



Case Study 10.10 Priors Ham, Wiltshire – changing from pasture to hay-meadow management where water regime and nutrients were appropriate but indicator species scarce



About the site

Priors Ham is a small (4 ha) meadow adjacent to North Meadow National Nature Reserve. In 2008, survey work carried out by the Floodplain Meadows Partnership indicated that the site had potential to be restored from species-poor pasture to species rich meadow. The soil-fertility status and soil-water levels were within the range suitable for Burnet floodplain meadow (MG4) and the meadow was entered into an HLS agreement for restoration and enhanced public access.

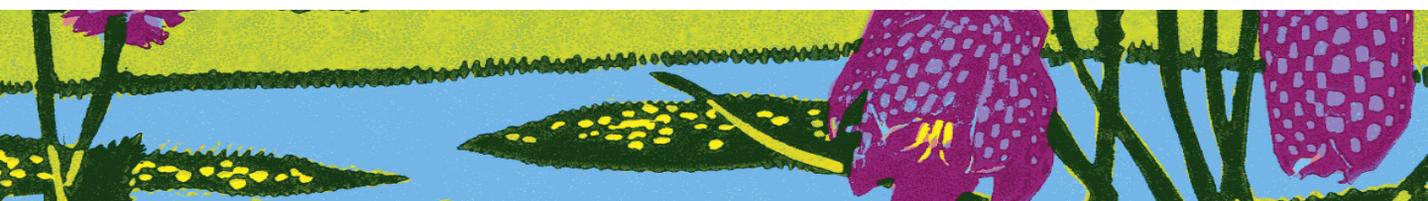


Technique used

In 2010, the meadow was sprayed twice with a glyphosate weedkiller prior to spreading with brush-harvested seed. For comparison, a small area was also spread with green hay in early August, following a single application of weedkiller earlier in the year. In 2011 the seeded area was sown again with brush-harvested seed collected from North Meadow by Emorsgate Seeds and grazed lightly. No other management was undertaken that year. Particularly wet conditions in 2012 prevented both hay cutting and any further interventions (treatment for docks and oversowing with brush-harvested seed in the green-hay area). In 2013 the field was ‘topped’ to cut the weeds, then cattle grazed. An early hay cut was taken in 2014 to try to re-balance the nutrient influx from the extensive floods of 2012/2013 and grazed once again.

Monitoring

Two blocks of five quadrats were surveyed in 2010 prior to the restoration work, one block in the green-hay area and the other in the seed-treatment area. These were re-recorded annually in 2012–2014. Two dipwells were installed with automated data loggers to monitor water-table levels. Soil samples were collected at two locations, pre- and post-restoration work. An adjacent field, Lake Meadow was also monitored and acted as a control throughout the trial.

