

Chippenham Fen NNR

Reserve Report

April 2011 - March 2012

By Michael Taylor



Reserve Management

Staff

Management work was carried out by Reserve Manager Mike Taylor and Senior Reserve Manager Chris Hainsworth, assisted at times by a number of volunteers.

Grazing

Buffalo

The seven water buffalo grazed parts of the reserve as follows (grazing units named as on Map 2 Grazing areas) :

| | |
|--------------------|--|
| Pigeon | 19 April – 12 May; 5 August – 12 September; 14 October – 2 November. |
| Baxter west | 12 May – 27 June; 2 November – year end. |
| East meadows | 27 June – 5 August; 12 September – 14 October. |
| North meadows east | 1 April – 19 April. |

The 2011-12 winter was relatively mild in comparison with the previous two years, but there was a cold snap from late January well into February, with lying snow for a week or more in this period. It was again necessary to supplementary feed the animals with barley straw from mid-January; generally two bales per day, but four bales a day for the brief period when snow was on the ground.

As last year the animals were fed at Bullock Hill. The weather remained cool, particularly at night, suppressing growth, and so some feeding continued until the third week of April, after the animals had been moved to the north meadows.

On 8 March 2011 the vet gave 6 buffalo their annual fluke and blue tongue injections, and took a blood sample from Mike (54), as we had been concerned about his condition. Late in March we received the results of the blood test – clear on everything except a positive for Johne's disease, an untreatable wasting condition. The vet advised taking dung samples, as this is the only way to confirm the disease – we collected samples and delivered them to the VLA in Bury St Edmunds on 1 April. We received the results on 12 April, and fortunately all the samples, including Mikes, had tested negative.

The electric fences around the Baxter west and Pigeon grazing compartments were strimmed once or twice during the growing season. This was less frequently than in previous years – the cold winter of 2010-11 followed by a dry spring and early summer seemed to suppress growth somewhat.

Fences were checked several times per week when buffalo were grazing, and any repairs made or fallen trees/branches removed as necessary. The outer perimeter of the Pigeon grazing compartment fence was cleared of trip hazards (stumps/fallen timber) as much as possible on 1 January.

The gateway from the inner barbed wire fence onto Baxter West had got very wet and rutted during the winter, so on 19/20 April it was moved a few yards onto higher ground.

The weekend buffalo checking rota, involving NE staff and volunteers, continued throughout the year. For most of the year checking was done only once per weekend, but each day in January-April when we were feeding the animals.

The Pigeon grazing compartment was connected to the mains electric fence energiser at the shed on 21 November. Between 26 October and 8 November NE staff and volunteers had buried a cable in a 15cm trench from the nearest point on the fence to the shed– a distance of around 100m.

A temporary electric fence was erected along the river in compartment 1 on 16 March, and a fence line strimmed along the river in compartment 2 on 20 March in readiness for buffalo grazing in April.

After more than 10 years of buffalo grazing in some compartments there do seem to have been changes in the vegetation composition, some potentially undesirable. In particular there is a perception (though we have no scientific data to support this) that *Phalaris* is becoming dominant and spreading in parts of Pigeon and East meadows grazing areas. Certainly it appears that it is unpalatable to the buffalo, and therefore possibly gaining a competitive advantage over other species. We are considering some chemical control trials to try and reduce the species dominance.

Cattle

On 20 May MT and Roger Beecroft set up the electric fence along the eastern boundary of compartment 1 in readiness for the cattle being brought on. However, as it turned out the first cattle did not appear until 29 June. Around 19-26 Redpolls grazed the north meadows – the exact number varied during the summer due to various health issues. On 21 June the cattle were shut into the Cambridge milk parsley area in the west of compartment 1 for a few days to graze it as tight as possible, before being moved into compartment 2 on 5 August. The cattle remained in compartment 2 until 18 August and then spent another short period here between 26 September and 14 October – otherwise grazing compartment 1 until they were gradually moved off-site from the end of October. The last few animals left on 18 November and the electric fence was taken down.

Rides/ Ride-Cutting (Map 3)

All main rides were cut every two weeks from mid April until mid October, using the Gator and flail mower or BCS pedestrian mower. In addition, 45 degree cuts, using tractor and mower or strimmer, were made on most rides at the end of June. This was to keep rides clear from drooping reed and other encroaching vegetation.

Some minor rides (eg part of the butterfly transect route in compartment 10) were cut less frequently, once or twice during the season.

The ride through compartment 12, from the shed to Bullock Hill, was slightly diverted near the main spring to avoid a wet area. A new sleeper bridge was erected over the ditch just above the wet spot on 8 June.

A wet hollow on the ride along the south margin of compartment 11, about 50 metres from the shed, was filled with spoil on 15 September.

Any windblown trees/branches were promptly cleared from rides – several trees were cleared on 19 April, 12 September and 5 January.

The remains of the boardwalk between the bogbean site and the chalk bank in compartment 4 were removed on 18 August.

Topping/Cut and gather (Map 4)

Two rush dominated areas in compartments 1 and 2 were topped on 1 June, using the Wessex flail mower raised to cut at about 25cm above ground. Parts of these areas were subsequently cut and gathered later in the year using the Ryetec.

A Ryetec cut and collect machine was borrowed from Dersingham NNR in late July. About 36 hours were spent during the whole of August cutting in compartments 1,2 and 13. Concentrating on areas where *Juncus* or *Phalaris* dominated, the irregular shaped cut blocks were linked together by narrow cut corridors (the ganglion approach). In general the machine worked very well, as long as the vegetation was quite dry. The only real limitation was hopper capacity – the rank vegetation soon filled it and so frequent tipping was necessary. To cut down on travel time, many small tipping sites were used, close to the cutting areas – where possible these were sited in the scrubby margins of the meadows.

An area of *Phalaris* dominated vegetation was cut with the BCS mower on 7 April. The vegetation was raked off and piled by members of NE West Suffolk and Breckland team on 11 April.

A small area in compartment 11, between dipwells 9 and 10 was cut on 13 June and raked and piled by Moulton Scouts on 14 June.

A small block was cut in compartment 2 on 26 July, with the BCS. This was raked and piled by the NE Brecks, Beds and Cambs team on 27 July.

The glade near the shed, the ungrazed margins of Baxter East and 'Ian McLeans plot' in compartment 5 were cut/trimmed on 5 August. Cambridge Conservation Volunteers raked and piled on 7 August. The mild autumn meant vegetation continued to grow, and so the glade near the shed and Baxter East were cut and raked again on 14 November.

The main bogbean area, the chalk bank and a block between Malcolms Pond and Boundary ride were cut/trimmed on 17 August and raked and piled by CCV on 21 August. The Malcolms pond area was cut and raked again on 12 December.

Sedge Cutting (Map 4)

John Setchell brought his caravan to the Fen on 15 June, but due to illness he was unable to do the sedge cutting this year. Instead, his son Marcus carried out the work between 10 August and 23 September. Approx 16-1800 bundles were cut from the sedge bed in compartment 6. In addition Marcus cut areas of sedge in the ungrazed sections of compartments 8 and 11. Due to time constraints quite a lot of 'rubbish' was left in small piles scattered around the cut areas. Some of these were subsequently amalgamated by NE staff and volunteers.

Woodland/Scrub (Map 4)

A small experimental deer enclosure was erected in compartment 12, close to the shed, on 16 May.

Glades/scallops were cut on the margins of the chalk banks in compartments 2 and 4 on 16 November and 4 January. Each glade was quite small, created by felling and removing 6-8 trees.

