Magdalen Hill Cemetery Extension

Annual Survey Report 2021

Winchester City Council

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1. Summary

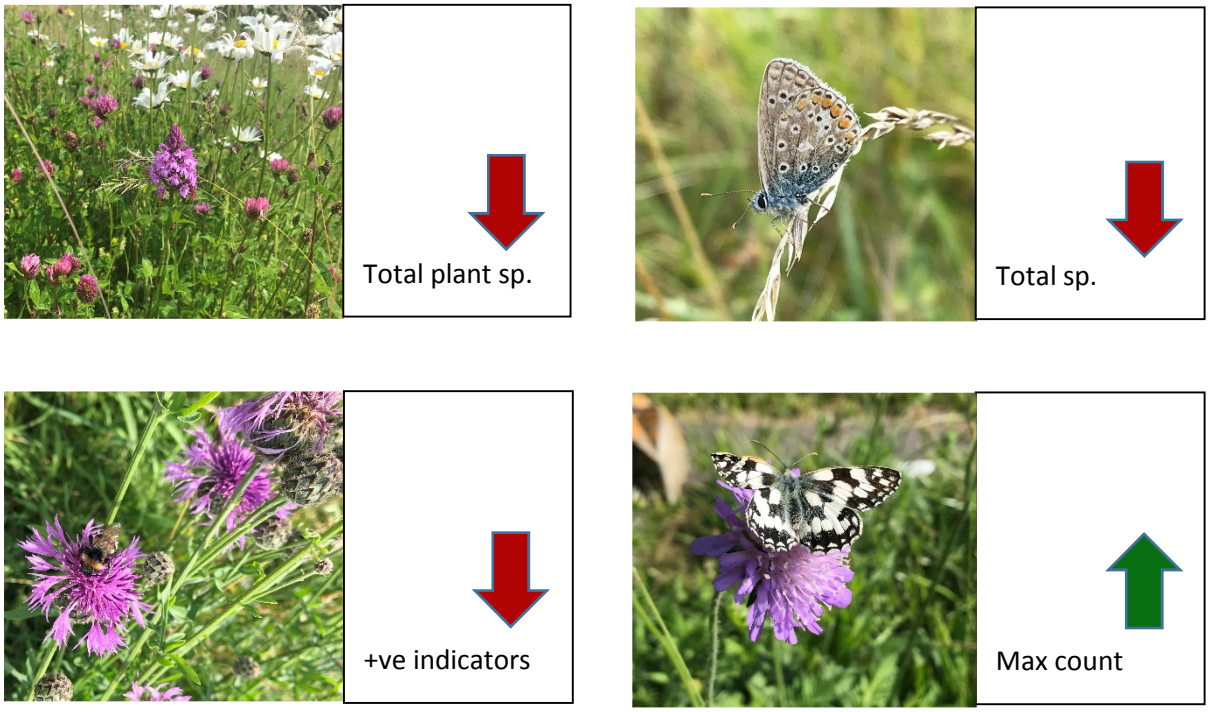

Figure 1. Headline results of 2021 biodiversity surveys at Magdalen Hill Cemetery extension. Green arrows show an increase compared to 2020 and red arrows show a decrease.

Table 1. Results of 2021 surveys compared to previous surveys at Magdalen Hill Cemetery extension. This shows the maximum number of reptiles recorded in one visit.

SURVEY	2020	2021
BOTANY		
TOTAL NO. SPECIES	43	38
POSITIVE INDICATORS	17	15
BUTTERFLIES		
TOTAL NO. SPECIES	20	19
MAX COUNT	66	124
REPTILES		
SLOW WORM		2

2. Introduction

In 2015 planning permission was granted for the extension of Magdalen hill Cemetery. In order to enhance biodiversity on site an area of this extension was scraped back exposing the low nutrient chalk underneath the top soil. In 2016, with the support of Butterfly Conservation, wildflower seeds were taken from Magdalen Hill Down (MHD) Site of Importance for Nature Conservation (SINC) and sown in this area in order to create a native chalk grassland meadow. The aim was to provide an extension to the habitat at MHD to support uncommon and declining species of butterfly.

In 2017 a further area was left as long grassland. Changing the cutting regime has not produced a meadow in this additional area but it has produced tussocky grassland and enhanced the habitat for invertebrates, small mammals and birds.

This meadow has taken a few years to fully establish but is now supporting a variety of plant species. This is the second year of monitoring surveys for both plants and butterflies and the first year for reptiles.

