



Case Study 10.5 Seighford Moor, Staffordshire – changing ditch-water levels to retain species-rich plant communities



Seighford Moor is a 40 ha Local Wildlife Site in Staffordshire. It is owned by a nearby estate and leased to a tenant farmer. About a quarter of the site is occupied by floodplain meadows, which are managed with a hay cut followed by aftermath grazing. The site has been farmed by the same family for at least 50 years, and has a long history of consistent use. The site is managed through an HLS scheme.

The potential of the site as a Local Wildlife Site and floodwater storage area was recognised in 2007 by the ‘Farming Floodplains for the Future’ Staffordshire pilot project. Under this project, and supported by agri-environment scheme funds, water-control equipment was installed in 2009 in order to ‘wet the site up’, focusing on the less species-rich areas of the site for the benefit of wading birds.

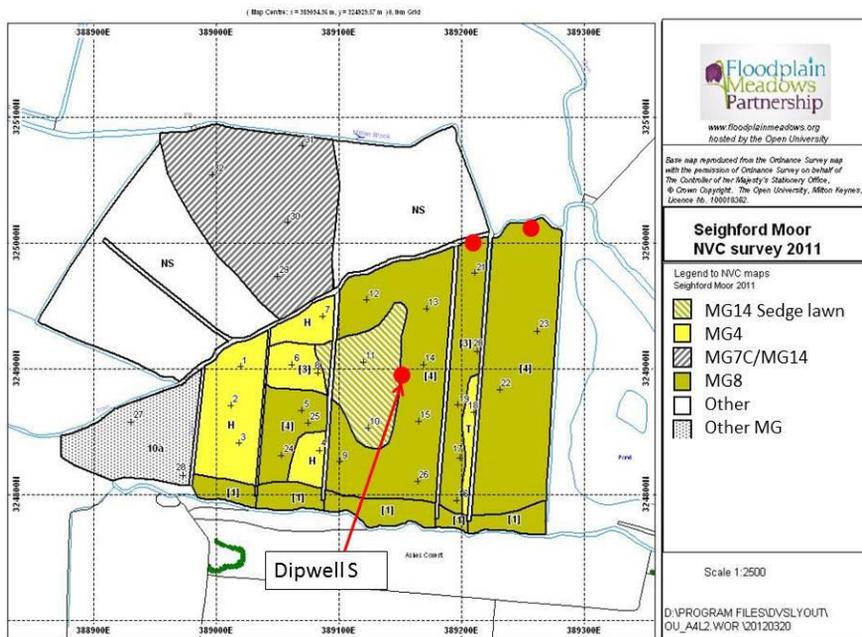
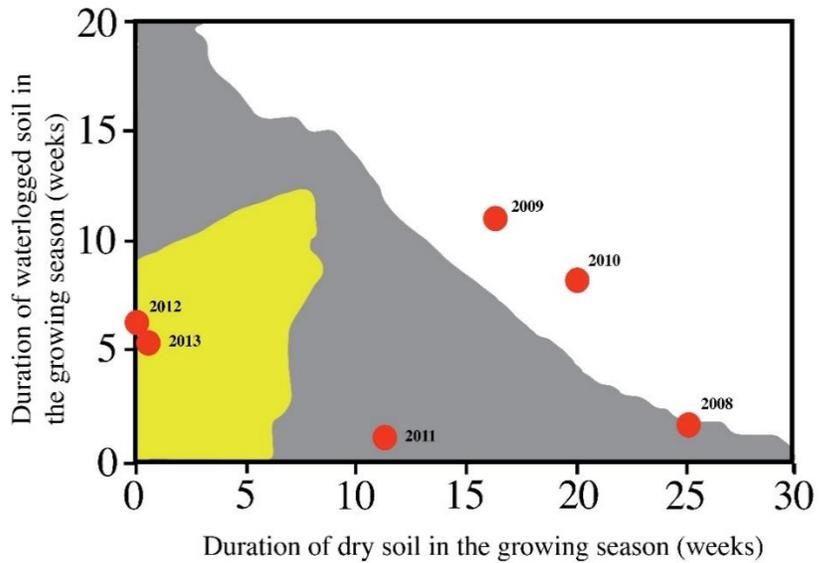


Figure 10.5 NVC map for Seighford Moor species-rich hay meadow area with dipwell locations.

A visit from the Floodplain Meadows Partnership in 2010 identified that the species-rich areas were changing towards swamp communities as the raised water levels and recent high rainfall started to take effect. Staffordshire Wildlife Trust (SWT) commissioned a botanical monitoring programme to assess the long-term effects of hydrological manipulation on the flora of the meadows, and in summer 2011 an NVC survey of the meadows showed that some of the hay meadows were Kingcup-carnation sedge meadow (MG8), and some small areas were similar to the Yorkshire fog sub-community of Burnet floodplain meadow (MG4). The overall assessment was that the site was being kept wet for 6–8 weeks too long per year and that the water-control structures should be opened or removed to reduce waterlogging of the surface soil.

