Fairfield Nature Reserve
Monitoring of Meadow and Arable-margin
2024

a report for
the Fairfield Association

compiled by

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1 Introduction and Methods

This report was commissioned by the Fairfield Association to continue monitoring the development of:

- the meadow in the Association's Fauna nature reserve; and
- the seeded margins of arable fields in the Association's Flora nature reserve.

1.1 The Meadow

Since 2011, an area of grassland in the south-eastern part of the Fairfield Association Fauna Nature Reserve (*c* 2.4 acres/ 1 ha) has been managed as a meadow; with exclusion of grazing stock during the spring and early summer, removal of ragwort, occasional seeding to encourage a more diverse meadow sward and either cutting of the grassland each summer (late July/ early August) with subsequent removal of the hay crop to prevent a build up of nutrients or, more recently, introduction of light cattle grazing in late summer to replicate the effects of mowing.

The site has been monitored each summer since 2011 to determine whether these management works are being effective in producing a botanically rich meadow and to guide future management of the plot. The monitoring methodology is outlined in the *Fairfield Association meadow survey training notes* (Skelcher 2012), which was based on guidelines for grassland assessment provided for the Defra Higher Level Stewardship agri-environment scheme (Natural England 2010, 2016). This principally involves recording the presence or absence of a number of key plant species that are indicators of either 'lowland meadow' or 'semi-improved grassland', within ten 2 x 2 m quadrats across the meadow. The ten monitoring points are selected each year to provide broad cover over the full meadow area, while each individual quadrat is selected locally to be representative of the wider meadow vegetation around each point. Areas near to the fence line or merging with the rush-pasture next to Lucy Brook are avoided because these are more likely to support vegetation that is not typical of the majority of the meadow.

According to the methodology criteria, a successfully managed meadow should support at least two 'lowland meadow' indicator species in five or more quadrats (frequent) and at least two species in three or more quadrats (occasional). Note that occurrence in 7 or 8 quadrats is referred to as ‘abundant’, in 9 or 10 as ‘dominant’ and in 1 or 2 as ‘rare’, broadly adapting conventions from the widely used DAFOR methodology for vegetation assessment (though note terms here are used only with respect to distribution and, for example 'dominant' does not necessarily imply high cover in addition to very high frequency, as it would in a standard DAFOR survey). Through good management, a greater diversity and frequency of indicator meadow species should be expected over time; progressing to a herb-rich lowland meadow.

In 2011 and 2012, monitoring took the form of a training event with a number of Fairfield Association members in attendance. Since 2013, monitoring has been undertaken by Graeme Skelcher but has remained open to Fairfield Association members who wished to attend. Only a single survey was carried out in July or early August each year up to 2016, but since 2017 two assessments have been made each year; one within the usual mid-summer period (most often in early July) plus an earlier visit in May. In 2024, these visits were made on 18 May and 13 July.