Several trees were cut down/trimmed around the edge of the glade near the shed on 15 November, to allow more light in. A few more higher branches were removed by Jim Allit of NE on 25 February. On the same day Will Russell (also NE) carried out some tree surgery to the large ash in front of the shed, removing several leaning branches that had been highlighted as potentially dangerous in the annual tree safety inspection.

CCV carried out a well attended scrub clearance task on 20 November. About 20 volunteers removed a large area of encroaching hawthorn scrub in compartment

1. The scrub was burnt on a patch of hard rush. On 23 November MT and Fay Jones followed up, re-cutting the stumps and treating them with glyphosate.

A contractor visited on 2 June to carry out a woodland survey of parts of the reserve on behalf of the Forestry Commission.

Anita Stone visited on 24 October to give advice on woodland management.

There is a possibility that some woodland management work will be carried out in compartment 12 in the future, to encourage more structural diversity. It was decided to set up a CBC through this woodland to monitor any resulting changes to the bird population. Volunteers Phil Brown and David Collins agreed to take on the survey. Unfortunately David had to drop out due to work commitments. A route was marked out through compartments 3 and 12 and Phil Brown began the first years census in March.

Water

Paul Curtis and Louise Evans of the Environment Agency visited on 15 April regarding the Lodes Granta compensation scheme. The three inflow points to the reserve were identified, although some of the man-hole covers could not be removed. On 5 May two EA ops personnel visited and successfully removed all the covers and examined the water meters within – at least one was not working. Contractors subsequently replaced one of the meters, but more work is necessary before the operation of the system can be critically tested. The background to this and the proposed future work is given in an appendix at the end of this report.

We progressed plans to automate our dipwell recording. Consultant Andy Dixon visited on 7 February to advise, and to pump out most of our dipwells – the subsequent recharge was monitored. Lockable metal dipwell covers, Troll dataloggers and software and various other materials were purchased late in the financial year, with a view to installation during summer 2012.

Much of the country, and East Anglia in particular, is suffering a severe drought after two very dry years. Winter 2011-12 produced very little rainfall to recharge the aquifer and as a result water levels on the Fen were very low at the beginning of March. In view of the drought and uncertainty over whether we would be able to use the Lodes Granta scheme, it was decided to raise water levels on the Fen as high as possible using the system of collar dams. This was done in mid March, and within days water levels in some of the dykes were higher than for some years. The level at the main spring was particularly high, reaching 12.66m on the gauge board in early April 2012. The high water level in the ditches seemed to make some parts of the fen away from the ditches a little wetter, but

most dipwell readings hardly changed at all – by past observation they seem to react much more to rainfall events than to ditch levels.

Deer control

During the year Chippenham Park estate became particularly conscious of the extent of deer damage to woodland on their land. The occasional visits by Ron Webb and colleagues did not seem to be controlling numbers, and so the Estate decided to carry out its own control in future, with Jim Riley taking over the culling on the reserve as well as the rest of the estate. An intensive cull on 26 February involving several guns shot 18 muntjac on the estate, 12 of which were on the reserve.

NNR Workbase

The office, lobby and w.c/shower were cleaned every two weeks by Mark Day on contract. The workshop and tractor area were swept/tidied by NE staff when time allowed.

Aztek Ltd carried out a fire alarm service on 20 January. NE staff tested the fire alarms on a monthly basis.

The septic tank was emptied by Redstripe on 17 February.

All portable electrical appliances were tested 1 August, together with the buildings electrical system. Necessary circuit breakers were fitted on 12 September.

Natural England staff and volunteers cleared out the gutters in early autumn.

The tractor, Gator, flail mower and BCS were serviced by Stephen Eyles on 18 November and 10 January.

As part of a nationwide NE contract, the base was surveyed for asbestos on 21 February.

Browns of Burwell delivered 500 litres of red diesel on 7 February.

20 tonnes of type 1 limestone was delivered by Rory Holbrook on 9 March. This was spread across the parking area in front of the workbase.

The Natural England office in Bury St Edmunds closed in March. Prior to this all the Breckland NNR files were moved to the Chippenham office, and on 23 February several items of furniture were brought from Bury to the Fen.

Health and safety

Access structure checks carried out quarterly. Annual tree safety assessment of zone 1 and 2 areas carried out on 11 October.

Volunteers

| | |
|---|--|
| Bruce and Gwen Martin, Phil Brown, David Collins , Nick Sibbett, Owen and Monica Marks, Alastair Burn | Bird monitoring |
| Cambridge Conservation Volunteers | Spent three days assisting with practical management works 7 and 21 August and 20 November – total of c40 vol days |
| Moulton Scouts (led by Alex Nichols) | Carried out practical management task on 14 June |
| Amber Taylor (NE) | Monitored the dipwells until April 2011. |
| David Overton, Kate Jackson Matt Ginn, Steve Gilby, Alex Nichols | Weekend buffalo checks |
| Dale Hing | Weekend buffalo checks |
| Frances Cheesman | Practical management work and collating species records |
| Fay Jones | Practical management work |
| Alistair Sibbett, Jack Spoor | Practical management work in school holidays |

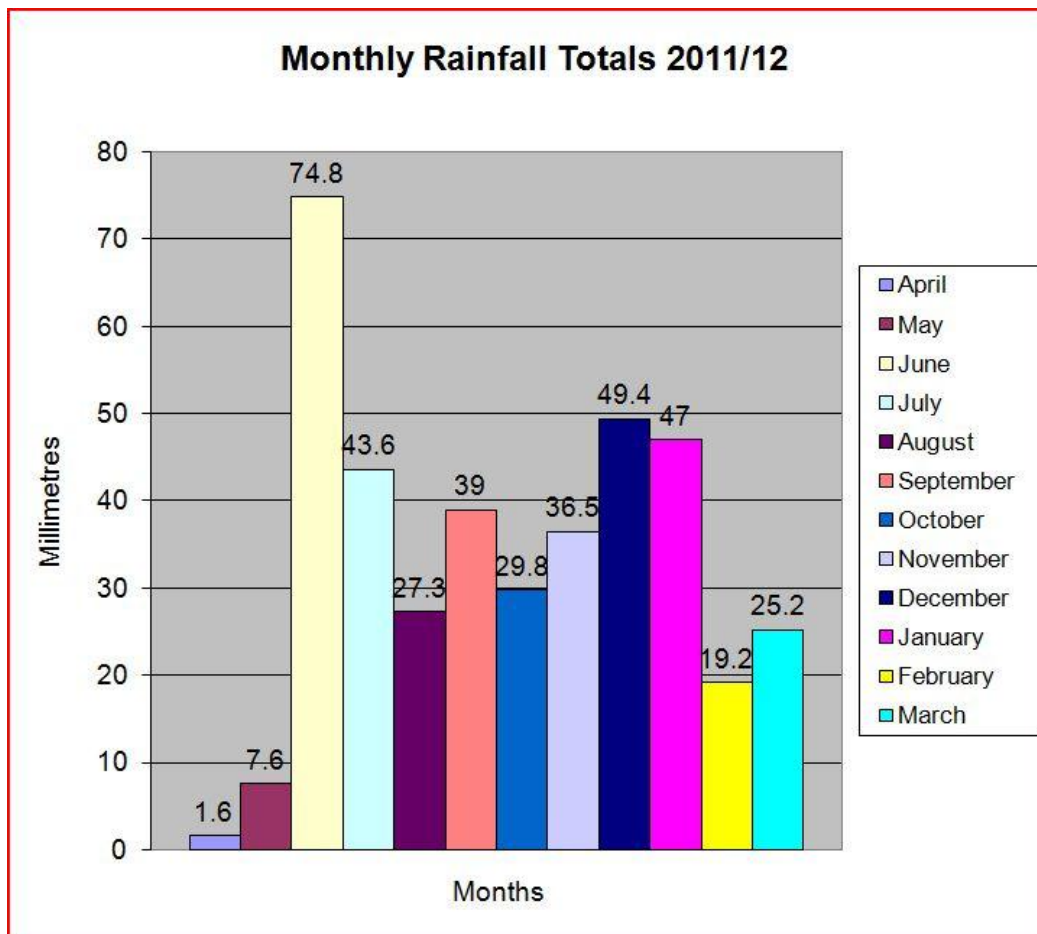
Louise Bacon, Vince Lea, Ian
Barton, Kathleen Rosewarne,
Jim Hodgkinson et al

Moth recording

Survey and Monitoring

Water levels/Rainfall

Dipwell readings were taken every two weeks, and rainfall readings weekly. All data was entered onto the dipwell spreadsheet. As mentioned previously dipwell and rainfall monitoring will be automated in 2012. A new rain gauge was purchased and installed on 11 April 2012, but manual readings will still be taken.



