

Report to Mousehold Heath conservators
19 June 2015
Report of Head of local neighbourhood services
Subject Mousehold Heath annual review 2014-15

Item

8

Purpose

To seek the views of the Mousehold Heath Conservators on the draft annual report for 2014-15 and that Conservators comment on the level of activity during the period of the report and how the report might be used.

Recommendation

That the Conservators comment on the report and consider how it may be used to promote Mousehold Heath and the work of the Mousehold Heath Conservators

Corporate and service priorities

The report helps to meet the corporate priority city of character and culture

Financial implications

Any financial implications arising from this report will have or will be met from approved budgetary provision

Contact officers

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Background documents

None

Report

1. The Conservators have requested that an annual report be prepared.
2. The purpose of the report is to provide an overview of management works undertaken during the course of the year, to highlight the level of voluntary activity, the range and numbers of events, walks and a summary of any biological surveys undertaken. Conservators have also requested that the report contains a forward looking section.
3. Conservators agreed that this be presented to Conservators at the June meeting annual, as it would coincide with the financial out turn report.
4. Officers have drafted the annual report for 2014-15 which is attached at appendix 1 and have incorporated information requested at the meeting in June 2014 for the previous years report.
5. Conservators are requested to comment on the content of the report, how they might wish it to be used to promote Mousehold heath and the work of the Conservators and the City Council.

Mousehold Heath annual report 2014 to 2015 (draft)

Forward

To be provided at a later date by the Chair

Introduction

Mousehold Heath is a unique area made up of 88 hectares (184 acre) of woodland, heathland and recreational open space within Norwich. Mousehold has played an important part in the history of Norwich and it is a designated Local Nature Reserve. It is important both for its wildlife and as a place where people can unwind from the pace of city life.

In Tudor times, Mousehold Heath stretched as far north as South Walsham and was 22 miles round. The surviving remnant of the heath was given to Norwich City Council (then known as the local corporation) by the Dean and Chapter, to look after on behalf of the citizens of Norwich.

This was officially recorded in 1884 by Parliament in an agreement called the Mousehold Heath Confirmation Act and a body called the Mousehold Heath Conservators was formed to govern the heath. The Mousehold Conservators is comprised of city councilors, representatives of professional bodies and members of the public and meets four times a year, to oversee the management and protection of Mousehold Heath.

The Conservators also prepare an annual report which provides an overview of the work of the Conservators, any changes to the heath or new biological records and an opportunity to look forward and reflect on changes, opportunities and issues that the heath faces. The report also highlights the level of voluntary activity as well as the numbers of events, walks and surveys undertaken.

The work of the Mousehold Conservators

The management of Mousehold Heath is guided by a management plan with the current plan approved in 2013. This seeks to balance the important ecological value of Mousehold with an equally important recreational site within an urban area.

The main management objectives for Mousehold Heath are therefore to:

- ensure that the area is managed effectively
- maintain and enhance its wildlife and historic value
- promote and enhance people's access to and enjoyment of the site.

The challenge therefore is to balance these important and at times conflicting objectives.

The Conservators agree an annual work programme and budget in January each year for the following financial year and monitor the implementation of this plan at its meetings.

The management plan and further details of the work of the Mousehold Conservators can be found on the Norwich City Council website.

This annual report provides an overview of the work of the Conservators, any changes to the heath or new biological records and an opportunity to look forward and reflect on changes, opportunities and issues that the heath faces.

The report also highlights the level of voluntary activity as well as the numbers of events, walks and surveys undertaken.

Conservation management

Heathland management

Lowland heathland is a scarce and threatened habitat and only a sixth of the heathland that was present in England in 1800 now remains. However, Britain still has 20% of the world's total area of heathland and this makes it important to conserve the existing heathland, and look for opportunities to extend them. The Government UK Biodiversity Action Plan for Lowland Heathland includes targets for establishing more lowland heathland to provide space for wildlife.

Similar declines have been seen in acid grassland habitat. Both of these habitats that can be found on Mousehold and provide a home to a high number of scarce and threatened species. Heather is an important nectar source for many insects such as bees, butterflies and hoverflies. A survey of solitary bee and wasps found a number of scarce and threatened species found on heather and bare ground inhabiting the heath and butterflies such as Small Heath, Small Copper, Common Blue and Green Hairstreak are only found in the heathland and acid grassland areas.

One of the priority management objectives is to address the reduction of open heathland and acid grassland across the site which has reduced in size in the last 40 years. Of the total area of 88 hectares, only 8.66 hectares of Mousehold is covered by heathland.

In 2012 Norwich City Council secured on behalf of the Mousehold Conservators, grant funding from Natural England's Higher Level Stewardship Scheme (HLS), to restore and conserve areas of heathland and acid grassland over a 10 year period. Presently, large areas of heathland on the site are in poor condition. The HLS 'restoration of lowland heath' option is aimed at restoration of important biodiversity action plan habitats that are not

currently in good or favourable condition, supporting the implementation of management plan objectives 7.1 and 8.1.

£30,600 was awarded paid as equal annual payments until 2022. In addition, further grant aid of £1138.00 was awarded for capital works. This funding has been allocated to restoring heathland and acid grassland areas by removing scrub, grinding stumps and stripping humus, giving heather seeds in the seed bank a chance to grow. This has resulted in existing heathland areas being enlarged and linked up.

The grant funding has enabled the Conservators to access specialist contractors to achieve this objective as part of the HLS agreement.

