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8 August 2018

Report on the Restoration of Swanworth Quarry



Summary

The ecological restoration of Swanworth Quarry began in 1997. The aim of the restoration was to create a species rich grassland to extend the rare habitat that exists in the neighbouring valley 'Hill Bottom', which is designated SSSI. There were three phases of seed sowing in: 1997, 2004 and 2012; all seeds were sourced locally. Grassland was initially managed by cutting but since 2015 the grassland has been winter grazed by cattle. In 2018 this will be switched to grazing by sheep. The aim of the grazing regime is maintain species diversity. The grassland retains characteristic plant species and supports a diverse invertebrate community. Swanworth quarry is now self-sufficient in seed, having an area of grassland which can be harvested and used as green hay in the future restoration phases.

Restoration progress



Originally sown in 1997, the species rich grassland has been established on the earliest restored area for 21 years. 80% of the species that were sown are still present including both greater knapweed (*Centaurea scabiosa*) and black knapweed (*Centaurea nigra*), field scabious (*Knautia arvensis*) and small scabious (*Scabiosa columbaria*), cowslips (*Primula veris*) kidney vetch (*Anthyllis vulneraria*), restharrow (*Ononis repens*) and lady's bedstraw (*Galium verum*). The grasses include characteristic limestone grassland species such as quaking grass (*Briza media*), sweet vernal grass (*Anthoxanthum odoratum*), crested dog's-tail (*Cynosurus cristatus*) and sheep's fescue (*Festuca ovina*). Both broomrape (*Orobancha* sp.) and pyramidal orchid (*Anacamptis pyramidalis*) have been recorded.

The second area to be sown (in 2004) is in good condition, with a particularly good population of pale flax (*Linum bienne*) and pignut (*Canopodium majus*), the latter of which is not found anywhere else on site.

An area that was covered with topsoil and allowed to regenerate naturally demonstrates the importance of sowing seeds and not adding nutrients. The naturally regenerated area is dominated by grasses, especially couch (*Elymus repens*), rye (*Lolium perenne*) and cock's foot (*Dactylis glomerata*), although these grasses occur elsewhere on site they do not dominate in the same way. While some species spread readily (e.g. kidney vetch, *Anthyllis vulneraria*) other species such as harebell (*Campanula rotundiflora*) and cowslip (*Primula veris*) are slow to spread and these species are not found on the regenerated area. Furthermore the additional nutrients in the topsoil is likely to have encouraged the weedy dominant grasses and these outcompeted the less competitive limestone flora.



In 2012, the final area was sown and in 2018 the grassland is established and is developing well. The restored site as a whole supports a range of characteristic invertebrates including the yellow meadow ant, which is typical of calcareous grassland and, the increasingly rare, glow worm. Other invertebrate species include butterflies, such as the small blue, marbled white, grayling, meadow brown, small heath and ringlet. There is a large population of six-spot burnet moths.

The site is well managed by the current operators who replaced an inadequate cutting programme with an appropriate and flexible grazing regime. In 2018, after three years of winter grazing by cattle, winter grazing by sheep will be introduced. The cattle have reduced the coarse vegetation and the sheep will ensure more selective and uniform grazing to maintain the site diversity. New areas of the site will be restored in the near future and these will be sown using green hay collected from within the site, which is a valuable resource of local seed. Overall the restoration has been successful, and contributes to local biodiversity targets.