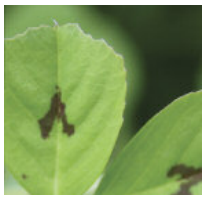
BARN HILL CONSERVATION GROUP

How we are restoring the meadow at Masons Field, Fryent Country Park



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heritage lottery fund

Planting bulbs

INTRODUCTION

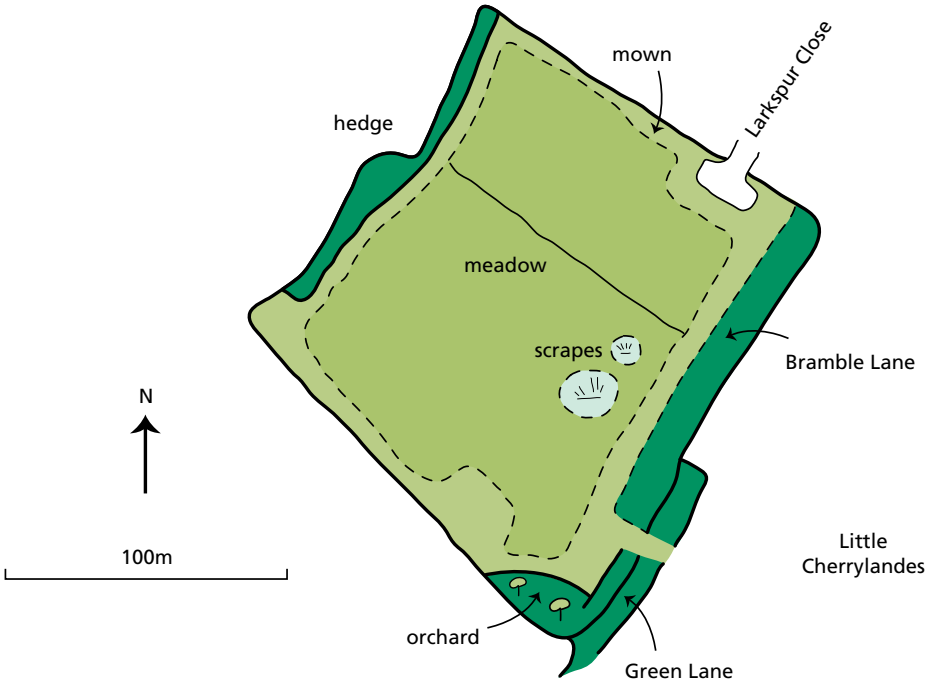
Restoration of the meadow at Masons Field, Fryent Country Park, within the London Borough of Brent, is described in this guide. Hay meadows are comprised of an intricate range of grasses and other plants which in turn support a diverse wildlife. Ideally, hay meadows are cut and harvested for hay during the summer. Restoration of Masons Field has provided an opportunity to recreate a type of grassland that was present here in the past.

LOCATION

Masons Field is situated in the north-east of Fryent Country Park. Access for visitors via Larkspur Close provides a link from Old Kenton Lane, Kingsbury Road and Roe Green. Southwards, a path has been installed linking Masons Field to the adjacent field of Little Cherrylandes and to other meadows of Fryent Country Park.

Masons Field is approximately 2.8 hectares in area, of which about 2 hectares is of meadow and grasslands.

Masons Field is designated as Metropolitan Open Land. It is part of the Fryent Country Park, Site of Importance for Nature Conservation (SINC), – as a Metropolitan Site – the highest grade within the SINC hierarchy. Brent Council declared the field a Local Nature Reserve in 2013.



Sketch map of Masons field and the main meadow features within and outside of field.

Grid reference: TQ 197 885
Post code: NW9 9LT

HISTORY

Masons Field was once part of woodland that covered much of lowland England. Clearings were made in the woodland to create three fields, as shown on a map of 1597 when the tenants had the name 'Mason'. Over time the woodland belts separating those fields were removed to leave one large field. The fields were probably farmed as meadows and as pasture for grazing livestock. There was some occasional arable use, for example at least once during the 19th century. However, arable use would have been difficult on London Clay soils. In the early 20th century, as suburbia spread with the enlargement of London, the field was acquired in 1927 by the predecessor of London Transport for use as a staff sports field. In the 1990s part of the field was sold for housing and the remainder became public open space to join Fryent Country Park. For more details see the booklet 'Masons Field as part of Kingsbury's history' by Philip Grant (2014) available from Barn Hill Conservation Group or on the BHCG website.