Work in 2015/16 will continue the ongoing habitat conservation and improvement and future management will increasingly move from heathland restoration to maintenance as areas in the agreement are restored.

A Natural England Lead Advisor, who is overseeing the agreement, recently visited the site and was pleased with the progress of the works to date.

Woodland Management

Mousehold today, is largely covered in secondary woodland and scrub, consisting mainly of oak, birch, with rowan and sycamore, species which readily invade heathland suffering a decline in their management.

There has been a large amount of woodland management work carried out on Mousehold by the wardens and by volunteers. Appendix 1 provides further information on progress on the woodland management objectives.

Tree Management

Due to exceptionally high winds experienced throughout parts of 2014-15, an above average number of tree works were carried out by the Mousehold Heath Wardens to make dangerous trees safe. Tree surveys carried out by the Mousehold Wardens in August 2014 and March 2015 identified a total of 87 trees (46 in August and 41 in March) that were next to paths that were dead, dying or dangerous and requiring, in some cases urgent attention or ongoing monitoring.

A total of 167 individual pieces of work were carried out to trees to make them safe during the year. Tree inspections are now carried out on a six monthly basis by the Mousehold wardens, along all well used paths and cycle ways.



Map 1 – Location of trees close to paths requiring management or monitoring



Mousehold Warden clearing wind-blown birch blocking path

In February the council's tree gang cut back overhanging branches on Mousehold Lane as a result of our ongoing tree inspection programme.



Norwich Norse contractors working along Mousehold Lane

Infrastructure

Residents and visitors use Mousehold extensively, for dog walking and other informal recreation such as running or jogging, casual ball games and picnics.

The site contains an extensive network of paths, many of which are informal in nature and come and go over time. More formal waymarked paths also exist many of which radiate away from the main car parks.

Whilst visitor facilities at Mousehold are limited the focus of the management plan is to retain the naturalness of the site and accommodate and support appropriate access.

Work completed during the year includes regular annual works such as surface re grading of the public car parks on Britannia Road and Gurney Road as well as one of improvement including:

- **Bollard replacement** - eleven hard wood bollards were replaced surrounding the public car park at the pavilion, Gurney Road
- **Benches** - three replacement benches were installed on Gilman Road open space.
- **No parking signs** - were installed opposite the entrance to Britannia Road car park to improve access and the turning circle for the Tour Bus.



The Norwich tour bus now has a greater turning circle once impeded by parked cars until signs were installed

Activities and events

Whilst Mousehold Heath is used considerably for informal recreation, the Conservators have continued to ensure the heath is available for appropriate events and activities organised by the council and other organisations as well as events organised directly by the Conservators that will widen residents understanding and knowledge of the heath's history and wildlife.

Events and activities carried out during the year included:

- **Guided walks** – a record number of guided walks were organised and led by Mousehold wardens for specific groups and members of the community throughout the year including walks for Norwich MIND, Norwich Family History Group, Norfolk's Women's Trefoil Guild, Norwich Garden's and Norwich Society. A total of 51 people attended these walks
- **Summer Walks Programme** – these set out to increase involvement, understanding and enjoyment of the site led by the Mousehold wardens and local naturalists. 12 walks were carried out including walks on bats, fungi, a dawn chorus, butterflies, management and wildlife, 2 community wildlife watch and 5 moth survey evenings, attracting 111 members of the community.
- **Mousehold Heath Fayre** – organised by the Mousehold Heath Defenders organised on the Fountain Ground attracting over 500 members of the community
- **Armistice Day** - An Armistice Day ceremony of remembrance, at the Airmen's Memorial, Gurney Road, was organised by the Mousehold Heath Defenders on 11th November 2014.
- **Winter solstice** - a Winter Solstice celebration organised by the Mousehold Heath Defenders
- **Norwich HEART Heritage Weekend Walks** – a geological themed walk was organised in conjunction with the wardens, together with a social and landscape history walk focussing on the stories of St. William's Chapel and Kett's Rebellion.
- **Norwich City Council Events** - Norwich City Council organised or promoted Playdays during the school summer holidays on the Fountain Ground, a bandstand concert and cross country runs for local schools.



Community Wildlife Watch Walk on St James Hill

Volunteering and involvement:

Considerable volunteer activity is promoted and supported on the heath by the Mousehold Wardens to help implement the management objectives and to widen understanding and enjoyment of the site. A significant number of volunteer activities took place during 2014-15 taken place. The following groups undertook work this year:

- The Conservation Volunteers (TCV)
- Norwich Community Green Gym
- Mousehold Heath Defenders
- The Assist Trust
- Norwich City College Duke of Edinburgh group
- UEA student group
- Easton College Foundation student group
- Easton College work placement student
- Hartford Manor special needs team
- Many individual volunteers from the community.

The work carried out has been varied and includes clearing scrub and dead vegetation from around the pavilion toilets (see photographs below), heathland management such as sapling pulling, scrub clearance and bracken bruising or pulling to reduce the extent of bracken across the heath; litter picks, path and emergency access route maintenance; woodland ride management; the removal of burnt (from fire damage) and old leggy gorse; maintaining the Earth Heritage Trail points, tree work; scrub management on St James Hill, maintaining the Cavalry Track route; cutting and raking the Anthills acid grassland.

A staggering 3944 volunteer working hours were carried out during the year.

