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# Recording of the Monitoring Plots,

# Scarfe Meadows, 2020

## Mike Harding on behalf of

## Little Ouse Headwaters Project

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# 1. AIMS

The Little Ouse Headwaters Project set up two monitoring plots at Scarfe Meadows (OHES 2011), one in the floodplain grassland and one in the wet pasture.

In 2020 a full resurvey of the plots was commissioned as part of the ongoing survey and monitoring programme.

This report summarises the resurvey undertaken in May 2020.

# 2. METHODS

The survey methods laid out by OHES (2011) were used to resurvey the two monitoring plots at Scarfe Meadows, described by OHES (2011) as:

> ***Plot S01 Wet Grassland***
> This plot is located in the northern field in the centre of the Wet Grassland area. The plot records the Reed Canary-grass vegetation in the wetter part of the stand. It is anticipated that the plot vegetation would be sensitive to changes in stock management and hydrology. It is mapped as S28(c) *Phalaris arundinacea,* the *Elymus repens – Holcus lanatus* sub-community. This is typically a tall herb fen community but in this grazed context is a wet grassland.
>
> ***Plot S02 Flood Pasture Grassland***
> This plot was selected to lie adjacent to the Tufted hair-grass Grassland (MG9a) in a reasonably diverse area of Flood Pasture Grassland. The community is MG7(c), *Lolium perenne* grassland, the *Lolium perenne – Alopecurus pratensis – Festuca pratensis* sub-community, a seeded agricultural grassland now reverting under low-intensity treatments.

It was anticipated that the plot vegetation would identify changes in the boundaries and composition of these two Floodplain habitats.

OHES (2010) gives the four phases of monitoring common to all of the LOHP site monitoring projects, summarised in Table 1.

**Table 1: The Four Phases of Monitoring (OHES 2010)**

| Survey intensity | Fieldwork Element | | Function within the Survey |
|---|---|---|---|
| **Rapid** | 1 | Locating Monitoring Plots | To establish locations for the Monitoring Plots |
| | 2 | Photographic Record | To produce a record surveillance images showing the condition of the developing fen vegetation |
| **Full** | 3 | Vegetation structural characters | To record features of the vegetation structure against which management requirements can be established. |
| | 4 | Floristic sub-sampling | To record the floristic composition of the plot in order to judge to success of the restoration measures against target floristic conditions. |

Item 1, Location of Monitoring Plots, was undertaken in OHES (2011), along with a first recording of the plots (Items 2-4). This report provides the results of a second recording of Items 2-4, nine years after.

Plot and marker details are given in OHES (2011), reproduced in Table 2 and Figure 1. Note that at the time of the 2020 resurvey none of the marker posts were still in place. The posts

were re-established using the GPS coordinates provided by OHES, but handheld GPS has an error of up to 3m and therefore it is possible there was some mis-registration. As a precaution, any sub-sample locations within 50cm of the plot boundaries were discarded. In addition, the large size of the plot (10 x 10m) and the location of the plots in a decent sized area of relatively homogenous vegetation should mean the plots remain representative. All four posts have been replaced, but they are likely to be disrupted again unless substantial markers are used.

**Table 2: Monitoring Plot Locations at Scarf Meadows**

| VEGETATION TYPE | PLOT CODE | MARKER POSTS | Marker Post Location | EASTING | NORTHING | Plot location (see Figure 4) |
|---|---|---|---|---|---|---|
| Wet Grassland | S01 | S01-01 | Freestanding near southern margin of Wet Grassland | 99901 | 80819 | Southern corner 25 metres northwest of S01-01; plot on northwest side |
| | | S01-02 | Freestanding near valley margin in line with Poplar tree. | 99928 | 80861 | |
| Flood Pasture | S02 | S2-01 | On fence line on eastern side of western field | 99775 | 80786 | Northeast corner of plot at 20 metres west of S2-01; plot on southern side. |
| | | S02-02 | Freestanding within MG9a grassland | 99723 | 80797 | |

