Case Study 10.6 Swill Brook Meadow, Lower Moor Farm complex, Wiltshire – introducing green hay to a species-poor grassland

About the site

Swill Brook Meadow (2.86 ha) is a component of the Lower Moor Farm complex of nature reserves purchased by Wiltshire Wildlife Trust between 1996 and 2005. Swill Brook Meadow links directly to Clattinger Farm (also part of the complex) which is an SAC (see Chapter 4) for its high-quality floodplain-meadow vegetation. Although very species-poor in comparison to the SAC, Swill Brook Meadow was less agriculturally improved than the remainder of the Lower Moor Farm fields.

Together with the rest of Lower Moor Farm, Swill Brook Meadow had a history of year-round grazing by cattle and sheep. It is very wet in winter and has a tendency to flood, so is likely to have escaped the heaviest winter-grazing pressure.

The bale is loaded into the rear of the spreader, chopped and then spread over the grassland through a funnel. The angle of the funnel and flow rate are adjustable, allowing the depth of the green-hay layer and the area of distribution to be altered. This method is quick and efficient. © Catherine Hosie

In 2010 the Lower Moor Farm complex was entered into an Environmental Stewardship (ES) agreement and Swill Brook Meadow was identified as a suitable location for sward enhancement in order to extend the area of good quality floodplain-meadow habitat.

Technique used

The management option chosen was sward supplementation with green hay due to the on-site availability of suitable species-rich grassland from which green hay could be harvested. In late July 2010, the meadow was cut tight to the ground. A spring tine harrow was used to break up the sward and create bare ground by pulling out the remnant thatch and any dead vegetation lying on the soil surface (thus ensuring that seeds in the green hay were able to reach the ground to germinate).

At Swill Brook Meadow the area of bare ground created was less than the recommended 40–50% because of the presence of species of interest including low numbers of snakeshead fritillary. The green hay was cut and big-baled in nearby Oaksey Moor Farm Meadow and transported 500 m to Swill Brook Meadow where it was spread within a few hours using a straw spreader. The ratio of donor to receptor area was a little less than 1:3. After spreading, the meadow was left to settle for a few weeks, then grazed lightly by sheep. Sheep were used because the underlying Oxford Clay soils are vulnerable to poaching in wet conditions. Following green-hay application, the meadow has been managed with a hay cut after 15 July, depending on weather conditions. Traditionally the hay cut was an extended process carried out over several weeks by hand or with small agricultural machinery. In the species-rich fields at Lower Moor Farm this extended hay-cutting process continued until the late 1990s when the farmer retired. Using modern farm machinery, hay cutting can now be completed within a matter of hours and as high nutrients are not a problem at Clattinger Farm, a later cutting date tries to replicate the traditional management at the site. This management is supported by the HLS option within the existing ES agreement. Aftermath grazing is carried out by cattle, which graze a number of the fields together, until the ground becomes too wet. If not cut for hay, the meadow may be extensively cattle grazed during the summer.

Monitoring

Ten 1 x 1 m quadrats were set up adjacent to Swill Brook Meadow on Side Ham to provide data from a sward that had not been enhanced for comparison and was already species rich. Three groups of five quadrats were established on Swill Brook Meadow to look at the impact of the green-hay intervention.