The Conservators would like to thank all the volunteers that have contributed their time and effort in improving Mousehold Heath for people and wildlife during the year.



Bollard installation to prevent vehicle access onto Gilman Open Space



Maintenance works carried out to the Earth Heritage Trail



Autumn cutting and raking of the wild flower glade adjacent to the wildlife pond to increase ground flora



Maintenance work around the Pavilion



St James Hill, pathway maintenance.

Challenges and successes

Gilman Road Open Space and the Desert conservation area

During the year, a review was undertaken of the management of the open space and conservation area at Gilman Road which has led to a number of improvements.

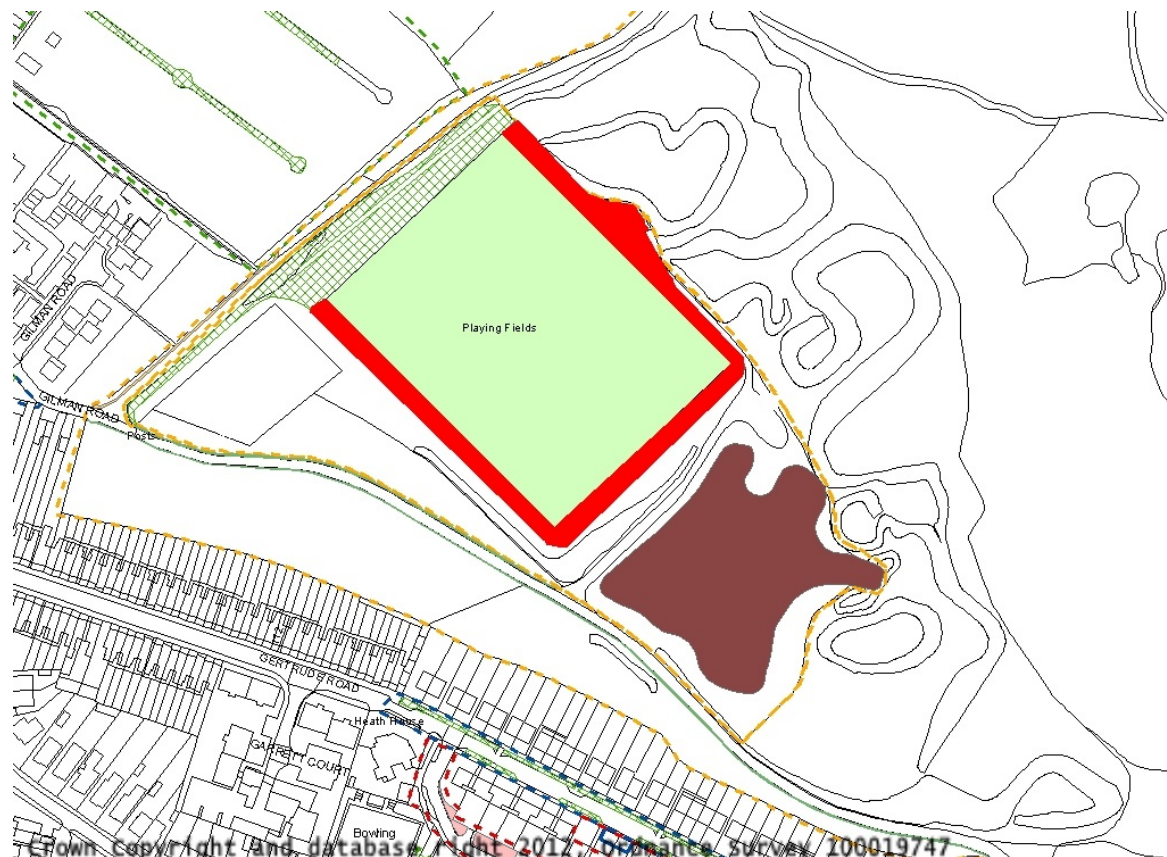
Map 2 shows the Desert (highlighted in brown) which is an acidic wild flower meadow where an annual conservation cut is carried out in October. The management of this site has been incorporated into the HLS funded works and carried out by specialist contractor under the guidance of the Mousehold wardens.

The area highlighted in red surrounding the open space at Gilman Road was previously managed as vegetation cut and this also is now maintained under the HLS scheme with additional volunteer help.

The area marked in green was previously managed as a sports field until 2014.

This has now been changed to a conservation cut that will improve the site for wild flowers and grasses associated with acidic soil conditions thereby improving the biodiversity on the site.

The area marked with green squares has been retained as a vegetation cut.



Map 2 Gilman Road conservation area

As well as leading to improvements to the biodiversity of this site, the changes have also resulted in £6772.00 available to be used for other works on Mousehold.

Education

The Conservators ongoing development of environmental education has continued this year.

An example is the continued Forest School activities with pupils from Mousehold Avenue infants, which continues to be popular with the pupils.

Additional Forest School activities involving George White middle school pupils started this year, forging a new relationship between the Mousehold wardens and School.

These activities increased involvement, understand and enjoyment of the site to over 150 children on a regular basis.

A number of community based Wild4 Wellies activities, regularly took place, providing environmental education and play for children.



Sprowston Beaver group taking part in an environmental activities day

Other works on Mousehold

Push the Pedalways

Push the Pedalways forms part of the council's plan to improve cycling facilities in the city and the Norwich cycle network.

This programme includes the eight-mile "pink pedalway" which provides a connection between Norfolk & Norwich University Hospital and UEA, through the city centre, to Heartsease.