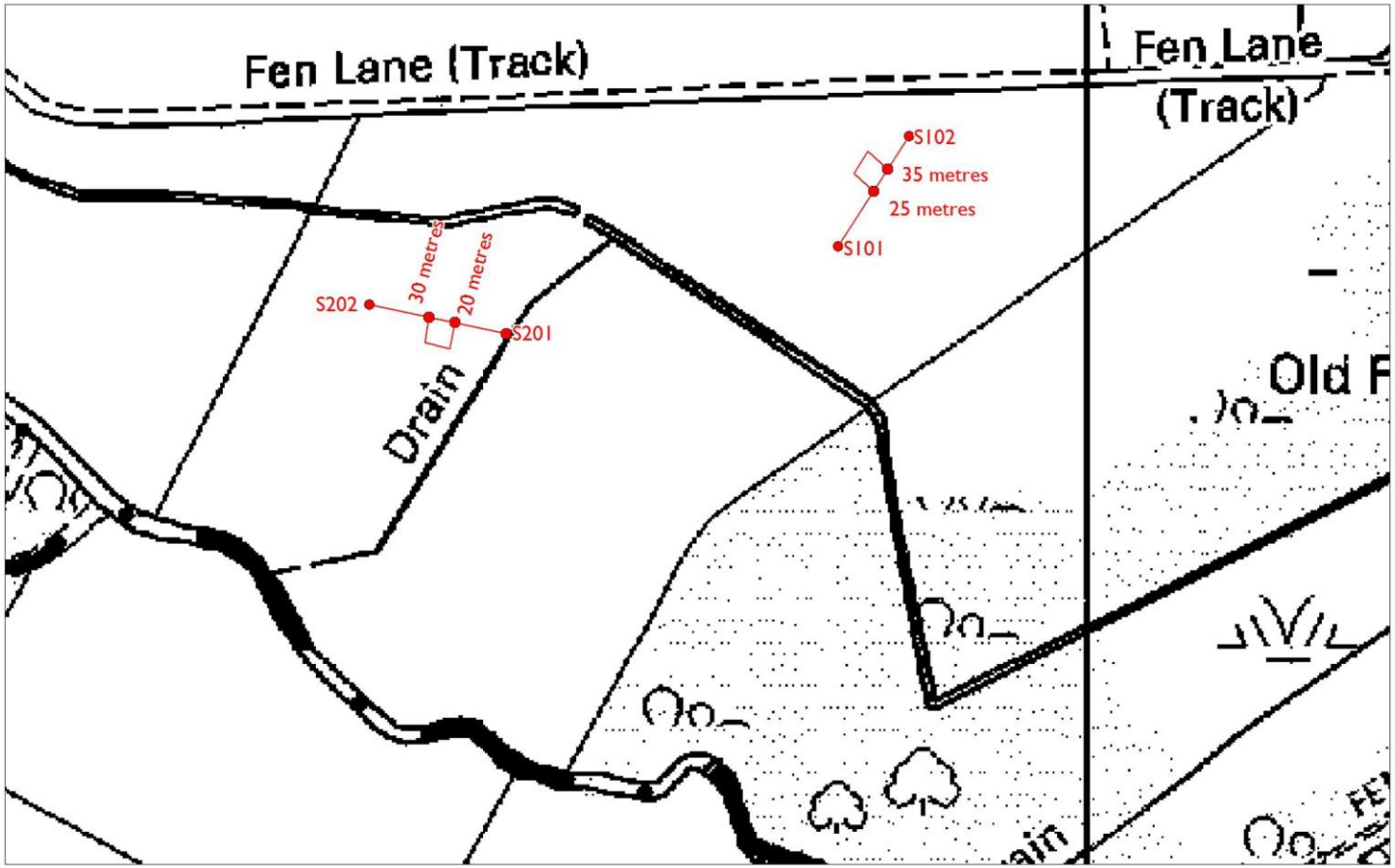
The recommended quadrat size of 1m x 1m was used, with recording of 20 sub-samples in each plot. Neither OHES (2010) nor OHES (2011) specify how sub-samples are to be located within the plot. Hence in 2020, sub-samples were relocated using random number tables and measuring tapes along two of the plot sides.

The weather preceding the survey was extremely dry, with relatively little rain in April and May. Consequently the vegetation was significantly advanced compared to “typical”, although the winter had been quite wet.

