

## **FRYENT COUNTRY PARK: HAY MEADOW SURVEY 2016**

### **Introduction**

Hay meadows at Fryent Country Park provide approximately 60 hectares of habitat within about thirty hedged fields. This report is a summary of the (2015) and 2016 hay meadow survey.

Survey information and knowledge informs management decisions, and provides feedback on the effect of our Environmental Stewardship agreement; and actions towards the Lowland Meadows Biodiversity Action Plan. Although this summary is collated after the harvest, initial data from the hay meadow survey is available by early July and is used to plan the management of the meadows during the late summer and autumn. Weekly conservation projects throughout the year often contribute to the maintenance of the meadows.

**Environmental Stewardship:** An Environmental Stewardship agreement was awarded by Natural England in February 2008. The meadows in the Fryent Country Park scheme are under two management prescriptions.

The majority are managed as 'semi-improved' (HK15) and are managed to include an area that is left uncut each year for the benefit of over-wintering invertebrates and other wildlife. These areas cover about a tenth of the field area. This area is rotated each year to prevent the establishment of thistles, brambles and Sloe scrub.

Other meadows are in a prescription for 'species-rich, semi-natural' (HK7) meadows. These are Lower Hydes East, Honey Slough West, Lyon, Honey Slough East, and Half Yarde Meade. These meadows have their whole areas harvested.

For both prescriptions further cutting and harrowing may follow at other times of the year, aimed at reducing accumulated thatch / matt, and increasing species richness.

Up to 2015 there was also a difference in the earliest cutting dates allowed on these two management options. (In 2015 this was changed to allow earlier cutting of all meadows which should be conducive to reducing the structural dominance of False Oat-grass).

**Monitoring team:** Barn Hill Conservation Group (BHCG) organised the monitoring of the meadows, including the database updates and data input for 2015 and 2016. Many thanks to Simon Mercer.

**Monitoring:** All of the monitored set of hay meadows were surveyed in 2015 and 2016. In some years a random sub-set has been selected. The monitoring aims to include the five 'species-rich, semi-natural' fields each

year. The numeric results reported here exclude those for Masons Field unless stated otherwise.

**Species richness:** Species richness is the number of species per unit area. It reflects the combined changes in constituent changes in species frequencies.

Species richness in 2015 averaged at 8.5 species per square metre. This was a reduction on the 10.5 of 2014 and followed the flail cutting without harvesting of 2014. Despite the improved management in 2015, the average species richness in 2016 was 8.4.

For 2015, species richness for individual meadows was in the range of 6.3 at Lyon field to 10.8 at Lower Hydes East. For 2016 the range was from 6.0 at Lyon field to 11.1 at Bugbeards / The Brache.

Information on the constituent species is provided at the end of this report.

Year	Species Richness	Year	Species Richness
2007	8.2	2013	9.6
2008	7.4	2014	10.5
2009	7.4	2015	8.5
2010	10.7	2016	8.4
2011	10.8		
2012	9.9		

**Thatch:** An objective of the Environmental Stewardship agreement is to reduce the quantity of thatch (matt / un-decomposed vegetative material at ground level) which is considered to reduce the species richness by physically smothering and otherwise reducing the emergence of some species. The Environmental Stewardship target is that thatch should not exceed 10% of ground cover. Thatch is difficult to measure: the material is visually obscured by the growing sward and canopy above; and at ground level needs to be distinguished from the current years' growth. Estimates were made in each quadrat.

Lyon Field and Honey Slough West had the highest percentage of ground level thatch in 2014 (at 93% for Lyon Field) compared with 13% at Half Yards Meade and 14% at Lower Hydes East. The average for all meadows was 28%.

Year	Thatch	Year	Thatch
2007		2013	60%
2008	77%	2014	28%
2009	62%	2015	76%
2010	40%	05.12.2016	33%
2011	48%	2016	22%
2012	36%		

The meadows were cut but not harvested in 2014, the thatch from which probably contributed to the high percentage cover in 2015. Harvesting was undertaken in 2015 (plus aftermath treatments) and the thatch reduced to 22% in 2016. For operational reasons the thatch cover in most of the meadows was also estimated in early December 2016, with an average of 33% cover.

**Cutting dates:** In 2015 the harvesting commenced on 4 August 2015; and in 2016 on 23 July 2016. Both dates were later than anticipated, while once started, cutting and harvesting were protracted over a period of time.