As can be seen from the chart above, it has been another very dry year with below average rainfall in every month apart from June.

Birds

Phil Brown and David Collins continued to work on the analysis and writing up of the 10 year bird survey. Several drafts were produced and it is hoped to publish the work eventually. As mentioned previously, Phil Brown started a woodland CBC in March 2012.

The dusk survey was carried out on 4 May. A maximum of 5-6 roding woodcock were recorded, together with 10 grasshopper warblers, 1 Cettis warbler, 3 tawny owls and one drumming snipe.

Mammals

Dr Mark Hows carried out a programme of live small mammal trapping in various parts of the reserve between 28 October and 2 November. Many bank voles and wood mice were trapped, together with one or two water shrews.

Five new bat boxes were put up on mature pines along the edge of Boundary Ride on 18 April. Antony Mould and Julie Danby of Natural England came on 13 October to check all the bat boxes on Pigeon, Ash and Boundary rides. No bats were found, but fresh droppings were found in some of the boxes.

An unidentified large bat was flying around outside the shed in daylight on 3 and 4 November.

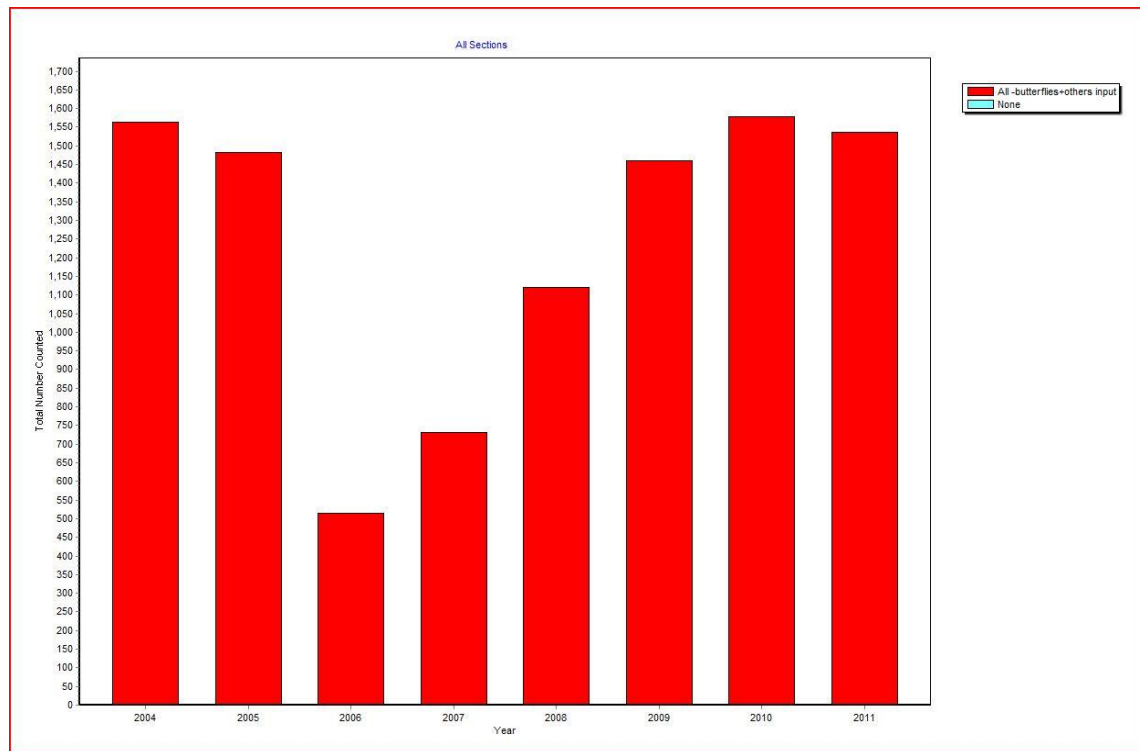
Amphibians

CH met Dr Terry Moore and wife Helen on 1 February regarding an amphibian survey of the Fen. Terry and Helen made several evening visits to the reserve in March and April 2012 to carry out the survey- the results are awaited.

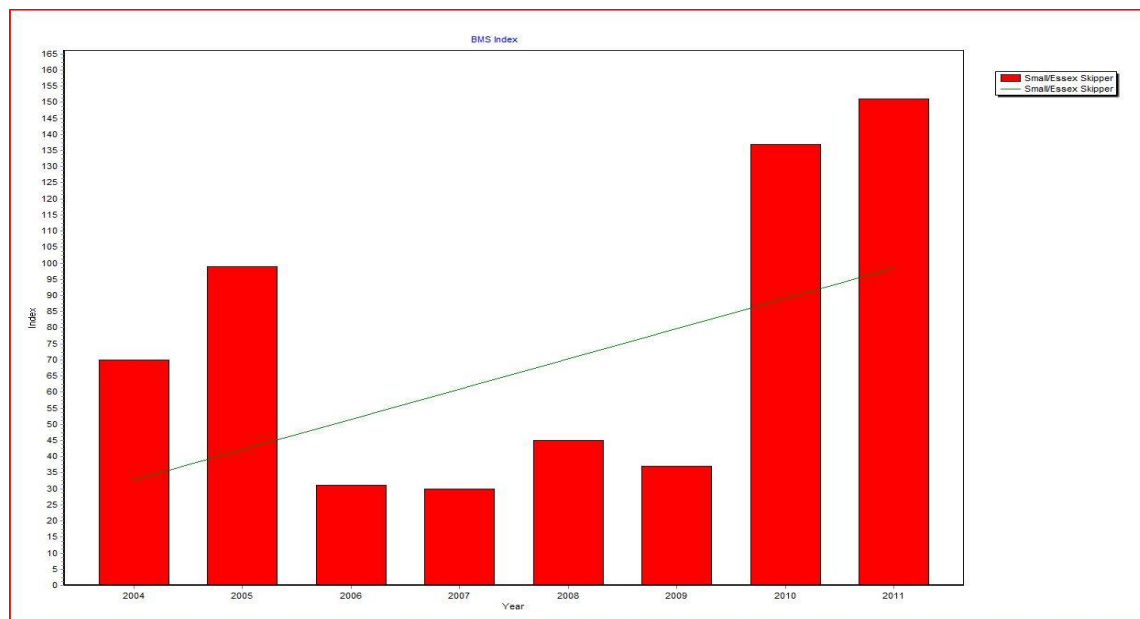
Invertebrates **Butterflies**

The butterfly transect was carried out weekly between April and September. Data was entered onto Transect Walker and sent to the National Butterfly Monitoring Scheme.