1.2 Arable Margins

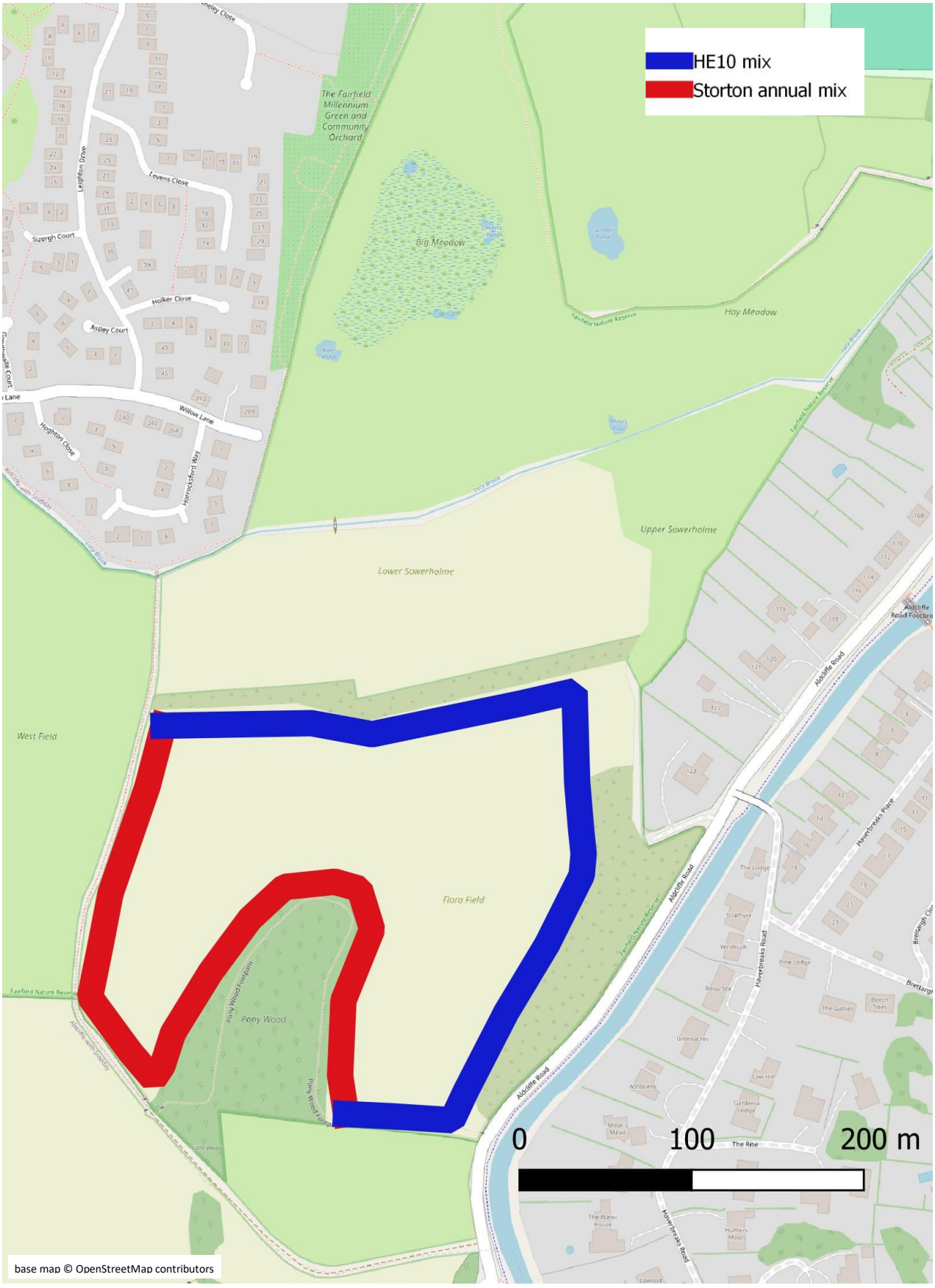
Following the successful works on the Fauna nature reserve, the Fairfield Association acquired a further 36 acres of land to the south of this site; bought in stages between 2011 and 2013. This land includes a small area of woodland (Pony Wood, Little Wood and a small intervening area that has since been planted with trees and shrubs to connect the two) and fields which have subsequently been managed for arable crops with broad, seeded 'wildlife strips' around their margins. As with the Fauna nature reserve, this land (the Flora nature reserve) has also been entered into higher tier Countryside Stewardship.

Monitoring of both the woodland and the arable margins commenced in the summer of 2015, following a similar methodology to that used for the meadow, though the woodland is now monitored by the Fairfield Association and so is not considered in this report.

The monitoring criteria selected for the arable margins were based on the targets set by Natural England for Higher Level Stewardship management. Again, 10 monitoring points were selected to provide broad cover over the full area of each habitat (in this case 10 points each for the two types of seed mix used - see Map 1), with individual points again selected locally to be representative of the wider vegetation around each point. For the arable margins, vegetation was again assessed within 2 x 2 m plots. Targets include cover of key wildlife-friendly herb and grass species included in the seed mixes. Additional observed species were noted that were not listed in the seed mixes but which are nevertheless desirable to encourage.

The arable margins are usually monitored in late July when, again, most of the target herb species are in flower. In 2024, the arable margins were assessed on 4 August.

Map 1: Location of Seed-mixes applied to Arable Margins



2 Results

2.1 The Meadow

In May 2024 (see Appendix 1a), one species from the 'lowland meadow' indicator list was recorded as 'dominant' (yellow rattle), one species was ‘frequent’ (black knapweed) and two were ‘rare’ (marsh orchid, meadowsweet). From the 'semi-improved grassland' indicator list, three species were 'dominant' (common sorrel, meadow buttercup, ribwort plantain), one was ‘abundant’ (red clover) and one was ‘rare’ (cuckoo flower).

In July 2024 (see Appendix 1b), again one species from the 'lowland meadow' indicator list was recorded as 'dominant' (yellow rattle), one species was ‘frequent’ (black knapweed) and one was ‘rare’ (common spotted orchid). From the 'semi-improved grassland' indicator list, three species were 'dominant' (common sorrel, meadow buttercup, ribwort plantain), one species was ‘frequent’ (red clover) and one was 'rare' (common cat's-ear).

The mean cover of herbs over the 10 quadrats in July was 74%, with over half having in excess of 75% herb cover and 50% or more herb cover was present in all quadrats. Negative meadow indicator species ragwort and creeping thistle were present only extremely sparsely within the meadow and far below a level that would cause concern.