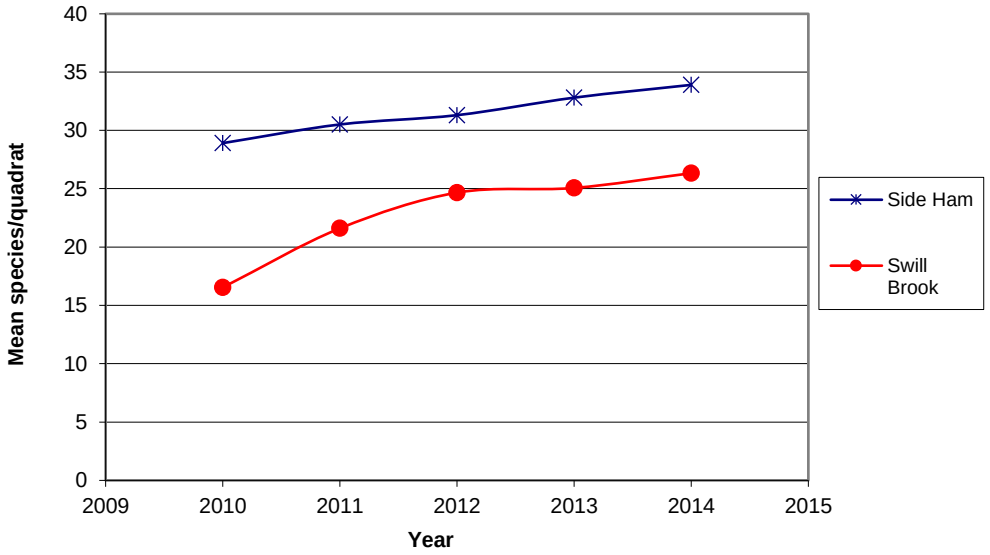

Figure 10.7 Mean species number per m^2 for each field between 2010 and 2014.

Results

The monitoring programme indicates that the work at Swill Brook Meadow is successfully recreating a species-rich sward referable to the Burnet floodplain community (MG4). In 2011, just 12 months after the green-hay application, species-richness had increased significantly, as had the goodness-of-fit to the target floodplain-meadow community. The transformation from species-poor Cuckooflower grassland (MG15p) to the more herb-rich Burnet floodplain meadow (MG4) continued in 2012 with further recruitment and expansion of species. Moss cover has also increased whilst the cover of species of more improved mesotrophic grasslands, such as perennial rye-grass and white clover has continued to decline. Changes in 2013 and 2014 were more modest, but the field is now similar in its species-richness to other Burnet floodplain meadow (MG4) fields in the reserve (see Figures 10.7 and 10.8).

Costs

Minimal as machinery used belonged to the Trust and green hay was collected and spread from Trust-owned adjacent fields. Partners Natural England through HLS agreement.

Benefits

Creation of 2.86 ha of species-rich meadow, additional hay crop, buffer for existing species-rich meadow.

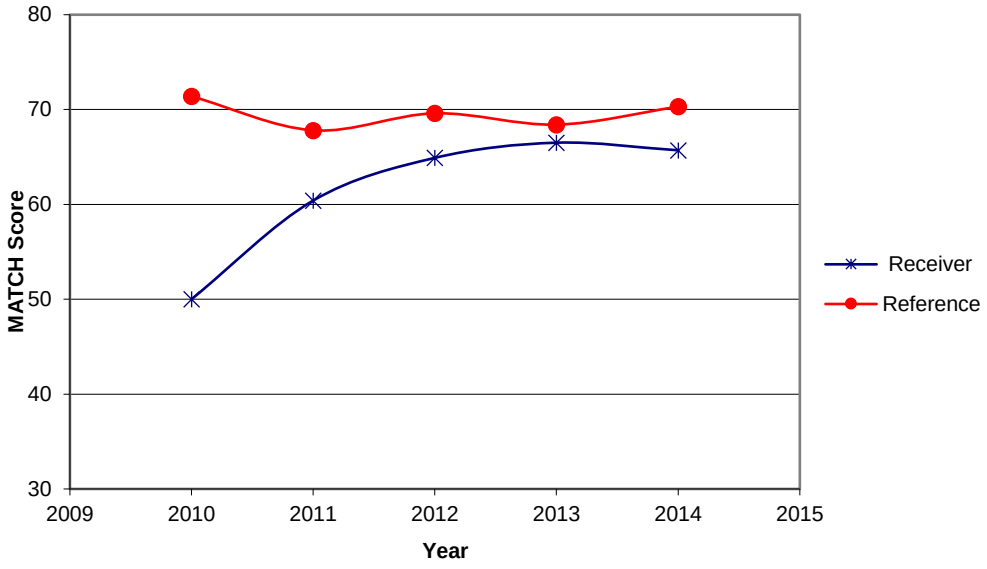

Figure 10.8 Change in the goodness-of-fit to the Burnet floodplain meadow community (MG4) of Rodwell (1992) of Swill Brook and Side Ham between 2010 and 2014. Scores are Czekanowski coefficients of similarity calculated using the MATCH program (Malloch 1998). Values are based on constancy tables derived from sets of ten quadrats in Side Ham and 15 quadrats in Swill Brook.