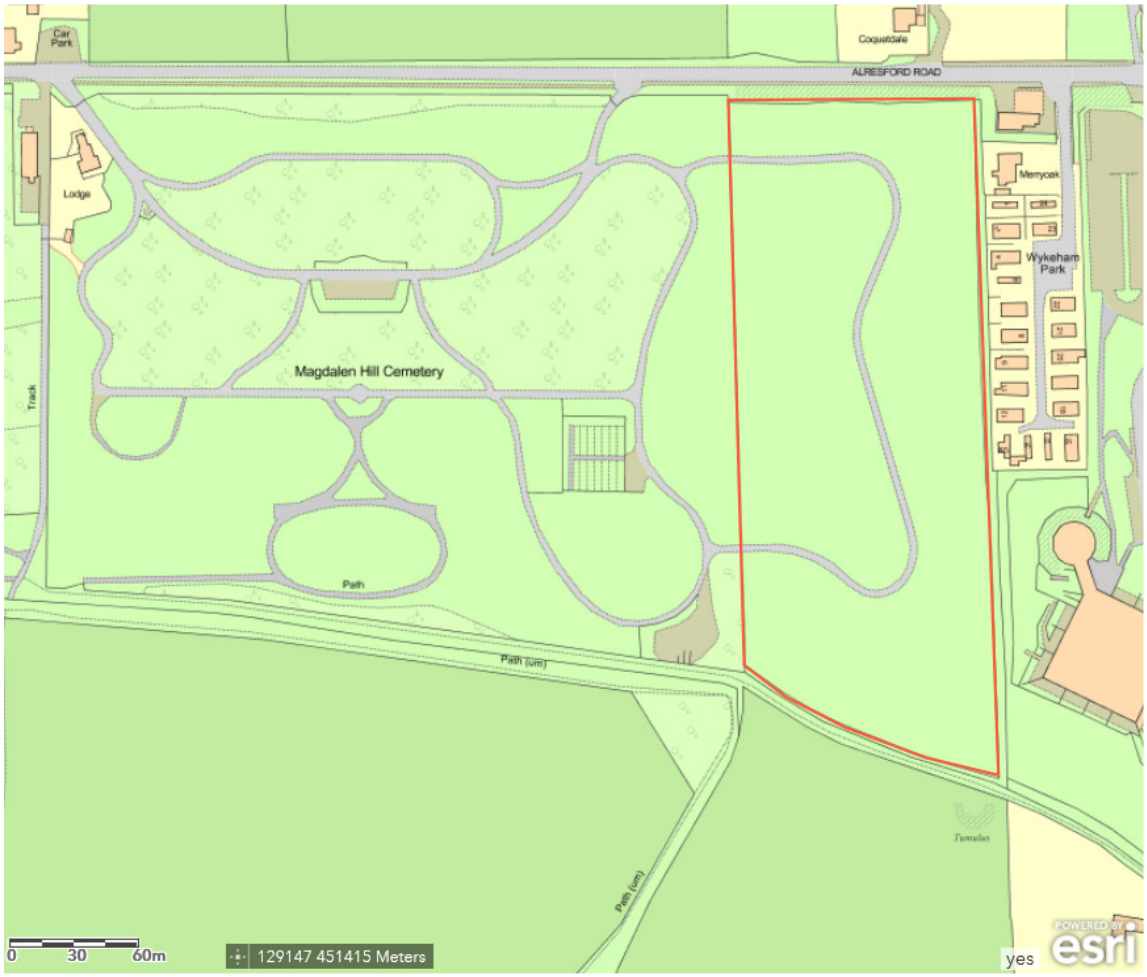

Figure 2: Location plan of Magdalen Hill Cemetery extension.

Figure 3: Small skipper (Thymelicus sylvestris) on Common Knapweed (Centaurea nigra) at Magdalen Hill Cemetery.

3. Methodology

Botany

The methodology was kept as similar as possible to Wheeler et al 2017 (1) to allow comparison across WCC sites. The condition assessment followed the common standards monitoring guidance for lowland grassland habitats (2).

8 quadrat locations were marked on the map prior to the survey in order to get an even coverage across the entire meadow area. No quadrats were placed within the long grassland area but the species present within this area were noted.

The survey involved identifying as many vascular plants within the 2x2m^2 quadrats as possible and recording the abundance using the DAFOR scale:

- D (Dominant) 50-100%
- A (Abundant) 30-50%
- F (Frequent) 15-30%
- O (Occasional) 5-15%
- R (Rare) <5%

The abundance of negative and positive indicator species for lowland meadow and calcareous grassland were recorded to show the condition of the grassland.

Figure 4: Location of quadrats for the botany survey at Magdalen Hill Cemetery.

Butterflies

The methodology is following the UK Butterfly Monitoring Scheme (UKBMS) but with reduced survey effort so that a fixed route transect (the yellow line shown in the figure below) was walked at a steady pace approximately every two weeks for a 26 week period from 1st April to 29th September. This was done in suitable weather conditions (above 13℃, with at least 60% sun if <18℃ and wind speeds <5 on the Beaufort scale) between 10:45am and 15:45pm. All butterflies within the transect area were recorded. Care was taken to ensure the same butterflies were not counted multiple times.