The meadow easily satisfies the target criteria for ‘semi-improved grassland’ (at least five ‘lowland meadow’ or ‘semi-improved grassland’ indicator species at least ‘occasional’), but falls short of the target criteria for ‘lowland meadow’ that requires there should be at least two ‘lowland meadow’ indicator species at least ‘frequent’ and two at least ‘occasional’.

2.2 Arable Margins

Five of the target species for the Storton mix margins were present in 2024, but only one of these occurred within the desired target cover of 5 - 60% (fodder radish 28%). Spring barley, mustard, gold of pleasure and spring wheat were all present at between 1.5 and 3.5%. This fell short of the Countryside Stewardship target which requires three target species to have at least 5% cover.

In the HE10 margins, three of the desired seeded grass species were present in 2024 (crested dog's-tail, timothy and common bent). The bulk of the grassland cover was provided by creeping bent and Yorkshire-fog.

Four Countryside Stewardship target herb species were present within the HE10 margin samples. Three of these exceeded 5% cover (black knapweed 23%, ribwort plantain 12% and yarrow 7%); meeting the minimum target threshold requirement that at least three target species should exceed 5%. Ox-eye daisy also occurred more sparsely with 2% cover. Other target species, red clover, meadow vetchling and common bird’s foot trefoil, were not recorded at any of the stops.

Of the listed 'undesirable' species, creeping thistle occurred occasionally (3 stops) and common nettle rarely (2 stops) within HE10 samples. Within the Storton samples, common nettle was present at just one stop. The presence of these species was therefore within acceptable limits for both margin types.

3 Discussion

3.1 The Meadow

Table 1, overleaf, shows the development in the abundance of lowland meadow (G06) and semi-improved grassland (G02) indicator species since 2011. Up to 2020, there had been a slow but steady improvement in most years in the quality and diversity of the meadow recorded each July, but this has faltered in the last few years. The overall results have continued to satisfy the criteria for 'Semi-improved Grassland' but are no closer to meeting the criteria for classification as 'Lowland Meadow'. In 2019 and 2020, it seemed that these conditions were very close to being met, with two G06 species at least 'frequent', one 'occasional' and other species present as 'rare'. Since 2021, however, there has either been only one 'frequent' target species with two 'occasional', or two species 'frequent' and none 'occasional'.

The percentage herb cover has remained very good, being above 50% for the 11th year in succession, while the cover of non-desirable species has remained at no more than 1% over the same period, so no further significant improvement could be expected in these respects.

Of the 'lowland meadow' indicator species in July 2024, yellow rattle remained at least frequent throughout the sward for the 12th successive year. Black knapweed (which appeared for the first time only in 2016) was again recorded as 'frequent', as had previously been the case from 2017 - 2020 and in 2023. Common spotted orchid, which has been present in most years since 2015, was recorded as 'rare'. Meadowsweet was noted for the first time in the managed meadow, though this is fairly common in the adjacent rush-pasture towards Lucy Brook. Ox-eye daisy was absent in 2024, after previously being 'rare' from 2021 - 2023 and being 'occasional' in four of the five years from 2016 - 2020.

The diversity and abundance of 'semi-natural grassland' indicators in July has remained reasonably constant over the last nine years, with at least 'frequent' occurrence of common sorrel, meadow buttercup, red clover and ribwort plantain throughout this time.

From 2017 onwards, monitoring of the meadow has also been carried out in May, and Table 2 shows a comparison of results each May from 2017 to 2024, and between May and July 2024. Several species tended to be a little less abundant in May compared to the July survey, due to being earlier in their seasonal growth development, but a few spring-flowering species were sometimes seen in May that had not been apparent in the later summer surveys. The May 2024 results were generally quite similar to the July results, with yellow rattle and black knapweed both at least 'frequent' and marsh orchid recorded as 'rare'.

Table 1: Abundance of indicator species (G06 = Lowland meadow; G02 = Semi-improved grassland) at Fairfield Meadow in July/August each year since 2011, together with values of other indicators of meadow quality.
D = Dominant; A = Abundant; F = Frequent; O = Occasional; Rare = Rare

