

Habitat re-creation: specialist techniques

In strategically important locations (eg between two Sites of Special Scientific Interest), more radical operations could be implemented.

Techniques that have been successful include:

• **Soil Stripping:** removal of the fertile top-soils prior to re-seeding with green-hay or a suitable purchased seed mix. This is an expensive operation, so is generally limited to small areas in highly strategic locations. The operation can offer the opportunity to reinstate landscape features such as old hedge-banks. The technique offers quick results in terms of re-establishing species rich grasslands.

• **Deep ploughing:** a single furrow plough is used to invert up to 100 cm of soil. This buries fertile top-soil and exposes impoverished soils. These often contain wildflower rich remnant seed-banks.

• **Clear felling:** some commercial conifer planting has historically occurred on wildlife-rich habitats. Careful harvesting of the timber crop and subsequent works (eg stump-mulching) can reveal long-hidden seed-banks and restore original wet grassland habitats. This operation is potentially expensive but its cost can be offset by the value of the timber crop. The post-harvest clearance and ground restoration operations have been successfully incorporated within Higher Level Stewardship agreements, but special projects such as these require detailed consultation with Natural England and Forestry Commission before they can proceed.

All of the operations discussed in this advice note have been successfully tried and tested in the Culm – for more information and advice please contact the Working Wetlands team.

Legislation

Invasive habitat restoration techniques often involve a complex range of operations that are governed by for example, local planning, historic environment, flood risk management, and Environmental Impact Assessment Regulations. It is essential that advice is sought from Working Wetlands or experienced conservation land management advisors before you embark on a project.

Sources of funding

Habitat restoration and re-creation operations in target areas may be supported by Environmental Stewardship agreements.

The Working Wetlands Small Grant Award may also be able to provide support. Please contact the Working Wetlands team for more details.  
tel 01404 221823;  
email [working.wetlands@devonwildlifetrust.org](mailto:working.wetlands@devonwildlifetrust.org)

Sources of information

Natural England has published a series of Technical Information Notes on a range of grassland restoration techniques.

[www.naturalengland.etraderstores.com/NaturalEnglandShop/publications](http://www.naturalengland.etraderstores.com/NaturalEnglandShop/publications)

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Advice note | Wet grassland restoration



Top soil stripping



Un-improved wet grasslands are vulnerable to losses from abandonment and agricultural improvement. During the last 100 years over 90% of our Culm grasslands have been lost. This emphasises the importance of existing wetlands as a crucial wildlife resource that should be the primary focus of conservation land management.

However with concerted effort wet grasslands can be restored or re-created. This enables the natural landscape to be reconnected; a landscape which is wildlife-rich and which also provides valuable services such as clean water and reduced risk of flood and drought.



Site selection

The aim of a grassland restoration project is to increase the diversity and abundance of flowering plants. In certain circumstances the aim is specifically to improve the suitability of habitat for a target species such as breeding curlew. This may involve a specific grazing regime or water level management.

With careful planning and site selection dramatic results can be achieved.

All of the operations detailed in this advice note involve ground disturbance. Some sites, where there is a risk of soil erosion or there is existing wildlife or archaeological interest, may not be suitable. Please contact your Working Wetlands advisor for further advice.

When starting a project, the receptor site should have the following characteristics:

- **Soil phosphorus must be low (a P index value less than 1 is ideal).**
- **Few competitive species in the sward** (eg Yorkshire fog or creeping buttercup).
- **No pernicious weed problem** (eg broad-leaved dock or creeping thistle) on site or nearby.
- **Availability and flexibility of livestock grazing** (ideally cattle) and appropriate machinery.
- **The site should ideally be located near to existing wildlife-rich habitats.**

Raising the water table

In carefully selected locations, raising the water table can be an effective way of increasing the wildlife value of land. The works required can be relatively straight forward and could include:

- **Breeching field drains – even old clay tiles can still be effective at draining land.**
- **Slowing water movement in open drains – sluices (monks) can be installed.**
- **Pond construction – new open water habitats are very valuable but should not be dug within wildlife-rich habitats. Contact Working Wetlands for advice.**

A higher water table stresses competitive grasses, increasing the potential for flowering plants to take hold. Wet ground is important in creating feeding habitats for birds such as curlew and snipe.

