



Case Study 10.4 Wheldrake Ings, Yorkshire – water-level management for birds and meadows



About the site

This 157 ha site was purchased by Yorkshire Wildlife Trust (YWT) in 1973, when it was still used for hay making. Anecdotal evidence from farming families suggests that the good quality hay meadows spread much further into the central (lowest) part of the site than they do today. Botanical records from the 1970s suggest that Burnet floodplain meadow (MG4) indicator species (great burnet, meadowsweet and pepper-saxifrage) were previously more extensive.

After the site was purchased, sluices were installed in the two main ditches draining into the River Derwent, allowing the fine-scale management of water levels. At the time, water was held on the site in winter and spring to try to attract more bird life. Before this, water flowed freely on and off the Ings. Over the last several decades, the focus of the management at the reserve has swung from birds to botany and back again. The site is designated an SPA for wintering, passage and breeding birds, and an SAC for floodplain-meadow grassland. It is also an SSSI and an NNR42.

Much of the site drainage is controlled through a network of grips and ditches, with two sluices controlling flow into the Derwent. Water will only flow out of the ditches when water levels in the Derwent are low enough, as the sluices are gravity controlled.

Funding

The reserve is managed mostly under Farm Business Tenancies and annual tenancies to the local farmers who cut and graze it. It is currently in an HLS agreement with much of the land managed through contracted farmers, and YWT graze part of the site. YWT then tries to supplement this with external funding bids.

Project objectives

1. To increase the area of Burnet floodplain meadow (MG4), which is believed to have decreased in the last 50 years, by lowering winter and spring water levels.
2. To balance the needs of the plant communities with those of the wintering and passage birds and to ensure the bird populations are maintained.

Insert photos





Technique used

A trial management regime was put in place, initially for five years. This was based on advice from wetland experts David Gowing and Neil Humphries, who suggested that Burnet floodplain meadow (MG4) cannot stand prolonged inundation, but that a water level of about 40 cm below the surface of the ground during the growing season could be tolerated, with the vegetation being less susceptible to waterlogging during the winter.

Ground-level contours for the Ings were investigated to explore the likely area of winter inundation under different scenarios. A sufficient drop in water level was needed to expose an area big enough to be worthwhile for floodplain-meadow restoration, whilst also leaving enough open water to support the tens of thousands of wintering birds that use the reserve. The area chosen is adjacent to the existing floodplain-meadow plant communities, so local seed sources and plants should colonise the restoration area. Further advice was sought from Natural England on how to make these changes without significantly affecting the birds on site. The trialled solution is as follows:

Winter: when river levels allow, the sluices are opened and water drops down to 40 cm below the 'sill level', revealing a 'band' of land where Burnet floodplain meadow (MG4) can re-establish itself. In practice, however, this rarely happens as the river water levels are too high so water cannot leave the site.

Spring: the draw-down of water continues so that the water table reaches its 'summer level' by mid May. By the end of May there is no standing water, only occasional pools for passage birds. The higher areas of the site should be dry enough, early enough, for the re-establishment of Burnet floodplain meadow (MG4).

Summer/autumn: a cutting and grazing regime is followed to suit Burnet floodplain meadow (MG4) restoration, and good relationships have been developed with tenant farmers to ensure that this management takes place. There is more reliable grazing now possible through the capital HLS fencing installation.





Monitoring

- Seventy-two fixed-point quadrats are surveyed annually by the Floodplain Meadow Partnership (FMP). One line of 20 quadrats was first recorded in the 1970s with repeat surveys conducted in 2002 and 2006.
- Dipwells with automated readers were installed and are downloaded annually by FMP, which also collects soil-fertility and hay-quality data.
- Wetland Bird Survey (WeBS) counts and Breeding Wading Bird Surveys are carried out by Natural England.
- NVC surveys 2003, 2008, 2014.

Results

Overall species richness increased most between 2009 and 2010; however, despite the lowered water levels, it is clear that the species-richness of the swamp and OV vegetation communities also continued to increase between 2010 and 2011. This may be due to drier soils allowing increased cutting of these wetter areas, leading to a reduction in shading by a few more bulky species, such as reed canary-grass. Regular cutting of the wetter areas is likely to maintain these increases in species-richness. Overall species-richness peaked in 2012 following the relatively dry winter and summer of 2010–2011. The wet summer of 2012 resulted in a small decrease in species-richness in 2013, especially in the drier Burnet floodplain meadow (MG4) vegetation. However, species-richness in 2014 was significantly higher than at the start of the trial in 2008. The slow draw-down in spring leaves valuable pools for passage birds and is of particular benefit to whimbrel travelling through the Lower Derwent Valley.

Cost

Approximately £12,000 per year plus staff and volunteer time.

Partners

YWT, Natural England.

Benefits

Increased area of species-rich floodplain meadow. The combination of water-level management, better relationships with tenants, greater areas being cut and regular ditch maintenance has all helped to achieve this. However, the habitat has shown itself to be very sensitive to weather-pattern





Species number

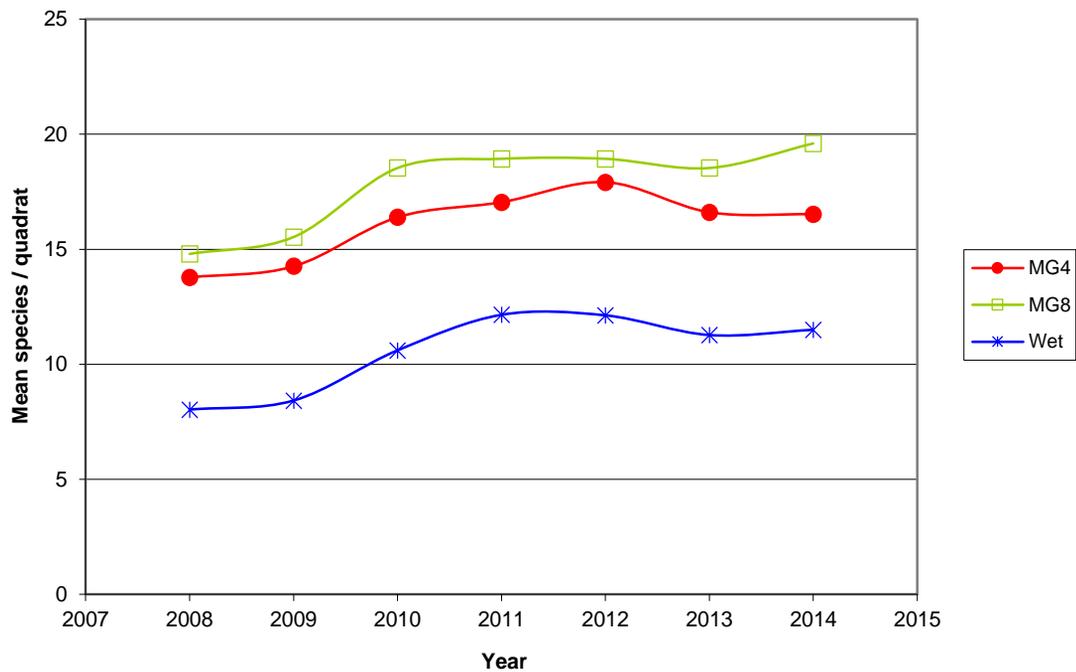


Figure 10.4 Change in species richness for permanent monitoring quadrats between 2008 and 2014 at Wheldrake Ings, Yorkshire. 'Wet' refers to those quadrats falling within NVC communities of the OV and S categories.