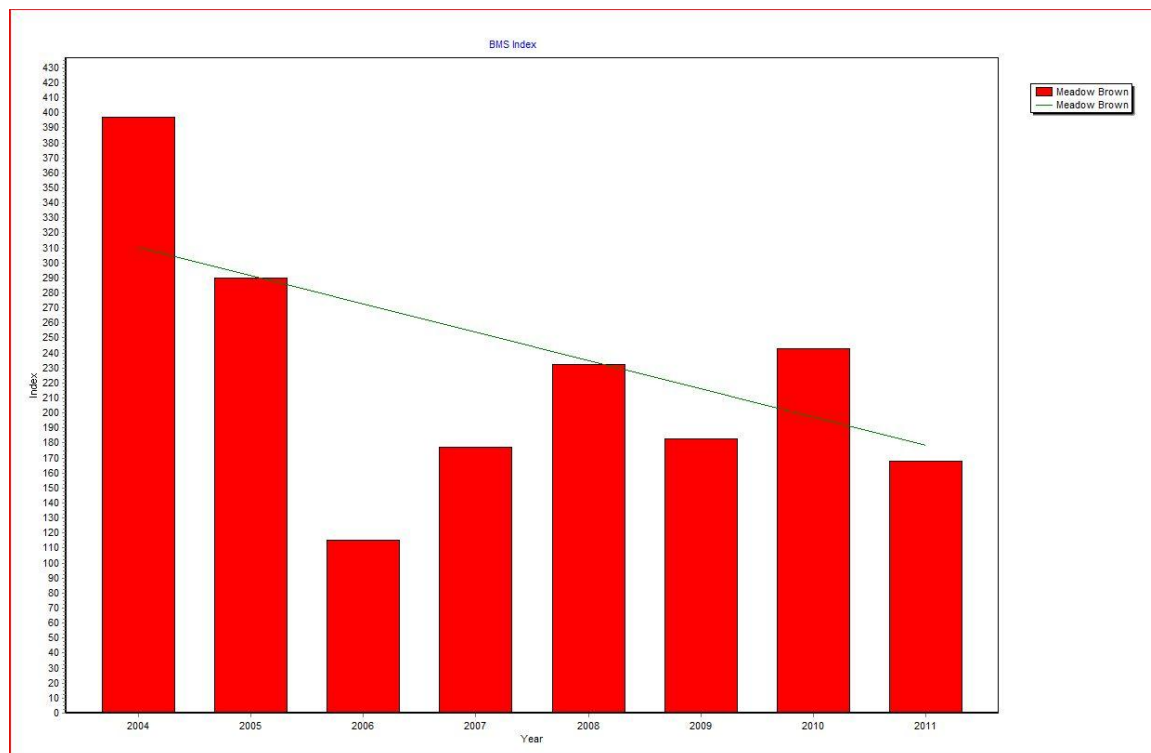
2011 proved to be another a reasonably good year overall.



The small skipper appears to be bucking the national trend and showing an increase at Chippenham, together with large skipper, large white, orange tip, brown argus, comma and speckled wood.

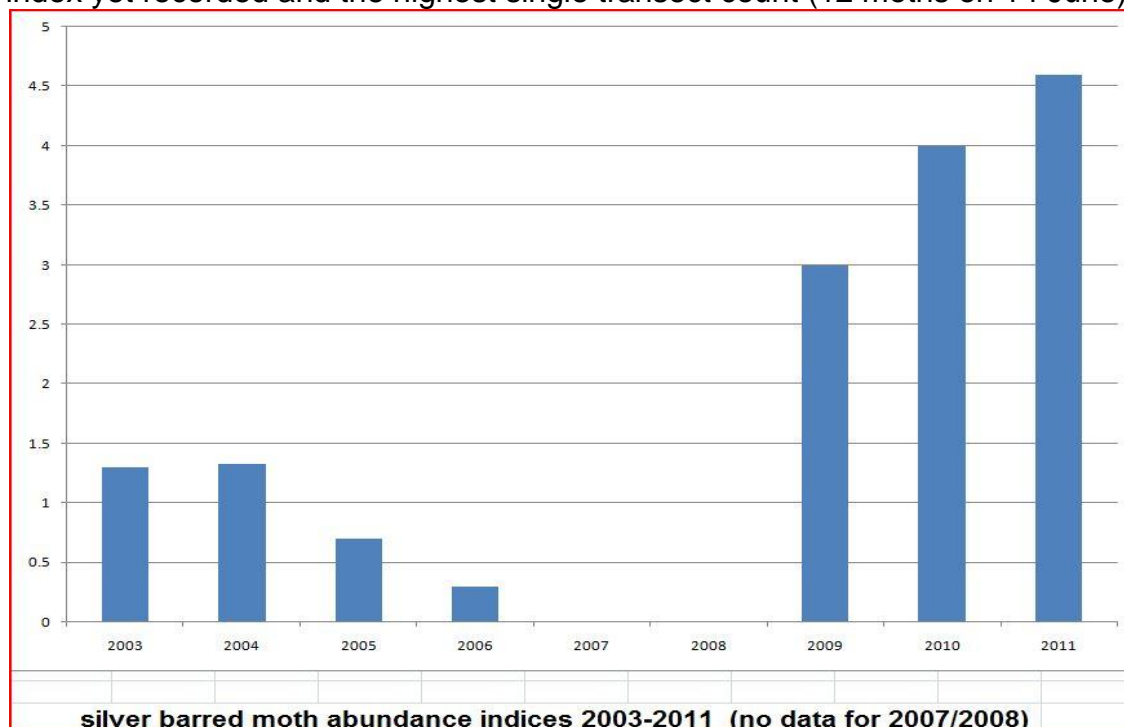


However, meadow brown, together with holly blue, small tortoiseshell and gatekeeper appears to be showing a downward trend in numbers.



Moths

The silver barred moth transect was carried out weekly between early May and early July. It proved to be a record year for this species, with the highest annual index yet recorded and the highest single transect count (12 moths on 14 June)



The index in the above table is the total number of moths recorded divided by the number of transects walked.

Following a suggestion at the annual invertebrate liaison meeting on 16 August that it would be a good idea to regularly monitor the moth population on the reserve, Louise Bacon co-ordinated a group of volunteers to carry out regular monthly light trapping from the beginning of October.

Plants

James Cadbury, assisted by Chris Hainsworth and Mike Taylor carried out the annual Cambridge milk parsley census on 20 July. This was earlier than in previous years and as a result it was slightly before the peak flowering period. 5000+ flowering plants were counted, many rather small possibly due to the dry conditions. This is considerably down on the 10000 recorded in 2009.

Sue Shaw came to the reserve to monitor M13 areas on 30 June.

Visitors/Meetings

CH moved permanently out to the Fen on 9 May, having taken the opportunity to go full-time Senior Reserve Manager.

Catherine Norris, a postgraduate student at Writtle College continued to visit to service her microclimate data loggers.

NE NNRs East team manager Peter Leverton visited on 24 May and 24 February.

Chris Hainsworth led a walk for 8 members of the Stowmarket branch of Suffolk Wildlife Trust on 9 July.

We held a small demonstration of a Ryetec machine for local NE reserve staff on 21 July. Machine kindly supplied and demonstrated by Ryetec salesman. We decided to buy our own machine, which was eventually delivered on 24 February.

NEs Brecks, Beds and Cambs team held team meeting in the office on 27 July.

Annabel Armstrong of Bidwells met CH on 11 August.

Clive Stace and Alan Leslie visited Fen on 11 August.

Annual invertebrate liaison meeting on 16 August. Attended by CH, MT, Dr Ian McLean, Louise Bacon and Ivan Perry.

Tim Pankhurst and Alan Leslie visited Fen on 19 September.

Paul Lacey of NE visited on a fact finding mission for a future article on the reserve in Conservation Land Management magazine on 28 September.

NE land agent Nick Teesdale visited on 4 November.

