Interest

WT Wildlife Trust

## Annex One: Environmentally Sensitive Areas - Scheme Prescriptions for the Broads

### ESA

The Department may modify the prescriptions set out below, to introduce additional requirements or amend existing ones, where this will help to protect and/or enhance habitats and species which are of importance within the designated area. Such modifications may be made for the lifespan of the agreement or from time to time, by means of a written agreement with you which will form part of your ESA agreement for the term specified.

### TIER 1 – PERMANENT GRASSLAND

- 1 Maintain grassland and do not plough, level or re-seed the land. You may use a chain harrow or roller but no other form of cultivation is allowed.
- 2 Graze with livestock other than pigs or poultry, but avoid poaching, under-grazing or over-grazing.
- 3 Take no more than one cut of hay or silage each year.
- 4 If you cut the grass for hay or silage, graze the aftermath.
- 5 Do not exceed your existing level of inorganic fertiliser and in any case do not exceed 125kg of nitrogen, 75kg of phosphate and 75kg of potash per hectare (100 units of nitrogen, 60 units of phosphate and 60 units of potash per acre) per year.
- 6 Use no more than 94kg of nitrogen per hectare (75 units of nitrogen per acre) in any one application.
- 7 Do not apply pig slurry or poultry manure and do not in any case exceed your existing level of organic manure. Do not apply more than 30 tonnes per hectare (12 tons per acre) of home-produced manure in any year. Do not apply more than 30 cubic metres per hectare (2,600 gallons per acre) of home produced cattle slurry at 10% dry matter in any year or the equivalent if dry matter is less than 10%.
- 8 Do not use fungicides or insecticides.
- 9 Do not apply herbicides except to control nettles, spear thistle, creeping or field thistle, curled dock, broadleaved dock or ragwort. Infestations of these weeds must be controlled by cutting or by herbicides. Herbicides used for these purposes shall be applied by weed wiper or spot treatment. Weed control should be carried out as soon as any problem starts to develop.
- 10 Do not install under-drainage or mole drain and do not subsoil or slit drain. Do not substantially modify your existing drainage system.
- 11 Maintain existing dykes in rotation over the period of your agreement and by mechanical means, not sprays. Spoil must be levelled following slubbing out, after allowing to dry. Slub out ditches and dykes once every 5 - 8 years.
- 12 You must maintain water at a suitable level for livestock to graze on your grazing marshes; ensure that there is at least 30cm (12") of water in the bottom of dykes between 31 October and 1 March; begin to increase dyke water levels to summer levels no later than 1 March to ensure adequate dyke water during the summer.
- 13 Maintain hedges, ponds and reedbeds.
- 14 Do not damage or destroy any feature of historic interest.
- 15 Obtain written advice on siting and materials before constructing buildings, roads or any other engineering operations which do not require planning permission or prior notification determination by the Local Planning Authority.
- 16 Obtain written advice on the management of woodland or scrub or proposals to plant any new woodland.
- 17 You must abide by the Codes of Good Agricultural Practice for the Protection of Water, Soil and Air, published by the Department (references PB 0617, PB 0587 and PB 0618) as amended from time to time.

**TIER 2 – EXTENSIVE GRASSLAND**

Observe prescriptions 1-17 plus additional prescriptions set out below:

- 18 Water levels on your grazing marshes must: be maintained at not more than 45cm (18") below marsh level between 31 March and 1 November; provide at least 60cm (24") of water in the bottom of the dyke between 30 November and 1 March; begin to be raised no later than 1 March in order to achieve the maximum summer freeboard as early as possible.
- 19 Do not carry out any mechanical operations between 31 March and 16 July.
- 20 Do not graze with livestock between 31 December and 1 April.
- 21 Do not cut for silage. Do not cut for hay before 16 July.
- 22 Do not exceed your existing level of nitrogen and in any case do not exceed 44kg of nitrogen per hectare (35 units of nitrogen per acre) per year. Do not apply phosphate or potash.
- 23 Do not apply any organic manure.
- 24 Do not apply lime, slag or any other substance to reduce soil acidity.
- 25 The following shall apply when carrying out dyke maintenance on a 5 - 8 year rotation: dyke management shall be carried out between 31 August and 1 April; to protect aquatic and marginal vegetation, either leave one bank or other sections untouched as a refuge for wildlife and a resource for re-colonisation; when re- profiling dykes, leave sides no steeper than 45° or create a stepped profile; on SSSIs, agreement holders must contact the Project Officer or English Nature before commencing any maintenance work.
- 26 Maintain existing foot drains and grips and only dig new foot drains and grips with the prior agreement of the Project Officer.

**TIER 3 – WET GRASSLAND**

Observe prescriptions 1-26 plus additional prescriptions set out below:

- 27 You must maintain the water table at marsh level so as to create field wetness or occasional shallow pools from 1 January until 30 April, and; maintain dyke levels at no more than 45 cm (18") below marsh level from 1 June until 31 October; begin to raise your water level to winter level no later than 1 November.
- 28 Do not apply any organic or inorganic fertiliser.
- 29 Do not graze with livestock between 1 November and 15 May.
- 30 Graze between 16 May and 31 October. Before 30 June do not exceed a grazing density of one bovine animal per 0.75 hectares (one animal per 1.8 acres) and do not cause poaching, overgrazing or undergrazing.

**WATER LEVEL SUPPLEMENT (available on Tiers 2 and 3)**

- 31 Agree an in-field water management plan with the Project Officer to include the creation, reinstatement and management of foot drains and grips.
- 32 Maintain dyke water levels at not more than 30cm (12") below marsh level from 15 March until 31 August.
- 33 Begin to raise dyke water levels to the maximum summer freeboard no later than 15 February.
- 34 Do not apply any inorganic or organic fertiliser or manure.
- 35 From 1 April until 31 May, do not exceed a grazing density of one bovine animal per 0.75 ha and do not cause poaching, over-grazing or under- grazing.
- 36 Do not graze with sheep until 1 June.

## FEN TIER

- 37 Agree a Fen Management Plan with the Project Officer. (This may need to be discussed with the Broads Authority and on SSSIs it will need to be agreed with English Nature.)
- 38 Do not apply any organic or inorganic fertiliser.
- 39 Do not apply any lime, slag or any other substance to reduce soil acidity.
- 40 Do not use any pesticides, fungicides, insecticides or herbicides.
- 41 Do not damage or destroy any feature of historic interest.
- 42 You must abide by the Codes of Good Agricultural Practice for the Protection of Water, Soil and Air, published by the Department as amended from time to time.

## TIER 4A – ARABLE REVERSION TO PERMANENT GRASSLAND

Once under permanent grass this land must be managed in accordance with prescriptions 1-17. If you wish you may also offer it for inclusion under Tier 2 or Tier 3 in which case you should seek further guidance on its management from the Project Officer.

- 43 Cease arable production and establish a new grass sward within 12 months of the start of the agreement.
- 44 During the first 12 months of the agreement do not apply any of the following without obtaining prior approval: organic or inorganic fertiliser; lime, slag or any other substance to reduce the acidity of the soil; pesticides.
- 45 From the start of your agreement you must follow all the Tier 1 guidelines from prescription 10 onwards.
- 46 On grassland reverted from arable do not exceed an annual average stocking level of 1.4 Livestock Units (LU) per hectare.