SOILS

Soil samples collected from Masons field were analysed at a laboratory. There are at least two soil types represented in the field.

Southern scrape

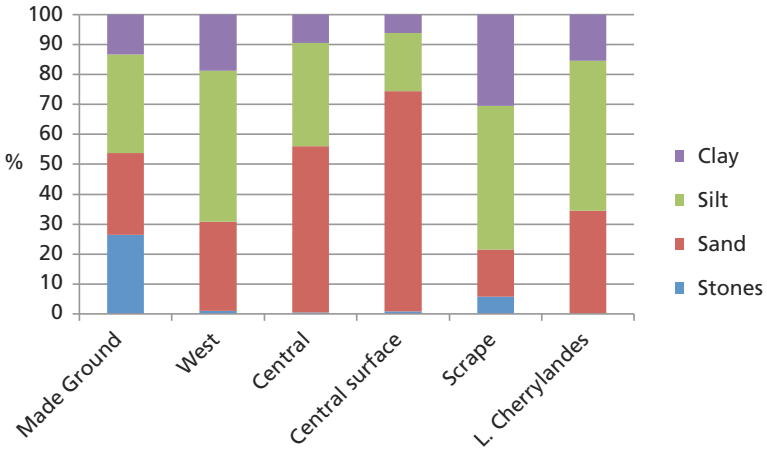
The majority of the area, generally in the south and centre, is indicative of the former sports field. Particle sizes include a high proportion of sand (55%). There is high organic matter (9.9%), high nitrogen and a pH of 4.6 which makes the soil acid. The soil in the grass root-zone, just below the surface, had higher proportions of sand (73%), organic matter (15%) and nitrogen; high Phosphorous (at 31ppm) and a more acid pH of 4.4.

In the north of Masons field the land rises slightly towards Larkspur Close and Sedum Close estate. Here the soil had a high proportion of stones (26%), high Potassium and a pH of 7.8 making the ground slightly alkaline. This area appears to be of made ground with a high proportion of construction waste that had been laid over the level of the former sports field.

In the west of the field the soil had been slightly disturbed and mixed prior to recent seeding. In the east of the field, two scrapes had been created by removing top soil to expose the underlying soil. Here the clay content was higher (30%) as was the next larger particle sizes of silt (48%).

By comparison, soils of the adjacent meadow of Little Cherrylandes had high organic matter (9%), high nitrogen, very low Phosphorous and a pH of 5.9. A more detailed report is available in the Appendices on the BHCG website. Conservation Group.

Differences in the soil structure at Masons Field, July 2014 (%)



See the list below for a description of the location.

SAMPLE REFERENCE	DESCRIPTION
Made ground	Raised ground, north, near to Larkspur Close and Sedum Close. During the 1990's demolition/ construction works had laid material over the level of the earlier sports ground.
West	Meadow on former sports ground with slightly disturbed soil prior to seeding, autumn 2012.
Central	Meadow on former sports ground, typical of much of the field.
Central surface	A sample from just below / within the turf of the central area.
South scrape	The site for the southern scrape that was later constructed in 2014. The sample was taken at a depth of 20-30cm to sample the soil at approximately the same depth as that of the proposed scrape, where the top 20-30cm of soil would be removed. Towards east side of field.
Little Cherrylandes	As a comparison, samples were taken from the adjacent hay meadow of Little Cherrylandes.

MEADOW RESTORATION

Restoration of the meadow at Masons Field involved:

- Preparatory works of rubbish removal, scrape creation, and Ragwort pulling.
- Planting using seeds, green hay, plugs, and bulbs.
- Management techniques including cutting, hay harvesting, aftermath cutting and harrowing.

PREPARATORY AND OTHER WORKS:

Rubbish removal

While large quantities of rubbish were removed from other areas of Masons Field, the meadow area had smaller quantities of litter. However rubble and other waste was encountered during the planting, particularly in the north of the field, as noted in the soil survey results. These materials were removed where encountered.