Part of the route touches on Mousehold and during the planning and development of the programme, the Mousehold Conservators were consulted on the proposals.

As well as changes to Gurney Road, sensor lighting is being installed along Valley Drive between Gurney Road and Heartsease Lane in 2015.

Looking forward

As the Conservators enter the third year of the current five year management plan a number of key areas of management will continue.

The restoration and improvement of the acid heath and grassland plays a vital role in the management and re-creation of this internationally vulnerable habitat and the wildlife that it supports. The HLS funding has been vital in enabling the Conservators to achieve this.

Equally important is the work to management Mousehold's woodlands and for both of these habitats, the commitment and enthusiasm from volunteer community groups and organisations, who play such a large part in making this possible.

The access infrastructure and facilities also require continued maintenance and the main access points will be reviewed during 2015-16. Whilst major change is neither needed nor affordable the management plan indicates the need to improve these "access hubs" where required.

Opportunities to work in partnership with community groups and organisations will continue to be explored. One such community partnership is presently being formed with Dibden Road Hostel, where participants of a 'Jumpstart Project' have just started to carry out voluntary site management tasks, such as litter picking to help bring structure to their lives and give them the skills, to help them back into working life as well at the same time, bring improvements to Mousehold.

Public walks and talks continue to be popular and are promoted through an annual programme available on line, local press, what's on, the council's events leaflet and the Tourist Information Centre.

To ensure a safe, positive and enjoyable visitor experience on going monitoring of the site is carried out including the reporting of anti-social behaviour, site repairs, tree surveys and works.

With Mousehold acting as a vital haven for wildlife and recreation contained within the urban area, the balancing of use of the site for recreation with its importance for biodiversity remains a day to day challenge.

During 2015-16, the Conservators will be considering the appearance and facilities that the main access points from car parks should contain.

Continued financial challenges remain and as in previous years, the Conservators will be mindful of this when agreeing the annual work programme and setting the annual precept.

Appendices

Appendix 1

Ecological surveys and species monitoring

Butterflies

Two Butterfly Monitoring Scheme (BMS) transect surveys were completed weekly, between April and October. The BMS is the largest and longest running (started in 1976) biological survey in the country. Data is collected from over 1,200 sites in the UK, with 29 sites surveyed in Norfolk. Butterflies are uniquely placed amongst British terrestrial insects and other invertebrate groups to act as indicators of the state of the environment. The results of the surveys are used by the national government to assess the impacts of climate change and the progress of governmental policy initiatives such as the UK Biodiversity Action Plan and Higher Level Stewardship (HLS) schemes. Not only are butterflies biologically suitable as indicator species, having rapid lifestyles and, in many cases, high sensitivity to environmental conditions, but the recording and monitoring volunteer and datasets built up by Butterfly Conservation and the Centre for Ecology and Hydrology, enable accurate assessment of their trends.

On a site basis, the surveys provide important data to site managers to monitor/determine habitat conservation and management, record new species and increase understanding and enjoyment through community involvement.

An additional Butterfly Monitoring Scheme (BMS) transect survey was completed between April and October. 547 butterflies were recorded on this transect, mainly in the recently managed and restored areas of the Anthills and heathland.

There were 468 butterflies recorded on the transect undertaken on the Weston side of Gurney Road – a good number considering the poor weather conditions. These numbers hold up well against 2013 numbers which was one of the best years in living memory nationally. Over 50 members of the community were involved in the surveys.

Despite annual weather fluctuations and national population changes the number of butterflies on the site is increasing as shown by Appendix 2. This upward trend suggests that habitat changes, through the restoration of open, early successional habitats, such as heathland, acid grassland and woodland glades - resulting in increased sunlight and nectar producing plants - is having a positive effect on the abundance and diversity of butterfly species.

Appendix 3 and 4 show how correlations can be seen between habitat management and butterfly abundance in specific transect sections.

Appendix 5 shows the variation in butterfly numbers with habitat types with section 8, 9,10 being through shaded, secondary woodland.

The site list now stands at 25 butterfly species (See Appendix 6)

Moths

Four public moth evenings, along with ad hoc surveys were completed, with 33 people attending. 100 moths were recorded during the survey, including 28 new species to the site. These ranged from the large and colourful Elephant Hawkmoth (*Sphinx ligustri*), which thrilled the participants on 19.07.14 and True Lover's Knot (*Lycophotia porphyria*), an attractive species closely associated with heather.

These surveys have resulted in the site species list rising to 205.

Birds

A Common Bird Census (CBC) survey was carried out by the Mousehold wardens with the help of volunteers. 30 species of bird were recorded as having breeding territories based on the CBC methodology. This number was roughly the same as previous years (see Appendix 7).

Plants

A monthly plant survey on St. James' Hill was carried out by members of the Mousehold Heath Defenders and a Mousehold warden.

Two further monthly surveys in the new pond/hawthorn glade and the desert wildflower area, have been carried out by members of the Mousehold Heath Defenders, recording a wide variety of nectar providing wild flowers. See Appendix 8 and 9 for species lists.

Bumblebees

A monthly survey was carried out by a member of the Defenders and a Mousehold warden on St. James Hill. The transect recorded a number of bee species, including Buff-tailed bumblebee (*Bombus terrestris*), White-tailed bumblebee (*Bombus lucorum*), Re-tailed bumblebee (*Bombus lapidarius*) and Common carder bee (*Bombus pascuorum*). Bee numbers increased along the transect route in 2014, suggesting that habitat management work, such as, opening up the Cavalry Track and clearing scrub on St James Hill to conserve grassland, is having a positive effect.

