

Soil Stripping

Dunsdon Farm demonstration site



Dunsdon Farm is a 22ha private farm between two parts of the Dunsdon National Nature Reserve (NNR) in the headwaters of the Tamar river catchment in NW Devon. The adjacent NNR is one of the best examples of “Culm grassland” in the Culm NCA and is managed by the Devon Wildlife Trust. This specialist habitat supports the rare marsh fritillary butterfly which is very vulnerable to isolation, and the restoration of species-rich grassland in this strategically placed link was important for the biodiversity of this internationally recognised site

Species-rich grassland cannot be re-created where the phosphate levels in the soil are too high, as rank grasses are able to outcompete the more delicate wildflowers. In this case the land had been agriculturally ‘improved’ and the elevated phosphate levels in the soil were preventing the restoration of this uniquely located site. In 2009, a thin layer of topsoil was stripped off the surface of the fields and the bare site was then sown with a specialist wildflower seed mix.

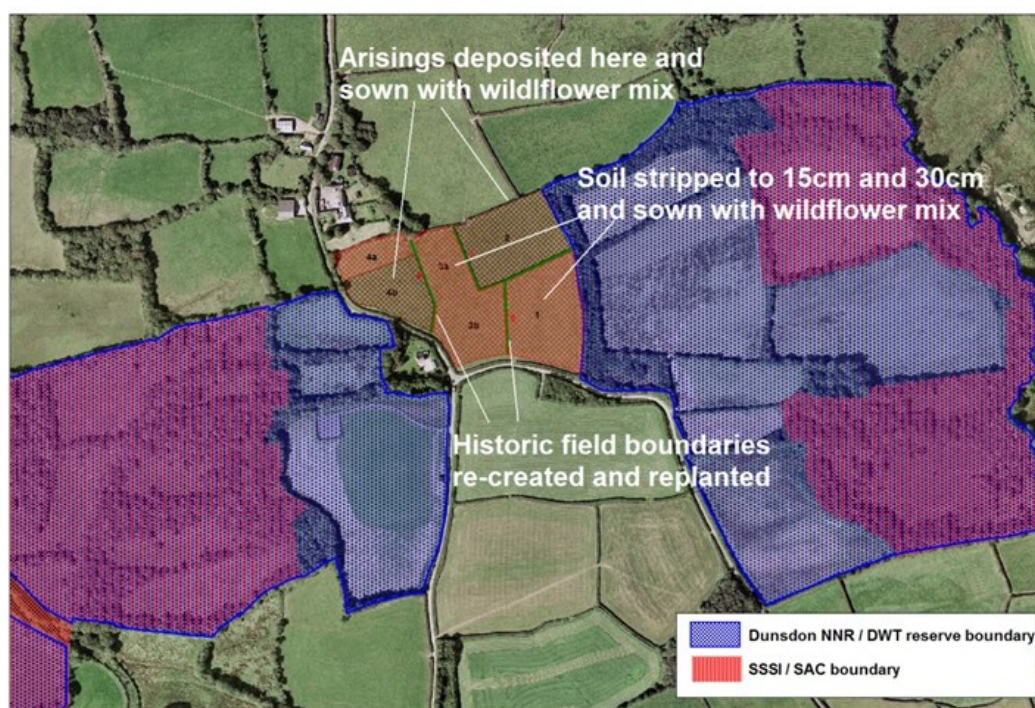


Ecosystem Services

The restoration of wildflower meadows here means that more of the Tamar catchment is being managed with zero inputs of fertilisers and pesticides which might otherwise find their way into the River Tamar downstream and ultimately drinking water abstracted at Gunnislake.

Wildflower meadows need to be grazed and highland cattle are now used to graze this pasture.

River systems with extensive wetlands are better regulated with fewer flooding problems and a more constant flow of clean water during droughts.



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Soil stripping and sowing with wildflower seed mix

The first step of the restoration of this site was to test phosphate levels in the soil and divide the 5.8ha site into different compartments. Soil was then stripped from four of the compartments to a depth of 15 or 30cm. Some of the top soil was used to re-create hedge-banks, whilst the remainder was spread over the remaining compartments.

The land was harrowed and rolled and a seed mix sown containing a mixture of 26 different grass and wildflower seeds of local provenance. These species were intended to represent the local plant communities, but also contained some additional species like oxeye daisy designed to give the restored meadow some extra 'charisma'.

Aftercare management included topping to encourage tillering, additional sowing in patches and hay cutting. Some soft rush treatment has also been necessary and grazing has been very carefully managed to maximise the seeding of the species sown.

Value for money

The restoration work at Dunsdon was funded by Natural England through a Higher Level Stewardship agreement with the landowner. Extensive staff time from the Working Wetlands project advisors was also essential.

The total costs of the capital works were around £20,000, of which around £8,000 was spent on seed. This equates to around £3,300/ha.



Soil stripping in 2009



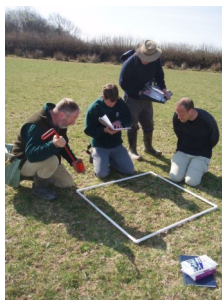
In the first year of flowering in 2010, a flush of oxeye daisies were very much evident

New hedge-banks were created along the lines of the historic field boundaries. These were subsequently planted up with a range of native hedge species.

Initial results and next steps

Detailed botanical surveys have been undertaken to monitor the success of this approach.

In those areas where only 15cms of soil was removed, a species rich lowland hay-meadow plant community is now forming. The location of this site between two marsh fritillary populations makes this an important nectar source for butterflies moving across the landscape. In some areas, particularly where soil stripping was deeper, the biomass of the new fields is more restricted although species rich.



The DWT work in the Culm NCA is supported by a wide range of organisations including:

