

Floodplain meadows and society - A two-way relationship!



Conference Programme

DAY 1 Wednesday 14th May 2014

12.30 Lunch

13.30 Welcome and introduction. The Floodplain Meadows Partnership: an update.
David Gowing and Emma Rothero

13.45 Session 1: What can floodplain meadows do for us: the ecosystem services of floodplain meadows

13.45 Ecosystem services in grasslands: evidence, trade-offs and restoration:
James Bullock

14.25 "Beauty and utility" in floodplain meadows: What price both? John Rodwell

15.05 Assessing ecosystem services and biodiversity in the Nene Valley: Jim
Rouquette

15.35 Tea/coffee and posters

16.15 Session 2. Trip to Clattinger Farm Special Area for Conservation

19.30 Conference dinner including after dinner speaker: Donald MacIntyre

DAY 2 Thursday 15th May

8.30 Session 3: Trip to North Meadow Special Area for Conservation

12.30 Lunch

13.30 Session 4. What can we do for floodplain meadows?

13.30 Friends of Motte Meadows: Wes Weate and Mel Brown

13.45 Engaging the community in the conservation of a high profile site: Anita
Barratt

14.00 Portholme Meadow SSSI and SAC, a 333 year legacy: J. Patrick Doody

14.15 Tea/coffee/posters

14.35 Chimney Meadows: restoration and management: Lisa Lane

14.50 Inspiring Meadows in Northamptonshire: Matt Johnson and Robin Field

15.05 Protecting flooded meadows in Estonia - examples from Alam-Pedja Nature
Reserve: Jaak-Albert Metsoja

15.30 Wrap up and finish by 15.45

Session 1: What can floodplain meadows do for us? The ecosystem services of floodplain meadows

Ecosystem services in grasslands: evidence, trade-offs and restoration

Professor James Bullock. Individual Merit Scientist, NERC Centre for Ecology and Hydrology (CEH), Wallingford, Oxon, OX10 8BB

Grasslands are a major land cover in many parts of the World, but compared to other habitats such as woodland, their contribution to ecosystem services are not well recognised by policy makers, land managers and scientists. In this part of the World, semi-natural grasslands have been, in general, created by human activities over the centuries. As such, semi-natural grasslands are ideally suited to providing multiple ecosystem services to benefit human wellbeing, as well as supporting important and distinctive biodiversity. Analyses across the range of semi-natural grassland types show that these grasslands can be important in providing forage for livestock, sequestering carbon, purifying water, and reducing flood risk, for example. The provision of cultural services – such as recreation, aesthetic value, and heritage – is an important contribution by these grasslands. The full appreciation of semi-natural grasslands is impeded by a lack of evidence in some areas, such as measuring the cultural services they provide, or setting reduced forage provisioning against gains in water quality, etc. Indeed, future planning to support the conservation, maintenance and restoration of semi-natural grasslands requires objective assessment of benefits and trade-offs. In this talk, I explore these issues both in general for semi-natural grasslands and specifically for wet meadows. Specific issues are: assessing how management for certain services may trade-off against other services; the role of grassland biodiversity in underpinning services; and the potential for grassland restoration to improve biodiversity and services.

Biography

James has been carrying out conservation ecology research for 25 years. He has worked on spatial ecology, specifically the impacts of habitat loss and fragmentation, and approaches, such as restoration, to counter these losses. He has worked extensively on semi-natural grasslands, albeit at the drier end of the spectrum! James led the semi-natural grasslands chapter for the UK Natural Ecosystem Assessment and has, in recent years, been researching the links between biodiversity and ecosystem services. He is leading number of large projects in this subject area, for example the Wessex BESS project which is examining biodiversity-service links, restoration and stakeholder needs in the Wiltshire chalk downlands.

Beauty & utility of floodplain meadows. What price both?

John Rodwell Independent Ecologist johnrodwell@tiscali.co.uk

Frameworks of Ecosystem Services include categories for Cultural Services but there is often some puzzlement about how these might be defined and their outcomes quantified. In particular, 'aesthetic' and 'spiritual' services are considered hard to accommodate within an Ecosystem Services typology. Yet, many people obtain manifest sensory pleasure from engaging with the natural environment and many artists testify to the inspiration it provides, producing work that moves others in turn. And many would say that nature is of immeasurable value to the well-being of the human spirit, maybe of some explicit religious significance in their lives, changing how they think and behave. Drawing on work for the Biodiversity Ecosystem Services Sustainability (BESS) programme and the Nature Improvement Areas, this paper explores how aesthetic and spiritual services can be understood and what challenges they pose for existing attitudes and practice concerning the indicators and outcomes of Ecosystem Services. In floodplain meadows, can delight and wonder really sit comfortably alongside the instrumental use which we make of this kind of habitat and landscape?