Dragonflies

Monthly surveys recorded 12 species of damselfly and dragonfly. These included the first site records of Norfolk Hawker (*Aeshna isosceles*) dragonfly (see photo), a rare and local Red Data Book species confined to Norfolk and North Suffolk Broadland. It's nearest recorded breeding site is Thorpe Marshes so they are presumably venturing up to the heath to feed on the abundance of insects in open habitats.



Photo: Sean Locke

Norfolk Hawker dragonfly (showing its diagnostic features of green eyes and yellow triangle on its abdomen) - recorded on the site for the first time

Appendix 2: Table showing progress on woodland management objectives set out in Management Plan 2008 – 2018

| Management Plan objective/Project name | Area | Work undertaken/to be undertaken | Work carried out by | Date start/finish |
|--|-------------------------|--|--|---|
| 9.2 (i): Create rides and glades | The Dip/Hawthorne glade | Has been cut back and restored over the last 4 years. A new pond was installed in November 2012 and wild flower seed spread in spring 2013. The glade is presently a flower rich habitat which is cut and raked annually in Autumn, removing dead material to increase sward diversity and easy access. Flower surveys are currently being undertaken by members of the Mousehold Heath Defenders who have recorded over 40 species. | Green Gym, TCV, Mousehold Defenders, Mousehold wardens. | Restoration work to finish March 2016. Annual cutting/raking ongoing. |
| 9.2 (iv): Increase amount of available dead wood habitat | Whole site | During glade restoration, tree safety works, heathland restoration, etc., large amounts of dead wood are left in piles to provide habitats for wildlife. In recent years this has greatly increased the amount of available dead wood, which is particularly important when considering the young age and lack of dead wood when comparing the site to older woodlands. | Mousehold wardens, volunteer groups, contractors. | Ongoing. |
| 9.2 (vi): Monitor spread of Sycamore and other non-native invasive species | Whole site | Sycamore: This species is increasing across the site. In managed areas seedlings and saplings are removed. In secondary woodland, young Sycamores could be managed by a Woodland Grant Scheme, and by Easton College and other volunteers groups, to reduce their impact on native species. Laurel: a recent survey has found a significant increase in Laurel across the site. This is particularly concerning | Easton College and other volunteer groups, Mousehold wardens. Mousehold wardens, Green Gym, TCV. Mousehold wardens | 2015 – 18. After HLS felling has finished. March 2015. Ongoing. Ongoing monitoring. |

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| | | <p>when considering the damage and cost of controlling Laurel in nearby Lion Wood. All Laurel will be mapped and removed by March 2015.</p> <p>Rhododendron: A large specimen near Gilman Road has been monitored with no evidence of it spreading.</p> | | |
| 9.2 (v): Retain creepers such as honeysuckle and ivy on trees. | Whole site. | <p>Creepers have been left (unless safety considerations dictate otherwise), with good quantities along Gilman Road and on paths near Vinegar Pond. There has been an increasing trend in associated butterfly species such as White Admiral and Holly Blue. Breeding birds such as Song/Mistle Thrush and winter migrants such as Redwings and Fieldfares have been recorded feeding on their berries.</p> | | Ongoing. |
| 9.2 (iii): Identify key specimen trees and woodland features such as Beech Drive. | Whole site | <p>Specimen trees such as Turner's and Mother Oak, Giant Redwood, etc., have been identified and any required protective measures (i.e. log boundary around Turner's Oak to protect it from car tyre compaction), have been put in place. These trees are monitored on a regular basis.</p> <p>Beech Drive: this picturesque avenue has been encroached upon by scrub. This will be cut back in 2015, to conserve views, allow easy access and help dry out the surface by allow sunlight to penetrate. A large Beech tree dying due to a fungal infection, has resulted in light penetrating ground level, allowing nectar bearing plants to grow, and a woodland glade to naturally develop. A large number of butterfly species including the</p> | <p>Mousehold wardens</p> <p>Prison Work Party, Mousehold wardens</p> | <p>Ongoing.</p> <p>2015. Ongoing.</p> |

| | | | | |
|-------------------------|---|--|--|--|
| | | scarce White Admiral, have subsequently been recorded in the new sheltered micro climate. It is recommended that new planting of Beech is not undertaken unless a large number of mature trees are lost and the avenue structure is compromised. | | |
| 9.3 (vi): Coppice area. | Area of dense, mainly hawthorn woodland adjacent to Gilman Road | A 0.5 – 1ha area of woodland has been identified (see map) for coppicing. Actively managing and opening up this area should help to reduce anti-social activity taking place as well as increasing biodiversity. | Easton College, TCV, Green Gym, Mousehold wardens. | 2015 – 2018, after HLS felling has finished. |
| Tree Safety Inspections | Whole site | Due to the age and structure (pioneer birch being replaced by high canopy oak trees) of secondary woodland, there has been, and will continue to be, an increase in tree management required, especially adjacent to highways and paths. The Mousehold wardens have recently implemented a new 6 month tree inspection survey, which takes a pro-active approach to tree/public health & safety. 70 dead, dying and dangerous trees and branches were identified, with over 150 tree jobs undertaken in the last 4 months to make the site safer for members of the community. | Mousehold wardens, Tree contractors | Every 6 months. Ongoing. |