NE Suffolk land management team held team meeting at Fen on 14 December.

Michael Taylor
Reserve Manager
April 2012

Species Records

Plants

Dactylorhiza incarnata ssp *ochroleuca* did not appear this year.

21 fragrant orchids were counted on Baxter east and 17 in compartment 2 on 4 July.

12 bee orchids were counted on north meadows compartment 1, mostly on the slopes between the higher ground near the footpath and the lower wetter areas. Another 5 bee orchids were then found in East Meadows on 16 June, together with 20+ twayblade. This makes it the best year by far for bee orchids on the reserve for many years.

44 marsh orchids were counted on Pigeon Ride, between Baxter east and Ash Ride, on 6 June. This appears to be an increase over recent years, but still (from memory) well down on similar ad-hoc counts made in 2002-2005, which numbered in the hundreds. It is assumed that buffalo trampling in wet conditions damaged the plants. In the last 3-4 years we have tried to graze the Pigeon compartment more sparingly, and then only in very dry conditions to avoid excessive poaching.

Bogbean did well at the main site despite the dry spring – first flower was noted on 18 April.

Moths

Silver barred moth appeared very early this year, on Baxter East on 3 May.

Apart from the regular monthly trapping sessions, NE staff camped out with moth traps on 1st and 26 July. A few reed leopards were recorded, but both nights turned rather cool.

Ian Barton recorded 67 species of leaf miners on 30 August, including the scarce *Caloptilia cuculipennella*.

Butterflies

A single white-letter hairstreak was seen this year, on thistle near the main gate on 19 July. The last butterfly of the year was a red admiral on 16 November.

Odonata

First *Pyrrhosoma* on 8 April; first *Libellula* on 27 April. 3 hairy dragonflies seen on 3 May. Latest common darter was on 3 November.

Birds

A Cettis warbler held territory in the northern part of compartments 6 for much of early summer.

A snipe was displaying in the vicinity of Malcolms Pond and compartment 5 for several weeks – it is possible that breeding was attempted for the first time in a number of years.

Other Vertebrates

Water vole glimpsed in ditch under draw bridge on compartment 9 buffalo fence on 17 May.

Stoat in full ermine on Pigeon Ride on 16 March.

Several toads in central ditch in compartment 2 on 22 March.

Appendix - Chippenham RoC Implementation: Proposal for Pilot Study on Chippenham and Snailwell Poor's Fen SSSI (v2)

Introduction

In December 2008, an Options Appraisal (OA) was prepared to assess the impact of licensed abstraction on Chippenham and Snailwell Poor's Fen Site of Special Scientific Interest (SSSI) as required for the Habitats Directive Review under the Habitats Directive (92/43/EEC) and its transposition into UK Law (The Conservation (Natural Habitats, & c.) Regulations 1994).

Chippenham and Snailwell Poor's Fen is designated as a SSSI and is a component feature of the Fenland Special Area of Conservation (SAC). The notified European features are *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (represented on site by M24) and Calcareous fens with *Cladium mariscus* and species of the *Caricion davalliannae* (represented on site by S2 and the sub-community M13).

As reported in the Options Appraisal, various lines of evidence point to the fact that the current operation of the Lodes Granta Groundwater Support Scheme is not fully effective at Chippenham and Snailwell Poor's Fen SSSI. During the Options Appraisal an initial investigation into enhanced mitigation was undertaken using a wetland model. This work demonstrated that the current mitigation is not fully effective, and was then used to determine there was sufficient water available from the Scheme to mitigate any effects from abstraction if a more suitable means of delivery can be designed.

The Options Appraisal identified the preferred option as Enhanced Mitigation. Based on the technical appraisal, the existing Lodes Granta Groundwater Support Scheme (implemented in 1991 to mitigate against the impacts of abstraction from the Chalk) could be enhanced to improve the mitigation on Chippenham and Snailwell Poor's Fen at a lower cost, and with greater

sustainability, and fewer social and economic consequences than reducing Public Water Supply licences.

The main action recommended was to undertake a detailed physical feasibility study of enhanced mitigation so that the most cost effective and least disruptive means of enhancement could be determined. A new Water Level Management Plan (WLMP) for the site was considered to be a potential mechanism to deliver the enhanced mitigation but has been discounted; the SSSI is not 'main river' and is therefore outside the Environment Agency remit associated with this process. In order to expedite implementation of the enhanced mitigation study, a decision was made to undertake this work outside the WLMP process. It is worth restating at the outset that if these more detailed studies indicate that there are physical or other limitations to enhancing the mitigation scheme then sustainability reductions on key PWS licences may need to be reconsidered in the future.

This proposed way forward was confirmed in the Site Action Plan (SAP) for Chippenham and Snailwell Poor's Fen SSSI, issued in December 2008. Therefore, with this commitment, the Environment Agency needs to undertake investigations to enhance the support provided by the Lodes Granta Groundwater Scheme, which this assignment will do.

A staged approach is proposed to investigate enhancing the support provided by the Lodes Granta Groundwater Scheme. This will involve selecting a fen compartment(s) for the pilot trial. Once the results are confirmed for this pilot trial, if successful the trial can be extended out to other areas of fen, or if unsuccessful, a different trial will be designed.

In advance of the pilot study, additional fieldwork has been undertaken in the form of topographical survey (Atkins, 2010a) and peat permeability testing (Burton, 2010) which were scoped following a site visit by representatives from the Environment Agency, Atkins and Natural England in October 2009. A desktop assessment of the topographic survey was also undertaken (Atkins, 2010b).

Objectives

The main objective of the study is to undertake a trial of the 'Enhanced Mitigation' option identified as the preferred option in the Options Appraisal. The trial will be a field-based assessment of how the Lodes Granta Groundwater Support Scheme and water control structures on Chippenham and Snailwell Poor's Fen SSSI should be operated to maximise the biodiversity potential of the site, whilst making best use of available water resources. In doing so, it will identify the main constraints to delivering this option, to enable the Environment Agency and its project partners to implement necessary actions. These actions might include aspects such as replacing structures, creating milled sub-irrigation channels or building up ditch embankments and proposing operational rules for the mitigation scheme.

Approach

The proposed approach for the pilot study consists of the tasks set out below.

Task 1 - Define ecological target levels

The first project task will be to define and agree the ecological target water regimes required in the selected unit(s). These regimes will need to consider not only maximum and minimum water levels, but also seasonality and multi-year variation. The targets will be agreed with the Environment Agency and Natural England. Criteria against which to measure the success of the trial will also be determined. The recommendations from the previous topographical surveys, peat permeability tests and the October 2009 site visit will also be reviewed as part of this task.

Task 2 –Trial design

As part of this task, the trial for the selected unit(s) of Chippenham and Snailwell Poor's Fen will be designed. We will build upon the knowledge gained from the Options Appraisal work and the results of the site visit and soil survey undertaken in October 2009. The design will set out the

proposed management of different structures around the site and the operation of the Lodes Granta Groundwater Support Scheme during the trial.

Task 3 – Technical note

The design of the trial will be set out in a short technical note describing the water level management and monitoring activities that will be undertaken, and the proposed responsibilities of different organisations. A workshop will be held with Natural England and the Environment Agency Operations Team to present and discuss the technical note (see Task 10). Following this workshop, the trial design will be finalised to reflect any issues and concerns and to agree the approach and responsibilities.

Task 4 – Lodes Granta Groundwater Support Scheme testing and gauging

The status and operation of the Lodes Granta Groundwater Support Scheme discharge points will be reviewed in advance of the trial. Environment Agency Operations Delivery staff will need to support an assessment of the condition of each discharge point by removing manhole covers. Field tests will also be undertaken to develop a management manual of the scheme, and to check that the scheme functions as required.