Soil analysis in re-wetting operations is not always required.

Operations affecting watercourses will require consultation with the Environment Agency.

Sward enhancement: green-hay sowing

With careful planning, preparation and organisation this technique can be very effective at enhancing the wildlife value of grasslands.

‘Green-hay’ is the term given to grass which is cut when the majority of wildflowers, grasses and sedges are setting seed (late June – early September). The green-hay is not allowed to dry but is collected and baled directly after cutting. The hay is immediately transported and spread on the receptor site. Rear-discharge dung-spreader or bale-choppers are ideal machinery for hay spreading.

The technique can be adapted for smaller sites where an allenscythe or even a brush-cutter can be used to cut the hay, then collected in a trailer, and spread manually on the receptor site.

Ground preparation is crucial – a short sward (0 - 5cm) and approximately 40 – 50% bare ground is ideal. This can be achieved by heavy stocking and / or scarification (eg heavy ‘chaining’, spring-time harrowing or light discing). The existing sward should remain intact but be loosened – not turned or cultivated.

Key points to consider:

- **Grass should be cut, baled and spread quickly – aim for 3 - 4 hours for the whole operation.**
- **Hay should be ‘bedded in’ after spreading, by rolling or cattle trampling.**
- **Follow up treatments such as topping may be required.**

Where receptor sites are dominated by rushes or coarse grasses, cutting and baling their arisings before sowing is important. Cut rushes can be used effectively as supplementary cattle bedding.

Donor site characteristics:

- **Should be located close-by. Often large numbers of bales have to be transported in a short time.**
- **Require similar characteristics to the receptor site in terms of soil, hydrology and management.**
- **Have high densities of desirable plant species.**
- **Have no pernicious weed burden** (eg creeping thistle, common ragwort, broad-leaved dock).
- **Has few highly competitive species** (eg Yorkshire fog, soft-rush, creeping buttercup).
- **Needs to be large enough** (one hectare cut should be sufficient to reseed four hectares).
- **No important wildlife should be damaged by the operations** (eg ground-nesting birds or protected insect and plant species).

After sowing the following operations may be required:

- **Leave sown hay for several days before ‘bedding in’ with a roller or cattle.**
- **Flowering plants need to become established and not smothered – this can be achieved by short periods of grazing (prolonged grazing of sites should be avoided), or cutting following the operation.**
- **Hay-meadows should be cut after mid July and ideally ‘aftermath’ grazed.**
- **In the case of pasture fields, light grazing in the following season enables desirable plants to flower and set seed.**

Working Wetlands is developing a register of potential donor sites – please contact the team for more information about sites in your area.

Sward enhancement: over-sowing and slot-seeding

Grasslands can be enhanced by sowing wildflower seed into the existing sward. The seed used can either be harvested from suitable donor-sites (usually via specialist contractors), or a suitable mix can be purchased from specialist wild plant seed companies. Conventional seed-sowing equipment can then be used for the operation. This is a more expensive option than using green-hay but it has several advantages, including:

- **A specific mix of species can be chosen, rather than relying on what is available from local donor sites.**
  - **The operation is less weather dependant, as there is no requirement to harvest, transport and spread in quick succession.**
  - **Greater control over seed application rates and locations is possible.**
- The following after treatments may be required:
- **Evidence has shown that targeted use of slug pellets after sowing is essential in ensuring high seedling survival rates.**
  - **Light rolling or cattle grazing will help to bed seeds in.**



Breaching field drains



Green-hay sowing



Oversowing wildflower seed