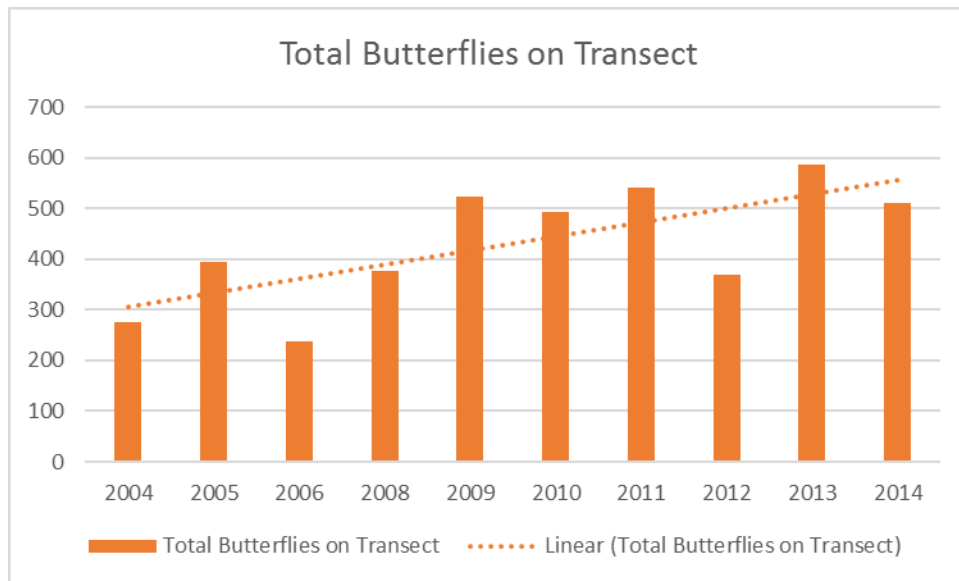


Chart showing the increase in total number of butterflies recorded, as shown by the trend line, when taking into account annual variations

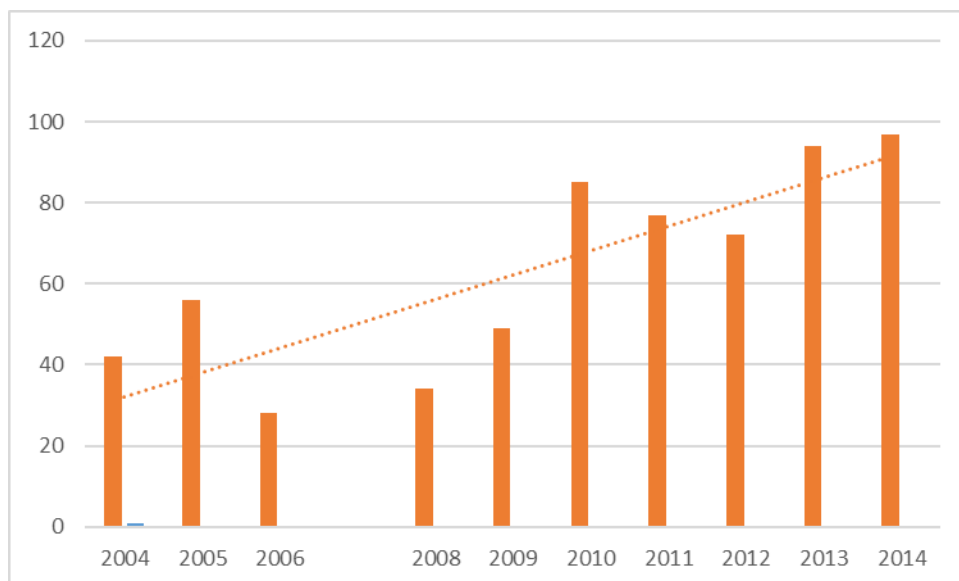


Chart showing the increase in number and upward trend of butterfly numbers in section 1 of transect survey. This appears to be a correlation between habitat changes as this new pond glade section has seen scrub clearance since 2009, resulting in more light and increased ground flora in recent years

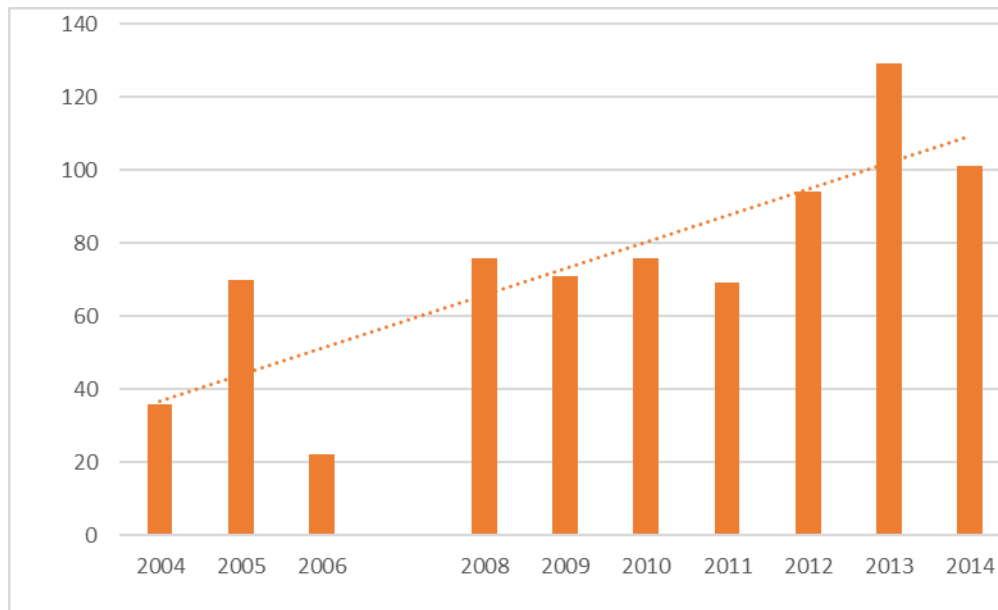


Chart showing increase in total number of butterflies recorded in section 5, which has seen an increase in heathland/acid grassland conservation management since 2008.