As part of this task, we propose the Environment Agency Operations team install flow loggers on the three Lodes Granta discharge on Chippenham and Snailwell Poor's Fen. Data from the loggers will be used to fine-tune the management manual and will be retained throughout the monitoring period to enable the volumes of water flowing to the site from this source to be quantified throughout the trial period.

The potential complexities of this task are acknowledged. This task has therefore been initiated early in the programme to ensure sufficient time for trouble shooting. It has been assumed the Environment Agency Operations team will undertake this task. No costs have been allowed for by Atkins for installing flow loggers.

Task 5 – Water level monitoring

Water level monitoring during the trial will be limited to a small number of existing locations along the flow pathways identified during the OA work. **It is also recommended that a number of additional temporary dipwells are also installed for monitoring with loggers during the trial period if additional budget can be made available.**

The monitoring network will be implemented in late spring to enable the collection of baseline monitoring data prior to the trial. All the existing monitoring locations used will need to be cleaned prior to installation; for example, existing dipwells will be scrubbed and purged.

Water level monitoring locations will complement the flow gauging devices on the Lodes Granta discharge points installed as part of Task 4.

Task 6 – Undertake trial

The trial will be undertaken in late summer/early autumn when the fen will be at its driest. The precise dates will need to be flexible, responding to climatic conditions. During the trial, Natural England will operate water level structures and the Environment Agency will operate the Lodes Granta Groundwater Support Scheme as per the design developed in Task 3. The Atkins team will be present on site during the trial.

A second workshop with Natural England and the Environment Agency Operations Team will be held during the trial so that any issues identified can be visited and discussed.

Task 7 – Site walkover survey

A walkover survey will be undertaken during the trial. The objective of the walkover will be to verify the flow pathways across the site determined during the Options Appraisal work. A small amount of topographical survey along these flow pathways will also be required to complement the analysis of LiDAR data previously undertaken and confirm that the objectives of the trial are being met.

Task 8 – Data analysis

Data provided by the water level monitoring and field surveys will be analysed to determine the success of the trial relative to the criteria defined as part of Task 1.

Task 9 - Reporting

The results of the trial will be presented in a final report describing the trial, its outcomes and any recommendations for the next stage, if required. The final project workshop will discuss the first draft final report. This report will then be updated to a final version to include any issues discussed.

Task 10 - Consultation

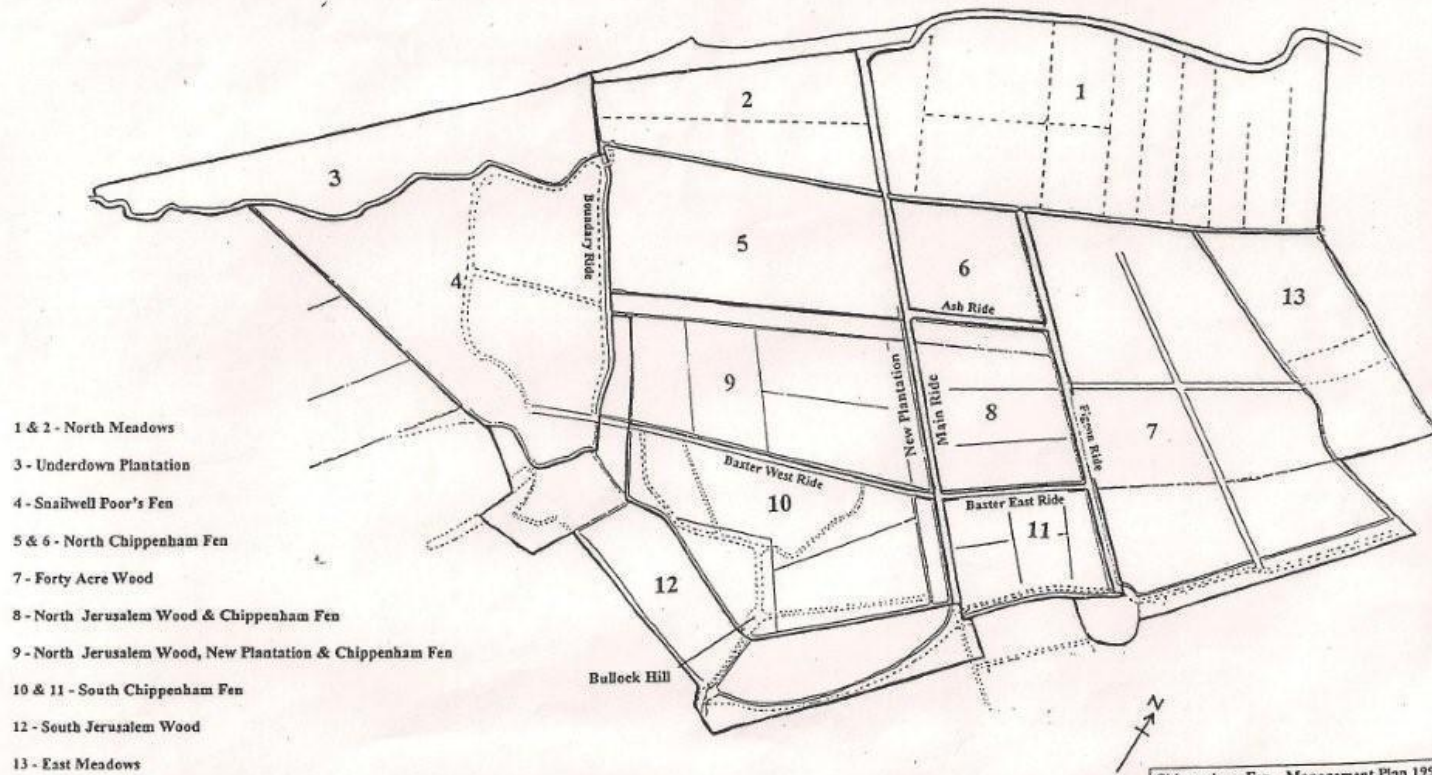
Three workshops will be held with Natural England and the Environment Agency, to include Operations Team staff where appropriate.

- The first workshop will discuss the Trial Design Technical Note (see Task 4).
- The second workshop will be field based and will involve a field visit to the site during the trial to discuss any issues (Task 6 and 7).
- The third workshop will be held towards the end of the project to present and discuss the final report (Task 9).

Task 11 - Project management

Project management will include monthly progress reports to the Environment Agency (and Natural England). Meetings with the Environment Agency will also be held on a regular basis. A total of three meetings with the Environment Agency have been costed as part of the project, to be undertaken before/after the workshops.