Indicator		**'11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
		6/8	5/7	19/7	10/7	15/7	5/7	12/7	5/7	5/7	2/7	17/7	2/7	22/7	13/7
overall % herb/sedge cover (target > 20%)		15	15	47	56	59	75	55.5	67.5	70	70	74	89	85	74
overall % undesirable species (target < 5%)		5	<5	1	<1	<1	1	<1	<1	<1	<1	<1	<1	0	<1
overall % bare ground (target < 10%)		0	0	0	0	0	0	0	0	<1	0	<1	1	0	<1
overall % scrub (target < 5%)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
overall % large sedges, rushes, reeds (< 30%)		0	0	0	0	0	0	<1	0	0	0	0	<1	0	0
Species															
yellow rattle	**G06**		O	A	A	D	D	D	D	D	D	D	D	F	D
black knapweed	**G06**						R	F	F	F	A	O	O	F	F
ox-eye daisy	**G06**					R	O	O	R	O	O	R	R	R	
orchids	**G06**					R	R	R	R	R	R		O		R
greater bird's-foot trefoil	**G06**							R	R				R		
betony	**G06**									R					
eyebright	**G06**												R	R	
meadow vetchling	**G06**													R	
meadowsweet	**G06**														R
meadow buttercup	G02	R	A	O	A	D	D	D	D	D	D	D	D	D	D
ribwort plantain	G02	R	O	O	O	A	D	D	D	D	D	D	D	D	D
common sorrel	G02	O	R	R	R	R	F	A	A	D	D	D	D	D	D
red clover	G02	R	O	R	O	O	F	A	F	F	D	F	D	D	F
common cat's-ear	G02	R				R	R	O	R	R	R	R	R	R	R
yarrow	G02	O	R	R	R	R	R	R	R	R	R	R			
self-heal	G02	R	R		R	R	O	R	R	R	R		R		
field wood-rush	G02	R													
germander speedwell	G02	R													

Table 2: Abundance of indicator species (G06 = Lowland meadow; G02 = Semi-improved grassland) and values of other indicators of meadow quality at Fairfield Meadow in May 2017 to 2024, together with comparison data for July 2024.

D = Dominant; A = Abundant; F = Frequent; O = Occasional; Rare = Rare

Indicator		**'17**	**'18**	**'19**	**'20**	**'21**	**'22**	**'23**	**'24**	**'24**
		30 May	28 May	31 May	28 May	28 May	28 May	27 May	18 May	13 July
overall % herb/sedge cover (target > 20%)		66	58	73.5	68.5	67	74.5	73	78	74
overall % undesirable species (target < 5%)		0.5	0.3	0	0.2	0.6	0	0	0.2	0.1
overall % bare ground (target < 10%)		0	0	1.3	0.9	1.2	1.6	0.1	0.6	0.6
overall % scrub (target < 5%)		0	0	0	0	0.1	0	0	0	0
overall % large sedges, rushes, reeds (< 30%)		0	0	0	0	0	0	0	0	0
Species										
yellow rattle	**G06**	D	D	D	D	D	D	D	D	D
black knapweed	**G06**	R	O	O	F	F	F	O	F	F
ox-eye daisy	**G06**	R		R	R			R		
orchids	**G06**					R		R	R	R
greater bird's-foot trefoil	**G06**				R					
cowslip	**G06**	R						R		
ragged robin	**G06**				R					
betony	**G06**									
eyebright	**G06**						R			
meadow vetchling	**G06**									
meadowsweet	**G06**									R
meadow buttercup	G02	D	D	D	D	D	D	D	D	D
ribwort plantain	G02	D	D	D	D	D	D	D	D	D
common sorrel	G02	A	A	A	D	D	D	D	D	D
red clover	G02	F	F	F	A	F	F	A	A	F
common cat's-ear	G02				R		R	R		R
yarrow	G02	R			R					
self-heal	G02									
cuckoo flower	G02	R	R		R	R			R	
field wood-rush	G02	R						R		
germander speedwell	G02									

3.2 Arable Margins

Tables 4 and 5 show the development, respectively, of the Storton and HE10 mix arable margins since 2015.

In the Storton-mix margins, fodder radish has been the most consistently abundant species. This occurred at or towards the upper limit of the required cover parameters in the first three years of monitoring and exceeding the 60% maximum threshold by an additional 16% in 2018, but returned to around 40 - 50% cover in the following three years and was down to 28% cover in 2022, 19% in 2023 and back up to 28% in 2024. Other target species have fluctuated in cover over the years, presumably dependent at least in part upon the proportion of seeds in each annual mix. In 2024 spring barley, gold of pleasure, spring wheat and mustard were present but none of these exceeded 5% cover**.** Thus, the Countryside Stewardship target of at least three key species occurring with 5 to 60% cover was not achieved in 2024; the third successive year following three previous years (2019 - 2021) in which this target was met.

The presence of purple ramping-fumitory in the Storton margin, recorded in 2019, is significant. This is a nationally scarce species of disturbed ground that can thrive in arable margins, with Lancashire being one of the few strongholds for this species. The plant used to be widespread on abandoned ground in Lancaster in the 1980s and, while it has declined in the district since then, it is still present at a few places locally. The arable margins provide a typical habitat for the species within its established historical range, so its continued presence should be encouraged. While its presence since 2019 has not been confirmed, seeds can remain dormant for several years so there is a reasonable chance of the plant returning where conditions are favourable.

