The Cayton and Flixton Carrs Wetland Project…

…Why, What, Where and When?

By David Renwick, Project Officer

This partnership project in the Vale of Pickering aims to rehabilitate a nationally-important wetland landscape through sensitive farm management, to make the Vale a richer place for wildlife and more attractive and accessible for the benefit of all.

Introduction

The Cayton and Flixton Carrs Wetland Project aims to help local farmers and landowners to create, manage and restore wetland habitats in the Vale of Pickering around Cayton and Flixton Carrs. It builds on the existing environmental and archaeological importance of this inspiring area. The Vale of Pickering has a fascinating landscape history from its glacial past, through the effects of man, from Mesolithic settlement to modern drainage, to the current changes in British Farming and the effects on wildlife through the ages. The Project is working with local farmers to boost the area's wildlife whilst at the same time helping them to secure a financially viable farm business, this will not only benefit the farmers and the wildlife but also provide much wider benefits which we can all enjoy. Here is a summary of what has happened so far and a taste of what we hope can happen in the future.

A Chilly Beginning

The last ice age or Pleistocene period lasted some 2.5 million years, with ice advancing and retreating across Britain many times over, finally disappearing completely some 10,000 years ago. At this time, now named as the beginning of the current Holocene period the landscape of North Yorkshire was still recovering from the grips of the last ice age. The glaciers to the south of Scarborough deposited vast amounts of material (rock, sand and clay) along the coast and further west towards Staxton and Ganton. In between these areas, known as moraines the drainage of water to the North Sea was impeded and so a series of lakes formed in hollows at the eastern end of the Vale of Pickering. The largest of these has been termed Lake Flixton, but it was probably made up of a series of small lakes which sat in an inter-connected landscape of different wetland areas.

Peat, Peat Everywhere but nothing left to Drink

The shoreline of these post-glacial lakes was at the current approximate 23 or 24 metre contour. The network of water bodies known collectively as Lake Flixton were shallow and from their formation they would have slowly started to in-fill with plant material from marginal and lake bottom habitats. As this plant material built up it formed into layers and because of the saturated conditions with low oxygen availability it could not decay as normal, so peat was formed, which built up in layers until little or no open water remained (around 7,000 years ago). Peat which is formed by this in-filling of a lake basin is known as lacustrine peat and the silty sediment of the lake bottom can still be found as a thick grey-white silty layer under the peat.

Analysis of pollen grains and macrofossils contained within these peat layers has shown what vegetation types existed in the Vale at the beginning of the Holocene Period. The drier areas supported a birch (*Betula*) and hazel (*Corylus*) woodland, whilst the lake itself was fringed with reed (*Cladium mariscus*) swamp and beds of saw-sedge (*Cladium mariscus*). The lake was shallow and the area of open water decreased rapidly into the Holocene leaving an area of peat on which a dense carr woodland of alder (*Alnus*), birch (*Betula*) and willow (*Salix*) grew up from the mid-Holocene onwards, with drier mixed oak (*Quercus*) woodland on the higher surrounding land. Despite the development of these woodlands areas much of the floodplain remained wet and marshy supporting wetland plant communities like reedbed, fen and sedge swamp. The pollen record has shown the presence of wetland plants including water lilies (*Nymphaea*), water-milfoil (*Myriophyllum*), bogbean

(*Menyanthes*), pondweed (*Potomogeton*), bog mosses (*Sphagnum*), reedmace (*Typha*), valerian (*Valerian*), marsh marigold (*Caltha palustris*), meadow-sweet (*Filipendula*) and golden saxifrage (*Chrysosplenium*). Peat is very good at preserving a large seed bed, so it is highly likely that these and other wetland species are still contained in the present day seed bank.

The Ascent of Cayton Man

Not only was this amazing natural landscape a haven for wildlife, but it was also a very important area for stone-age people. Pieces of worked flint were discovered by amateur archaeologists in the 1930s and 40s which led to excavations by Clarke in the 1950s of the internationally renowned Star Carr site. The site has been dated to some 9,600 years old and was situated on the edge of Lake Flixton, where a birch platform was constructed and occupied by hunter gatherers, who probably used the site as their base camp, migrating into the uplands during the warmer summer months. Masses of flint tools and animal remains were found, including antler head-dresses suggesting a ritual use for the site. Quarry species included red deer (*Cervus elaphus*), roe deer (*Capreolus capreolus*), wild horse (*Equus ferus*), wild pig (*Sus scrofa*), aurochs (*Bos primigenius*) and various bird species. Interestingly there is no evidence that fish was exploited despite the high likelihood that the lakes in the area supported a large stock of fish. Other evidence has shown that the woodlands as well as the wetlands were exploited for their resources including food and building material and that the people also burned the reed *(Phragmites australis)* and sedge swamps (*Cladium mariscus*) near their camps, possibly to improve access.

The excavations at Star Carr and various other subsequent studies have shown that the areas around the post-glacial Lake Flixton were important habitation sites for Neolithic and Mesolithic man, with a network of settlement all on the same lake edge contour level of 23 or 24 metres. This makes the current eastern and of the Vale of Pickering massively important in terms of its Mesolithic archaeology and for the paleo-environmental record contained within the peat profile.

There is also significant evidence of human history within the vale during the iron age, roman and Anglo-Saxon periods, but during these periods the wetter areas were essentially left as ‘waste’ land with human settlement been concentrated on the higher land at the valley edge.

Drainage and all Napoleon’s Men

It was not until the twelfth to fourteenth centuries that large scale drainage for agriculture occurred. This occurred when large areas of the Vale were colonised by the monasteries. These groups drained land for both arable and pastoral farming depending on the nature of the land and often the monastery involved. For instance Rievaulx Abbey was well known for draining land for arable farming, however this was much more prevalent at the western end of the vale, other abbeys, like Yedingham concentrated on pastoral farming. Two common forms of medieval land-use preserved in place names to this day are ‘ings’ and ‘carrs’. Ings were land which flooded occasionally and were used for hay production with grazing of the aftermath. Ings management sometimes involved the use of water control structures and drainage works to allow the land to be dry when access was required for cutting. Carrs were areas of land which flooded all winter long but could be used for grazing during the summer.

On current day Ordnance Survey maps of the area around Flixton and Cayton Carrs the word carr is very common (e.g. Seamer Carr, Star Carr, Deepdale Carr, Osgodby Carr, Coulson’s Carr Cayton Carr, Loder’s Carr, Flixton Carr, Folkton Carr, Staxton Carr), with occasional occurrences of the word ings (Flixton Ings, Seamer Ings, Irton Ings, Upper Ings), especially to the west of the A64. This points at a predominantly pastoral landscape during the medieval period around Cayton and Flixton.

The first large-scale drainage scheme was carried out following the passing of the Muston and Yedingham Drainage Act of 1800 and involved straightening and realignment of large stretches of the Rivers Hertford and Derwent in the eastern Vale. Much of the work been undertaken by prisoners of war from the Napoleon's armies. The new channels had a characteristic trapezoidal section with steep sides and raised banks, with a network of drainage ditches carrying water from surrounding farmland into feeder ditches or 'delphs' which ran parallel to the main river. Water movement from these parallel ditches into the main river was controlled by a series of sluices. Following the initial 1800 drainage act there were a series of subsequent drainage schemes in 1914, 1918, 1926 and 1930 (the Land Drainage Act which set up the internal drainage boards including the local Muston and Yedingham Internal Drainage Board). Land drainage has continued at a continuous pace for the last two hundred years and has transformed the Vale from an extensive area of natural wetland habitat to one of the most prosperous and fertile agricultural areas in the country, albeit at the expense of wildlife and natural habitats.

What's Left Today?

Up until the 1970s good quality fen habitat and wet grassland were still present in the vale around Flixton and Cayton. However the most recent drainage activities resulted in the loss of this habitat, so that now little good quality wetland habitat remains. Since the post glacial lakes filled up naturally thousands of years ago there is no natural open water in the vale, however there are many small farm ponds and artificial lakes such as those formed from gravel extraction (e.g. Burton Riggs). The system of rivers, streams and drainage ditches provide a much more extensive network of open water habitats, however many of these features around the Cayton and Flixton Carrs are degraded by intensive management, although providing green corridors for some species to disperse. Some have interesting relict flora in or along their banks, including water violet (*Hottonia palustris*), hop or cypress sedge (*Carex pseudocyperus*), opposite-leaved pondweed (*Groenlandia densa*), meadow rue (*Thalictrum flavum*), purple loosestrife (*Lythrum salicaria*) and branched bur-reed (*Sparganium erectum*).