Common Knapweed

Scrape creation

Scrapes are shallow, gently sloping depressions with wide edges created to provide a freshwater habitat for part of the year. They can help to hold water at times of high rainfall; but may dry-out during dry weather. Scrapes provide conditions suitable for a range of plant, invertebrate and other wildlife.

Two scrapes were created at Masons Field. The design called for gentle slopes so that the flora of the edges could be cut and harvested during the summer – at the same time as the meadow was harvested. Excavation was undertaken

Nothern scrape in first winter

Volunteer project planting plant plugs

with machinery and the spoil was used to create new hedge-banks nearby. The remaining exposed soil of the scrapes had a high clay content and lower nutrient levels which would be desirable for encouraging species richness in meadows.

Marsh Bird's-foot Trefoil

The two scrapes were seeded using a mixture of perennial plant plugs (for the northern scrape), seeds of wild flower species, and by natural re-generation from root fragments and buried seed. The end result should be areas that support a mix of species of damp grassland grading into the surrounding meadow. During wet winters, the scrapes may look like ponds.

Species introduced to the scrapes included Cuckooflower, Meadowsweet, Marsh Bird's-foot Trefoil and Field Woodrush. Some of these species were planted also elsewhere in the field.

Ragwort pulling

Ragwort, mainly the Common Ragwort Senecio jacobea can establish in neglected meadows. While the plant is important for some species of insects, it contains a toxin that, if eaten, is poisonous to mammals including livestock. Because the toxin can accumulate in the tissues of the body, there is a pre-sumption to keep it out of the food chain of livestock. While livestock may avoid eating Ragwort, it is more difficult to avoid in dried hay. The plant has its own legislation, the Control of Ragwort Act 2003. Other species of ragworts also contain the toxin but are not covered by the legislation.

Common Ragwort plants had established at Masons Field, so pulling (and / or cutting at the base) was employed to reduce the plants prior to harvesting. Pulling is done using gloves to prevent contact with the skin. The cut material can be stacked to decompose away from the meadow. Note that this technique leaves the roots in the ground, so repeat cutting of meadows is important. Cutting controls the Ragwort which is then at a competitive disadvantage compared with the meadow plants that compete better when cut or grazed.


Red Clover


Cowslip

PLANTING

Species

The restoration project aimed to replace species that could have been present in the meadows in the historic past. As there were no records available of the former flora, the project sought to use species that were likely to have been present in meadows in Brent. This was based on:


Selfheal

- Species present in the other meadows of Fryent Country Park.
- Species lists for lowland British grassland communities for those communities present elsewhere at Fryent Country Park, particularly for Mesotrophic Grassland communities MG4 (a floodplain meadow community as at Half Yardes Meade), MG5 and MG1. See Rodwell, J.S. et al. 1992. British Plant Communities. Volume 3. Grasslands and montane communities. Cambridge University Press.
- The historic flora of Middlesex (Kent, D.H. 1975. The Historical Flora of Middlesex. The Ray Society, London); and the flora of London (Burton, R.M. 1983. The Flora of the London Area. London Natural History Society).

Species already present in Masons Field could be expected to spread given appropriate management of the meadow, for example, Meadow Vetchling (Lathyrus pratensis).


Snake's-head Fritillary

For the restoration, there was a preference to plant perennial species due to their ability to persist in a meadow and to survive cutting. Species that were sourced for the restoration included: Cuckooflower, Meadowsweet, Great Burnet, Common Bird's-foot Trefoil, Marsh Bird's-foot Trefoil, Red Clover, Tufted Vetch, Common Sorrel, Cowslip, Selfheal, Devil's-bit Scabious, Pepper Saxifrage Lady's Bedstraw, Lesser Knapweed, Ox-eye Daisy, Hawkweed, Common Cats-Ear, Autumn Hawkbit; Yellow Rattle, Field Woodrush; the grasses Yellow Oat Grass, Quaking Grass, Crested Dogs-tail, Sweet Vernal Grass; and bulbs Wild Daffodil, and Snake's-head Fritillary. Common Poppy, an annual, was also used to provide some colour during the first year.

