Floodplain Meadow Restoration Case Study
Ismore Meadow, river Severn, Shropshire

Landownership and site background

This field is owned by the National Trust, Attingham Park Estate and managed by a tenant farmer. It was previously in arable, including potatoes, but the site was flooded too much for this to remain viable.

It was unmanaged for 2 years before the NT took it on directly. It is now in an organic HLS option and being restored to floodplain meadow.

Restoration activity

The restoration activity started in 2011. The NT sprayed twice and then spread green hay in the late summer of 2011. They also sowed a wheat crop to retain soil.

Ten acres of green hay came from Mottey Meadows National Nature Reserve on 31st July 2011.

They timed work to coincide with when Mottey hay was ready for cutting. The hay was cut, put onto waggons and moved straight away to Ismore Meadows. It was spread using muck spreader and then rolled out.

In 2012, there was concern that there wasn't much interest on the site, that it shouldn't go back into a CS option and had a lot of weedy species. However the NT continued with the meadow management and whilst still work in progress the restoration is widely regarded as a success.

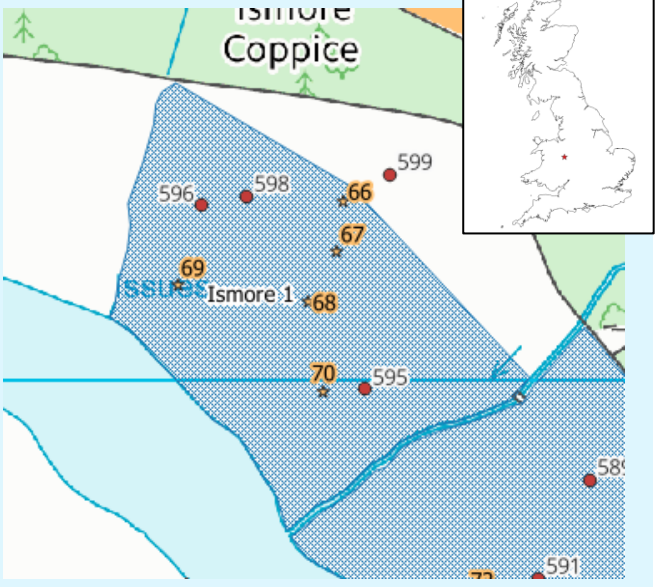
Current management

Hay cutting is slightly sporadic. It should be cut after 15th July, but sometimes is only topped and grazed. The farm tenant has been reluctant to mow for hay in some years. By the time of the visit in late June 2023 however, it had been cut – probably in May as there had been some re-growth, although a small section had not been cut.

The site has been monitored since 2013 using a W-walk transect with 10 stops, recording 1m2 quadrat at each stop.

Site information

Size: 2.4 ha
Public access: No
Phosphorus levels: Not known
Soil type and profile: Very sandy loam
Flood frequency: partial flooding, Some of the field is up slope.



Progress by 2023*

This field sits on sandy soil and in 2017, at the time of the first visit by FMP, had a species-rich plant community, with 16.2 species per 1m^2. Sweet vernal grass, rough-stalked meadow-grass and Yorkshire fog dominated among the grasses.

Field wood-rush, cat's ear, mouse-ear chickweed, oxeye daisy meadow buttercup, ribwort plantain, common sorrel and lesser trefoil were all well-spread across the field in small amounts.

Great burnet, yellow rattle and selfheal were rarer, but still well established. By the re-visit by FMP in in 2023 it had about 20% of bare ground or similar proportion of ground cover from plant litter, which is reflected in the high abundance of ruderal, bare-ground loving species like ribwort plantain and dandelion.

However, competitive species like perennial ryegrass and creeping bent grass are also dominant. This affects the functional species diversity on the meadow.

Progress by 2023 continued

Very competitive (C) and ruderal (R) (easily spread but not long lasting in the community) species are abundant, while stress-tolerant species (S) (slowly establishing but long-lasting in the community) are in the minority (Table 2). In well developed, ancient meadows, the three functional types are represented more or less equally.

The taxonomic diversity has not changed much since 2017. The plant community continues to develop into typical Burnet floodplain meadow (MG4 NVC – *Sanguisorba officinalis* – *Alopecurus pratensis* grassland), but the goodness-of-fit scores are not high enough to be confident yet in a strong plant community association.

Cat's ear, mouse-ear chickweed, oxeye daisy, meadow buttercup, common sorrel and lesser trefoil were all well-spread across the field in small amounts. Individual plants of great burnet and common knapweed are well established, but still uncommon. Yellow rattle, field wood-rush and selfheal were not recorded in 2023, but Devil's-bit scabious grows well in the uncut edges.

According to Ellenberg's indicator scores, the soil fertility has increased slightly. The soil moisture level looks quite stable, and soil reaction has became more neutral (less acidic).

Table 1 Summary of the botanical data collected

	2017	2023
Ellenberg F (moisture tolerance)	5.42	5.4
Ellenberg N (fertility)	4.44	4.94
Ellenberg R (Reaction)	5.74	6.06
Species/quadrat (mean and range /1 m x 1 m)	16.2 (14-20)	14 (11-20)
NVC (top 2 MAVIS subcommunities)	MG6b MG4b	MG4b MG4

* A summary of the data collection and analysis methods used is available here

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*.

	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

* A summary of the data collection and analysis methods used is available here

Management recommendations

This restoration field is progressing well. Ensuring a regular, annual hay cut followed by aftermath grazing is important to continue to make progress in restoration here, particularly as this field is largely dry, has a low fertility and is very well drained.

Although there are many typical meadow species, their spread across the field remains slow. There is a large proportion of bare ground which would provide a good opportunity to enhance both the diversity and abundance of forb species by spreading more green hay, seeds or plug plants.