CHARACTERISING SUSSEX MEADOWS BY INTERROGATING THE NATIONAL VEGETATION CLASSIFICATION.

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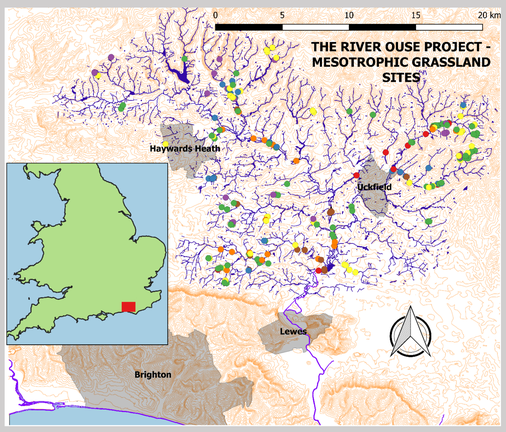


Figure 1. 240 survey sites in the upper reaches of the Sussex Ouse, 2006 – 2018. Key as Figure 2.

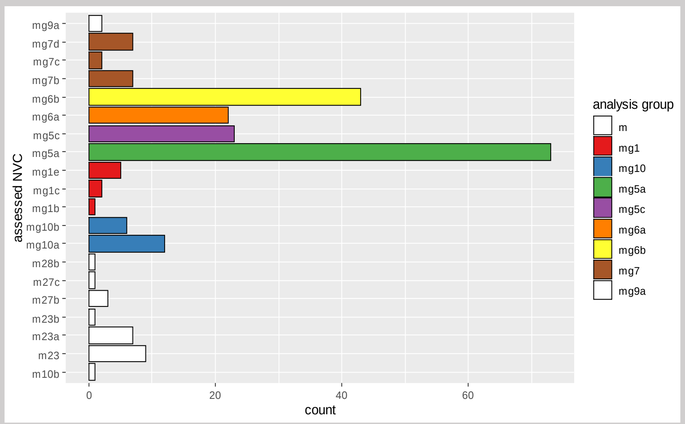


Figure 2. Assessed NVC communities. Mesotrophic grassland sites shown in colour.

Streamside meadows (Figure 1) were selected on the basis of their species richness, potential for restoration and significance for flood control. We used the sampling method outlined in Rodwell (1992) to collect data which were then matched with NVC standards using our understanding of grassland ecology along with the MATCH software (Malloch, 1998). We found mires and mesotrophic grasslands (Figure 2), but matches to the NVC standards were often poor. To differentiate matches from the standards, we refer to assessed matches in lower case ("mg5a").

We are interested in assessing the differences between our samples and the standards in order to understand the local conditions which affect them.

Here we present a post-match analysis of 207 mesotrophic grassland sites; where we do not have many samples, we have grouped sub communities into analysis groups as shown in Figure 2.

The NVC standards do not represent fixed communities. Typical intermediate stages for mesotrophic grassland are shown in figure 3, adapted from Rodwell (1992). We expect to find intermediate stages in our samples due to farming intensification, neglect, and the local soil conditions.

We investigated this expectation by estimating dissimilarities using the Euclidean distance between our samples and the standards in a frequency space of 22 species, chosen because they occur with a frequency of V (0.8 – 1.0) in at least one of the standards. The greatest difference between two points in this space is 4.69 units (v22).

All our samples are closer to each other than to MG5a (Figure 4), although distance from MG5a increases roughly in accordance with Figure 3. **The assessed and nearest standard communities often do not agree, suggesting that intermediate stages are present.** In general, species count declines with distance from MG5a, as would be expected.

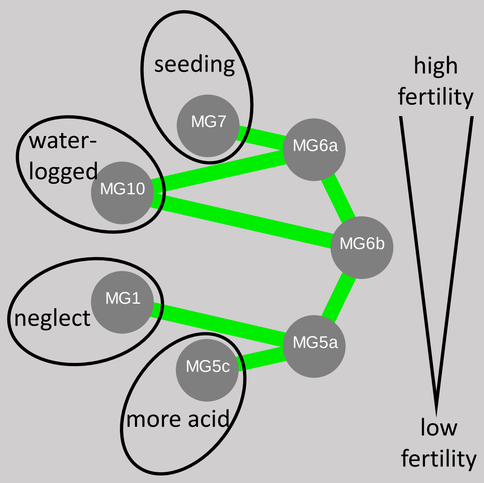


Figure 3. Environmental and management factors characteristic of mesotrophic grassland communities. The green lines represent potential community transitions (after Rodwell 1992).