Provenance: sourcing of seeds and plant material

Sourcing of seeds, plants and bulbs had to meet several other requirements:

- Wild species were required, in contrast to agriculturally improved varieties that are also available. Agricultural varieties differ from the wild plants and can be more vigorous.
- Organic Standards: Masons Field and Fryent Country Park are certified as organic under the Soil Association Organic Standard. Plant materials were sourced either as certified organic, or where the organic material was not commercially available, a Derogation was sought for the use of each species. A Derogation is a request to use non-organic plants, that is then checked and agreed by a certification body.
- Specialist UK suppliers for the project, confirmed, and provided evidence where necessary, that their stock had been raised from the true wild species and had been grown as near to organic standards as possible. In the case of bulbs, suppliers were required to confirm that there stock was not dug from the wild.

Yellow Rattle

Sources of plants for the restoration

The sources of plant material for the project were from:

- **Natural regeneration, the buried seed bank and self-seeding:** The majority of the current vegetation had developed as rough grassland from the former sports field in use during much of the 20th century. In the northern part of the field the sports field had been capped with construction land-fill probably in the late 20th century. Where the soil was disturbed during the restoration project, a range of common species germinated from the buried seed bank. Other species probably self-seeded from the adjacent meadows at Fryent Country Park; for example Goatsbeard and Salsify. Their presence in close proximity at Masons Field gave rise to the hybrid Tragopogon x mirablis.

Fritillary bulbs prior to planting

- **Seed:** Seeds were sourced mainly from a specialist supplier of British wild flower and wild grass seed. Another supplier provided seed of two orchid species that may once have occurred locally in old hay meadows.
- **Yellow Rattle:** Yellow Rattle (Rhinanthus minor) is a meadow plant that is semi-parasitic on the roots of other plants and particularly of grasses. By reducing competition from grasses, Yellow Rattle encourages the establishment of wildflowers planted as plugs and seedlings. Yellow Rattle was sown as seed onto areas of exposed soil where grass could be expected to grow.
- **Seed from green hay:** Freshly cut hay was collected from a species-rich meadow. At the recipient area, the hay is spread over bare ground or where gaps have been created by scarifying the ground. Seed drops from the green hay into the new meadow. For Masons Field, seed of Great Burnet (Sanguisorba officinalis) was collected within a few minutes of hay cutting from Half Yardes Meade, a Mesotrophic Grassland MG4 type grassland at Fryent Country Park. The seed was scattered over the bare soil of the southern scrape.
- **Perennial meadow plant plugs:** Meadow plants grown from seed of the wild species in commercial nurseries and supplied as plugs. Plugs are supplied in trays containing rows of plugs, each plant growing in soil within a moulded indentation in the tray. The indentations taper towards a drainage hole. The hole also enables the plug to be gently extracted from the tray, using for example the blunt end of a pencil. Plugs used for the Masons Field project were primarily of 55cc (cubic centimetres) with approximately 104 plugs per tray. These were approximately 60mm deep and of 36mm diameter. Some larger plugs were also sourced.
- **Bulbs:** Meadow species that propagate as bulbs included Snakeshead Fritillary and Wild Daffodil.

Boxes of wildflower plugs

Goatsbeard – Salsify hybrid

PLANTING

Planting bulbs

- **Natural regeneration and the buried seed bank:** While most of the vegetation of the field was left intact, the planting of seeds, plugs, or bulbs was widespread throughout the field. It is expected that the planted species will in time spread through the meadow.

- **Seed:** Seed of different species varies in size and shape, though generally is of a size that can be easily blown by wind. Seed was kept dry in sealed containers and away from excessive heat until the time of planting. Seed germinates on bare soil – it is a waste of seed to scatter it onto areas of established meadow vegetation or where a seedling would have difficulty competing against the surrounding established plants. And underground, the roots of established plants compete for nutrients and water. Sowing was undertaken at times when the wind speed was low, and scattered by hand. The ideal sowing rate was between 1.5 to 4 grams per square metre. Seed can be mixed in a bucket with dry sand before sowing, so as to make for a more even spread of seed. The sown seed was not covered with soil; indeed, nor would it be in a natural situation. Contact should be sufficient from the roughness of the soil, aided by the next rain. Research elsewhere suggests that birds find only a small proportion of the seed. Small quantities of seed were also scatted over the disturbed ground where plugs or bulbs had been planted.

