



So, What can be achieved for the restoration of diverse grassland, and what will it do for us?

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Defining the challenge



- The level of ambition in Making Space for Nature is huge and is reflected in the Biodiversity 2020 objectives.
- We want habitats that are more better bigger and more joined up.
- This is a massive challenge. It has proved hard enough stopping wildlife habitats getting fewer, worse, smaller and more isolated!
- Sir John didn't reveal the full scale of the challenge. For grasslands we have to achieve his goals while also:
 - Pursuing sustainable intensification
 - Saving the species as well as the habitats
 - Facing up to a period where CAP funding is likely to be constrained
 - Fitting grassland conservation into the jobs and growth agenda
 - Dealing with climate change etc. etc.

How well placed are we to meet the challenge?

1: What are we reasonably sure about?



- We have made enormous progress in understanding the ecology and practical management techniques needed to restore species-rich grasslands.
- We know the main factors that limit the re-establishment of diverse grasslands; Soil nutrients, Propagules and Microsites
- We know how to overcome all of these
- We know it can work in practice on real farms
- We know the importance of outcome focused, adaptive management
- We know the importance of having committed farmers
- We have also learnt a lot about the management of existing high value grassland, about how to manage nutrients, and the impact of hydrology

2. What are we starting to understand?



- Plant/soil interactions and their relevance to restoration.
- How to restore grasslands as whole systems, including the invert communities
- The potential to reintroduce a more modest degree of diversity into more intensively managed grasslands.
- The range of ecosystem services that grasslands can produce, and what the synergies and trade offs are.
- The importance of heterogeneity of management, and the dangers of unintentionally imposing excessive uniformity
- The importance of topographical variation
- How to restore ecological integrity at landscape scale
- How re-created grasslands continue to evolve and change in the longer term - Can we truly re-create the complexity of structure and pattern found in semi-natural grasslands?

What are the main remaining obstacles?



- We can never know enough about the ecology and practice of grassland restoration. Here are three suggestions for further work:
 - Could infrequent use of non-selective weedkillers be another limiting factor?
 - How do we best design multi-species ecological networks that optimise the use of scarce resources and the ecological outcomes?
 - Can we reliably quantify the contribution diverse grasslands make to ecosystem services?
- But, the central challenge is to find ways of applying all the hard won knowledge we do have to diversify grasslands at a big enough scale to halt continuing losses and start to reverse the historic declines.

Understanding the central challenge in more detail



- There are four main aspects to this challenge:
 - Economics - can we make grassland diversification pay for commercial farmers?
 - Availability of public money – can we make a convincing case for prioritising grassland maintenance and restoration even within a smaller CAP? Can alternative sources of finance be generated?
 - Improving value for money – can we get better and more consistent outcomes from RDP grassland management options
 - Motivation, enthusing farmers about managing diverse grasslands
- This last one is probably central to improving value for money

A two tier challenge?



- It may be helpful to divide the challenge of restoring diverse grasslands into two parts:
 - Managing and restoring species-rich semi-natural grasslands
 - Diversifying grasslands within mainstream commercial farming

Species-rich semi-natural grasslands



- The core challenge here is to make best possible use of whatever funding is available for agri-environment schemes
 - By scheme design, including appropriate payment rates, a strong outcome focus & careful targeting
 - By disseminating & applying our hard won ecological knowledge
 - By investing in farmers, through advice, support and encouragement, to motivate and empower them to practise adaptive management
 - By continued monitoring
- The other element of this challenge is to find other ways of making species rich, semi-natural grasslands at least partially pay through:
 - Development of niche markets for the products (e.g. hay & meat)
 - Development of systems of Payment for Ecosystem Services such as soil carbon.

Diversifying grasslands within mainstream commercial farming



- It may help to regard this as distinct and different from the restoration of species-rich, semi-natural grasslands.
- This is a different and less familiar challenge, though not new. In the 1950s there was a lot of debate and attention paid to optimal species mixes in productive grass swards under different conditions
- The Widespread Enhancement of Biodiversity is looking again at the potential role of legumes, which could be part of the answer
- A new ELS option EK21 Legume & Herb-rich swards offers farmers a chance to experiment with this.
- We don't yet have all the answers, and maybe this is where the main thrust of applied research needs to go now?

In conclusion



- We have made enormous progress!
- Central to this has been a close partnership between researchers and practitioners, supported by sustained, long term funding for rigorous, practical, applied research
- We still face enormous challenges if we are to respond to the scale of Sir John Lawton's challenge in the face of all the competing pressures on land in a time of economic constraint
- A pre-requisite for success is to build much stronger partnerships with the farmers who own and/or manage our grassland resource
- The next big scientific challenge is perhaps to look again at productive grasslands and see how these could be diversified, and made to produce more across the range of ecosystem services.