

Natural regeneration: Its role in mineral site restoration

Introduction

Mineral sites provide excellent opportunities for natural regeneration and natural habitat succession. Once common in the wider countryside, these important ecological processes and the habitats they support are now limited due to changes in agriculture and an intensification of land use. In the past, sparsely vegetated habitats and bare ground were considered unsightly and of little value, with quarry restoration and aftercare often aimed at producing vegetation cover as quickly as possible. However, allowing plants to naturally colonise retained bare mineral soils is now recognised as an important element of mineral site restoration. In many cases, natural regeneration can lend itself to the development of open mosaic habitat, - a Priority Habitat in the UK of exceptionally high ecological value. Natural regeneration in the right place can also save time, effort and money which would otherwise be spent on regrading slopes, adding topsoil, seeding or tree-planting requirements.

Bare ground

Bare ground provides the basis for natural regeneration. It is an essential feature for a wide variety of specialist flora and fauna, and is particularly important for a suite of rare and threatened invertebrates.

- ✓ Retain spoil banks, cliff faces and hummocks and hollows on various scales. Allow cliffs and slopes to erode naturally where feasible to enable continual creation of bare areas through erosion and slippage.
- ✓ Retain areas of impeded drainage – the resulting ephemeral pools will be an important constituent of the developing habitat mosaic.



Pioneering plants and early succession

Natural regeneration will be most effective on bare ground where there is a nearby semi-natural habitat to provide a source of colonising material (e.g. through wind-blown dispersal). Plant species that are first to colonise disturbed, often nutrient poor ground are known as ruderal plants.

- ✓ Ruderals are important for plant-eating invertebrates that favour hot, dry conditions and provide food for nectar-feeding and pollen-feeding species.
- ✗ Some native and non-native plant species such as Canadian fleabane, rosebay willowherb and bristly ox-tongue can be especially invasive on bare ground and may rapidly cover an area at the expense of other native pioneers. In these cases, it may be appropriate to ‘kick start’ succession on the existing area by seeding with an appropriate seed mix.

Scrub

Scrub is an important transitional habitat and a valuable component of other habitats, adding structural diversity and shelter. It establishes naturally if allowed to do so and will attract a variety of wildlife.

Management

Natural regeneration and succession will eventually lead pioneer habitat towards a closed grassland sward, followed by scrub, shrub and tree establishment. Many of these features will be desirable within a wider habitat mosaic but ongoing management will be necessary to maintain wildlife interest.

- ✓ Implementing a mowing or grazing regime will help maintain open habitats and opportunities for continued natural regeneration.
- ✓ Where resources are limited, aftercare management can be focussed on a selection of key features that are being retained for the early successional value but are also most susceptible to degradation by natural succession.

Case studies



Natural regeneration at Marford Quarry in Wrexham, showing retained spoil banks and the developing open mosaic habitat. Area to the left of the fence is grazed by rabbits maintaining bare ground and suppressing succession.
 ©Tony Robinson.



Natural regeneration of calcareous grassland on quarry scalplings at Swanworth Quarry in Dorset.
 © Barbara Smith.



A lost opportunity for heathland regeneration – inappropriate tree planting on china clay tips in Cornwall. © NAM.



The former stone quarries on Portland in Dorset provide perhaps the ultimate example of the hands-off approach to restoration but even these historic abandoned sites are now benefitting from active habitat management to prevent invasive, non-native species (namely cotoneaster) from out-competing the native flora. © NAM.

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