  Seeds of the two orchid species were the size of dust. These were sown by adhering small quantities of seed to a wetted object, and then transferring the seeds by contact with the soil.

  Seeding was undertaken between the early autumn and the late winter. Germination would normally occur when conditions were next suitable during the early autumn or in the spring. Some species such as the Yellow Rattle were planted in September or the early autumn, as they required exposure to cold on damp ground during the winter to enable germination in the spring.

- **Seed from green hay:** Seed of Great Burnet Sanguisorba officinalis was collected from the meadow at Half Yardes Meade. Seed was collected from the cut flower heads in early September, within a few minutes of a rotary cut with machinery. The seeds were manually sown onto the exposed soil of the southern scape at Masons Field.

Packets of wildflower seed

- **Perennial meadow plant plugs:** Use of perennial rootstock differs from seed in that the plant – or at least the root, is already established. Planting is best undertaken during the autumn to early spring. Planting during this dormant period is better for the plant – and easier work for the planting teams. Planting is easier if delayed until the ground is soft. However, like seeds, the plug plants, benefit from reduced competition. One planting method was to use a spade to scrape off the top 1-2 cm of turf for an area approximately the width of the spade head. A slot would be created in the soil and the plug inserted. More efficiently, was the use of plug planting tools – available from plug suppliers. These metal tools contain a hollow head the same shape and size of the plugs. The user walks to the planting position, inserts the tool, and a plug of soil is extruded from the ground, into which the plant plug can be inserted. Variants of this method included creating longer, sinuous strips into which plugs were planted at approximately 20cm intervals; or into wider areas of disturbed ground created by machinery.

- **Bulbs:** Bulbs are planted at the depth required for each species. Bulbs are usually planted in the autumn, but can be planted as 'in the green' bulbs in the spring at which time their vegetative shoots are actively growing. In both cases, and as for plant plugs, it helps if the soil is moist and can be easily dug. A method for planting is to insert a spade into the ground to the depth required for the bulbs, on three sides of a square. The spade is then re-inserted into the intermediate of the three slices, and levered upwards to lift the square of soil and turf which is then laid upside down, on the ground on the 'hinge' side of the square. Approximately 5-10 bulbs are planted in the hole, and the soil and turf returned into place. Holes can be arranged to correspond to the desired drift pattern of the bulbs. Unlike seeds, bulbs can grow through established turf.

- **Pattern:** For seed, plants and bulbs the planting pattern could be varied to create intricate, informal and naturalistic patterns. Variations included patterns of drifts, sinuous lines and spiral patterns.

How to use a plug planter

Photo by David McClements

Ladies Bedstraw

PLANTING EFFICIENCY AND EFFECTIVENESS

The following notes are our practical experience from the project:

- Carefully plan the overall work; and the detail of the planting.
- That includes the plan for subsequent management of the meadow – and the resources that will be available to manage or farm the meadow.
- Planting seed onto bare soil is probably less expensive in terms of materials and labour, and more effective, than planting plugs into existing grassland.
- However, sowing seed requires that the existing vegetation is first removed – that may have high costs.
- At Masons field, the large majority of the field's existing vegetation was retained; so planting of plant plugs and bulbs was necessary, in addition to areas where seeds were sown.
- Planting plugs and bulbs is easier when the ground is moist.
- Test the soil prior to the project: planting into clay and topsoil is easier than planting into compacted made-ground containing rubble from past construction works.
- Removing patches of turf to facilitate the growth of plug plants can be useful to help establish the plants, though is labour intensive.
- Purchase the plug planting tools in advance, preferably from the same supplier of the plugs to ensure that they are of the same size and shape. Ensure that each planting team has at least once plug planting tool.
- Small teams worked well, with one or two people removing patches of turf, one person creating the holes with the plug planter, one person moving the trays of plants and releasing the plugs from the trays, and one person inserting the plugs into the holes in the ground.
- On clay soils, for planting events for between 1,250 and 3,000 plants, planting rates averaged between 17- 43 plants per person hour depending upon the experience of the volunteer team. That included the work of the turf removal, hole creation, release of the plugs and plug planting.
- The work rate of a professional team was not measured. One professional team estimated that they could have planted at a rate of 60 plants per person per hour. More notes are provided in the Appendices.