Biography

John Rodwell was Professor of Plant Ecology at Lancaster University but now works independently providing expert advice and research products for environmental and wildlife agencies and NGOs in this country and elsewhere in Europe. Coordinator of the UK National Vegetation Classification, he continues work on defining plant communities, at the moment in a revision of the EUNIS Habitat Classification for the European Environment Agency. He is also part of a team just beginning a three-year programme of Red-List evaluation of all terrestrial and marine habitats across the 28 EU countries for DG(Environment). He has worked on interpreting grassland composition and ecology for the Floodplain Meadows Project project and is chair of the UK Grasslands Forum. He is also interested in relationships between nature and culture, heads an Anglo-German conversation between ecologists, landscape architects, philosophers and theologians on belonging and place based in Manchester University and is an independent member of the Defra NIA Monitoring & Evaluation Steering Group.

Assessing ecosystem services and biodiversity in the Nene Valley

Jim Rouquette, University of Northampton. jim.Rouquette@northampton.ac.uk

Flowing from Daventry to Northampton and on to Peterborough, the Nene Valley consists largely of arable farmland and improved grassland, interspersed by urban areas. A few floodplain meadows do remain and the valley bottom is characterised by a network of gravel pits which have become important sites for over-wintering and breeding wetland birds. However, the Nene faces increasing pressures from human development, with the area highlighted for significant growth over the next few years. This is placing considerable pressure on the natural environment, but also presents an opportunity to achieve conservation of biodiversity and ecosystem services at a landscape scale.

This was the context for developing the Nene Valley Nature Improvement Area (NIA). This is a flagship Defra funded project to improve biodiversity conservation along the river and floodplain and is a partnership between a large number of organisations. In this talk Jim will briefly describe the Nene Valley NIA, before focussing on work to model and map ecosystem services and biodiversity across the landscape. This project is very much a work in progress, but a number of methods will be highlighted in which this information will be used to target conservation action and influence planning and policy across the catchment. The project is also investigating a number of possible schemes whereby beneficiaries pay providers for the ecosystem services that they receive – so called Payments for Ecosystem Services (PES) schemes. Work from outside the Nene Valley will be highlighted that revealed the potential multiple benefits of floodplain meadow (re)creation.

Biography

Jim is a research ecologist and conservation biologist at the University of Northampton. His primary research interest is in ecosystem services and biodiversity, particularly in relation to rivers and their catchments. He is interested in determining how we can conserve a landscape rich in biodiversity in the face of potentially conflicting land use pressures. His research focusses on modelling and mapping ecosystem services and biodiversity, operationalizing the ecosystem approach, and exploring the implications for policy and practice. He also carries out research on riverine and wetland ecology and conservation, including examining patterns of biodiversity in river corridors, the ecology of species of conservation concern, and the impact of urbanisation, agriculture and flood risk management practices on biodiversity.

Session 4: What can we do for floodplain meadows?

Friends of Mottey Meadows.

Mel Brown, Natural England Senior Reserves Manager, Mottey Meadows National Nature Reserve and Wes Weate, land owner and member of the Friends of Mottey Meadows

When Natural England was formed, new targets were created to encourage engagement of the local community with National Nature Reserves. At Mottey Meadows NNR, a meeting was set up with the nearby village residents of Wheaton Aston to propose a friends group and many things have flowed from there. This talk will cover how the group was created, what it has achieved, and what is happening now on the NNR. Wes Weate will discuss being involved with a local group from a community perspective and how the friends group have supported the NNR through fund raising activities. Between them they will look at the future for the site and the friends group.

Biography

Mel Brown has been managing the Mottey Meadows for five years along with two other National Nature Reserves in Staffordshire. Her previous experience includes working as an assistant warden for the National Trust in Mid & South East Wales and as Full Time Volunteer on the Gower Peninsula for the National Trust.

Wes Weate comes from one of the oldest families in Wheaton Aston and generations of his family have farmed there. His grandfather and father made hay from the Mottey Meadows and sold and delivered it to breweries and bakeries in the Wolverhampton area. He has always lived in Wheaton Aston and can recount many memories of hay-making from personal family recollections.

He is now retired but was one of the founding members of the Friends Of Mottey Meadows group and acts as its current chair.

Engaging the community in the conservation of a high profile site

Anita Barratt Natural England Reserve Manager Anita.Barratt@naturalengland.org.uk

North Meadow NNR SAC SSSI is one of the largest (45ha) unimproved lowland hay meadows remaining in the UK today. It is famous for the nationally scarce *Fritillaria melagris* which blooms in April attracting up to 10000 visitors over 4/5weeks. It is a busy public site for much of the year, which without careful management, has the potential to seriously and permanently degrade this important site.

North Meadow has been part of the life of the town of Cricklade for more than 800 years. Anita will cover the issues created by the site's high profile and how she has used her work with volunteers and community groups to help conserve and protect the rare habitat of the meadow.

Biography

Anita works as a Reserve Manager for Natural England and has managed North Meadow National Nature Reserve for 10 years. Anita trained in organic horticulture and conservation, and over the last few years has specialised in leading groups of volunteers to achieve significant national awards.

As chair of the local Cricklade Garden Club she led the group to achieve two silver gilt medals for courtyard gardens in 1999 and 2001 at the Chelsea Flower Show in London. In 2004 she started a new volunteer group 'Cricklade Bloomers' with the aim of entering Cricklade in the small town category of the Britain in Bloom competition. The first regional gold medal came in 2005 followed by a national gold medal for the best UK small town in 2008. At this time Anita was asked to

become a Britain in Bloom regional judge. By 2010 a group of 40 volunteers were meeting every Wednesday and Saturday to work on projects around Cricklade culminating in 2011 in Cricklade winning the top Britain in Bloom Champion of Champions award against stiff competition from 1700 UK villages, towns and cities.

www.crickladeinbloom.co.uk

Portholme Meadow, Cambridgeshire - SSSI and SAC, a 333 year legacy

Dr J Patrick Doody, Clerk and Trustee, Thomas Miller Charity c/o 5 Green Lane, Brampton, Huntingdon, Cambs. PE28 4RE Tel: 01480 392706 Mob: 07847949667 jp.doody@ntlworld.com

Portholme Meadow is a large, unenclosed river floodplain meadow, bordered on two sides by the River Great Ouse in the Parish of Brampton, in Cambridgeshire. It is mostly at or below the Ordnance Survey, ten metre contour and is regularly flooded in winter. It has a rich history of human use for hay, sheep and cattle grazing, as a racecourse and an airfield. With an area of 104 ha, it represents 7% of the total UK lowland unimproved hay meadows. It supports a rich flora and is a haven for a number of less common breeding birds in summer (e.g. corn bunting and skylark) now absent from much of the more intensively farmed Cambridgeshire landscape. It also supports large populations of ducks, waders and gulls when flooded in winter. It is a Site of Special Scientific Interest and recognised internationally as a Special Area of Conservation under the European Union 'Habitats' Directive*.

In 1681 Thomas Mill of Brampton left a small part of the meadow to the "the Town of Brampton".... "three parcels of land on Port Holme the rent from which should be paid to the Minister of the Parish every year for preaching a sermon on New Year's Day and the rest to be distributed to the poor in Easter Week". This presentation will consider this legacy, the contribution it makes to the conservation of the site, how it benefits the local community and relates to the recently formed 'Friends of Portholme Meadows' group.

Biography

Dr J Patrick Doody worked for the Nature Conservancy Council and its successors until his retirement in 1998. He is an independent coastal ecologist working in North America and Europe. He has lived in Brampton for nearly 30 years and has taken a special interest in the history and natural history of Portholme Meadow. He has recently taken over as Clerk and Trustee to the Portholme Thomas Miller Charity.

* See <http://www.floodplainmeadows.org.uk/files/floodplain/Portholme%20Meadow%20Brampton%20Parish%20History%20and%20Natural%20History.pdf>.

Enhancing and restoring Chimney Meadows

Lisa Lane. Upper Thames Living Landscape Manager; Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust. Chimney Meadows Nature Reserve, Chimney, Bampton, Oxon, OX18 2EH

Following the purchase of Chimney Farm by Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust in 2003, work started to restore the intensively managed farmland and 70 ha of floodplain meadows were recreated on former arable land, using green hay from the neighbouring Chimney Meadows National Nature Reserve.

Early monitoring of the arable reversion fields showed that target vegetation communities of MG4/5 were reached within 3 years. It is now 10 years since green hay was spread and thanks to the WREN Biodiversity Action Fund, we will be monitoring the plant and invertebrate communities

of the meadows again, to see how they have developed during this time.