Fen meadows and wet grasslands were once common in the Vale and were a result of grazing of natural habitats. Although these habitats are semi-natural in nature, relying on human management for their maintenance they do have considerable wildlife value. They have been greatly reduced in area due to the under drainage of fields and many remaining areas suffer from complete periodic drying during spring and summer months thus much reducing their value as wetland habitats. In and around Cayton and Flixton Carrs there are still very small areas of fen meadow remaining in isolated locations as well as small areas of wet grassland, but these are limited mostly to providing wet conditions in winter only and dry considerably in spring and summer. Those areas of wet grassland that do remain are often overly dominated by soft rush (*Juncus effusus*). These problems of rush domination and seasonal drying make the wetland habitats unsuitable for use by breeding waders making breeding wader numbers much reduced.

Areas of wet woodland are now rare in the wider Vale, however there are important areas of wet woodland at Flixton Carr Plantation were downy birch (*Betula pubescens*), silver birch (*B. pendula*) alder (*Alnus glutinosa*) can be found with common reed (*Phragmites australis*) forming stands in the under storey.

Notable members of the fauna around Cayton and Flixton Carrs include kingfisher *(Alcedo atthis*), kestrel (*Falco tinnunculus*), yellow wagtail (*Motacilla flava*), barn owl (*Tyto alba*), little owl (*Athene noctua*), short (*Asio flammeus*) and long eared owl (*A. otus*), grey partridge (*Perdix perdix*), corn bunting (*Miliaria calandra*), tree sparrow (*Passer montanus*) teal (*Anas crecca*), over wintering marsh (*Circus aeruginosus*) and hen harrier (*C. cyaneus*), over wintering snipe (*Gallinago gallinago*), redshank (*Tringa totanus*) lapwing (*Vanellus vanellus*) and curlew (*Numenius arquata*). Mammals of note include sporadic water vole (*Arvicola terrestris*), otter (*Lutra lutra*) and brown hare (*Lepus europaeus*).

The Cayton and Flixton Carrs Wetland Project – What?

Over the past 10 to 15 years, it has become more and more difficult for farmers in the project area to make a living from the land. This is because of problems with the area's drainage system, peat compaction and increased rainfall, meaning the land has become wetter - making harvesting crops difficult. These problems could be made worse by climate change and global warming as rainfall levels are expected to increase and storms become more frequent. The recent changes to UK agriculture and the introduction of the new Environmental Stewardship Scheme have provided a possible alternative income for farmers, paying them to deliver environmental benefits. It is hoped that these schemes can be used to reverse the recent declines in farm wildlife, especially farmland plants and birds. The Project will help farmers to apply for the Higher Level Stewardship Scheme, which will then pay them to create and manage new wetland habitats.

The project was started by Scarborough Borough Council on a small piece of land near Star Carr, the aim here was to create a small wetland area, including scrapes and wet grassland. However, when local farmers heard of these plans they also became interested in getting involved in the project. This led to a widening out of the project into surrounding farmland and a number of other organisations including the Environment Agency, English Nature, The Royal Society for the Protection of Birds (RSPB), the Rural Development Service and North Yorkshire County Council became involved. Along with Scarborough Borough Council and the local farmers these organisations now form the project partnership.

The main aim of the Cayton and Flixton Carrs Wetland Project is to restore floodplain habitats to the Vale of Pickering landscape at Cayton and Flixton Carrs and the surrounding areas. The primary objectives of the Project include the following;

- To create a range of valuable wetland habitats
- To provide an alternative to intensive agriculture
- Alternative income for farmers
- Contribute to local and national targets on nature conservation covered by local and UK biodiversity action plans
- Contribute to conservation of nationally important archaeological and paleo-environmental deposits
- Develop opportunities for wildlife based tourism
- Improve flood storage

The project aims to create a landscape containing a mosaic of wetland habitats of wet grassland, pools, flushes, reedbeds and wet woodlands, with extensive areas of wet grasslands grazed by cattle, sheep and other livestock. A predominantly open landscape, with soil conditions suitable for breeding waders such as redshank, snipe, curlews and lapwings with flocks of wintering ducks, waders and geese on shallow flooded land near the river. Watercourses will be rich in wildlife supporting water voles, otters, dragonflies and aquatic plants. We only want to create wetland where it is sustainable, appropriate and site conditions allow us to do so. Where wetland habitats can not be created we will look to benefit other wildlife as much as we can, especially farmland birds. The habitats will be managed through close working with the farming community to understand and manage water levels in the project area. With traditional farming at its heart to maintain a functional, working farmed landscape. The project is committed to making decisions in an open and inclusive way to ensure that it achieves environmental, social and economic gains.