In the HE10 margin, three of the five desirable grass species (common bent, timothy and crested dog's-tail) were present in 2024, but all at rather low cover. Creeping bent and Yorkshire fog typically form the largest grass component.

The total cover of key herb species in the HE10 mix in 2024 was about 55%. The individual cover of black knapweed, ribwort plantain and yarrow all exceeded 5% cover, with ox-eye daisy also present at lower cover; so the target of minimum 5% cover for at least three key herb species was met for the sixth time in the last seven years (2023 being the exception, when two species exceeded 5% but a further three species had a combined cover of 8%).

Table 4: Arable-margin Storton-mix indicators at the Flora fields in each year since 2015.
HLS indicates HLS targets need to be met
D = Dominant; A = Abundant; F = Frequent; O = Occasional; Rare = Rare

Indicator		**'15**	**'16**	**'17**	**'18**	**'19**	**'20**	**'21**	**'22**	**'23**	**'24**
		29/7	5/7	28/7	27/7	22/7	22/7	1/8	30/7	31/7	4/8
Desirable species cover (target 5 - 60% of at least 3 species)											
spring triticale	**HLS**	19.6	0	0	0	0	0	0	0	0	0
poacher white millet	**HLS**	0	0	0	0.5	0	0	0	0	0.1	0
fodder radish	**HLS**	58.7	49.5	61.5	76.5	50.5	49.5	41	27.5	19.2	28
spring barley	**HLS**	1.5	3.2	0	0	0	5.5	3.1	5.6	9.1	3.5
spring wheat	**HLS**	6	0	3.5	0.7	0.7	0.8	0.5	2.2	0.7	1.6
gold of pleasure	**HLS**	0	0	1	8	23.5	4	9.1	2.5	0.1	2
mustard	**HLS**	14.3	40.5	18.5	3.1	20.5	19.1	17.6	0	0	3
purple ramping-fumitory						*2*	*0*				
tansy-leaved Phacelia		*2.6*	*0.9*	*0.7*	*0.1*	*0.2*	*2.1*		*0.1*		
borage		*0.5*		*1*	*present*	*0.1*	*1*			*0.1*	
common fumitory						0.1	0		2.6		
common couch grass								15.5	14		O
redshank											A
corn marigold											F
cornflower											R
field pansy											R
Cover of bare ground (target 5 - 10%)	**HLS**	5	5.5	14	13	11	4.7	14.5	9	14.7	7.5
Undesirable species (target - no species more than 5% cover)	**HLS**										
common nettle		0.1	0.2	4.1	0.3	0.4	3.4	3.9			0.5
curled dock											
broadleaved dock										0.2	
spear thistle		0.1									
creeping thistle,		0.1			0.1	1	4.5	12	5.2	2.1	
common ragwort							9				

Table 5: Arable-margin HE10-mix indicators at the Flora fields in each year since 2015.
HLS indicates HLS targets need to be met
D = Dominant; A = Abundant; F = Frequent; O = Occasional; Rare = Rare

Indicator		**'15**	**'16**	**'17**	**'18**	**'19**	**'20**	**'21**	**'22**	**'23**	**'24**
		29/7	5/7	28/7	27/7	22/7	22/7	1/8	30/7	31/7	4/8
Desirable species cover - grasses											
crested dog's- tail	**HLS**	1.5	2	2		2	2	2.5	2.5	R	0.1
small leaved timothy	**HLS**	2	2	3	3	2.5	9.5	4.5	7	O	2.1
smooth meadow-grass	**HLS**	0.5		0.5	1		0.2	0.5	0.5		
red fescue	**HLS**	4.5	6	12.5	15	1	2	6.5	2.5	O	
common bent	**HLS**	9.5	3	15	6	15	15.5	10	6	R	5
Total cover (target > 75% at end of year 1)		**18**	**13**	**33**	**25**	**21**	**29**	**24**	**19**		**7.2**
Yorkshire-fog			*39*	*14*	*20*	*25.5*	24.5	11	10.5	A	28
creeping bent			*31.5*	*30*	*20*	*12*	8	27.5	17.5	D	21
ryegrass			*2.1*	*1.5*	*3*	*3*	2.7	1.5	1	F	0.5
meadow foxtail			*2*	*5.5*	*2*	*1.5*	2	1.5		F	0.5
cock's-foot			*1.5*			*0.5*	0.5	1		O	2.5
sweet vernal grass			*1.7*	*1*		*0.5*	0.5	2			1
rough meadow-grass				*0.5*		*12*	2.5	0			7.5
marsh foxtail						*0.7*	0.2	0			
false oat-grass						*2.5*	3	2	0.5	F	5.5
Desirable species cover - herbs (target 5 - 60% of at least 3 species)											
black knapweed	**HLS**	4.1	14.5	16	9.2	17	24	27	29.5	35.5	33.5
yarrow	**HLS**	0.5	0.6		14	24.4	10.1	5.7	6.6	2.7	7.2
ox-eye daisy	**HLS**	12	1.6		5.5	19.5	9.3	2	1.5	3.3	1.9
ribwort plantain	**HLS**	7.5	7.7	12.5	6.4	7.5	15.5	9.6	10.6	18.5	12.5
red clover	**HLS**	0.1	0.1		0.1		3	3	1.5	2.3	
meadow vetchling	**HLS**						0	0			
common bird's-foot trefoil	**HLS**										
Cover of bare ground (target 5 - 10%)	**HLS**	0	0	0	2.2	0.8	0	1.8	0.6	0	2
Undesirable species (target - no species more 5% cover)	**HLS**										
common nettle		0.5		0.5	0.1	0.1	1.4	3	0.1	0.8	0.2
curled dock						0.5	0	0	2		
broadleaved dock		0.6		1	0.1	0.8	3.1	0.4		0.2	
spear thistle		1.5	1.2		0.2	0.5	1	0		0.3	
creeping thistle,		1			0.5	1	1.6	16.5	13.5	3.9	4.5
common ragwort		0.1						0			