MAP 1 COMPARTMENTS

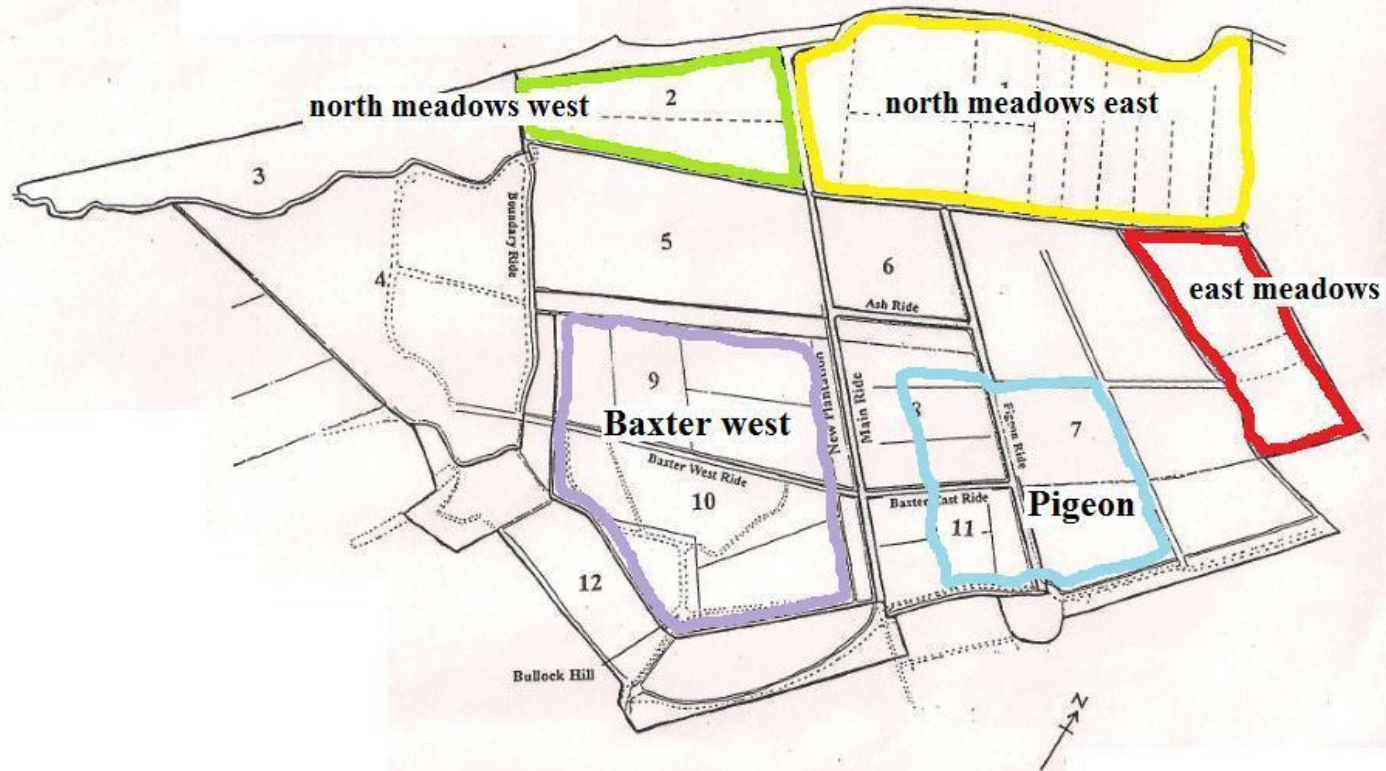


Chippenham Fen - Management Plan 1996

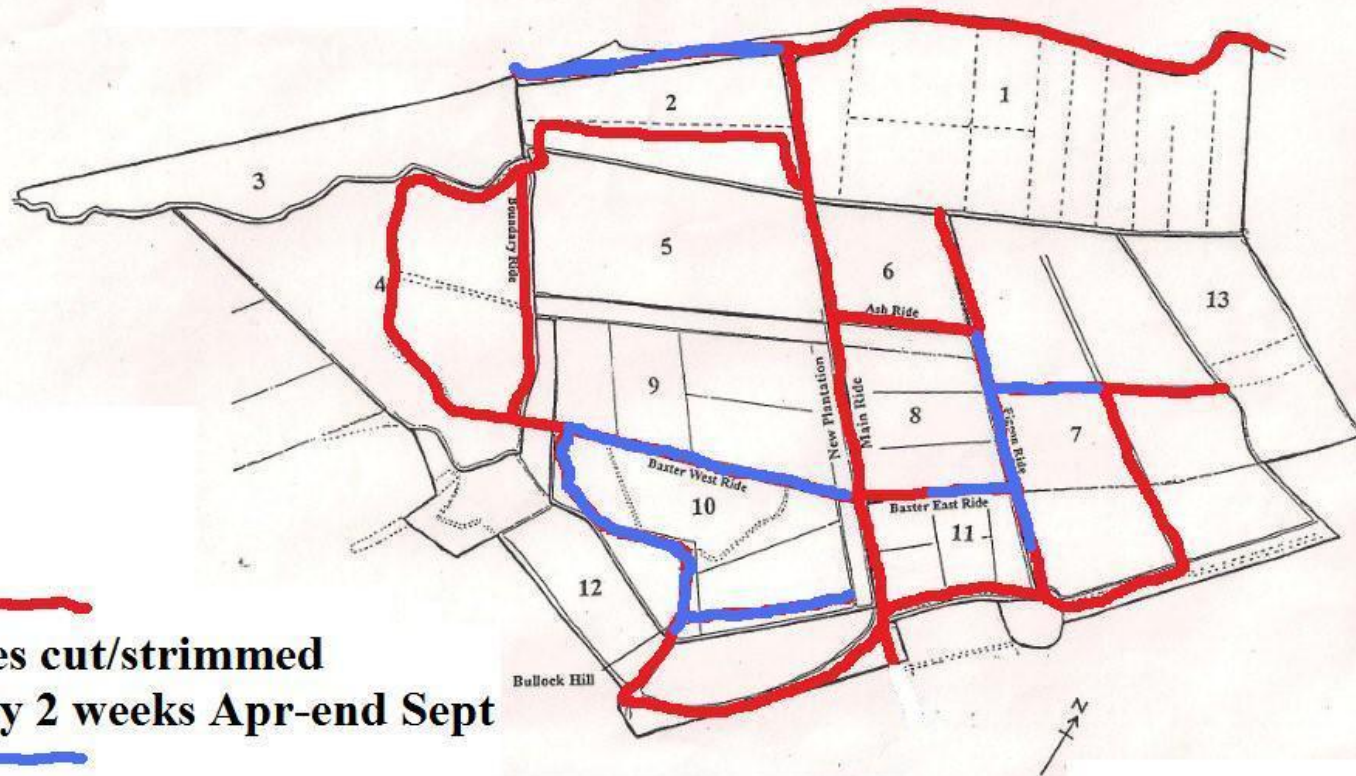
Figure 3 - Compartment Map

East Midlands Environmental Consultants
110 Smeinton Dale, Nottingham, NG3 7DN

MAP 2 GRAZING AREAS

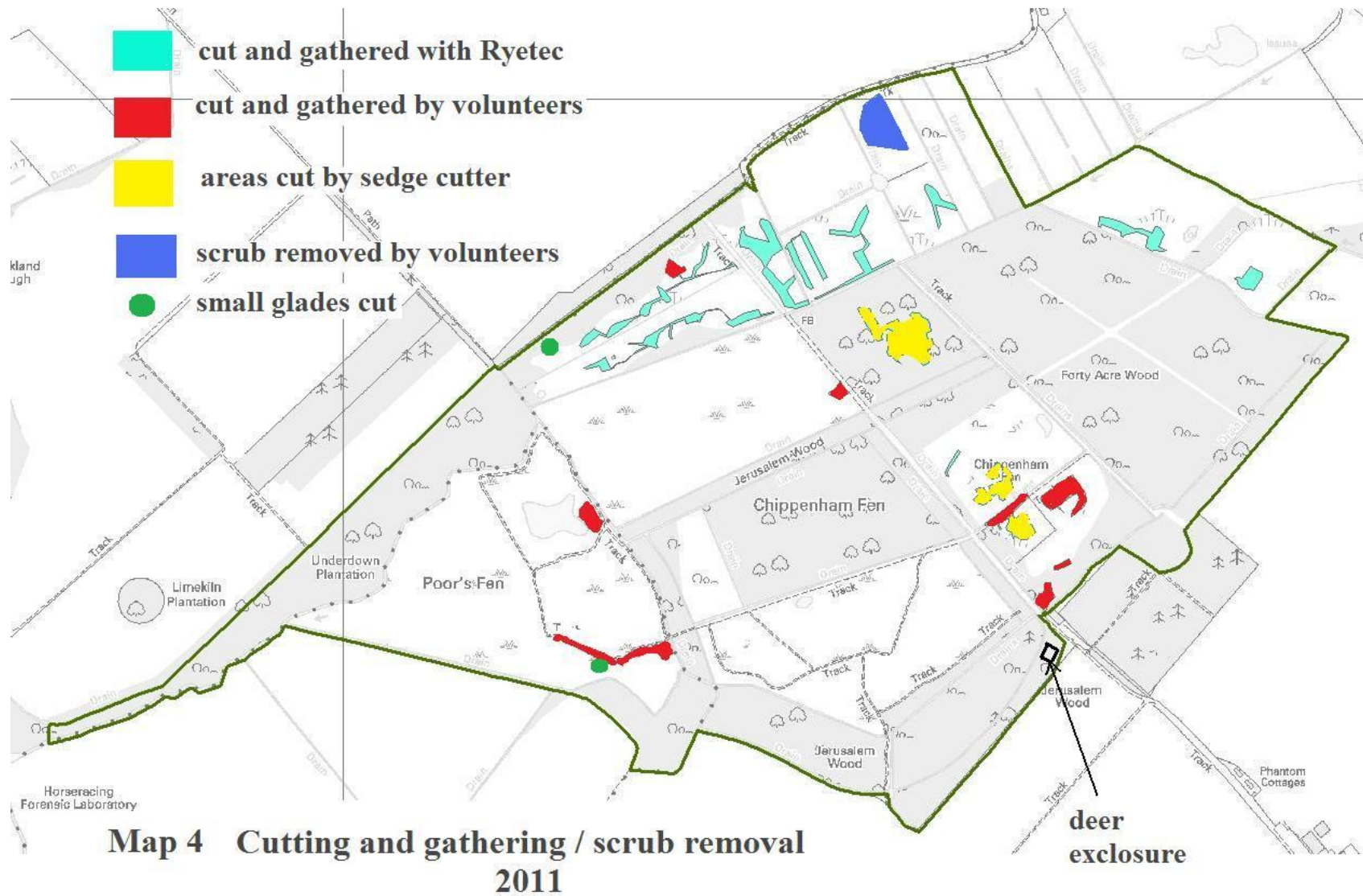


MAP 3 RIDE CUTTING 2010



**Rides cut/strimmed
every 2 weeks Apr-end Sept**

**Rides cut/strimmed less frequently; a few
times during season as necessary**



| Week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | Total | Index | Week Index |
|-------------------------|-------|--------|-------|--------|--------|-------|-------|--------|--------|--------|-------|-------|--------|-------|-------|-------|-------|--------|-------|-------|--------|-------|-------|-------|-------|----|-------|-------|------------|
| Mean Temp | 17.00 | 18.00 | 21.00 | 22.00 | 18.00 | 17.00 | 17.00 | 17.00 | 17.00 | 16.00 | 20.00 | 17.00 | 26.00 | 20.00 | 18.00 | 17.00 | 18.00 | 21.00 | 17.00 | 19.00 | 16.00 | 18.00 | 22.00 | 20.00 | 18.00 | | | | |
| Mean Sun | 87.00 | 100.00 | 75.00 | 100.00 | 100.00 | 56.00 | 75.00 | 100.00 | 100.00 | 100.00 | 81.00 | 94.00 | 100.00 | 56.00 | 87.00 | 81.00 | 44.00 | 100.00 | 63.00 | 94.00 | 100.00 | 0.00 | 81.00 | 50.00 | 62.00 | | | | |
| Small/Essex Skipper | | | | | | | | | 1 | 3 | 10 | 21 | 18 | 17 | 15 | 3 | 1 | | | | | | | | | | 151 | 151 | 151 |
| Large Skipper | | | | | | | | | | | | | | | | | | | | | | | | | | | 89 | 89 | 89 |
| Clouded Yellow | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| Brimstone | 5 | 13 | 12 | 12 | 10 | 11 | 2 | 4 | | | 1 | 1 | 1 | 1 | 6 | 3 | | 2 | 1 | 3 | 2 | | 5 | 2 | | | 97 | 97 | 97 |
| Large White | | | | | | 1 | 1 | | | | | 2 | | 2 | 5 | 8 | | 7 | 1 | 3 | | 1 | | | | | 31 | 31 | 31 |
| Small White | | | | 1 | 1 | 1 | | | 1 | | 1 | 4 | 4 | 4 | 7 | 7 | 3 | 3 | 13 | 9 | 27 | 4 | 2 | 6 | | | 98 | 98 | 98 |