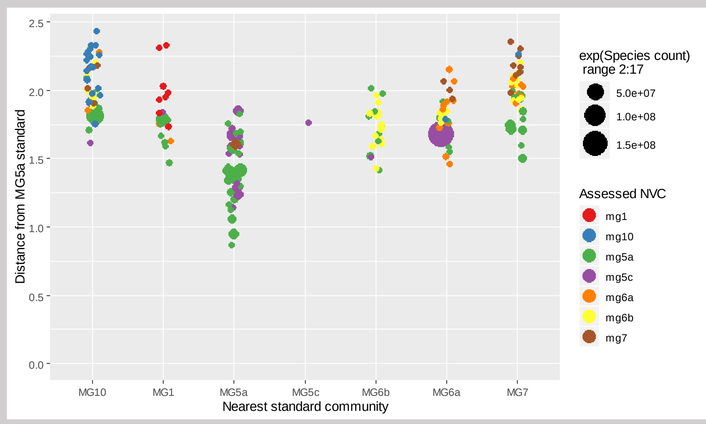
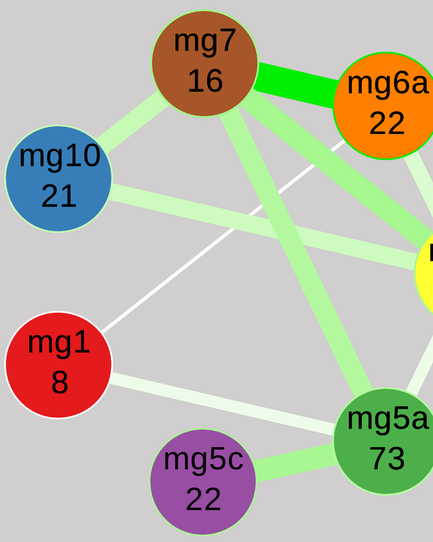


Figure 4. Distances, MG5a to nearest standard. Many samples have different assessed and nearest standard communities.



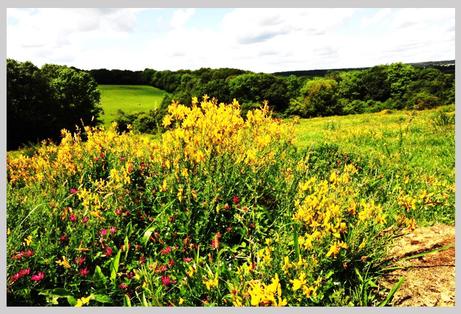


Figure 5. Intermediates between assessed NVC and standard communities represented as transitions from one grassland type to another. The situation is more fluid than would be suggested by Figure 3. The pictures are grassland examples from our sites. The numbers in the nodes show the community counts .

A contingency table (confusion matrix) between assessed and standard NVCs quantifies the potential intermediates. The gross confusion between an assessed and a standard NVC is the sum of the corresponding off-diagonal elements in the confusion matrix, Table 1, red figures.

Table 1. Gross confusion between assessed and standard NVC. The red figures represent transitions between communities.

	Standard NVC						
Assessed NVC	MG1	MG10	MG5a	MG5c	MG6a	MG6b	MG7
mg1	16	0	7	1	2	0	0
mg10		38	8	2	3	8	5
mg5a			62	16	5	10	14
mg5c				2	1	1	0
mg6a					22	7	10
mg6b						32	10
mg7							16

The intermediate stages represented by the confusion matrix are shown in Figure 5 as transitions between communities. Their frequency is expressed as percent of the pool size (the total number of samples at each end of the exchange). Only transitions where the observed confusion exceeded the random expected confusion are shown.

Intermediates between mg5a and mg7 , mg6b and mg7, are present, in addition to those shown in Figure 3. They appear to be favoured by local soil conditions and management practices.

Our samples do not closely match the NVC standards, and it is tempting to suggest modifying the standards to accommodate local data. Instead, our approach is to use the mismatch constructively, treating the standards as reference points in a more or less uniform frequency space (Rodwell, 2006, p45) and thereby gaining insight into local conditions.

We find that the NVC is a useful descriptive tool and suggest that changes to accommodate regional data reduce its value.

Further information and reports from the River Ouse Project are available at www.susses.ac.uk/riverouse

References

Rodwell, J S (1992). British Plant Communities, Volume 3, Grasslands and Montane Communities.
Rodwell, J S (2006). NVC Users Handbook, JNCC
Malloch, A J C (1998). MATCH version 2. University of Lancaster.

Acknowledgements

This work would not have been possible without the help of a team of skilled volunteers. We are extremely grateful to them.