The Cayton and Flixton Carrs Wetland Project – Where?

The project area is situated some 3 km south of the outskirts of Scarborough and is bounded by the A64 York to Scarborough road on its western boundary, the Filey to Seamer railway line to the north, the A1039 Staxton to Folkton road to the south and by Carr Lane (the road linking Cayton and Folkton) to the east. The project is situated at the eastern end of the Vale of Pickering on the peaty soils where post-glacial Lake Flixton used to be some 12,000 years ago. This 1,000-hectare area covers part of the River Hertford floodplain, an essentially flat and open landscape. The area has been heavily drained for agriculture over the last 200 years. Although the project area is less than 3km from the North Sea, all of the area's water drains west through the Rivers Hertford and Derwent, eventually reaching the sea through the Humber Estuary.

What are we doing and How?

The work of the project so far has centred on gathering baseline data and survey information on the farms in the project area, to support Environmental Stewardship applications. This has included volunteer bird surveys involving the Scarborough Bird Group and The RSPB's Volunteer and Farm Alliance Plus Project, a project aimed at benefiting farmland birds which have been in massive decline over recent decades. The project is also commissioning a series of other surveys including water vole, ditch vegetation and ditch invertebrates, so that we can get a baseline against which we can monitor change and success as the project progresses and we implement management practices on the ground.

As well as the ecological surveys we have also been gathering data on the hydrology of the area. This has included monitoring the ground water levels using a series of dipwells (tubes in the ground which allow us to measure the water table depth) and gauge boards (scales in ditches to measure water depth). Along with LiDAR* data, which gives us a very accurate topographical map of the area, local rainfall data, information on the nature of the geology and substrate and on what flow of water enters and leaves the catchment of the project area we have built up a picture of how much water there is in the area and where are the best areas to create wetland habitats. This feasibility work will also help us to plan where we will need to install water control structures such as sluices, bunds and peat plugs for ditches. These structure will allow us to manipulate water levels to get the best outputs for wildlife and so that we can drop water levels if needed to carry out management.

* This stands for Light Detection and Ranging and involves a plane flying over the area firing a beam of light down which is bounced off the ground below and detected by a sensor in the plane, the height from plane to ground can then be calculated and by joining up a series of these points a map of the ground surface height built up.

As the project aims to re-wet areas of land to create these habitats we need to make sure that there are no detrimental effects on land that is not within the project area, or that is not going to be subject to wetland creation. This is especially important where it concerns productive land which is still subject to agricultural production. There can also be no detrimental effects on property or infrastructure including roads, railway lines, the Seamer Carr Landfill Site or any other important land uses. To do this we have commissioned an Environmental Impact Assessment (EIA). This simply assesses the potential impacts of the wetland creation on these land-uses and suggests ways of minimising or avoiding any such impacts. The consultants have produced detailed computer models of the surface and groundwater systems of the project area using the hydrological data which has been collected to predict what will happen when water is raised on areas of land.

All of this background survey and monitoring work will contribute to Environmental Stewardship Applications for farmers within the project area and the Farm Environment Plans (FEPs) which are required to support these applications. FEPs essentially map the environmental and archaeological features on the farm and assess their importance and condition and then recommend management options in order to manage, restore or create the feature in question. The project has been working

with local landowners to develop their stewardship applications and we have already secured the first of these agreements. Over the next twelve months we will be working up a further four applications and liasing with other landowners to see if they want to apply for the scheme.

Raising the Project profile has also been important and to this effect a project logo, web-page, newsletter, vision statement and leaflet have been developed. We have also produced and released a press release which resulted in articles in a number of publications. Consultation with members of the public, local communities and interest groups is key and presentations have been made to local groups to raise the profile of the project. In the future we hope to engage more with volunteers in everything from survey work to practical habitat management.

Conclusions

The Cayton and Flixton Carrs Wetland Project is a nationally important wetland restoration project which aims to bring considerable environmental, social and economic benefit to the project area, the surrounding parts of the Vale of Pickering and beyond. By bringing different individuals, groups and organisations to work together we will create a much enhanced landscape. The project is multifunctional in that it provides multiple benefits across a wide range of areas and it is hoped that as it becomes more successful the project will grow to cover more of the Vale. The project has traditional farming at its heart and by harnessing this we will deliver massive environmental gains.

For more Information

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