

Floodplain Meadow Restoration Case Study

Westbridge Meadow, Stafford, Staffordshire

River Trent

Landownership and site background

Westbridge Meadow is part of Stone Meadows Local Nature Reserve owned and managed by Stafford Borough Council. It was a pair of football pitches, but was too wet to be reliably useful, so it was decided to restore it to a meadow. This was inspired by the discovery of remnant floodplain meadow vegetation around the edges of the site, with some great burnet, common bistort, brown sedge and meadowsweet. It is therefore possible that much of the Trent corridor in Stone was formerly Burnet floodplain meadow (MG4).

Westbridge Meadow has been undergoing restoration to a more species rich floodplain meadow since 2015.

The site is publicly accessible and well used. The Borough Council aspiration is to create species rich meadows and inspire the public.

Restoration activity

The site was power harrowed to bare earth in July 2015 and spread with green hay from Motte Meadows national Nature Reserve. However, this had not been successful, so it was power harrowed and sprayed in 2016 and then spread with commercial seed (Naturescape). SBC tend to sow at half the recommended rate to keep costs down. They used a mix of N6 and N7 mixed together (wet meadow and clay soil mix) and were aiming to get some of the rarer species including pepper saxifrage and saw wort *tinctoria*.

SBC also planted 9 cm pots more recently (2021) including great burnet, pepper saxifrage, water avens and marsh marigold (the latter two were planted in the low-lying areas).

In 2023, seed was collected from the surviving old great burnet plants and taken to a nearby commercial nursery in the hope of growing them on to 9 cm plug plants to be re-introduced into the site.

Site information

Size: 3.3 ha

Public access: yes

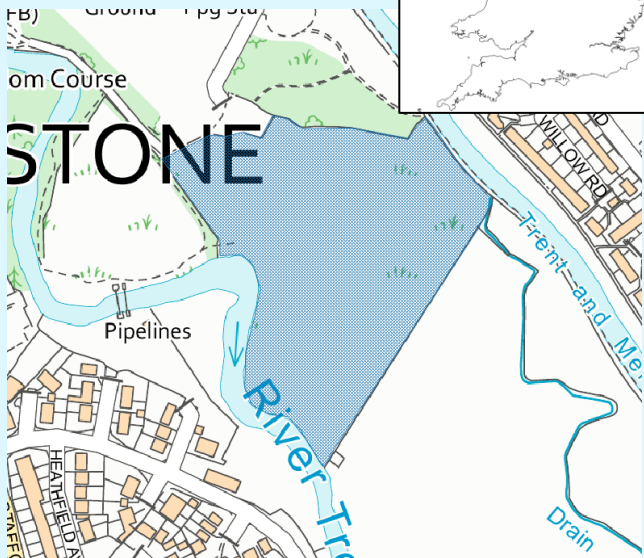
Phosphorus levels: not known

Soil type and profile: organic rich and deep A horizon (to 30 cm) overlying silty clay. Damp at 60–90 cm and gravel at bottom of profile.

Flood frequency: Doesn't really flood although is classed as floodplain

End use of hay: the contractor comes and takes the hay

Priority Habitat Inventory: Species rich lowland meadow



Current management

Annual hay cuts are undertaken typically mid-August, sometimes with a second cut. In 2022 the hay cut was 1st September, which is later than usual. However, any second cut arisings are left on the site. There is no grazing, the occasional second cut is a replacement for that.

SBC try and keep docks down by volunteer pulling rather than spot spraying.

Progress by 2023

The vegetation in the field is species-rich, with up to 30 species per 1m² recorded in places. Soil moisture and fertility (Table 1) sit at levels suitable for Burnet Floodplain Meadow (MG4 *Sanguisorba officinalis* – *Alopecurus pratensis*) to exist. This field when compared to the typical MG4 community in MAVIS scored over 70% similarity.

The sward is dominated by several grass species and creeping buttercup *Ranunculus repens*, however many other species are well spread across the field in small amounts.

Species richness and a well-developed community type are characteristics of very good restoration progress (Table 2). However, the plant functional diversity here has scored very low (Table 2), indicating that the meadow has a way to go to become a well-formed and well-functioning plant community. The imbalance between the three functional types of plants in the sward is a major concern here. Competitive species (C) and ruderals (R) – are species that grow easily in open areas but do not last long in a more closed sward. IN Westbridge Meadow both competitive and ruderal species dominate the vegetation, while stress-tolerant species, which should be more abundant in a well-established species rich meadow, are not well represented yet.

This meadow meets the criteria for inclusion in Natural England's Inventory (PHI) as **Lowland Meadows Priority Habitat**. This means that this is a good quality, species-rich meadow.

Management recommendations

Continue with the current consistent management of the site as a meadow. Additional restoration efforts through further plug planting may improve the functional diversity. Some species which can help to achieve this are:

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|--------------------|----------------------------------|
| Selfheal | <i>Prunella vulgaris</i> |
| Great Burnet | <i>Sanguisorba officinalis</i> |
| Pepper-saxifrage | <i>Silaum silaus</i> |
| Glaucous sedge | <i>Carex flacca</i> |
| Carnation sedge | <i>Carex panicea</i> |
| Timothy | <i>Phleum pratense sens.lat.</i> |
| Common mouse-ear | <i>Cerastium fontanum</i> |
| Creeping tormentil | <i>Potentilla reptans</i> |
| Marsh bedstraw | <i>Galium palustre</i> |

Table 1. Summary of botanical data collected

	Higher/ drier area
Ellenberg F (moisture tolerance)	6.02
Ellenberg N (fertility)	5.44
Ellenberg R (Reaction)	6.24
Species/quadrat (mean and range /1 m x 1 m)	23 (20-30)
NVC (top 2 MAVIS subcommunities)	MG4b MG4T



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