The survey work was undertaken on 29th and 30th May, about three weeks earlier than OHES (2011) reflecting the advanced season. Some grazing had occurred on both plots but not much, and there were no issues with identifying the plants.

As recommended by OHES (2010, 2011), an oblique photograph for each plot was taken, plus a closer direct overhead shot of each quadrant taken. The area used for the quadrant data was not the whole area, but the area projected down from standing height and equivalent to c.1m$^2$, as recommended in OHES (2010).

**Figure 1: Location of Plots. Reproduced from OHES (2011)**



# 3. RESULTS

## 3.1 Plot S01: Wet Grassland

### 3.1.1 Photographic Record

**S01 Wet Grassland. View taken from the centre of the southern edge of the plot looking north. TL 99910 80842, 29 05 20.**

**S01 Wet Grassland Quadrants**

| South West | South East |
| --- | --- |
|  |  |

| North West | North East |
|---|---|
|  |  |

### 3.1.2 Vegetation Structural Characters

| **Monitoring Plot** | S01 |
|---|---|
| **Recorder** | Mike Harding |
| **Survey Date** | 29 May 2020 |

**Character of the ground surface**

Overall flat but uneven with poached areas and much tussock giving reasonable micro-topographic variation. Silty soil surface.

**Soil Wetness**

| Dry, dusty | Dry, firm | Slightly damp | Moist | Wet | Saturated |
|---|---|---|---|---|---|
| | | | IIII | | |

| | **Attribute** | **Quadrant** | | | | **Average** |
|---|---|---|---|---|---|---|
| | | **SW** | **SE** | **NW** | **NE** | |
| **Layer height** | Standing water (cm) | 0 | 0 | 0 | 0 | 0 |
| | Plant litter (cm) | 3 | 3 | 2 | 5 | 3.25 |
| | Woody seedlings (cm) | 0 | 0 | 0 | 0 | 0 |
| | Large sedges / rushes (cm) | 90 | 80 | 90 | 60 | 80 |
| | Reed-like grasses (cm) | 90 | 50 | 40 | 25 | 51.25 |
| | Woody saplings (cm) | 0 | 0 | 0 | 0 | 0 |
| **Cover value** | Standing water (%) | 0 | 0 | 0 | 0 | 0 |
| | Trampling (%) | 10 | 30 | 40 | 10 | 22.5 |
| | Dunging (%) | 0 | 0 | 0 | 0 | 0 |
| | Bare ground (%) | 5 | 30 | 30 | 5 | 17.5 |
| | Plant litter (%) | 80 | 40 | 30 | 75 | 56.25 |
| | Bryophytes (%) | 0 | 0 | 0 | 0 | 0 |
| | Woody seedlings (%) | 0 | 0 | 0 | 0 | 0 |
| | Large sedges / rushes (%) | 60 | 30 | 50 | 15 | 38.75 |
| | Reed-like grasses (%) | 30 | 20 | 20 | 75 | 36.25 |
| | Woody saplings (%) | 0 | 0 | 0 | 0 | 0 |

### 3.1.3 Floristic Sampling

| | |
|---|---|
| **Monitoring Plot** | S01 |
| **Recorder** | Mike Harding |
| **Survey Date** | 29 May 2020 |