Figure 10.6 The expected hydrological range for Kingcup-carnation sedge meadow (MG8) is shaded yellow compared to the hydrological range for all species-rich grasslands shaded grey. Annual hydrological regimes from recordings of Seighford Moor's Dipwell (S) in the period 2008–2013 (see Figure 10.5) have been plotted to show the duration of wet and dry soils during the growing season.



Technique used

The water-level control structure closest to the species-rich meadow area of the site was removed in late 2010. Monitoring was instigated to assess the stability of the vegetation at the site and to relate species and community distributions to the soil-water regime.

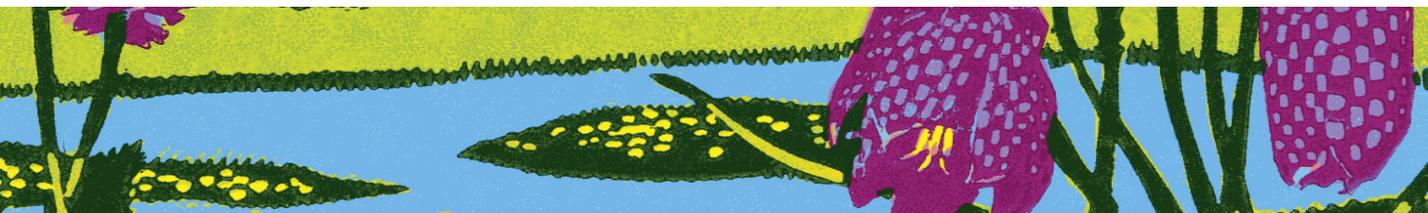
Monitoring

In 2010, some botanical monitoring was undertaken and in June 2012 a series of 54 botanical transects were established. SWT installed a series of dipwells to monitor the effects of the ditch level

Results

A review of the dipwell data from 2011 to 2013 shows that the water levels were within the expected range for Kingcup-carnation sedge meadow (MG8).

Figure 10.6 illustrates the degree to which management can affect hydrology. This site was relatively dry prior to 2008, as typified by the 2008 spot showing that 25 weeks of the growing season had water tables deep enough to cause little impact on the surface soil. The ditch levels at the site were artificially raised in 2009, producing a regime that gave around ten weeks of waterlogging during the growing season, as indicated by the 2009 and 2010 spots. This hydrological regime proved to be beyond anything previously recorded for species-rich grassland, which is represented by the grey zone in the figure. In response to this information, ditch levels were allowed to fall again, producing the moist, but not heavily waterlogged regime of 2011, which was a dry year weather-wise. The years 2012 and 2013 were very wet in terms of rainfall and their hydrological regimes as plotted on the figure show them to fall clearly into the preferred hydrological niche of Kingcup-carnation sedge meadow (MG8) (represented by the yellow zone).





Quadrat data from 2011, 2012 and 2013 were used to assess changes in the goodness-of-fit to NVC communities.

The dipwell (S) from which the data plotted in Figure 10.6 are derived sits in a low-lying area of Sedge lawn (MG14) surrounded on the drier margins of the field by typical Kingcup-carnation sedge meadow (MG8) (see Chapter 8). The sward in the field to the west represents an excellent example of the Burnet sub-community (MG8a) of Kingcup-carnation sedge meadow (MG8D), which is usually associated with rather drier soils than the Typical form or the Sedge lawn (MG14). The botanical monitoring data from this area indicated that the vegetation was stable in NVC terms, with no expansion of large sedge species.

The fields to the east of dipwell (S) supported species-poor Kingcup-carnation sedge meadow (MG8) in 2011 and subsequently showed an increase in species diversity and improved goodness-of-fit to Kingcup-carnation sedge meadow (MG8), with a reduction of rush cover and increases in common sedge, tufted hair-grass, ribwort plantain and clover species, suggesting a move to a drier community.

Cost

No cost for change in management as this was simply removal of the sluice board, carried out by the Farming Floodplains for the Future project. Monitoring equipment (automated recorders, dipwells, installation and analysis) was approximately £4,500.

Partners

Staffordshire Wildlife Trust, Natural England, Floodplain Meadows Partnership, landowners, tenants of the Seighford Estate and the Sow and Penk IDB (Internal Drainage Board).

Benefits

Retention of species-rich plant communities. Entry of site into HLS scheme and designation of site as a Local Wildlife Site