The WREN funded 'Chimney Meadows: Enhancing and Restoring Floodplain Meadows' project, is also enabling us to undertake management works such as ditching, fencing and improving water supplies for livestock, to help restore the National Nature Reserve plant communities. The meadows have suffered as a consequence of summer flooding and difficulties making hay and grazing the site, due to the wet weather of recent years.

Finally, we will be undertaking further green hay spreading to enhance fields which have been historically managed as hay meadows, but which are less species-rich than other fields on site. Some of the work highlighted will be undertaken by contractors, but volunteers are also of vital importance in enabling us to maintain Chimney Meadows in the long term. The grant will enable us to provide training such as first aid and brushcutting to ensure they can undertake the necessary tasks safely.

Biography

Lisa graduated from University College London in 1994 with an M.Sc. in Nature Conservation and went on to work for Cheshire Wildlife Trust, initially as Woodland Project Officer, followed by HLF Reserves Officer. In 2004, she became Chimney Meadows Project Officer for Berks, Bucks and Oxon Wildlife Trust, converting 200 ha of intensively managed farmland into a nature reserve. This included reverting 70 ha of arable land into floodplain meadows. In 2006, she changed roles and as People and Wildlife Reserves Manager, oversaw the management of a suite of Community Nature Reserves. Latterly, she returned to Chimney Meadows as Upper Thames Living Landscapes Manager, this time with a remit to line manage the Chimney Meadows Estate Manager, to work with other organisations to inspire communities about their local area and to encourage farmers and landowners, along the Upper Thames, to manage their land in ways that are beneficial to wildlife.

Inspiring Meadows in Northamptonshire

Matt Johnson Wildlife Sites Officer (Wildlife Trust BCN) The Wildlife Trust for Bedfordshire, Cambridgeshire & Northamptonshire, Lings House, off Lings Way, Billing Lings, Northampton, NN3 8BE, Matt.Johnson@wildlifebcn.org

Dr Robin Field - Nene Valley Nature Improvement Area Land Advisor (RNRP)
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Over the last 100 years Northamptonshire has suffered similar losses of species rich grassland to elsewhere in the country. At the start of this century, with only one or two exceptions, only small isolated meadows remained. Starting in 2006, the River Nene Regional Park (RNRP) and the Wildlife Trust BCN (WT) working with Natural England have striven to reverse this decline. Working through the Higher Level Scheme 2006-14, RNRP Environmental Grant Scheme 2006-8, Inspiring Meadows Project (WT) 2011-14, Revital-ISE Project 2008-13, Nature Improvement Area Land Advisor Fund 2013-15, and Lottery Funding 2009-14, over 210 ha of species rich grassland has been recreated and 150 ha restored and returned to appropriate management. This has included a number of wet grassland sites, including MG4 grasslands and historic water meadows, owned by a variety of landowners & organisations and providing different restoration & management challenges. A further 60 ha is planned for restoration over the next 2 years with future projects forming part of a Heritage Lottery Fund Landscape Partnership bid.

Biographies

Matt Johnson has worked for the Wildlife Trust in Northamptonshire for the past 5 years. Since 2010, he has been the Wildlife Sites Officer providing survey work and land advice to LWS landowners across the county. His main focus has been on restoring meadow sites through the 3 year SITA funded Inspiring Meadows project. Previously he did a Conservation MSc at the

University of Leeds and worked as an ecologist at Gifford Ltd.

Dr Robin Field has worked in Northamptonshire giving land advice to farmers and landowner since 2006. The post has been funded through various different funders over the years but at the moment he works as the Nene Valley Nature Improvement Area Land Advisor and the Catchment Sensitive Farming Officer for the area. Previously he has worked as a Senior Lecturer in the higher education sector, specialising in rural management and moth and butterfly research. He has been involved in species rich grassland restoration and recreation projects for over 20 years.

Protecting flooded meadows in Estonia – examples from Alam-Pedja Nature Reserve. Jaak-Albert Metsoja albert@ut.ee. PhD student, Dept of Botany. University of Tartu, Estonia

Estonia has some 15 000 ha of flooded meadows (Natura 2000 habitat type 6450, Northern Boreal alluvial meadows). Unlike in intensively used agricultural areas, these meadows in Estonia have largely escaped conversion to arable fields and the main threat to this habitat is abandonment and shrub encroachment. In many parts of Estonia, the rivers are unregulated, resulting in a natural flooding regime with floods taking place in spring after snowmelt. Alam-Pedja Nature Reserve (340 km²) in Central Estonia is among three largest conservation areas for flooded meadows in the country.