Photo by David McClements

Photo by David McClements

MANAGEMENT OF THE MEADOW:

Cutting

Cutting is the first part of the hay harvesting operation, and can be used on its own or for additional cuts. Two main types of machinery were used: tractor drawn flail equipment and tractor drawn rotary equipment from agricultural contractors. Rotary machinery was preferred as it is considered to cause less damage to insects and other invertebrates.

Hay Harvesting

Hay harvesting involves the cutting, field drying and collection of the cut material. Depending upon the state of the hay and the weather conditions, drying may take up to a few days. During that time the cut material can be spread to aid drying by the air and the sun. When dry the material is gathered into rows called windrows before it is baled. At Masons Field, harvesting was achieved for the first time for many decades when the meadow was harvested on 5 September 2013. On that occasion the material was gathered loose as haylage. Harvesting has the advantages of cutting and removing material from the meadow, thus reducing the accumulation of dead thatch and nutrients. Ripe seed heads may be shattered enabling the dispersal of seed. Perennial meadow plants are encouraged to grow new vegetative shoots, while non-meadow species such as Creeping Thistle, Common Ragwort and Brambles are reduced.

Aftermath cutting

Aftermath cutting, using a flail or agricultural rotary cutter, was undertaken in the late summer or early autumn. Aftermath cutting mimics to an extent, the effect of grazing. It creates gaps between plants in the sward, encourages meadow species to grow new vegetative shoots, and tops undesirable species such as Creeping Thistle and Common Ragwort. Cutting can be undertaken in the late winter or early spring if ground conditions are suitable.

Harrowing

Harrowing involves a tractor drawing a metal harrow over the meadow. This acts like a large comb – disturbing and breaking up the matt of thatch of dead vegetation at ground level, and slightly scarifying the ground surface. This reduces the smothering effect of the thatch, increases the light reaching the ground; and benefits the germination and growth of seedlings and of new vegetative growth.

TABLE OF MANAGEMENT WORKS AT MASONS FIELD

YEAR	MEADOW MANAGEMENT	COMMENTS
2003-2004	Mowing	Field mown several times each year.
2005-2010	Flail cut	Field flail cut, once or more, each year.
2011: Start of restoration project.	Flail cut	Meadow was cut with a flail.
2012	Flail cut – 80%	The meadow was flail cut except for an area in the west of the meadow that had been reseeded during the year.
2013	Flail – 80% Hay cut & harvest Aftermath cut	Spring cut to reduce some of the rough grassland species. 5 September 2013. The first hay harvest (as loose haylage) since modern records commenced. 12 October 2013.
2014	Rotary flail cut	The then contractor missed the harvest. A second contractor made a rotary cut in September, and again in October.

SURVEYS AND MONITORING

Surveys of the meadows are undertaken at Fryent Country Park each year. As the same method is used, comparisons can be made between meadows, and between years. Repeat surveys are given the term of monitoring.

At the start of the restoration project, surveys were extended to Masons Field in 2011. Surveys are undertaken at the same time each year, with target dates between 15-30 June, before the hay harvest. The method uses ten, 1-metre square quadrats (framed squares), placed approximately randomly throughout the meadow. The presence of plant species including grasses and mosses in each quadrat is recorded. When all of the quadrats have been surveyed, the percentage of quadrats in which each species was found, provides an estimate of the percentage frequency of each species in the meadow. Species found elsewhere in the meadow but not in a quadrat are noted. The percentage cover of thatch, the matt of dead plant material at ground level, was estimated in each quadrat and averaged across all the quadrats.

SPECIES RICHNESS

Species richness increased during the restoration from an average of 2.9 species per square metre in 2011 to 10.1 species per square metre in 2014 (see the graph).

The increase in species richness is considered to be partly due to the re-introduction of cutting and harvesting. While the species richness of Masons Field is now near to that of the established meadows of Fryent Country Park, the diversity could increase further during the next few years following the planting of the restoration project. In 2014 some of those plants had established and were recorded during the survey. It is expected that these will increase in distribution, number and frequency during the coming years.