## TIER 4B – ARABLE GRASSLAND MARGINS

- 47 Cease production on a strip of land at least 6m wide at the edge of a field used for arable cropping. This margin must be taken from the existing arable land and must adjoin an open drainage channel e.g. a ditch or watercourse.
- 48 Cultivate the margin so as to create a seed bed and establish a grass sward within twelve months of ceasing arable cropping.
- 49 Maintain the grass sward on the field margin by cutting at least once a year. Do not cut before 30 June and do not allow any cut material to enter the dykes.
- 50 Do not apply to the margin without obtaining prior approval: organic or inorganic fertiliser; lime, slag or any substance to reduce the acidity of the soil; fungicides and insecticides; herbicides (except to control nettles, spear thistle, creeping or field thistle, curled dock, broad-leaved dock or ragwort). Apply herbicides by weed wiper or spot treatment.
- 51 You may regularly cultivate and apply herbicides to a one metre edge of the margin adjacent to the cropped area.
- 52 You must abide by the Codes of Good Agricultural Practice for the Protection of Water, Soil and Air, published by the Department as amended from time to time.



## PUBLIC ACCESS TIER

- 53 Make the access route available for public access at no charge.
- 54 Maintain a free passage over the access route.
- 55 Do not erect new fences on or adjacent to the access route without the prior written approval of the Department.
- 56 Keep the access route and fields crossed by it free of litter and other refuse.
- 57 Exclude bulls from the access route and fields crossed by it, except for bulls which do not exceed the age of 10 months or are not of a recognised dairy breed and are at large in any field or enclosure in which cows and heifers are also at large.
- 58 Agree with the Department in writing in advance the public liability insurance cover which you will maintain for the duration of the access agreement.
- 59 Provide and maintain adequate means of entry to the access route.
- 60 Affix and maintain appropriate signboards and waymarking.
- 61 Do not permit any of the following activities on the access route or on fields crossed by it: camping, caravanning, lighting of fires, organised games or sports, riding of motor vehicles (except those used for agricultural operations on the land) without the Department's prior written approval.
- 62 Agree with the Department in writing whether the riding of horses or cycles may be permitted on the access route.
- 63 If you wish to apply for temporary closure of the access route you must agree this with the Department in writing in advance. Where temporary closure is permitted you must post signs giving notice of the intended closure and the reasons for it at each entry point to the access route at least two weeks in advance of the date of closure.

**Source:** Adapted from the *ESA Scheme Prescriptions for the Broads ESAs*. Produced by the Department for Environment, Food and Rural Affairs. © Crown copyright 2002. PB 6484/B

## Annex Two:

### Environmentally Sensitive Areas (ESAs) and Environmental Stewardship (ES): Summary information for Broad's ESA (Natural England 2012)

BROADS tier	ES likely level potential*	HLS options	Additional comments
001 permanent grass - TYPICAL	ELS		
001 permanent grass - TYPICAL, but supporting SPA bird populations	HLS if land of sufficient quality ELS otherwise	HK9, HK10, HK15	Needs robust bird use evidence to support <u>this categorisation</u>
001 permanent grass - TYPICAL, but with high interest ditches	HLS if land of sufficient quality ELS otherwise	HB 14	Needs robust evidence to support <u>this categorisation</u>
001 permanent grass - ATYPICAL WTEER than ESA tier would indicate	HLS if land of sufficient quality ELS otherwise	HK9, HK10, HK15	
001 permanent grass - ATYPICAL: MORE SPECIES RICH than ESA tier would indicate	HLS if land of sufficient quality ELS otherwise	HK6, HK15, and possibly HK9,10,15	Needs robust evidence to support <u>this categorisation</u>
002 extensive grass - TYPICAL	ELS		
002 extensive grass - ATYPICAL: SPECIES RICH OR SPA significance	HLS if land of sufficient quality ELS otherwise	HK15 or HK15 + HK10 or HK10 / HK6 or in some cases HK9	Needs robust evidence to support <u>this categorisation</u>
003 wet grass	HLS if land of sufficient quality ELS otherwise	HK19	
AXS public access	No direct equivalent although educational access still available	HN8, HN9	
04A arable reversion - producing a semi-improved sward	ELS		
04A arable reversion - producing a species rich sward or a sward that supports SPA bird populations	HLS if land of sufficient quality ELS otherwise	HK6, HK9, HK10, HK15	Needs robust evidence to support <u>this categorisation</u>
04bB grass margin	ELS	ELS	
05A fen	HLS if land of sufficient quality ELS otherwise	HQ6 + HQ11 OR HQ12	