In Alam-Pedja, a local NGO started the meadow restoration by removal of shrub overgrowth and re-initiation of mowing in 2000. The meadows have been monitored for changes in plant, bird, and fish communities since that time. Jaak-Albert will present an overview on the restoration means, process and results, with more detailed insights into two EU funded restoration projects in the area.

Biography

Jaak-Albert was born in 1978 in Tallinn and started studies in biology in the University of Tartu in 2003. From the beginning he has focused on flooded meadows, and since 2006 also worked in an NGO in Alam-Pedja Nature Reserve, being responsible for the restoration and management of the Nature Reserve's meadows. In his NGO-work, one challenging task is to find sustainable use for the biomass from the flooded meadows. In his studies he tries to shed light on the management impact on the vegetation processes, focusing on plant species diversity, soil seed banks, and productivity-richness relationship.

After dinner speaker: Donald MacIntyre donald.macintyre@hotmail.co.uk

We are pleased to present Donald MacIntyre as our after dinner speaker, talking about harvesting seed on North Meadow in 1982 and since, and a romp through time to the present day.

Biography

1949: Born Salisbury, Wiltshire

1950-1967: Moved around the West Country with roots in Bath

1967-1970: Botany, Royal Holloway College

1970-1973: Plant genetics, University of Glasgow

1973-1974: Plant ecology, University of Reading

1975-1979: Plant breeding, SCRI Auchincruive, Ayr

1979-1980: Plant breeding, Terrington St Clement

1980-2014: Native seed growing and farming, Norfolk and Bath

1984-2014: Founding member and director Flora locale

2002-2014: Breeding working horses, Bath

2014: Royal Warrant

Site visits

Clattinger Farm

Short talks and discussions will be run at each site covering a range of different topics. These are as follows:

- Hedge, tree and fence management. Ellie Jones, Wiltshire Wildlife Trust.
- Nutrients and hydrology. David Gowing (Floodplain Meadows Partnership)
- Monitoring plants, hydrology, soils, NVC plots and others. Irina Tatarenko (FMP) Rob Large, (WWT)
- Invertebrates of floodplain meadows
- Restoration through green hay spreading and monitoring the results. Catherine Hosie (WWT) and Hilary Wallace (FMP).
- Farming system at Clattinger. Mickey Scott (farm contractor) and Neil Pullen (WWT).

North Meadow

- Summer flooding, drainage and hydrology. David Gowing (FMP)
- Removal of a floodbank and grassland restoration. Rob Wolstenholme (Natural England)
- Grassland restoration using green hay and seed spreading. Isobel Whitwam (NE)
- Snakeshead fritillaries. Irina Tatarenko (FMP)
- Control of bulky sedges and other problem plants. Sonia Newman and Clare Lawson (FMP)
- Plant communities of floodplain meadows. Hilary Wallace (FMP) Donald MacIntyre

North Meadow and Clattinger Farm Special Area for Conservation (SAC), designated under the European Habitats Directive is composed of two SSSI's found in the Thames Valley in southern England and represents one of only five sites in the UK designated under this legislation for lowland hay meadows. These two SSSI's represent an exceptional example of the traditional pattern of management and also contain a very high proportion (>90%) of the surviving UK population of fritillary *Fritillaria meleagris*, a species highly characteristic of damp lowland meadows in Europe and now rare throughout its range.

Clattinger Farm SSSI

Clattinger Farm SSSI (60.3 ha) comprises a series of meadows and pastures which display a wide range of unimproved grassland types and an outstanding meadow flora. It constitutes the only lowland farm in Britain known to have received absolutely no agricultural chemicals.

The site is located in the Upper Thames Basin and is bounded by the Flagham Brook to the north and the Swill Brook to the south. The combination of high water levels, soils developed from alluvium overlying Oxford Clay, and uninterrupted traditional management involving cutting for hay and aftermath grazing, has favoured the growth of an exceptional range of meadow plants.

The meadow complex supports at least 40 species of grass and sedge, many of which are indicative of old unimproved grasslands. Most frequent are creeping bent *Agrostis stolonifera*, upright brome *Bromus erectus*, meadow foxtail *Alopecurus pratensis*, sweet vernal-grass *Anthoxanthum odoratum*, red fescue *Festuca rubra*, and Yorkshire-fog *Holcus lanatus*, although seldom is any one species dominant.

Slightly less common are quaking-grass *Briza media*, meadow barley *Hordeum secalinum*, downy oat-grass *Avenula pubescens* and tall fescue *Festuca arundinacea*. Sedges are well represented and include distant sedge *Carex distans*, spiked sedge *C. spicata*, spring-sedge *C. caryophylla* and the extremely rare Red Data Book species, downy-fruited sedge *C. tomentosa*.

