

Landownership and site background

Mottey Meadows National Nature Reserve supports some of the most species-rich floodplain meadow vegetation in England, with both the MG4 *Alopecurus pratensis*-*Sanguisorba officinalis* and the MG8 *Caltha palustris*-*Cynosurus cristatus* communities of the National Vegetation Classification (NVC, Rodwell 1992) being present over extensive areas. It is owned by Natural England with management carried out by local farmers, who have managed the site for many years.

The restoration field is found towards the southern end of the site and was bequeathed to Natural England in 2011 by a local farmer who had managed the site for many years. The aim was to restore it from a species poor grassy pasture, to a species rich meadow to supplement the NNR, and to use it as an occasional community space from which to run public events during the summer.

Restoration activity

The field was shut up for hay for the first time in April 2009 and a botanical monitoring programme started. In 2011 the field was grazed down, and green hay was strewn on the western half of the field, with the eastern half being left as a control to record changes through management change (pasture to hay cut) alone. The field was then monitored in 2012, 2014, 2015, 2017 and 2023.

Current management

Annual hay cut followed by aftermath grazing. Typically the hay is cut towards the end of July.

Progress by 2023

Species richness has steadily increased in both halves of the field, although the hay-strewn area has a higher species richness in every monitoring period compared to the non hay strewn area (Figure 1). By 2023, the differences in abundance of desirable herbs are still visible between the two areas of the field.

Site information

Size: 1 ha

Public access: Permissive only

Phosphorus levels: 12.1 mg/l at start of process.

Soil type and profile:

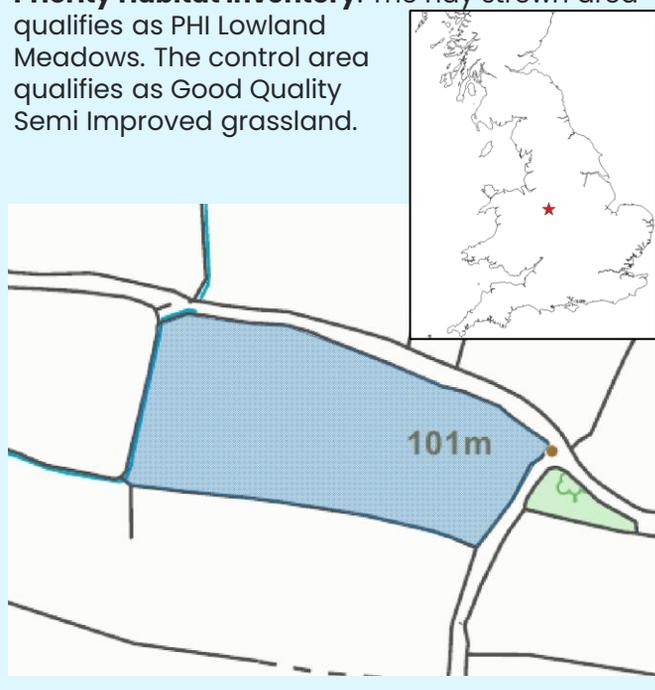
Cost: Low

Economics of management

e.g. how does management work in wider context of landowner?

End use of hay: local farmers purchase grazing and hay making licences from Natural England for the majority of Mottey Meadows, including the restoration meadow

Priority Habitat Inventory: The hay strewn area qualifies as PHI Lowland Meadows. The control area qualifies as Good Quality Semi Improved grassland.



Common knapweed, oxeye daisy, ribwort plantain, devil's-bit scabious and bird's-foot trefoil are still most abundant in the hay-strewn part of the meadow, whilst in the Control area their presence is minimal.

Great burnet has increased the size of its clones in the hay strewn area and is spreading well across the Control area, establishing and developing very successfully.

Plants in both parts of the field have not yet developed communities with the highest taxonomical diversity even though the species richness has been consistently growing.