| Green-veined White | | 3 | 8 | 25 | 12 | 14 | 5 | 6 | | | 2 | 7 | 32 | 17 | 31 | 27 | 19 | 17 | 20 | 25 | 9 | 26 | 9 | 5 | 2 | 1 | 321 | 322 | 321 |
| Orange-tip | 1 | | 5 | 11 | 2 | | 1 | 1 | | | | | | | | | | | | | | | | | | | 21 | 21 | 21 |
| Green Hairstreak | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 1 |
| White-letter Hairstreak | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| Small Copper | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| Brown Argus | | | | | | | 3 | | | | | | | | | 12 | 5 | 1 | | 1 | | | | | | | 22 | 22 | 22 |
| Common Blue | | | | | | | 2 | 6 | | 1 | | | | | | | | 1 | | 1 | 3 | 1 | | | | | 15 | 15 | 15 |
| Holly Blue | | | | 1 | 2 | 2 | 2 | | 1 | | | | | | | | | | | | | | | | | | 8 | 8 | 8 |
| Red Admiral | | | | | | | | | 1 | 1 | | | | | 1 | 3 | 7 | 3 | 2 | 10 | 4 | 5 | 1 | | 2 | 5 | 40 | 45 | 45 |
| Painted Lady | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| Small Tortoiseshell | 1 | 1 | 1 | | | | | | | | | | | | | | 1 | | | | | 1 | | | | | 5 | 5 | 5 |
| Peacock | 13 | 12 | 8 | 5 | 8 | 4 | 2 | 2 | | | | | | | 2 | 4 | 14 | 8 | 2 | 3 | 2 | | | 2 | | | 91 | 91 | 91 |
| Comma | 6 | 2 | | | | | | | | | | | | | 1 | 1 | 1 | | | | 1 | | 3 | 5 | 2 | 5 | 22 | 27 | 27 |
| Speckled Wood | | | 3 | 3 | 6 | 9 | 2 | 6 | 2 | 3 | 4 | 4 | 1 | | 2 | 2 | 1 | 4 | 12 | 4 | 4 | 23 | 10 | 13 | 17 | 6 | 135 | 141 | 139 |
| Gatekeeper | | | | | | | | | | | | | | | 3 | 6 | 9 | 13 | 2 | 7 | 6 | 2 | 1 | | | | 49 | 49 | 49 |
| Meadow Brown | | | | | | | | | | 2 | 5 | 5 | 6 | 9 | 23 | 18 | 24 | 32 | 10 | 7 | 13 | 5 | 7 | 2 | | | 168 | 168 | 168 |
| Ringlet | | | | | | | | | | | | 3 | 38 | 55 | 46 | 11 | 4 | 1 | 1 | | | | | | | | 159 | 159 | 159 |
| Small Heath | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| Total | 26 | 31 | 37 | 58 | 42 | 42 | 20 | 25 | 6 | 10 | 23 | 61 | 130 | 140 | 186 | 117 | 100 | 96 | 65 | 73 | 71 | 68 | 38 | 35 | 23 | 17 | 1523 | 1540 | 1537 |

Chippenham Fen Butterfly Transect Indices by week 2011