**\*NOTE** - Advisors identify candidate HLS priority holdings, based on their knowledge of the holding. The Farm Environment Plan (FEP), produced as part of the HLS application, is used to confirm the potential benefits that HLS will deliver on the holding. If the FEP does not identify sufficient potential HLS benefits on a holding, the HLS application will be terminated and the land referred for ELS. FEPs are not produced for 'ELS only' sites.

## Annex Three: Survey Questionnaire

### The Broads after the ESAs - Assessing the State of Grassland in the Broads

**Q1 Do you intend to continue managing grassland as you have under the ESA?**

Yes ☐

No ☐

**Q2 If not, what changes do you intend to make?**

Stop grazing	Reduce stocking	Increase stocking	Rent out land for grazing	Stop making hay / silage	Increase fertiliser	Increase manure	Drain	Reseed	Crop	Manage for wildlife	Reconsider viability of	Other

**Q3 How much land did you have within each ESA tier?**

	0 hectares	1-10 ha	11-50 ha	51-100 ha	101-200 ha	201-500 ha	More than 500 ha
Tier 1							
4A arable reversion							

**Q4 How much grassland has been intensively managed?**

0 hectares	1-10 ha	11-50 ha	51-100 ha	101-200 ha	201-500 ha	More than 500 ha

**Q5 How much grassland will be intensively managed in the future?**

0 hectares	1-10 ha	11-50 ha	51-100 ha	101-200 ha	201-500 ha	More than 500 ha

**Q6 How much nitrogen fertiliser did you routinely apply to the marshes?**

None	Less than 50kg/ha	50 kg / ha - 100 kg / ha	More than 100 kg / ha

**Q7 How much nitrogen fertiliser will you routinely apply to the marshes in the future?**

None	Less than 50kg/ha	50 kg / ha - 100 kg / ha	More than 100 kg / ha

**Q8 Has lime been regularly applied to reduce acidity?**

Yes ☐

No ☐

Q9 When did you last reseed?

Less than 5 years ago	6 - 10 years ago	11 - 15 years ago	Never

Q10 By what means did you reseed?

Slot seed	Spray, plough and reseed	Plough and reseed without spraying	Spray, disc and reseed	Disc and reseed without spraying

Q11 What mechanical operations have been carried out on the grassland in the last 15 years?

(Please tick all that apply)

Rolling	Harrowing	Topping	Slot seeding	Mole draining	Subsoiling	Silt draining	Discing	None of these

Q12 Do you graze your marshland?

Yes - I use my own livestock ☐Yes - I do not use my own livestock ☐No ☐

Q13 Which animals do you use to graze your land?

(Please tick all that apply)

Dairy Cattle	Replacement Heifers	Beef suckler cattle	Beef stores or finishers	Sheep	Horses

If this is likely to change, please state how:

Q14 When do you normally turn out?

April		May		June		July	
-------	--	-----	--	------	--	------	--

If this is likely to change, please state how:

Q15 When would you normally bring livestock in off the marshes?

October		November		December		Out winter stock	
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If this is likely to change, please state how:

Q16 Do you make hay or silage from your marshland?

Hay	Silage	Both	Neither

Q17 When would you normally cut hay / silage? (Select all that apply)

	May	June	July	August
Hay				
Silage				

Q18 Are cutting dates likely to change in the future, and if so how?

Q19 Are you able to control water levels on your land?

Yes ☐ No ☐

Q20. At what height do you maintain dyke water levels in reaction to mean marsh level?

	At marsh level	1 foot below	2 foot below	3 foot below
Winter				
Spring				
Summer				
Autumn				

Q21 How is water level management likely to change in future?

Q22 Do you think the ESA was a good scheme?