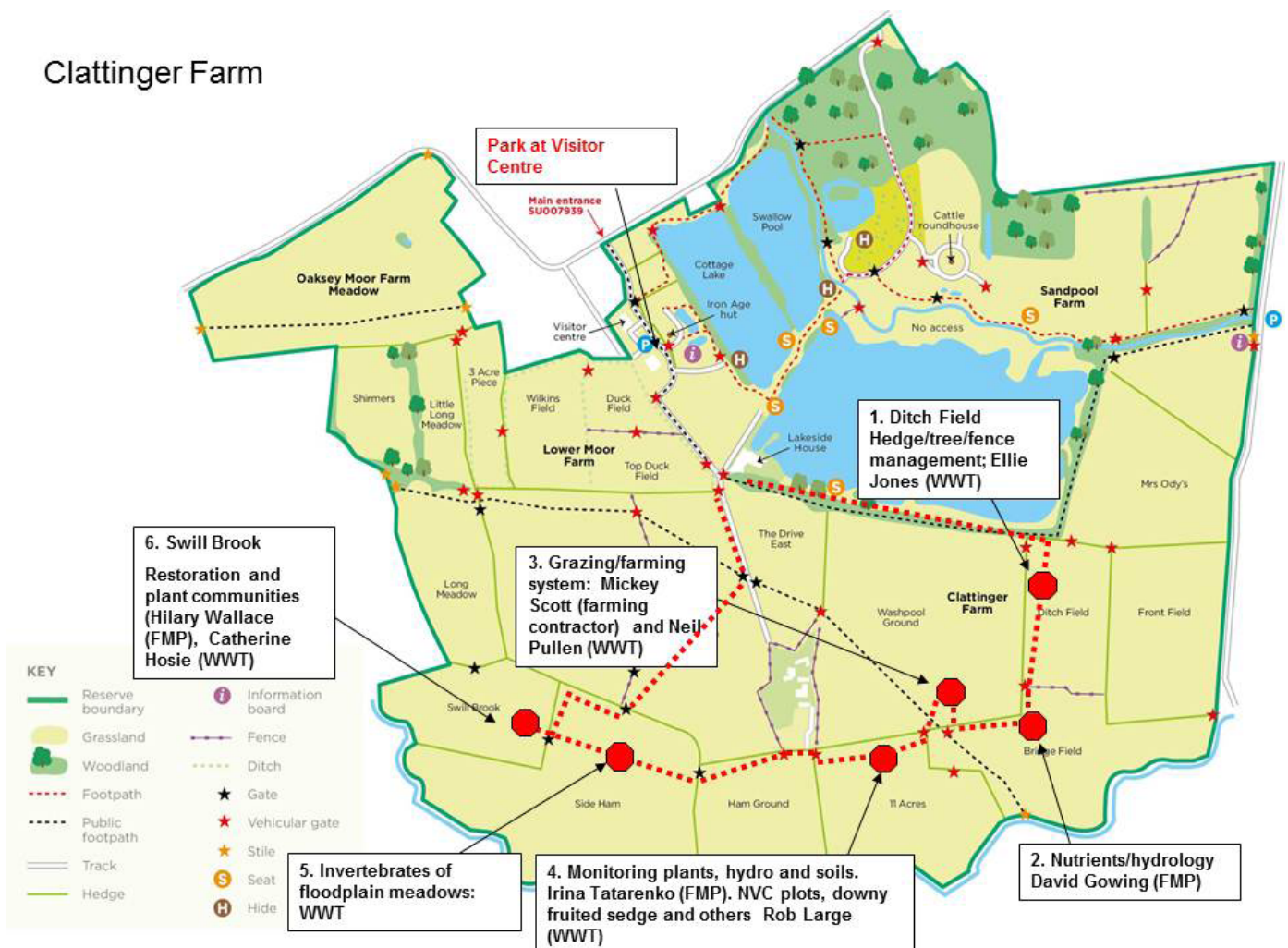
A striking feature of Clattinger Farm is the differing floristic content of the meadows. One is characterised by an abundance of adder's-tongue *Ophioglossum vulgatum*, common twayblade *Listera ovata*, and the rare fritillary *Fritillaria meleagris*; a second supports large quantities of cowslip *Primula veris* and rough hawkbit *Leontodon hispidus*, whereas another contains abundant common spotted orchid *Dactylorhiza fuchsii*, common fleabane *Pulicaria dysenterica* and oxeye daisy *Leucanthemum vulgare*.

