

Meadow monitoring at Fairfield Association Fauna Nature Reserve, Lancaster, 2014

a report for
the Fairfield Association



compiled by
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Introduction and methods

Since 2011, an area of grassland in the south-eastern part of the Fairfield Association Fauna Nature Reserve has been managed as meadowland; with exclusion of grazing stock during the spring and early summer, removal of ragwort, some seeding to encourage a more diverse meadow sward and cutting of the grassland in mid summer (late July/ early August) with subsequent removal of the hay to prevent a build up of nutrients.

The site has been monitored each summer since; using methods outlined in the *Fairfield Association meadow survey training notes* (Skelcher 2012) to determine whether these management works are being effective in producing a botanically rich meadow and to guide future management of the plot. This monitoring principally involves recording, at 10 points (i.e. a 2 x 2 m quadrat) within the meadow, the presence or absence of a number of key plant species which are indicators of either 'lowland meadow' or of 'semi-improved grassland'. The 10 monitoring points were selected to provide broad cover over the full meadow area, while each individual point was 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 were avoided.

According to the criteria outlined in Skelcher (2012), a successfully managed meadow should support at least two 'lowland meadow' indicator species in 5 or more quadrats (frequent) and at least two species in 3 or more quadrats (occasional). Through good management, a greater diversity and frequency of indicator meadow species should be expected over time, indicative of a herb-rich lowland meadow; though this could take a number of years to achieve.

In 2011 and 2012, monitoring took the form of a training event with a number of Fairfield Association members in attendance. In 2013 and 2014 monitoring was undertaken by Graeme Skelcher, but has remained open to Fairfield Association members who wished to attend, with one and three members present respectively in each year. 2014 monitoring was carried out on 10 July.

Results

In 2014, one species from the 'lowland meadow' indicator list was recorded as 'abundant' (yellow rattle) and 1 'semi-improved grassland' indicator species was 'abundant' (meadow buttercup), 2 were 'occasional' (red clover and ribwort plantain) and 3 were 'rare' (common sorrel, self-heal and yarrow - see Appendix for details). This falls short of the criteria for 'lowland meadow', but does satisfy the criteria required for description as 'semi-improved grassland' (two species at least frequent and two at least occasional from either of the lowland meadow or semi-improved grassland indicator lists).

The mean cover of herbs over the 10 quadrats was 56%, with only one quadrat having less than 40% cover. All potentially negative meadow features were absent or recorded within acceptable limits. The principal negative feature noted was the presence of ragwort, which occurred at less than 1% cover at each of just two points.

Discussion

The table below shows that there has been a distinct improvement in the quality of the meadow since 2011. Most striking is the percentage herb cover, which has now reached 56% compared to just 15% in 2011 and 2012. The decrease in cover of non-desirable species is also very encouraging, with the cover of (mainly) ragwort decreasing from 5% cover over the whole site to less than 1% at just two of the sample points.

The only 'lowland meadow' indicator species recorded at the site has been yellow rattle, which has increased from 'occasional' in 2012 to abundant over the last two years. The general diversity of herb species has not altered very much (with a few species, which only occurred rarely, appearing to have become lost, following the switch from pasture to meadow management), but there is a sense that some species are becoming established and more consistently frequent within the sward.

Table: Abundance of indicator species at Fairfield Meadow in each year together with values of other indicators of meadow quality.

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

Indicator	2011	2012	2013	2014
	6 August	5 July	19 July	10 July
overall % herb/sedge cover (target > 20%)	15	15	47	56
overall % undesirable species (target < 5%)	5	<5	1	<1
overall % bare ground (target < 10%)	0	0	0	0
overall % scrub (target < 5%)	0	0	0	0
overall % large sedges, rushes, reeds (< 30%)	0	0	0	0
Species				
common cat's-ear	R			
common sorrel	O	R	R	R
field wood-rush	R			
germander speedwell	R			
meadow buttercup	R	A	O	A
red clover	R	O	R	O
ribwort plantain	R	O	O	O
selfheal	R	R		R
yarrow	O	R	R	R
yellow rattle		O	A	A

Conclusions

Development of the site from agriculturally improved pasture to a semi-improved meadow is a positive endorsement of the management carried out over the last four years. There is still some way to go before the field could be considered as a high quality lowland meadow and the lack of any wild flower-rich fields in the near vicinity will limit potential for natural colonisation. However, four years is still a relatively short period of time for the development of a meadow and some further enhancement should be expected over the next few years.

References

- 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: Fairfield Meadow Monitoring Form 2014

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.
6. Note other important habitats present in the field, though these do not need to be monitored.

Site	Fairfield Meadow												
Date	19 July 2013												
			1	2	3	4	5	6	7	8	9	10	Total
% herb/sedge cover (target > 20%)			70	50	60	80	70	50	40	50	10	80	56
% undesirable species (target < 5%)			1	0	0	0	0	1	0	0	0	0	0
% bare ground (target < 10%)			0	0	0	0	0	0	0	0	0	0	0
% 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	Go6												
autumn hawkbit	Go6	Go2											
betony	Go6												
bird's-foot-trefoil	Go6												
bitter-vetch	Go6												
black knapweed	Go6												
black medick		Go2											
bugle	Go6												
bulbous buttercup		Go2											
burnet saxifrage	Go6												
common bistort	Go6												
common cat's-ear		Go2											
common meadow-rue	Go6												
common sorrel		Go2						✓					R
cowslip	Go6												
cuckoo flower		Go2											
devil's-bit scabious	Go6												
dropwort	Go6												
dyer's greenweed	Go6												

Site Fairfield Meadow															
Date 19 July 2013			1	2	3	4	5	6	7	8	9	10	Total		
eyebright	Go6														
field scabious	Go6														
field wood-rush		Go2													
germander speedwell		Go2													
glaucous/common/carnation sedge	Go6														
goat's-beard	Go6														
great burnet	Go6														
greater bird's-foot-trefoil	Go6														
lady's bedstraw	Go6														
lady's-mantles	Go6														
lesser trefoil		Go2													
marsh marigold	Go6														
marsh valarian	Go6														
marsh/fen bedstraw	Go6														
meadow buttercup		Go2	✓	✓	✓	✓	✓	✓			✓	✓	A		
meadow vetchling	Go6														
meadowsweet	Go6														
milkworts	Go6														
narrow-leaved water-dropwort	Go6														
orchids	Go6														
ox-eye daisy	Go6														
pepper-saxifrage	Go6														
pignut	Go6														
ragged robin	Go6														
red clover		Go2	✓		✓	✓		✓					O		
ribwort plantain		Go2	✓		✓	✓		✓					O		
rough hawkbit	Go6														
salad burnet	Go6														
saw-wort	Go6														
selfheal		Go2	✓										R		
sneezewort	Go6														
tormentil	Go6														
water avens	Go6														
water mint	Go6														
wood anemone	Go6														
yarrow		Go2											R		
yellow rattle	Go6		✓	✓	✓	✓	✓	✓	✓	✓			A		

Lowland Meadow	at least 2 Go6 species <i>Frequent</i> and at least 2 Go6 species <i>Occasional</i>
Semi-improved Grassland	at least 4 Go2 or Go6 species <i>Occasional</i>