| | Sample Number, 1m² | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | Frequency 2020 | Frequency 2011 |
| *Phalaris arundinacea* | P | P | P | P | P | P | | P | P | | P | P | P | P | P | P | | P | P | P | **85** | **100** |
| *Agrostis stolonifera* | P | P | P | | P | P | | P | | P | P | | P | | P | P | P | P | P | P | **75** | **100** |
| *Juncus effusus* | P | | P | P | | P | | P | | | P | P | | P | | P | P | | P | P | **60** | **10** |
| *Ranunculus repens* | P | P | | P | | | P | | | P | P | | | | P | P | | P | | P | **50** | **30** |
| *Juncus articulatus* | | | | | P | | | | P | | P | P | | | P | | | P | P | P | **40** | |
| *Alopecurus pratensis* | | P | | | | | P | | | P | | | P | | P | | | P | P | P | **40** | |
| *Poa trivialis* | P | P | | | | | P | | | | P | P | | | | P | P | | P | | **40** | **20** |
| *Holcus lanatus* | | | P | | | P | P | | | P | | P | | P | | | P | P | | | **40** | **25** |
| *Carex hirta* | | | P | | | P | | | P | | | P | | | P | P | | | P | | **35** | **25** |
| *Arrhenatherum elatius* | P | P | | | P | | | P | | | | | P | | | | | | P | | **30** | |
| *Glyceria notata* | | | | P | | | | | P | | P | | | | P | | | | P | | **25** | **30** |
| *Urtica dioica* | | | P | | | | | | P | | | | | P | | | | | P | | **20** | |
| *Juncus inflexus* | | P | | | | | P | | | P | | | | | | | | | | | **15** | **15** |
| *Schedonorus pratensis* | | | P | | | | P | | | | | | | | | | P | | | | **15** | **20** |
| *Cirsium arvense* | P | | | | | | | | | | | | | | | | P | | | | **10** | |
| *Eleocharis palustris* | | | | P | | | | | | | P | | | | | | | | | | **10** | |
| *Veronica beccabunga* | | | | P | | | | | | | | | | | P | | | | | | **10** | |
| *Persicaria lapathifolia* | | | | P | | | | | | | P | | | | | | | | | | **10** | |
| *Rumex conglomeratus* | | | | | | P | | | | | | | | | P | | | | | | **10** | |
| *Deschampsia cespitosa* | | | | P | | | | | | | | | | | | | | | | | **5** | |
| | | | | | | | | | | | | | | | | | | | | | **Mean** | |
| **Species number** | **7** | **7** | **7** | **8** | **4** | **6** | **6** | **4** | **5** | **5** | **9** | **6** | **4** | **4** | **9** | **6** | **6** | **6** | **10** | **6** | **6.25** | **3.85** |

### 3.1.4 Commentary

**Vegetation structure**

This is a relatively flat area of marsh on silty clay soil, but with considerable micro-topographical variation attributable to tussocky vegetation and localised trampling and poaching. There is an upper tier of rushes, particularly tussocks of *Juncus effusus,* and more locally, *J. inflexus*, and then a tier of shorter grazed vegetation, perhaps maintained lower by grazing. Within the grassy matrix there is a third discontinuous layer of herbs of short grasses and rushes, and then the ground which due to grazing has variable amount of bare ground and surface litter. Bryophytes are generally absent. The plot was much dryer in the 2020 monitoring period, recording no water at the surface, whereas in 2011, there was significant water a few cm deep and the plot generally saturated.

**Floristics**

In 2020, the plot is still a relatively species-poor floodplain sward with a mean number of species per quadrat of 6.25. *Phalaris arundinacea* and *Agrostis stolonifera* still dominate the plot, but *Juncus effusus* is very frequent with *Ranunculus repens, Alopecurus pratensis, Juncus articulatus, Holcus lanatus* and *Poa trivialis* also frequent in what is essentially a grass-with-rushes sward. Most of the remaining species are grasses with one sedge (*Carex hirta*) and some tussocks of *Juncus inflexus.* Other than the buttercup, and a few records for *Veronica beccabunga*, most of the broadleaved herbs are typical of enriched and disturbed ground – *Rumex conglomeratus*, *Cirsium arvense* and *Urtica dioica*, although all are uncommon in the plot.

Species richness has nearly doubled since 2011, with the total number of species recorded in the plot increasing from 10 in 2011 to 20 species this year. However, few are of particular interest – *V. beccabunga* and *Eleocharis palustris* perhaps, both recorded only in 2020. In general, the rushes have greatly increased since 2011, especially *J. effusus* and the newly recorded *J. articulatus,* while grasses in general have increased in frequency – even some dry meadow species such as *Arrhenatherum.* These trends suggest an increase in grazing pressure, although the increase of *Arrhenatherum* is against trend. Overall, the sward could be said to have improved in conservation terms but the gain is still rather modest.

In community terms, there may be a shift from S28(c) *Phalaris arundinacea,* the *Elymus repens – Holcus lanatus* sub-community, typically a fen community, toward MG10(b/c) *Juncus effusus-Holcus lanatus* rush pasture, intermediate between the *Juncus inflexus* and *Iris pseudacorus* sub-communities. This shift in NVC communities is also consistent with an increase in grazing pressure.