4 Conclusions

Despite the initial steady increase in diversity and abundance of key species within the meadow over successive years, the meadow remains a very good 'semi-improved grassland' but continues to fall just short of meeting the criteria for herb-rich 'lowland meadow'.

The seeded arable margins have generally shown signs of positive development. The HE10 margins met the HLS targets for cover of key herb species again this year. In the Storton margins, only fodder radish and spring barley exceeded 5% cover in 2023, with three other species falling short of this, which meant that the target for three species exceeding 5% cover was not met for the third successive year after being achieved in the three previous years up to 2021.

5 References

Natural England (2010) *Higher Level Stewardship Farm Environment Plan manual (3rd edition)*. Natural England

Natural England (2016) *Countryside Stewardship baseline evaluation of higher tier agreements (BEHTA) manual part 2: technical user guidance on BEHTA feature identification, condition assessment and data collection in the field (2nd Edition*). Natural England.

Skelcher G (2004) *A vegetation survey of Fairfield Urban Nature Reserve*. Unpublished report for the Fairfield Association.

Skelcher G (2012) *Fairfield Association meadow survey training, 5 July 2012*. Unpublished report for the Fairfield Association.

Appendix 1a: Fairfield Meadow Monitoring Form 18 May 2024

1. Choose sampling points to provide a wide coverage over the whole field and which, at a glance, appear representative of the wider vegetation. Field edges and small stands of atypical vegetation should be avoided.

2. Sample sizes of approximately 2 x 2 m should be used. Where appropriate, the shape of sampled quadrats can be adapted from the standard square to cover a plot of the same total area.

3. Tick presence of indicator species at each sampled stop.

4. Record % cover of listed features at each stop (including combined cover of 'undesirable species': creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort, common nettle, marsh ragwort, cow parsley and bracken) and calculate average (mean) cover at all stops in the 'Total' column.

5. Count up the number of stops at which each indicator species is present and record in the 'Total' column:
   D (*dominant*) = occurrence at 9 or 10 stops out of 10,
   A (*abundant*) = occurrence at 7 or 8 stops,
   F (*frequent*) = occurrence at 5 or 6 stops,
   O (*occasional*) = occurrence at 3 or 4 stops and
   R (*rare*) = occurrence at 1 or 2 stops.

Also record species as rare if they were observed on site but not at any of the sampled stops.

Site Fairfield Meadow			**Sample quadrat**										
Date 28 May 2022			**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Total**
% herb/sedge cover excluding white clover & creeping buttercup **(target > 20%)**			90	95	90	70	90	85	85	60	70	40	**77.5**
% undesirable species (target < 5%)									1	1			**0.2**
% bare ground (target < 10%)									1	2	1	2	**0.6**
% scrub (target < 5%)													**0**
% large sedges, rushes, reeds (< 30%)													**0**
agrimony	G06												
autumn hawkbit	G06	G02											
betony	G06												
bird's-foot-trefoil	G06												
bitter-vetch	G06												
black knapweed	G06		✓	✓				✓	✓	✓	✓		**F**
black medick		G02											
bugle	G06												
bulbous buttercup		G02											
burnet saxifrage	G06												
common bistort	G06												
common cat's-ear		G02											
common meadow-rue	G06												
common sorrel		G02	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	**D**
cowslip	G06												
cuckoo flower		G02											**R**
devil's-bit scabious	G06												
dropwort	G06												
dyer's greenweed	G06												
eyebright	G06												
field scabious	G06												
field wood-rush		G02											
germander speedwell		G02											
glaucous/common/carnation sedge	G06												