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Figure 5: Small copper (Lycaena phlaeas) at Magdalen Hill Cemetery.

Figure 6: Butterfly monitoring transect at Magdalen Hill Cemetery.

Reptiles

A reptile survey was undertaken by a member of ARG (Amphibian and Reptile Group). 10 tins were placed on site and these were checked 8 times during the survey season.

4. Results

Botany

Table 2. Abundance of plant species (DAFOR) across 8 quadrats surveyed at Magdalen Hill Cemetery on 7 July 2021.

Quadrat		1	2	3	4	5	6	7	8	Constancy	Cover
Lotus corniculatus	**Bird's-foot-trefoil**				R	R				2	R
Centaurea nigra	**Black Knapweed**	F	R	R	O	R	R	R	O	8	R-F
Medicago lupulina	Black Medick	F	O	O		R	R	R		6	R-F
Primula veris	**Cowslip**									+	
Convolvulus arvensis	Field bindweed		R				R			2	R
Centaurea scabiosa	**Greater Knapweed**				R		R			2	R
Senecio Vulgaris	Groundsel	R	R	R						3	R
Plantago media	**Hoary Plantain**	R								1	R
Anthyllis vulneraria	**Kidney Vetch**	O	D	R	A	A	D	D	D	8	R-D
Galium verum	**Lady's Bedstraw**	R	O	R	O	F	R	O	O	8	R-F
Leontodon saxatilis	Lesser Hawkbit	R								1	R
Origanum vulgare	**Marjoram**	R	R	R	R	O	O	R	O	8	R-O
Ranunculus acris	Meadow Buttercup	O	R	R	R	R	O	R	R	8	R-O
Filipendula ulmaria	**Meadowsweet**									+	
Lathyrus pratensis	**Meadow Vetchling**						O	R	R	3	R-O
Oilosella officinarum	Mouse-ear hawkweed	R			R					2	R
Leucanthemum vulgare	Ox-eye Daisy						R			1	R
Hypericum hisutum	Perforate St John-wort	R		R	R	R				4	R
Anacamptis pyramidalis	**Pyramidal Orchid**								R	1	R
Senecio erucifolius	Ragwort							R	R	2	R
Trifolium pratense	Red Clover					R	R	R		3	R
Plantago lanceolata	Ribwort Plantain	F		R			O			3	R-F
Leontodon hispidus	**Rough Hawkbit**				R			R		2	R
Sanguisorba minor	**Salad Burnet**		R		R	R	R			4	R
Onobrychis viciifolia	Sainfoin									+	
Prunella vulgaris	Self-heal	F	R	R	R	R	O	R	R	8	R-F
Phleum bertolonii	Smaller Cat's-tail	F	R				R		O	4	R-F
Scabiosa columbaria	**Small Scabious**				R					1	R
Crepis capillaris	Smooth Hawk's-beard	R	R	R						3	R
Anthoxanthum odoratum	Sweet Vernal Grass	F	F	O	O	O	F	F	R	8	R-F
Phleum pratense	Timothy	R								1	R
RTrifolium repens	White Clover	R								1	R
Daucus carota	Wild Carrot	R	O		R	O	O		R	6	R-O
Reseda lutea	Wild Mignonette									+	
Archillea millefolium	Yarrow	R	R	R	O	F	R	F		7	R-F

Rhinanthus minor	**Yellow-rattle**			R				O	O	3	R-O
Blackstonia perfoliata	Yellow-wort									+	
Holcus lanatus	Yorkshire Fog	R								1	R
Species in **bold black** are positive indicators of UK BAP habitat lowland meadow only; species in **bold blue** are positive indicators of both lowland meadows and lowland calcareous grassland; whilst species in **bold red** are calcareous grassland indicators. + shows presence outside of the quadrats.											

Table 3. Results of Grassland Condition Assessment

Negative Indicator Species		**Total (quadrats)**	**DAFOR**	**LM indicator**	**LCG indicator**
Senecio jacobaea	Ragwort	2	R		
Positive Indicator Species					
Lotus corniculatus	Bird's-foot-trefoil	2	R	**Y**	**Y**
Centaurea nigra	Black Knapweed	8	R	**Y**	
Primula veris	Cowslip	+		**Y**	
Centaurea scabiosa	Greater knapweed	2	R		**Y**
Plantago media	Hoary Plantain	1	R		**Y**
Anthyllis vulneraria	Kidney Vetch	8	D		**Y**
Galium verum	Lady's Bedstraw	8	O	**Y**	**Y**
Origanum vulgare	Marjoram	8	R		**Y**
Filipendula ulmaria	Meadowsweet	+		**Y**	
Lathyrus pratensis	Meadow Vetchling	3	R	**Y**	
Anacamptis pyramidalis	Pyramid Orchid	1	R	**Y**	**Y**
Leontodon hispidus	Rough Hawkbit	2	R	**Y**	**Y**
Sanguisorba minor	Salad Burnet	4	R		**Y**
Scabiosa columbaria	Small Scabious	1	R		**Y**
Rhianthus minor	Yellow-rattle	3	O	**Y**	
Species in **bold black** are positive indicators of UK BAP habitat lowland meadow only; species in **bold blue** are positive indicators of both lowland meadows and lowland calcareous grassland; whilst species in **bold red** are calcareous grassland indicators. + shows presence outside of the quadrats.					