**Summary of records and events**

The plot is grazed by cattle in summer. As far as is known this has been annually since 2011 but the management history of the plot before acquisition by LOHP is not known.

**Relation to past and target conditions**

The plot is progressing as expected in terms of vegetation development but is too dry to sustain wader interest, the core objective for the site. The incursion of creeping thistle, perhaps related to recent dry summers, is also a cause for concern.

## 3.2 S02: Flood Pasture Grassland

### 3.2.1 Photographic Record

**S02: Flood Pasture Grassland View, taken from TL 99746 80780 looking north**

**SO2: Flood Pasture Grassland Quadrants**

| South West | South East |
| --- | --- |
|  |  |

| North West | North East |
|---|---|
|  |  |

### 3.2.2 Vegetation Structural Characteristics

| **Monitoring Plot** | S02 Flood Pasture Grassland |
|---|---|
| **Recorder** | Mike Harding |
| **Survey Date** | 30th May 2020 |

**Character of the ground surface**

Very flat silty clay surface, very little micro-topographical variation. No tussocky structure, even meadow sward.

**Soil Wetness**

| Dry, dusty | Dry, firm | Slightly damp | Moist | Wet | Saturated |
|---|---|---|---|---|---|
| IIII | | II | II | | |

| | **Attribute** | **Quadrant** | | | | **Average** |
|---|---|---|---|---|---|---|
| | | **SW** | **SE** | **NW** | **NE** | |
| **Layer height** | Standing water (cm) | 0 | 0 | 0 | 0 | 0 |
| | Plant litter (cm) | 2 | 3 | 2 | 5 | 3 |
| | Woody seedlings (cm) | 0 | 0 | 0 | 0 | 0 |
| | Large sedges / rushes (cm) | 0 | 0 | 0 | 0 | 0 |
| | Reed-like grasses (cm) | 0 | 0 | 0 | 0 | 0 |
| | Woody saplings (cm) | 0 | 0 | 0 | 0 | 0 |
| **Cover value** | Standing water (%) | 0 | 0 | 0 | 0 | 0 |
| | Trampling (%) | 0 | 10 | 20 | 0 | 7.5 |
| | Dunging (%) | 0 | 0 | 15 | 0 | 3.75 |
| | Bare ground (%) | 15 | 15 | 15 | 5 | 12.5 |
| | Plant litter (%) | 75 | 70 | 70 | 90 | 76.25 |
| | Bryophytes (%) | 0 | 0 | 0 | 0 | 0 |
| | Woody seedlings (%) | 0 | 0 | 0 | 0 | 0 |
| | Large sedges / rushes (%) | 0 | 0 | 0 | 0 | 0 |
| | Reed-like grasses (%) | 0 | 0 | 0 | 0 | 0 |
| | Woody saplings (%) | 0 | 0 | 0 | 0 | 0 |

### 3.2.3 Floristic Sampling

| | |
|---|---|
| **Monitoring Plot** | S02 Flood Pasture Grassland |
| **Recorder** | Mike Harding |
| **Survey Date** | 30th May 20120 |

| | Sample Number | | | | | | | | | | | | | | | | | | | | Frequency 2020 | Frequency 2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | | |
| *Alopecurus pratensis* | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | **100** | **100** |
| *Agrostis stolonifera* | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | **100** | **100** |
| *Poa trivialis* | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | | P | P | P | **95** | **90** |
| *Cirsium arvense* | P | P | P | P | P | P | | P | | P | | P | P | P | P | P | P | P | P | P | **85** | **75** |
| *Holcus lanatus* | | P | | P | P | P | P | P | | P | P | P | P | P | P | P | P | P | P | | **80** | **100** |
| *Festuca rubra* | P | P | | P | P | P | | P | | P | | P | | P | P | P | P | | P | P | **70** | **5** |
| *Ranunculus repens* | P | | | P | P | | | | P | P | P | | | | P | | | P | | | **40** | **20** |
| *Arrhenatherum elatius* | P | P | | | | | P | P | | P | | | P | P | | | | | | | **35** | **60** |
| *Lolium perenne* | | P | | | P | P | | P | | P | | | | | | | | | | | **25** | **30** |
| *Urtica dioica* | | | | | | P | | | | | P | P | | | | | | | P | | **20** | **30** |
| *Dactylis glomerata* | | | | P | | | | | | P | | | | | | | | P | | | **15** | **10** |
| *Deschampsia cespitosa* | | | | | | | | | P | | P | | | | | | | | | | **10** | **5** |
| *Persicaria lapathifolia* | | | | | P | | | | | | | | | | P | | | | | | **10** | |
| *Elymus repens* | | | | | | | | | | | | | | | | | | | | | | **10** |
| *Schedonorus pratensis* | | | | | | | | | | | | | | | | | | | | | | **5** |
| *Taraxacum officinale* | | | | | | | | | | | | | | | | | | | | | | **5** |
| | | | | | | | | | | | | | | | | | | | | | **Mean** | |
| **Total Number Species** | **7** | **8** | **4** | **8** | **9** | **8** | **5** | **8** | **5** | **10** | **7** | **7** | **6** | **7** | **8** | **6** | **5** | **7** | **7** | **5** | **6.85** | **5.95** |