Numerous other herbs are widespread throughout the site, including betony *Stachys officinalis*, saw-wort *Serratula tinctoria*, fairy flax *Linum catharticum* and great burnet *Sanguisorba officinalis*. The unique complex of unimproved meadows also allows less common plants to thrive such as hairy lady's-mantle *Alchemilla filicaulis*, and meadow saffron *Colchicum autumnale*.

Additional interest is provided by the meadow boundaries. These comprise a series of ditches, along with thick species-rich hedges. This combination of habitats favours an associated diversity of invertebrates.

The farm meadows are entered into a HLS agreement and as part of the management one relatively species poor meadow (Swill Brook) was strewn with green hay from the adjacent Oaksey Moor meadow in July 2010. This receiver site is included in an extended monitoring programme for the site as a whole.

Clattinger Farm



North Meadow SSSI

North Meadow is a National Nature Reserve famous for having the largest UK population of snakes head fritillaries. The meadow has been managed by the residents of Cricklade for hundreds of years through the Court Leet which still exists and has an active role in the management of the meadow today. While there is no precise information as to when North Meadow first came into being, it seems possible that its use as Lammas Land dates back to the original establishment of a community at Cricklade. When the town was founded, a number of burgages were laid out, and to each was attached one or more strips in the arable land, stints in the hay meadows (thought to include North Meadow), and other rights. Certainly Cricklade is mentioned as a Borough (The Borough and Hundred of Cricklade) in the 1066 Domesday Survey and it is possible that its organisation, including the Lammas Land regime, was already established by this time.

Whatever the origins of the meadow, there is no doubt that a fairly uniform system of management of the site has been continued for several hundred years. The Lammas Land system practiced in the area is alluded to in a number of documents.

The meadow is now mainly owned by Natural England but grazing is still managed by the Manorial Court who appoint a Hayward to supervise the grazing of authorised animals on the meadow and to collect the grazing fees. The Manorial Court were successful with an application for HLS environmental stewardship award in 2009, since when cattle from a local farmer have now grazed the meadow (2010, 2011 & 2013). The award runs for 10 years and will allow the Court to pay a grazer, thus executing their responsibility to graze the meadow as it used to be grazed under the Lammas system.

The meadow attracts a large number of visitors during April, when the fritillaries are in flower: around 10,000 over a 4/5 week period. The presence of the reserve manager and volunteer wardens play an important role informing visitors about the importance of the site and keeping the public to the marked paths. Natural England arrange guided walks around the meadow at weekends during this time.

The site lies on the alluvial deposits of the floodplain of the Rivers Churn and Thames near Cricklade. As Lammas land it is grazed in common between 12 August and 12 February each year and cut for hay no earlier than 1 July. Over 250 species of higher plant occur on the meadow, including abundant grasses such as red fescue *Festuca rubra*, perennial rye-grass *Lolium perenne*, meadow foxtail *Alopecurus pratensis*, crested dog's tail *Cynosurus cristatus* and yellow oatgrass *Trisetum flavescens*. Meadow brome *Bromus commutatus* and meadow barley *Hordeum secalinum* are also frequent.