Species Richness: number of plant species per square metre

THATCH

Thatch is the matt of dead organic material that occurs above the surface of the soil. Composed of dead grass and other vegetation, it may take a year or more to decompose. Thatch accumulates when a meadow is not cut and harvested, or where the cut hay is not harvested. Thatch smothers the germination of seeds, the growth of seedlings and new vegetative stems. This reduces the plant diversity of the meadow. Overtime, only a few vigorous species can penetrate this matt and those come to dominate the meadow.

Traditionally, aftermath grazing was employed in meadows. A few weeks after a hay harvest the meadow plants would have put on new growth. In the late summer or early autumn, livestock would have been introduced to the meadows. Aftermath grazing would have reduced the thatch, creating gaps between plants, thus increasing the light and space available for germination of seeds. In the late autumn or early winter, the livestock were taken off the meadows before the clay soils became too wet to take the weight of the livestock without poaching (damage) to the ground.

Thatch: percentage of thatch matt at ground level

Grazing by livestock is not practical at Masons Field and Fryent Country Park. To partially mimic the effect of grazing, a second cut can be taken in the late summer or early autumn. And if ground conditions allow, this is followed by harrowing in which a tractor draws a metal harrow over the meadow. Acting like a large comb this breaks up the matt of dead vegetation, and slightly scarifies the ground surface. Masons Field at the start of the restoration had not been harvested during some recent years and a thick matt had accumulated. The reduction in the matt of thatch is illustrated in the graph.


Common Sorrel


Spotted Medick

MASONS MEADOW FLORA: 2014 SURVEY

Species recorded as present during the survey of 2014 are listed here in declining order of average frequency. The full list is in the Masons Field Project Appendices on the BHCG website.

False Oat-grass, Yorkshire Fog, Rough Meadow-grass, Bent (Agrostis spp.) grasses, Dandelion, Red Fescue, Common Mouse-ear, Couch, Creeping Buttercup, Meadow Foxtail, Common Vetch, Common Ragwort, Creeping Thistle, Smooth Meadow-grass, White Clover, Cocksfoot, Common Sorrel, Cut-leaved Cranesbill, Meadow Buttercup, Ox-eye Daisy, Small-leaved Cat's-tail, Yellow Rattle; and forty-seven other species.

Analysis by the Floodplain Meadows Partnership indicates that the meadow flora is developing towards a MG1 (Mesotrophic Grassland 1) community, near to the Festuca rubra sub-community of Arrhenatherum elatius MG1a community. Under appropriate management this could tend towards MG5 and/or MG4c communities.


Chicory


Yellow Rattle seed heads

FUTURE MANAGEMENT

The project aims to encourage the further establishment and spread of the planted species during the following years. With appropriate management, a diverse flora and meadow community can develop.

HOW YOU CAN HELP OR FIND FURTHER INFORMATION

- Visit the Masons Field project webpages at the Barn Hill Conservation Group website **www.bhcg.btck.co.uk**
- Visit Masons Field and the other Fryent Country Park meadows.
- Join a meadow survey in June: details are on the Barn Hill Conservation Group programme.
- Help survey for the Meadow Brown and other butterflies by learning how to walk the butterfly transects.
- Volunteer on a practical conservation project. See the BHCG programme on the website or phone 020 8206 0492.

ACKNOWLEDGMENTS

The Heritage Lottery Fund provided a grant towards the project with partnership funding from Brent Council. Brent Council and Barn Hill Conservation Group were the project partners. Brent Council Sports and Parks Service provided project management. Barn Hill Conservation Group organised planting, surveys and other works. Planting was assisted by volunteers from Alperton Community School and Brent Youth Volunteers coordinated by Eileen Sabur;and residents from Valley Farm Residents Association. We also acknowledge the work by SEWA volunteers. Advice and training was provided by the Floodplains Meadows Partnership and from Flora locale. Simon Mercer and John Barrington of Barn Hill Conservation Group; and Leslie Williams contributed information to this report. Images are by Barn Hill Conservaiton Group, Leslie Williams and David McClements.

Common Sorrel and Meadow Buttercup

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