38 plant species were recorded across the 8 quadrats with an additional walk through the long grassland area/strip. 15 positive indicators of lowland meadow and/or calcareous grassland UK BAP habitats were noted.

Butterflies

Table 4. Butterfly survey results across 12 visits (approximately every two weeks) from April to September at Magdalen Hill Cemetery in 2021.

Date	**1/04**	**19/04**	**27/04**	**12/05**	**26/05**	**03/06**	**1/07**	**09/07**	**22/07**	**04/08**	**16/08**	**15/09**
Start	11:10	14:10	13:30	13:20	12:45	16:05	13:50	10:00	14:30	15:30	13:20	15:45
Finish	11:25	14:25	14:00	13:40	13:15	16:35	14:20	10:30	15:00	16:00	13:50	16:15
Temperature	14	15	16	15	16	19	22	18	27	21	17	21
% Sun	90	100	90	100	90	35	50	75	70	30	50	60
Wind	5	2	2	4	2	3	0	2	3	2	3	0
Small skipper						3	8	22	9			
Large skipper							6	4				
Brimstone		8	6	3		1	1		2			
Large white						1		4	18	6	1	2
Small white								1				2
Small copper							1					
Small blue						3	4	2	5	3	6	4
Brown argus									1			
Common blue						4	4		3	4	10	4
Chalkhill blue									1			
Red admiral									2		1	
Painted lady										1		
Small tortoiseshell											1	
Peacock		2	2				1			3		
Marbled white							13	26	12			
Gatekeeper									10	10	1	
Meadow brown							29	59	20	19	8	1
Ringlet									1			
Small heath					3		10	6	1		2	1
No. butterflies	0	10	10	3	3	12	77	124	85	46	30	14
No. species	0	2	2	1	1	5	10	8	13	7	8	6

A total of 19 butterfly species were recorded on site with a maximum of 124 individual butterflies on 9 July and 13 species on 22 July.

Reptiles

ARG recorded a total (and peak) count of 2 slow worms. In addition to this ARG have recorded of common lizard directly adjacent to the cemetery extension area.

In addition to this on 26 May a slow worm was recorded in the long grass during a butterfly transect.

Other species

Other species recorded on site during the surveys include: Cinnabar (*Tyria jacobaeae*), Red legged partridge (*Alectoris Rufa*) and Emperor dragonfly (*Anax imperator*).

5. Discussion and comparison with previous years

The botany was undertaken for the second year. Five less flowering plant species were recorded on site and two less positive indicator species. Agrimony, Wild basil, Goat's beard and Fairy flax were not recorded in 2021 but Meadow vetchling and Small scabius were recorded when they were not in 2020. Anecdotally more Pyramidal orchids were noted within the grassland. The dominant species on site is still considered to be Kidney vetch.

The butterfly transect was also undertaken for the second year running. 19 species were recorded throughout the survey compared to 20 in 2020. Holly Blue and Grizzled skipper recorded on site in 2020 but not 2021 and Large skipper was recorded in 2021 but not in 2020. However considerably higher numbers of individuals were recorded in 2021 with 124 compared to 66 in 2020. This is largely due to high numbers of Meadow Brown and to some extent Marbled white during July 2021. Some of these differences may be due to weather. Spring 2020 was considerably warmer than in 2021 with a temperature of 25 degrees on 26/05/20 compared to 16 on 26/05/21.

The reptile survey was undertaken for the first time on the cemetery extension. This provides a baseline figure and shows that a small population of slow worms are present on site. Whilst common lizard are present in the wider area they have not yet been recorded on site.

Figure 7: Kidney Vetch and Pyramidal Orchid at Magdalen Hill Cemetery.

6. Management Recommendations

- Introduce collection regime for long grassland area to improve diversity.

Figure 8: Common Blue butterfly at Magdalen Hill Cemetery.

7. References

1. Wheeler, B. and Wilson P. (2017). Vegetation Survey and Condition Assessment of Whiteshute Ridge, 2017.
2. JNCC (2004). Common Standards Monitoring Guidance for Lowland Grassland Habitats. ISSN 1743-8160 (online).