

Two decades of dune slack restoration in North Wales: Diversity, Community and Habitat Specialists

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Abstract

Humid dunes slacks are a highly threatened habitat, listed as vulnerable in the EU habitat red list. Accelerated successional processes in dune systems have resulted in the loss and degradation of ideal conditions for specialist dune slack species, hence the need for conservation management. This study investigated the restoration of a dune slack in North Wales, UK, where soil removal was undertaken to reinstate nutrient-poor open damp conditions. It assessed the outcomes of the management for dune slack communities over the 18 years since restoration. It also assessed the differences between restored and un-restored areas of dune slacks. Since the restoration was carried out in winter 2004/05 surveys of fixed quadrats were undertaken most years until 2022 with an additional survey in 2022 of the adjacent un-restored parts of the dune slacks. Species diversity and plant community composition changes over time were assessed using multivariate analysis and indicator species analysis. Comparisons between the restored and un-restored areas of the dune slacks were also made. Ellenberg Indicator Values (EIVs) were examined to identify potential environmental drivers of post management successional changes. After 18 years a species rich and diverse dune slack community exists. This is absent from the un-restored area. The establishment of species occurred rapidly in the first three years, followed by continued but slower increases in species richness and diversity. This is due to the addition of new species without losses of established species. EIVs show no significant difference over time suggesting the restored areas are still at an early stage of succession. Distinct stages of community change since restoration are characterised by different indicator species. Plants are likely to be largely recruited from an existing seed bank. Restoration by turf removal may be suitable for other low nutrient, species rich habitats dependent upon fluctuating groundwater levels.

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