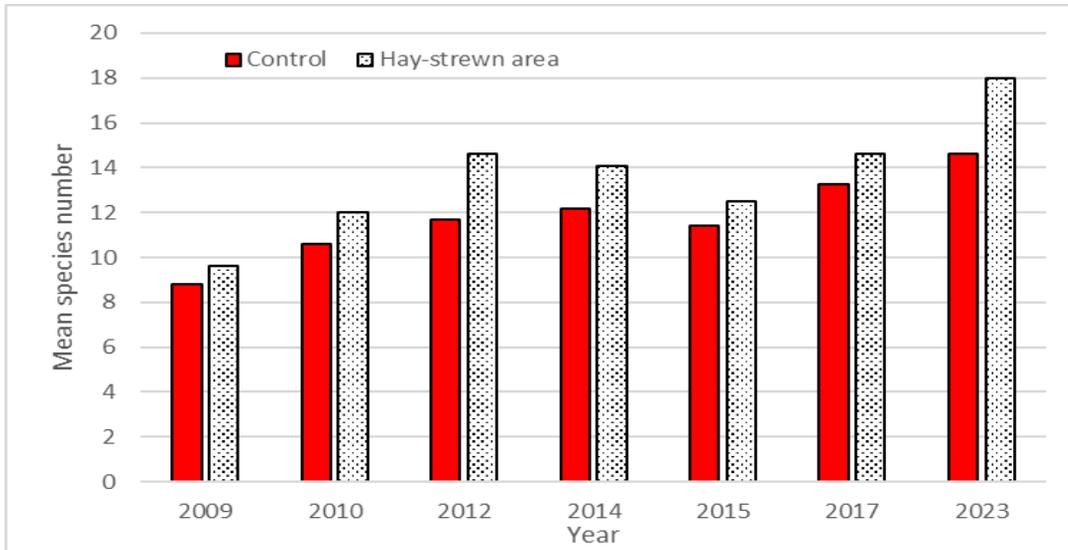


Figure 1. Change in species richness for hay strewn (blue spotted bars) and control areas (solid red bars) between 2009 and 2023. From 2009–2017 the graph is based on 18 quadrats in the hay and 12 in the control areas. Data for 2023 are based on 6 quadrats in the hay-strewn area and 5 quadrats in the control.

The functional diversity is very well balanced in both areas with competitive (C), ruderal (R) (easily spread but not long lasting in the community) and stress-tolerant species (S) (slowly establishing but long-lasting in the community) being more or less equal. By this criteria, Mottey Meadow Weate’s Field matches the adjacent ancient meadows, where these three functional types are represented more or less equally.

Management recommendations

Continue with annual hay cutting and aftermath grazing.
A new phase of hay strewing could be attempted, ideally on the Western, previously hay-strewn, area only. This would leave the eastern-control area to continue to demonstrate the impacts from simply changing management from grazing to hay cutting: a very useful study in itself.



Table 2. Five categories of meadow restoration progress, measured by indicator scales based on species richness, NVC similarity score and ratios of Grime's plant functional types. Adapted from Rothero, Tatarenko & Gowing, 2020. Highlighted figures indicate the site score for that measure

Hay-strewed area	Score of progress (1 = poor progress, 5 = very good progress)				
Measure	1	2	3	4	5
Average scores from five botanical quadrats per field. Calculated in MAVIS					
Species richness (number of species per 1 m ²)	<8	8 to 12	13-15	16-20	>20
NVC similarity score	<50%	50-55%	55-60%	>60%	>65%
C:S ratio	1.65	1.39	1.23	1.1	1.09
S:R ratio	0.67	0.79	0.81	0.89	0.93

Control	Score of progress (1 = poor progress, 5 = very good progress)				
Measure	1	2	3	4	5
Average scores from five botanical quadrats per field. Calculated in MAVIS					
Species richness (number of species per 1 m ²)	<8	8 to 12	13-15	16-20	>20
NVC similarity score	<50%	50-55%	55-60%	>60%	>65%
C:S ratio	1.65	1.39	1.23	1.1	1.09
S:R ratio	0.67	0.79	0.81	0.89	0.93