Yes ☐ No ☐

Further comments:

Q23 Do you consider the ESA to be a cost effective scheme? Did it deliver value for tax payers' money?

Yes ☐ No ☐

Further comments:

Q24 How do you think the ESA scheme benefited the general public? Q25. Have you entered Entry Level Stewardship (ELS)?

Yes ☐ No ☐

If not, why not?



Q26. What proportion of your grassland is under an ELS management option?

Approximately 10%	Approximately 25%	Approximately 33%	Approximately 50%	Approximately 75%	Approximately 100%

Q27 Have you considered or applied for Higher Level Stewardship (HLS)?

Yes ☐ No ☐

Q28 If not, why not? (Please tick all that apply)

Scheme complexity	Stocking density	Payment rates	Lack of flexibility	Too long term	Too short term	Maintaining high water levels	Other

Q29 How will the CAP greening measures influence your decision making in regards to grassland?

Q30 Would you be interested in seeing how others are managing the transition period between the ESA schemes and forthcoming new environmental land management schemes?

Yes ☐ No ☐

Q31 What do you consider to be the outlook for agri-environment schemes?

Q32 Would you be willing to work with neighbours to deliver wider conservation work at a landscape scale?

Yes ☐ No ☐

Please help us understand why you selected this answer:

Q33 Do you feel you have received enough information about future funding opportunities and legislation to know which way to take your business next?

Yes ☐ No ☐

Q34 What information do you require / would you like to receive and who do you seek advice from regarding future options?

Q35 Would you be interested in being paid for delivering ecosystem services?

Yes ☐ No ☐

Q36 Is increasing food production a priority when considering the future of the marshes?

Yes ☐ No ☐

Q37 Do you think that by maintaining low intensity grazing systems you are providing ecosystem services and contributing to climate change mitigation by:

	Yes	No
Alleviating flooding		
Improving water quality		
Encouraging tourism		
Locking up carbon and methane		
Improving habitat connectivity		
Increasing biodiversity		
Preventing increase in IDB water board payments		

Q38 Who do you think should be paying for the services you offer by maintaining low intensity grazing marshes? (Tick all that apply)

Natural England	DEFRA	EU	Broads Authority	Water Companies	Insurance Companies	Tourism	Agri-business	No one	Other

Q39 What measures will you take before making a decision on the future of the marshes?

Soil testing	Ecological assessment	Business assessment	Flood risk assessment	Land drainage assessment	Other

Q40 Are you aware of Environmental Impact Assessment (EIA) regulations for uncultivated land?

Yes ☐ No ☐

Q41 Have you heard of coastal and floodplain grazing marsh BAP habitat and its role in the EIA decision making process?

Yes ☐ No ☐

Q42 Do you think that EIA regulations apply to you?

Yes ☐ No ☐

If not, why not?

Q43 Are you aware that the Campaign for the Farmed Environment (CFE) now includes grassland options?

Yes ☐ No ☐

Q44 Are you likely to take up voluntary measures for low input grass?

Yes ☐ No ☐

Q45 Are you aware of Nitrate Vulnerable Zone (NVZ) regulations?

Yes ☐ No ☐

**Q46 Do any of your marshes contain wildflowers e.g. orchids, ragged robin, iris, etc?**

Yes ☐ No ☐

**Q47 Has wildlife increased on your farm over the last 25 years?**

Yes ☐ No ☐

What species have you seen increase?

**Q48 Has wildlife decreased on your farm over the last 25 years?**

Yes ☐ No ☐

What species have you seen decrease?

**Q49 What wildlife would you like to see more of in the broads?**

**Q50 Are you considering improving or creating habitats for wildlife over the next five years?**

Yes ☐ No ☐

**Q51 What do you love about farming on the broads?**

We will be conducting a limited number of anonymous interviews. If you would like to participate please enter your phone number and email in Q52 & 53. A member of the FWAG Norfolk team will get in touch.

**Q52. Phone number:**

**Q53. Email address:**



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