**Meadow Brown butterfly:** The life-cycle of this species is considered to be associated with traditional hay meadow management. Monitoring of populations has continued annually and transect counts are [available](#).

**Hay Watch:** Hay Watch is organized at the time of the harvest. Thank you to those who participated.

**Field Management records:** Spreadsheet/s of field management are maintained to bring together farm records and data from historic, geographic, administrative, technical, and management sources.

**Meadow management:** Harvesting commenced later than anticipated in 2015, and progress was protracted. However, some of the fields then received an aftermath harvest and then chain harrowing. Despite the change of guidance allowing for an earlier start in 2016, cutting commenced later than anticipated, was also protracted, and in some fields, unfinished.

**Masons Field:** Masons Field on the north-east of the Country Park is the subject of a Heritage Lottery Fund award to restore the field. Following the main restoration work, projects have focused on improving the management of the meadow, hedgerows, green lanes and orchard areas. The species richness in 2015 was 7.2 and in 2016 it was 9.5. Thatch was 92% in 2015 reducing to 23% in 2016. A report on progress was printed in early 2015 – copies are [available](#) from Barn Hill Conservation Group.

**Soil Association Organic Standard:** The certification was retained at the annual inspection. Masons Field (the extension to the Country Park), the woodlands and their produce are certified as organic.

## Species:

Details of the occurrence and frequency of each species are held in a database that includes data on over 200 species recorded in the meadows since 1985. The following tables cover the more recently frequent species only – and please consult the database for more details and accuracy. Masons Field was also surveyed but not included in the tables below, as the monitoring commenced there in a later year. Species are listed with frequencies (percentages) based on the proportion of one-metre square quadrats in which the species was recorded. Figures of 0 include some frequencies of less than 0.5%; and thus, a zero does not necessarily indicate absence.

The figures for lowest and highest cover the whole series from 1985 to 2016. The frequencies for the years 2008 and 2016 are a guide to the situation during the Environmental Stewardship agreement.

Yorkshire Fog <i>Holcus lanatus</i>					
Lowest		Highest		2008	2016
1997	83	2002	100	96	96
A medium height grass. Present in almost all quadrats.					

False Oat-grass <i>Arrhenatherum elatius</i>					
Lowest		Highest		2008	2016
1985	37	2006	99	99	81
Structurally the most dominant grass in most of the annually cut meadows, it does better when harvested material is not collected up. Both frequency and abundance increase further if areas are left uncut. It reduces as the number of cuts per year increases. At Fryent Country Park, an aftermath cut can be effective at reducing the frequency and structural dominance – and opening the sward for other species. Earlier hay harvesting is also thought to reduce this species. The frequency was 95% in 2015. Meadow management in 2014 was mainly of two flail cuts, but in 2015 there was a hay harvest, an aftermath harvest and harrowing which could have been conducive to reducing False Oat-grass in 2016.					

Rough Meadow-grass <i>Poa trivialis</i>					
Lowest		Highest		2008	2019
1997	26	2001	95	85	89
This species does better in dry years, or following a dry year. It does better in shorter, open swards.					

Meadow Vetchling <i>Lathyrus pratensis</i>					
Lowest		Highest		2008	2016
1985	17	2014	85	58	73
Yellow-flowering. An indicator species of meadows and has increased during recent years.					

Meadow Foxtail <i>Alopecurus pratensis</i>					
Lowest		Highest		2008	2016
1985	27	2013	86	84	83
An early-flowering grass of meadows. Look out for the 'fox-tail' when in flower.					

Meadow Buttercup <i>Ranunculus acris</i>					
Lowest		Highest		2008	2016
1985	29	2013	82	45	54
Appears to be partly affected by cyclic patterns over several years, while other factors probably also affect frequencies.					

Couch <i>Elytrigia repens</i>					
Lowest		Highest		2008	2016
2012	39	1997	89	45	32
Possibly under-recorded when not flowering.					

Bent grasses <i>Agrostis spp.</i>					
Lowest		Highest		2008	2016
1994	10	2003	66	23	50
Late developing so sometimes under-recorded. Most plants in the meadows are Common Bent <i>Agrostis capillaris</i> though other species of <i>Agrostis</i> may also be present.					

Cocksfoot <i>Dactylis glomerata</i>					
Lowest		Highest		2008	2016
1985	9	2014	54	33	44
Cocksfoot has increased during recent years.					

