

Changes in the flora of frontal dune slacks at Birkdale over a 20-year period

Back in 1983, Sefton Borough Council asked Lancashire Trust for Nature Conservation (now the Wildlife Trust) to survey the Birkdale frontal dunes, west of the coast road, as a prelude to adding this dune strip to the Birkdale Sandhills Local Nature Reserve. This study included a detailed examination of the flora of 26 dune-slacks, damp hollows that have a characteristic vegetation type. Twenty years on, it was decided to repeat the survey to find out how the habitat and plant-life had changed.

The 26 slacks have a total area of 3.31ha, most being quite small with an average area of 1274m². Since 1983, habitat conditions have changed markedly. Most of the slacks were formed by wind erosion during the very dry period of the early 1970s and by the early 1980s were only sparsely vegetated. Twenty years on, all but one of the slacks had a “mature” vegetation type, characterised by a nearly complete plant cover and a high frequency of woody species, such as Creeping Willow (*Salix repens*) and other larger shrubs. The relative wetness of the slacks had not changed much over the period but several included scrapes dug as Natterjack Toad breeding pools since the first survey, creating a new habitat for water-plants.

A total of 213 vascular plants (species, sub-species and hybrids) was recorded in the slacks, compared with 150 in 1983, a 42% increase in 20 years. Mean numbers per slack were 60.3 in 2003 and 41.8 in 1983, a statistically significant difference. On average, species-richness had increased by 18.7 plants per slack. The most species-rich slacks in 1983 tended also to be the richest in 2003, the highest number being counted in slack no. 27 in both years (78 in 1983; 95 in 2003). There was a positive relationship between species-richness and slack area in both years. In other words, the larger slacks tended to support more plants and vice versa.

The proportion of introduced plants in the slacks is very low – only 8%, compared with about 37% non-native species in the dune system as a whole.

Using national and regional criteria, 20 of the plants found in 1983 are “notable” in terms of their rarity or conservation status. This figure had increased by 80% to 36 in 2003. The rare plants include Sharp Club-rush (*Schoenoplectus pungens*) for which Birkdale is the only British locality and Baltic Rush (*Juncus balticus*), a northern plant whose only sites in England are at Birkdale.

Three of the notable plants – Flat-sedge (*Blysmus compressus*), Dune Helleborine (*Epipactis dunensis*) and Brookweed (*Samolus valerandi*) - have undergone a more than three-fold increase in occurrence in the slacks. Only one notable species – Variegated Horsetail (*Equisetum variegatum*) - has significantly declined over the period. Of the commoner species, seven maritime plants, more usually associated with salt-marshes, have declined, while only one of this group – Sea Club-rush (*Bolboschoenus maritimus*) – has increased.

It is concluded that the considerable increase in the botanical interest of these dune-slacks over the 20 years is probably due to the following factors:

- Most of the slacks have undergone succession from a young to a mature stage, involving colonisation by additional plants.
- Habitat in eight slacks has been diversified by the excavation of scrapes, providing ideal conditions for a variety of water plants.
- Control of the invasive shrub Sea Buckthorn (*Hippophae rhamnoides*) by the local authority since the mid-1990s has reversed the trend towards domination of the slacks by scrub and has encouraged a greater diversity of low-growing plants, including many dune-slack specialists.

Source: Smith, P.H. (2006). Changes in the floristic composition of sand-dune slacks over a twenty-year period. *Watsonia* **26**: 41-49.