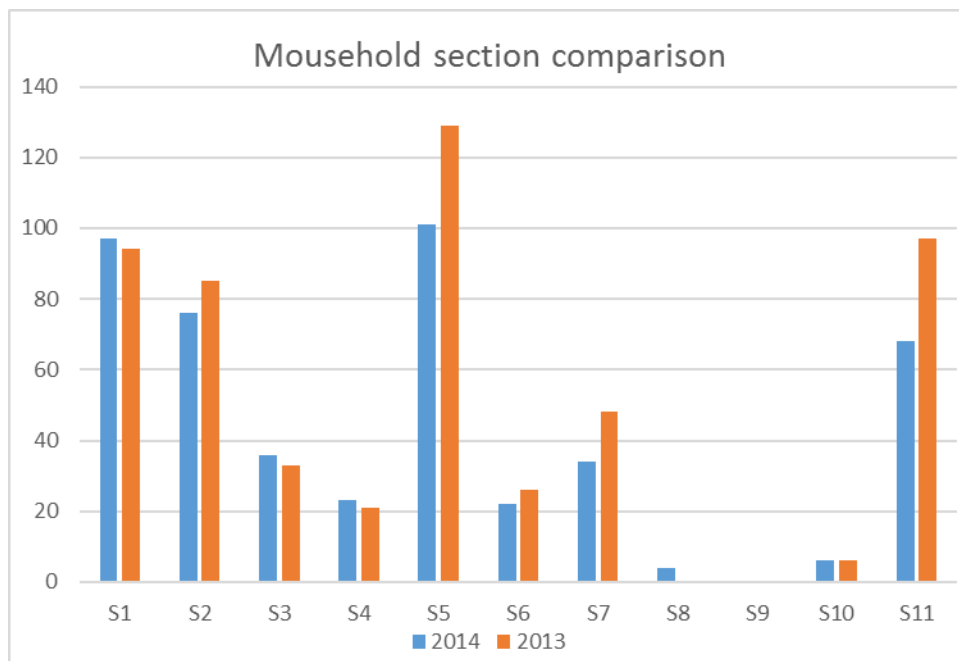


Chart showing variation in butterfly abundance in different transect sections. Sections S8, S9, S10 are through shaded secondary woodland.

| Appendix 3: Table showing a list of butterfly species recorded during 2014-15 | | |
|--|----------------------------|---|
| Species | Distribution/Status | Habitat: Egg/Caterpillar Foodplants |
| Comma, <i>Polygonia c-album</i> | Resident | Hop, Common Nettle, Bramble etc. |
| Essex Skipper, <i>Thymelicus lineola</i> | Resident | Various grasses; Cocks-foot, Creeping Soft-grass and Tor grass. |
| Small Skipper, <i>Thymelicus sylvestris</i> | Resident | Grasses; Yorkshire Fog and Creeping Soft grass. |
| Large Skipper, <i>Ochlodes venata</i> | Resident | Various grasses. |
| Common Blue, <i>Polyommatus icarus</i> | Resident | Open habitats. Legumes. |
| Holly Blue, <i>Celatrina argiolus</i> | Resident | Holly, Ivy and variety of other plants. |
| Small Copper, <i>Lycaena phlaeas</i> | Resident | Open ground. Common and Sheep's Sorrel. |
| Green Hairstreak, <i>Callophrys rubi</i> | Resident. Local. | Heathland. Gorse and Broom. |
| Brown Argus, <i>Aricia agestis</i> | Resident. Local. | Common Rock-rose |
| Large White, <i>Pieris brassicae</i> | Resident | Brassicas and Crucifers. |
| Small White, <i>Pieris rapae</i> | Resident | Brassicas and Crucifers. |
| Green-veined White, <i>Artogeia napi</i> | Resident | Damp, grassy and flowery places. Various Crucifers. |
| Orange-tip, <i>Anthocharis cardamines</i> | Resident | Crucifers. |
| Purple Hairstreak, <i>Neozephyrus quercus</i> | Resident | Oak trees. |
| Gatekeeper, <i>Pyronia tithonus</i> | Resident | Various grasses. |
| Meadow Brown, <i>Maniola jurtina</i> | Resident | Various grasses |
| Ringlet, <i>Aphantopus hyperantus</i> | Resident | Various grasses, shrubs and bramble. |
| Peacock, <i>Inachis io</i> | Resident | Common Nettle. |
| Painted Lady, <i>Vanessa cardui</i> | Migrant | Thistles. |
| Red Admiral, | Resident. Migrant | Common Nettle. |

| | | |
|---|-----------------------|----------------------------------|
| White Admiral, <i>Limenitis camilla</i> | Resident. Vulnerable. | Woodland glades. Honeysuckle. |
| White-letter Hairstreak, <i>Satyrus w-album</i> | Resident. Endangered. | Elms. |