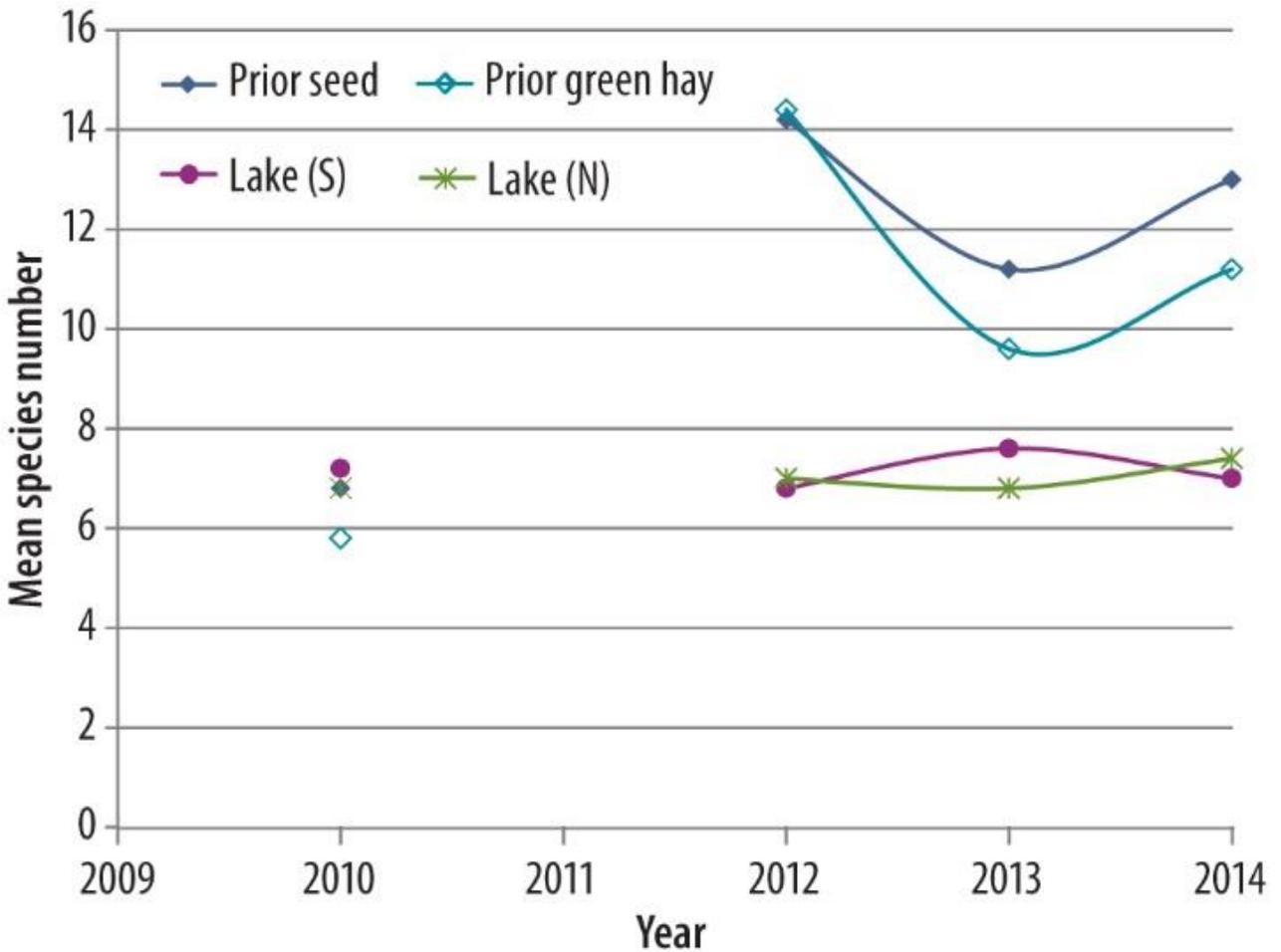




Results

At Priors Ham, species-richness had more than doubled by 2012, although many species were present at low cover and great burnet had not colonised. In 2013, there was a marked decline in richness following a long period of flooding in 2012–2013. By 2014, Priors Ham was showing recovery from the flooding, and although species-richness remained below that of the 2012 peak, both areas were significantly richer than at the start of the trial and richer than the unseeded Lake Meadow, which showed very little change over the monitoring period (see Figure 10.11).

Figure 10.11 Changes in species-richness at Priors Ham and Lake Meadow 2010–14. Lake Meadow (S) and (N) are two blocks of quadrats in the control field.



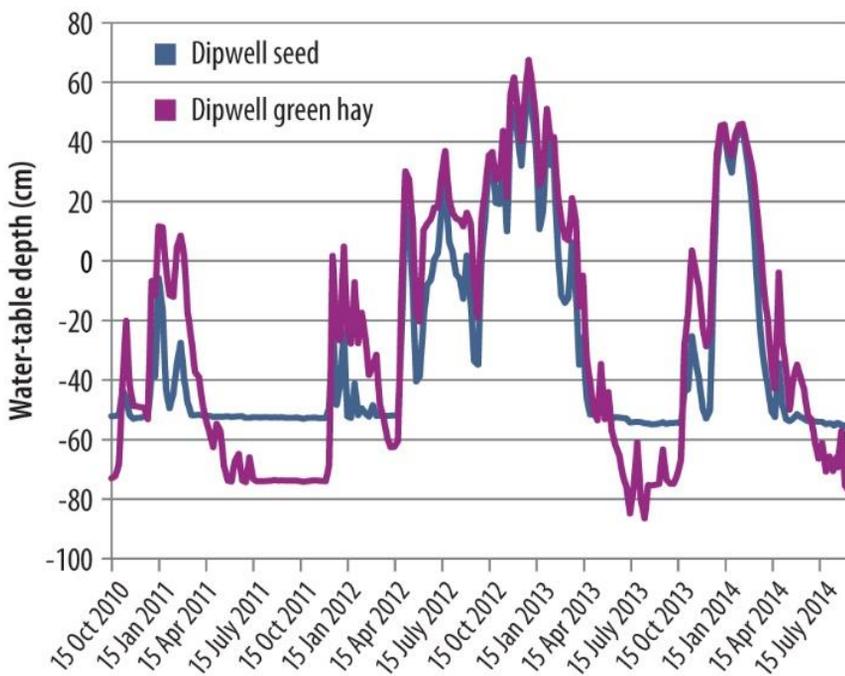


Figure 10.12 Hydrographs for the two dipwells in Priors Ham. Negative values indicate the depth of water table below the surface; positive values indicate the depth of surface floodwater.

Data from the two soil samples showed high pH (7.4 and 7.6) similar to that found in much of the adjacent North Meadow. However, the values for available phosphorus (41.7 and 56.0 mg/l^{-1}) were much higher than the range suitable for Burnet floodplain meadow (MG4) community and were higher than at the start of the trial, presumably because of the extensive flooding in 2013–2014 (see Figure 10.12). The depth and duration of spring flooding was quite limited in both 2011 and 2012, with water levels falling to 50 cm below ground during summer 2011 and between late April and early May 2012. However, the summer rainfall in June 2012 resulted in almost continuous surface water across the meadow from July 2012 until early May 2013.

Cost

The initial costs of approximately £1,300 were made up of:

- ground preparation (including weed control and cultivating);
- costs of getting area in North Meadow brush harvested;
- drying and storing of seed; and
- sowing of seed (labour, machinery and sand-mixer costs).

Natural England provided the National Nature Reserve green hay free of charge. The second oversowing cost approximately £500.

Partners

The Co-op group (landowners), the tenant farmer and Natural England.

Benefits

- Increased offtake of nutrients from catchment through removal of hay crop.
- Increased public access to flower-rich meadow.
- Increased biodiversity.