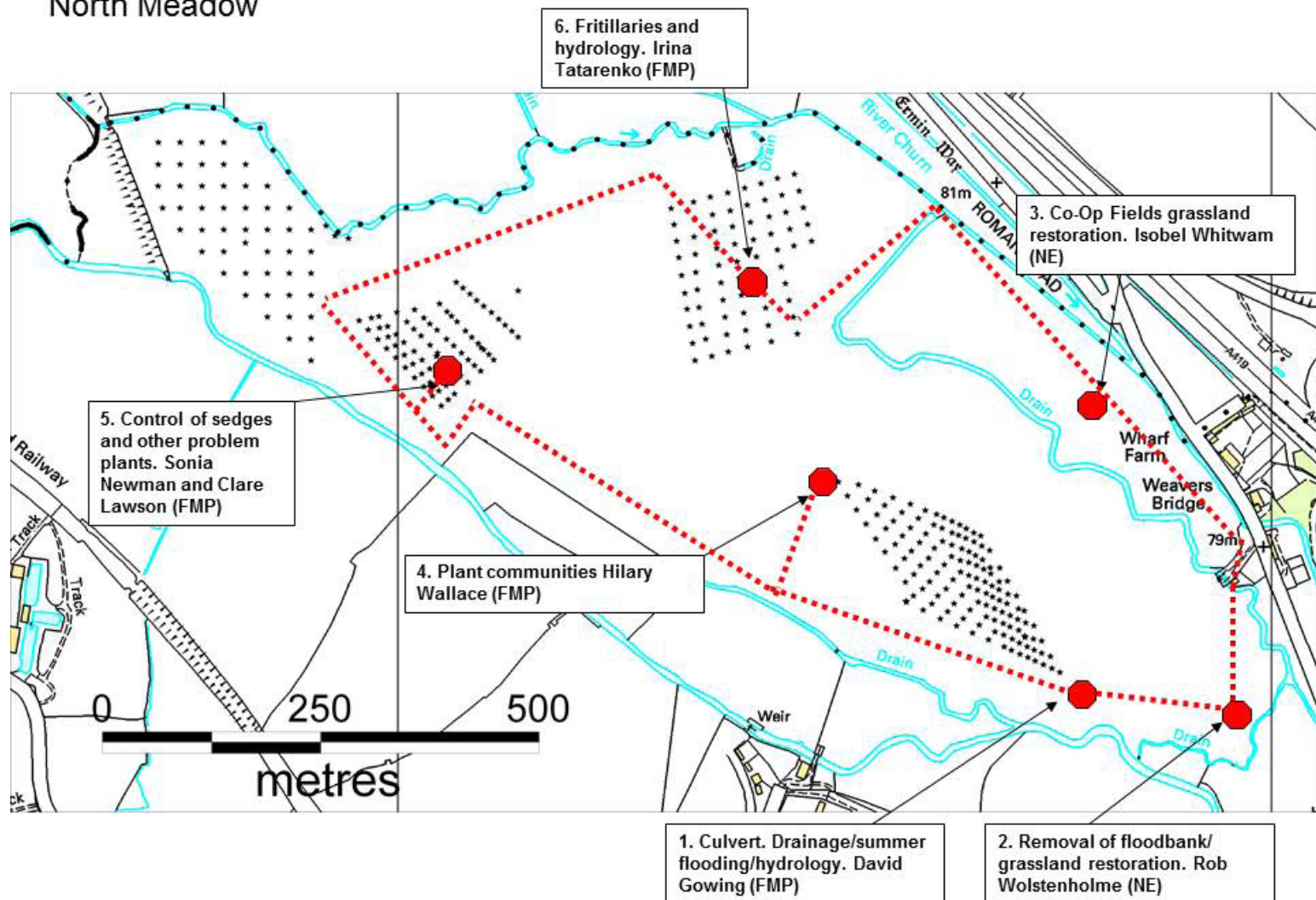
The flora is rich in herbs with typical hayfield species such as pepper saxifrage *Silaum silaus*, yellow rattle *Rhinanthus minor*, great burnet *Sanguisorba officinalis* and black knapweed *Centaurea nigra*. Adder's tongue *Ophioglossum vulgatum*, common meadowrue *Thalictrum flavum* and ragged robin *Lychnis flos-cuculi* also occur.

Several ditches border the meadow, providing habitat for plants such as slender tufted-sedge *Carex acuta*, marsh arrowgrass *Triglochin palustris* and great water-dock *Rumex hydrolapathum*. The common frog also breeds in these areas.

Old channels crossing the meadow hold tubular water-dropwort *Oenanthe fistulosa*, marsh marigold *Caltha palustris*, marsh foxtail *Alopecurus geniculatus*, early marsh-orchid *Dactylorhiza incarnata* and brown sedge *Carex disticha*. Typical meadow butterflies such as meadow brown *Maniola jurtina*, common blue *Polyommatus icarus* and small heath *Coenonympha pamphilus* are

common. Bordering hedges support populations of gatekeeper *Pyronia tithonus*, ringlet *Aphantopus hyperantus* and speckled wood *Pararge aegeria*. Altogether 14 species of dragonfly have been recently recorded, mainly at the meadow edge, although several such as brown hawk-er *Aeshna grandis*, black-tailer skimmer *Orthetrum cancellatum* and the ruddy darter *Sympetrum sanguineum* also feed over the meadow.

North Meadow



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Thanks must go to the Esmee Fairbairn Foundation for their continued support to this project and our Steering Group for their ongoing support and guidance.

We would also like to thank Natural England and the Wiltshire Wildlife Trust for their support in helping to organise and inform the site visits and for their permissions to visit these sites. In particular thanks to Anita Barratt, Isobel Whitwam, Rob Wolstenholme (Natural England); Neil Pullen, Ellie Jones, Catherine Hosie and Rob Large (Wiltshire Wildlife Trust), and Sue Townsend (Field Studies Council).



a million voices for nature



The Open University

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