Site Fairfield Meadow			Sample quadrat										
Date 28 May 2022			**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Total**
goat's-beard	G06												
great burnet	G06												
greater bird's-foot-trefoil	G06												
lady's bedstraw	G06												
lady's-mantles	G06												
lesser trefoil		G02											
marsh marigold	G06												
marsh valarian	G06												
marsh/fen bedstraw	G06												
meadow buttercup		G02	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	**D**
meadow vetchling	G06												
meadowsweet	G06												**R**
milkworts	G06												
narrow-leaved water-dropwort	G06												
orchids	G06			✓									**R**
ox-eye daisy	G06												
pepper-saxifrage	G06												
pignut	G06												
ragged robin	G06												
red clover		G02	✓	✓	✓	✓	✓	✓	✓				**A**
ribwort plantain		G02	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	**D**
rough hawkbit	G06												
salad burnet	G06												
saw-wort	G06												
selfheal		G02											
sneezewort	G06												
tormentil	G06												
water avens	G06												
water mint	G06												
wood anemone	G06												
yarrow		G02											
yellow rattle	G06			✓	✓	✓	✓	✓	✓	✓	✓	✓	**D**

Lowland Meadow	at least 2 G06 species *Frequent* and at least 2 G06 species *Occasional*
Semi-improved Grassland	at least 5 G02 or G06 species *Occasional*

Appendix 1b: Fairfield Meadow Monitoring Form 13 July 2024

1. **Choose sampling points to provide a wide coverage over the whole field and which, at a glance, appear representative of the wider vegetation. Field edges and small stands of atypical vegetation should be avoided.**

2. **Sample sizes of approximately 2 x 2 m should be used. Where appropriate, the shape of sampled quadrats can be adapted from the standard square to cover a plot of the same total area.**

3. **Tick presence of indicator species at each sampled stop.**

4. **Record % cover of listed features at each stop (including combined cover of 'undesirable species': creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort, common nettle, marsh ragwort, cow parsley and bracken) and calculate average (mean) cover at all stops in the 'Total' column.**

5. **Count up the number of stops at which each indicator species is present and record in the 'Total' column:**
   D (*dominant*) = occurrence at 9 or 10 stops out of 10,
   A (*abundant*) = occurrence at 7 or 8 stops,
   F (*frequent*) = occurrence at 5 or 6 stops,
   O (*occasional*) = occurrence at 3 or 4 stops and
   R (*rare*) = occurrence at 1 or 2 stops.

Also record species as rare if they were observed on site but not at any of the sampled stops.

Site Fairfield Meadow			**Sample quadrat**										
Date 2 July 2022			**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Total**
% herb/sedge cover excluding white clover & creeping buttercup **(target > 20%)**			80	70	90	90	60	60	95	75	70	50	**74**
% undesirable species (target < 5%)			0	0	0	0	0	0	1	0	0	0	**<1**
% bare ground (target < 10%)			0	0	0	0	0	0	1	0	2	3	**<1**
% scrub (target < 5%)			0	0	0	0	0	0	0	0	0	0	**0**
% large sedges, rushes, reeds (< 30%)			0	0	0	0	0	0	0	0	0	0	**0**
agrimony	G06												
autumn hawkbit	G06	G02											
betony	G06												
bird's-foot-trefoil	G06												
bitter-vetch	G06												
black knapweed	G06			✓	✓			✓	✓	✓	✓		**F**
black medick		G02											
bugle	G06												
bulbous buttercup		G02											
burnet saxifrage	G06												
common bistort	G06												
common cat's-ear		G02					✓						**R**
common meadow-rue	G06												
common sorrel		G02	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	**D**
cowslip	G06												
cuckoo flower		G02											
devil's-bit scabious	G06												
dropwort	G06												
dyer's greenweed	G06												
eyebright	G06												
field scabious	G06												
field wood-rush		G02											
germander speedwell		G02											

Site Fairfield Meadow			Sample quadrat										
Date 2 July 2022			**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Total**
glaucous/common/carnation sedge	G06												
goat's-beard	G06												
great burnet	G06												
greater bird's-foot-trefoil	G06												
lady's bedstraw	G06												
lady's-mantles	G06												
lesser trefoil		G02											
marsh marigold	G06												
marsh valarian	G06												
marsh/fen bedstraw	G06												
meadow buttercup		G02	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	**D**
meadow vetchling	G06												
meadowsweet	G06												
milkworts	G06												
narrow-leaved water-dropwort	G06												
orchids	G06						✓						**R**
ox-eye daisy	G06												
pepper-saxifrage	G06												
pignut	G06												
ragged robin	G06												
red clover		G02	✓		✓	✓		✓	✓				**F**
ribwort plantain		G02	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	**D**
rough hawkbit	G06												
salad burnet	G06												
saw-wort	G06												
selfheal		G02											
sneezewort	G06												
tormentil	G06												
water avens	G06												
water mint	G06												
wood anemone	G06												
yarrow		G02											
yellow rattle	G06		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	**D**