### 3.2.4 Commentary

**Vegetation structure**

The plot is very flat with very little micro-topographic variation, not even afforded by vegetation tussocks. The substrate was silty clay soils. There was significant plant litter, around 76% and 3cm thick on average, a significant increase from 2011. Trampling was modest, and had decreased from 2011, with much less bare ground – 12.5% in 2020 compared with 55% in 2011. These changes *may* reflect the fact that there had been three weeks more grazing in 2011. Structurally, this remains a grass sward with no rushes and no tall reed-like grasses as recorded in Plot S01. A tall and rather dense canopy of narrow-bladed grasses dominates the sward, with very few broad-leaved herbs other than creeping thistle and no bryophytes on the ground. This has provided very little structural variation.

**Floristics**

There has been remarkably little change since 2011. The sward is wholly grass dominated, with mixtures of *Alopecurus pratensis, Agrostis stolonifera, Poa trivialis and Holcus lanatus* with *Festuca rubra* in significant quantity. The latter is one of the few species to show a significant increase in frequency since 2011, while *Arrhenatherum elatius* has decreased. There are a variety of grasses at lesser frequency, a relatively stable sward.

Overall, the sward has stubbornly remained a relatively species-poor meadow community with few broadleaved herbs, all of which are either undesirable (*Cirsium arvense, Urtica dioica* and *Persicaria lapathifolia*) or very common such as *Ranunculus repens*. *Cirsium arvense* has increased a little, perhaps in response to the dryer summers and in common with S01.

One new species has been recruited to the data set, and two species lost compared to 2011. However, all three were very infrequent in the recording year, so it is very possible they were present in the plots but just not falling within quadrats. Mean number of species per quadrat has shown a slight increase in 2020 – but it is still so low – 6.85 in 2020 compared to 5.95 in 2011 – that it cannot be said to be an improvement. There are no species of conservation interest.

In community terms, the grassland remains MG7(c), *Lolium perenne* grassland, the *Lolium perenne – Alopecurus pratensis – Festuca pratensis* sub-community, a seeded agricultural grassland. This is not especially a river valley grassland and remains stubbornly outside of wet grassland community types.

**Summary of records and events**

The plot is grazed by cattle each summer from late May onwards. As far as is known it has been grazed every year since 2011 but density and seasonal patterns are not known.

**Relation to past and target conditions**

The site has not changed significantly and is rather dense and species poor, lacking true wet grassland indicators. The issue is not management – the sward is appropriately grazed – but water levels. The site remains too dry to meet target conditions. The increase in creeping thistle is also a concern.

# 4. CONCLUSIONS AND RECCOMENDATIONS

Both plots have been relatively stable since 2011. Plot S01 has shifted a little more towards MG10 *Juncus effusus-Holcus lanatus* rush pasture, with an increase in species richness but no recruitment of species of conservation interest. It has good structural variation. Plot S02 has not changed from an agricultural sown grassland of little conservation interest, with little or no variation.

In both plots, grazing management appears to be appropriate. The main problem for the site is that it is not wet enough to develop more beneficial wet grassland and floodplain habitats and is not meeting its conservation objectives.

The plots should be re-recorded in 2025. A five-year resurvey is ideal.

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