Hairy Tare <i>Vicia hirsuta</i>					
Lowest		Highest		2008	2016
2001	0	2011	78	8	7
Hairy Tare benefits from hot dry summers, and during the previous year.					

Meadow Brome <i>Bromus commutatus</i>					
Lowest		Highest		2008	2016
2002	8	2011	62	15	39
The name is apt; this grass appears to do best at a single hay meadow cut and harvest per year.					

Perennial Rye-grass <i>Lolium perenne</i>					
Lowest		Highest		2008	2016
2009	12	1987	82	14	22
Widely used agriculturally, for sports pitches and lawns. Perennial Rye-grass competes better if cut frequently, and in nutrient-rich soils.					

Smooth Tare <i>Vicia tetrasperma</i>					
Lowest		Highest		2008	2016
2001	0	2010	45	14	9
An annual legume, it benefits from hot and dry summers, and during the previous year.					

Cut-leaved Cranesbill <i>Geranium dissectum</i>					
Lowest		Highest		2008	2016
2001	1	2011	43	6	14
Frequencies are higher following, and during dry summers.					

Creeping Buttercup <i>Ranunculus repens</i>					
Lowest		Highest		2008	2016
2006	5	1989	63	7	20
Some evidence of a medium-term cyclic pattern. Prefers shorter, damper swards.					

Common Vetch <i>Vicia sativa</i>					
Lowest		Highest		2008	2016
2001	1	1997	83	22	6
As for other annual legumes, Common Vetch benefits from hot dry summers and during the preceding year.					

Small-leaved Cat's-tail <i>Phleum bertolonii</i>					
Lowest		Highest		2008	2016
2012	3	2014	17	7	12

Meadow Barley <i>Hordeum secalinum</i>					
Lowest		Highest		2008	2016
1985	2	2010	15	9	13

Common Sorrel <i>Rumex acetosa</i>					
Lowest		Highest		2008	2016
2007	1	2012	23	4	11
Can also be used as a herb.					

Creeping Thistle <i>Cirsium arvense</i>					
Lowest		Highest		2008	2016
2016	1	1992	48	10	1
An un-desirable species on account of un-palatability to livestock. It increases in poorly managed meadows, but can be reduced by increasing the cutting frequency. A practice of using the data from the meadow monitoring in early summer to identify meadows with high frequencies of Creeping Thistle, and then arranging for a second cut in the late summer to follow the harvest, applied over a number of years, appears to have been effective.					

Crested Dog's-tail <i>Cynosaurus cristatus</i>					
Lowest		Highest		2008	2016
1990	1	2014	11	4	9
More frequent in meadows in the west of the Park.					

Common Mouse-ear <i>Cerastium fontanum</i>					
Lowest		Highest		2008	2016
2003	0	1991	20	3	5

Dandelion <i>Taraxacum officinale</i> agg.					
Lowest		Highest		2008	2016
1990	0	2013	13	2	6

Red Fescue <i>Festuca rubra</i>					
Lowest		Highest		2008	2016
1985	1	2010	12	8	10
More frequent in meadows in the west of the Park.					

Hogweed <i>Heracleum sphondylium</i>					
Lowest		Highest		2008	2016
1987	1	2012	8	6	9

Red Clover <i>Trifolium pratense</i>					
Lowest		Highest		2008	2016
2009	1	1985	22	1	7

Great Burnet <i>Sanguisorba officinalis</i>					
Lowest		Highest		2008	2016
	2	2010	8	4	5
Particularly in the HK7 meadows. Great Burnet is considered an indicator of MG4 type grasslands of the National Vegetation Classification which includes some flood-plain meadows.					

Meadow Fescue <i>Festuca pratensis</i>					
Lowest		Highest		2008	2016
1990	1	2012	5	4	1
Particularly in Lower Hydes East and Honey Slough East (both HK7).					

Lesser Yellow Trefoil <i>Trifolium dubium</i>					
Lowest		Highest		2008	2016
2008	0	1985	54%	0	0.04
This species does better in dry summers and the year following dry summers; and hay harvesting.					

White Clover <i>Trifolium repens</i>					
Lowest		Highest		2008	2016
2008	0	1987	42	1	3
White Clover is a species of short grassland, while it is less frequent in taller hay meadows. In the meadows typically found on and alongside mown paths.					