Lowland Meadow	at least 2 G06 species *Frequent* and at least 2 G06 species *Occasional*
Semi-improved Grassland	at least 5 G02 or G06 species *Occasional*

Appendix 1c: Grasses present in Fairfield Meadow, 5 July 2019 (not monitored in other years)

Site Fairfield Meadow						
Date 5 July 2019	**1**	**2**	**3**	**4**	**5**	**Total**
% herb/sedge cover excluding white clover & creeping buttercup **(target > 20%)**	80	50	80	40	80	
% undesirable species (target < 5%)	0	<1	0	0	0	
% bare ground (target < 10%)	1	<1	<1	<1	0	
% scrub (target < 5%)	0	0	0	0	0	
% large sedges, rushes, reeds (< 30%)	0	0	0	0	0	
common bent	✓	✓	✓	✓	✓	**D**
crested dog's-tail	✓	✓	✓	✓	✓	**D**
meadow foxtail		✓	✓	✓	✓	**A**
perennial ryegrass	✓	✓	✓		✓	**A**
red fescue			✓			**R**
rough meadow-grass		✓				**R**
smooth meadow-grass				✓		**R**
sweet vernal-grass	✓	✓	✓	✓	✓	**D**
Yorkshire-fog	✓	✓	✓	✓	✓	**D**

Appendix 2a: Fairfield Arable-margin Monitoring Form 2024 - Storton mix

Stop number	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	*Date:* 4 August 2024
2. Cover of bare ground											**target for HLS**
bare ground	20	5	5	10	5	5	5	5	5	10	**-** between 5% and 10 % by year 2
3**. Field-layer composition - Storton mix**											
spring triticale (wheat/rye hybrid)											**target for HLS -** between 5% and 60% of at least 3 sown desirable broad-leaf species by year 2
poacher white millet											
fodder radish	15		15	40	20	50	80	35	20	5	
spring barley								35			
spring wheat	5			5					1	5	
gold of pleasure	10						10				
mustard	10	5	5			5	5				
purple ramping-fumitory											
tansy-leaved Phacelia											
borage											
common fumitory											
corn marigold	✓			✓		✓	✓	✓	✓	✓	
cornflower						✓		✓			
corn camomile											
common couch grass		✓	✓	✓							
redshank	✓	✓	✓	✓		✓		✓	✓	✓	
field pansy					✓						
4. Undesirable field species											
common nettle			5								**target for HLS -** no species should be more than occasional
curled dock											
broadleaved dock											
spear thistle											
creeping thistle,											
common ragwort											

Appendix 2b: Fairfield Arable-margin Monitoring Form 2024 - HE10 mix

Stop number	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	*Date:* 4 August 2024
1. Cover of desirable species - HE10 mix											
crested dog's- tail							5			5	**target for HLS** - at least 75% cover of desirable species by year 1
small leaved timothy				5		1			5	15	
smooth meadow-grass											
red fescue											
common bent	20		20	5						5	
Yorkshire-fog	25	20	15	10	30	20	60	25	60	15	Other non-target grass species present
creeping bent	5		5	30	35	15	20	50	40	10	
ryegrass									5		
meadow foxtail								5			
cock's-foot										25	
sweet vernal grass					5			5			
rough meadow-grass				10		30	10	10		15	
marsh foxtail											
false oat-grass		30	15				5	5			
2. Cover of bare ground											**target for HLS -** between 5% and 10 % by year 2
bare ground	1	1	2	10	1	1	1	2	0	1	
3**. Field-layer composition - HE10 mix**											
black knapweed	60	30	60	20	35	20	25	40	20	25	**target for HLS -** between 5% and 60% of at least 3 sown desirable broad-leaf species by year 2
yarrow		15		1	5	20		1	15	15	
ox-eye daisy				1	5	1	10		2		
ribwort plantain		10	10	5	15	5	40	25	10	5	
red clover											
meadow vetchling											
common bird's-foot											
meadowsweet											
tansy-leaved Phacelia											
cut-leaved crane's-bill											
greater bird's-foot											
greater knapweed											
common fumitory											
borage											
cudweed					1						
cornflower											
corn marigold											
corncockle											
corn chamomile											
lady's bedstraw											
hedge bedstraw											
hedge woundwort											
4. Undesirable field species											
common nettle									1	1	**target for HLS -** no species should be more than occasional
curled dock											
broadleaved dock											
spear thistle											
creeping thistle,				15					15	15	
common ragwort											