Case Study 10.1 Fotheringhay Meadow, Northamptonshire – restoration of a site with good soil structure and water regime

About the site

Fotheringhay Meadow is a privately owned, undesignated 12 ha meadow on the River Nene floodplain. It is managed by the farmer with support from the Nene Valley Nature Improvement Area (NIA).

Historically, the meadow was used for spring sheep grazing until May or June, followed by a hay cut in late July or early August. A walk-over survey showed it to be rich in grasses but poor in broadleaved herbs, although there were small areas with some key herbs including great burnet. This suggested that the site had not been fertilised, but that selective herbicides may have been applied in the past. The NIA wished to explore the restoration potential of the meadow.

Soil survey

A soil profile survey was undertaken at nine sample points using a 1.2 m long auger. For each profile, the depth of the darker surface horizon and the depth to sand and/or gravel were measured, and any mottling of grey/brown (which indicates a fluctuating water table) was noted. The basic profile of the soil across the field was found to be a layer of dark brown loamy clay to about 0.2 m, followed by a band of clay up to 1 m thick. In some places the band of clay was thinner, and had sand and some gravel sitting below it (see Figure 10.3). Cores with sand and gravel within 1 m of the surface showed very little mottling in the clay layer, suggesting that the area the cores were taken from were free draining and had a water regime that could support a more species-rich floodplain meadow. At points where no sand or gravel was found, the clay was dense and had significant mottling (grey/brown), suggesting long periods of waterlogging or poor drainage. The soil cores with sand and gravel were found in areas of higher species diversity.

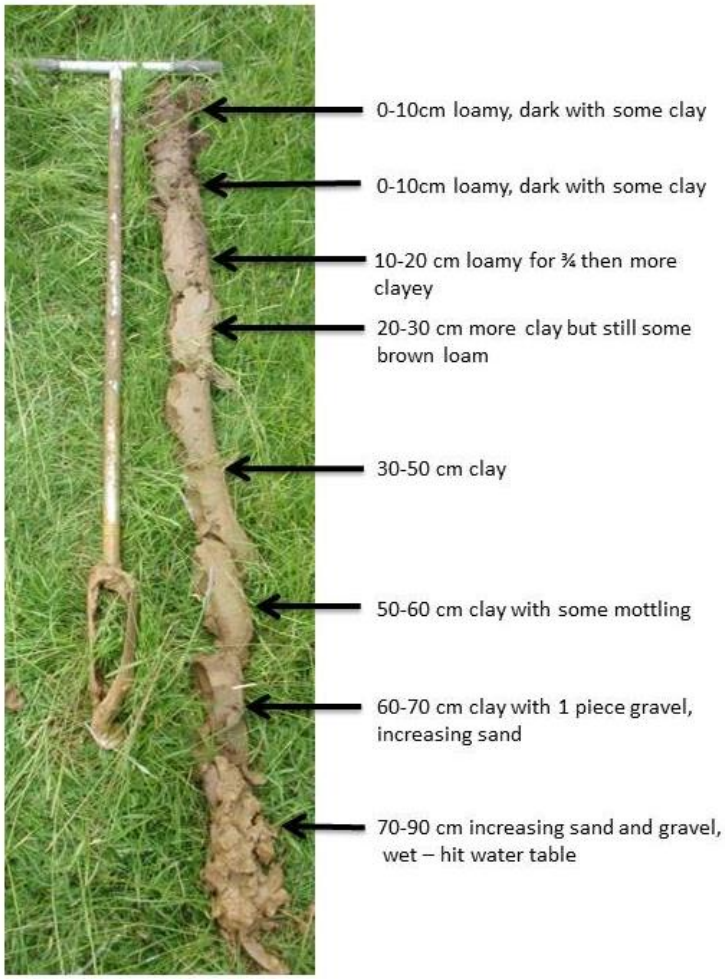

Figure 10.3 A soil core taken from Fotheringhay Meadow showing the soil profile. © Heather Proctor

The low nutrient levels, presence of gravels, low weed cover and low cover of competitive grasses such as cock's-foot and false oat-grass (which can swamp species such as great burnet) all suggested that the chances of a successful restoration of a species-rich sward were high.

Preparing strips of the ground with a tractor and harrow (spring tine or similar). © RNRP

Spreading seed using a quad-bike mounted fertiliser/seed hopper. © RNRP

Techniques

In September 2014, six 150 m x 6 m strips were lightly cultivated, seeded and then rolled in one half of the site. The strips were separated by 12 m and were located so as to give a range of different soil and water conditions. The strips were seeded with a commercial seed mix (Emorsgate EM8). As the site already had a good diversity of grasses, the seed mix contained herb seeds only. Known patches of great burnet were avoided. The work was carried out by the farmer using standard farm machinery. The second half of the meadow was scheduled to be treated in spring 2015, followed by the reinstatement of hay-meadow management, with grazing until no later than mid May and a July hay cut, earlier than previously.

Monitoring

In summer 2014, fixed-point botanical monitoring along a transect was carried out to provide baseline data, and will be repeated as the project progresses.

Cost

The cost of the seed (approx. £6,000) was covered by the NIA. The meadow is in HLS option HK15 "maintenance of grassland for target features", but Natural England will review the option over the next couple of years.

Partners

Nene Valley NIA (lead partners – Wildlife Trust BCN, River Nene Regional Park), the farmer, Natural England.

Benefits

· Enhanced public views of the flower-rich meadow from the historic castle.
· Increased biodiversity.
· Improved habitat for pollinators in a largely arable landscape.