Crow Garlic <i>Allium vineale</i>					
Lowest		Highest		2008	2016
	0	2008	3	3	2

Marsh Bird's-foot Trefoil <i>Lotus uliginosus</i>					
Lowest		Highest		2008	2016
	0	2014	2	1	2
At Fryent Country Park, Marsh Bird's-foot Trefoil is typically found in the hay meadows and in damp, open habitats. The Common Bird's-foot Trefoil ( <i>Lotus corniculatus</i> ) is rare in the meadows but found on the mown grassland of the roadside mounds and in the acid grassland on Barn Hill.					

Creeping Cinquefoil <i>Potentilla reptans</i>					
Lowest		Highest		2008	2016
	0	2014	2	0	1

Curled Dock <i>Rumex crispus</i>					
Lowest		Highest		2008	2016
2012	1	1998	8	1	1

Tufted Vetch <i>Vicia cracca</i>					
Lowest		Highest		2008	2016
2006	0	2010	7	2	0.4

Lesser Stitchwort <i>Stellaria graminea</i>					
Lowest		Highest		2008	2016
2016	0.5	1999	8	3	0.5

Cow Parsley <i>Anthriscus sylvestris</i>					
Lowest		Highest		2008	2016
	0	2010	6	0	1
The frequency was 3% in 2015.					

Meadowsweet <i>Filipendula ulmaria</i>					
Lowest		Highest		2008	2016
	0	2009	2	1	1

Pedunculate Oak <i>Quercus robur</i>					
Lowest		Highest		2008	2016
	0	2012	3	0	0

Red-veined Dock <i>Rumex sanguineus</i>					
Lowest		Highest		2008	2016
1986	0	1994	4	2	4

Smooth Meadow-grass <i>Poa pratensis</i>					
Lowest		Highest		2008	2016
2001	0	1998	6	1	1

Blackthorn <i>Prunus spinosa</i>					
Lowest		Highest		2008	2016
	0	2012	5	3	3
Considered an un-desirable species in meadows, being woody, thorny and if left un-cut can grow into scrub. Occurs as suckers near to meadow edges; and presumably as seedlings when at a greater distance from the hedgerows.					



Goatsbeard <i>Tragopogon pratensis</i>					
Lowest		Highest		2008	2016
2016	0.04	1998	9	1	0.04

Tufted Hair-grass <i>Deschampsia cespitosa</i>					
Lowest		Highest		2008	2016
1987	3	1991	7	2	1
An indicator of damper conditions.					

Mosses <i>Bryophyta</i>					
Lowest		Highest		2008	2016
	0	2012	4	0	3 plus
Some individual species have been recorded separately; and the 2016 percentage is for the Common Feather-moss ( <i>Kindbergia praelonga</i> ). The 2012 entry is for the total of species. The height of the hay meadow sward is not conducive to a high frequency of mosses.					

Large-leaved Cat's-tail <i>Phleum pratense</i>					
Lowest		Highest		2008	2016
	0	1985	2	1	0

Hoary Ragwort <i>Senecio erucifolius</i>					
Lowest		Highest		2008	2016
	0	2010	1	0	0
A ragwort often found in meadows on clay soils. Look for the relatively deeply-cut and straight-edged leaves, and for in-rolled margins on the underside of the leaves. Probably present in all years but may be at too low a frequency to register during the survey. The 2015 frequency was 0.22%. Hoary Ragwort was recorded in 2016 in Masons Field though not within quadrats.					

Common Ragwort <i>Senecio jacobaea</i>					
Lowest		Highest		2008	2016
	0	2000*	1*	0	0.17%
This ragwort species is the target for management under the Ragwort Control Act 2003 as it can be poisonous to livestock and is nationally common. In 2015 the estimated frequency was 0.04% (and not found within any quadrats). However, in Masons Field (still in restoration; and not within the long-term set of monitored meadows), the frequency was about 20%. Plants in Masons Field were pulled before cutting or seed could have been shed. A series of planned repeat cuts could reduce the frequency. A separate report is produced for Common Ragwort: copies are <a href="#">available</a> from Barn Hill Conservation Group. (*Frequencies were higher in some years due to large-scale fly-tipping and ground disturbance in some meadows between 1986-1990).					

Cleavers <i>Galium aparine</i>					
Lowest		Highest		2008	2016
2014	0	1987	5	2	2
More a species of hedgerow edges: in meadows it is more an indicator of poor management of the meadow.					