Appendix 4: Table showing the Common Bird Census (CBC) Survey results for 2014-15

| Number of territories recorded along transect – P&P car park to St James Hill, Spring 2011 | Number of territories recorded along transect – P&P car park to St James Hill, Spring 2012 | Number of territories recorded along transect – P&P car park to St James Hill, Spring 2013 | Bird Species Recorded. | Number of territories recorded along transect - P&P car park to St. James Hill, Spring 2010. | Number of territories recorded along transect – P&P car park to St James Hill, Spring 2014 |
|---|---|---|-------------------------------|---|---|
| 17 | 12 | 17 | Blackbird | 22 | 17 |
| 9 | 4 | 6 | Blackcap | 6 | 11 |
| 9 | 9 | 10 | Blue Tit | 12 | 15 |
| 8 | 13 | 13 | Chaffinch | 16 | 13 |
| 6 | 5 | 6 | Chiffchaff | 3 | 12 |
| 2 | 3 | 4 | Coal Tit | 2 | 2 |
| 2 | 2 | 2 | Common Whitethroat | 2 | 2 |
| 6 | 10 | 6 | Dunnock | 4 | 8 |
| 1 | 1 | 0 | Garden Warbler | 0 | 0 |
| 2 | 4 | 2 | Goldcrest | 4 | 3 |
| 1 | 1 | 0 | Goldfinch | | 21.03.14 |
| 0 | 2 | 2 | Greater Spotted Woodpecker | 3 | 3 |
| 11 | 9 | 9 | Great Tit | 9 | 10 |
| 0 | 3 | 1 | Greenfinch | 3 | 2 |
| 1 | 1 | 2 | House Sparrow | 1 | 4 |
| 1 | 2 | 2 | Jay | 2 | 2 |
| 5 | 2 | 2 | Long Tailed Tit | 6 | 2 |
| 1 | 1 | 1 | Mistle | 1 | 1 |

| | | | | | |
|----------------------|----------|--|--|-------------------------------------|------------------------|
| | | | Thrush | | |
| 29 | 40 | 22 | Robin | 29 | 30 |
| 2 | 4 | 4 | Song Thrush | 3 | 6 |
| 0 | 0 | 0 | Sparrowhawk | 1 | 0 |
| 2 | 1 | 1 | Tree Creeper | 2 | 3 |
| 1 | 1 | 1 | Willow Warbler | 2 | 1 |
| 28 | 28 | 20 | Wren | 19 | 23 |
| | | | Other species recorded without evidence of territories - | | |
| 25.03.11 15.05.11 | 07.05.12 | 29.04.13 | Kestrel | 17.03.10, 19.04.10, 26.04.10, | 12.04.14, 29.04.14 |
| 23.03.11 02.06.11 | 12.05.12 | 29.04.13 | Magpie | 31.03.10, 19.04.10. | 29.04.14, 03.06.14. |
| | | | Marsh Tit | 26.04.10 | |
| | | 17.04.13 18.04.13 14.05.13 21.05.13 | Carrion Crow | | |

Appendix 5: List of plant species recorded on the Desert Wildflower area by members of the Mousehold Heath Defenders in 2014

White Clover, (*Trifolium repens*),
Ribwort Plantain (*Plantago lanceolata*)
Creeping Buttercup (*Ranunculus repens*)
Black Medick (*Medicago lupulina*)
Slender Trefoil (*Trifolium micranthum*)
Common Mouse-ear (*Cerastium holosteoides*)
Yarrow (*Achillea millefolium*)
Smooth Cat's-ear (*Hypochoeris glabra*)
Daisy (*Bellis perennis*)
White Bryony (*Bryonia dioica*)
Common Nettle (*Urtica dioica*)
Elder (*Sambucus nigra*)
Large-leaved Lime (*Tilia platyphyllos*)
Cleavers (*Galium aparine*)
Buddleia (*Buddleja Davidii*)
White Dead Nettle (*Lamium album*)
Bramble (*Rubus* spp)
Upright Hedge-parsley (*Torilis japonica*)
Dog Rose (*Rosa canina*)
Common Ragwort (*Senecio jacobaea*)
Black Horehound (*Ballota nigra*)
Creeping Thistle (*Cirsium vulgare*)
Spear Thistle (*Cirsium vulgare*)
Hedge Bindweed (*Convolvulus arvensis*)
Hemlock (*Conium maculatum*)
Broad-leaved Dock (*Rumex sanguineus*)
Wood Avens (*Geum urbanum*)
Goat's-beard (*Tragopogon pratensis*)
Field bindweed (*Convolvulus arvensis*)
Prickley Sow Thistle (*Sonchus asper*)
Mare's-tail (*Hippuris vulgaris*)
Rosebay Willowherb (*Chamaenerion angustifolium*)
Dove's-foot Crane's-bill (*Geranium molle*)
Shepherd's Purse (*Capsella bursa-pastoris*)
Small-flowered Buttercup (*Ranunculus parviflorus*)
Silverweed (*Potentilla anserine*)

Ox-eye Daisy (*Chrysanthemum leucanthemum*)

Sheep Sorrel (*Rumex acetosella*)

Mouse-ear Hawkweed (*Pilosella officinarum*)