



UK Biodiversity Action Plan Priority Habitat Descriptions

Coastal Sand Dunes

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The definition of this habitat remains unchanged from the pre-existing Habitat Action Plan (<http://tna.europarchive.org/20110303145238/http://www.ukbap.org.uk/UKPlans.aspx?ID=28>), a summary of which appears below.

Coastal sand dunes develop where there is an adequate supply of sand (sediment within the size range 0.2mm to 2.0mm) in the intertidal zone and where onshore winds are prevalent. The critical factor is the presence of a sufficiently large beach plain whose surface dries out between high tides. The dry sand is then blown landwards and deposited above high water mark, where it is trapped by specialised dune-building grasses which grow up through successive layers of deposited sand.

Sand dunes form in relatively exposed locations, and in a number of physiographic situations. The most common are bay dunes, where a limited sand supply is trapped between two headlands; spit dunes, which form as sandy promontories at the mouths of estuaries; and hindshore dunes, which occur in the most exposed locations where large quantities of sand are driven some distance inland, over a low-lying hinterland. This last type forms the largest dune systems in the UK. Less common types are: ness dunes, which build out from the coast; dunes on offshore islands, which are often superimposed on a base of other material such as shingle; climbing dunes where sand is blown up on to high ground adjacent to the beach; and tombolos, where a neck of sand is deposited between two islands or between a promontory and an island.

Sand dune vegetation forms a number of zones, which are related to the time elapsed since the sand was deposited, the degree of stability which it has attained, and the local hydrological conditions. Embryonic and mobile dunes occur mainly on the seaward side of a dune system where sand deposition is occurring and occasionally further inland in blow-outs. They support very few plant species, the most characteristic being marram grass *Ammophila arenaria*. Semi-fixed dunes occur where the rate of sand accretion has slowed but the surface is still predominantly bare sand; marram is still common but there is an increasing number of other species. Fixed dune grassland forms largely closed swards where accretion is no longer significant, the surface is stabilised and some soil development has taken place. Calcareous fixed dunes support a particularly wide range of plant species. On dunes which have become acidified by leaching, acid dune grassland or dune heaths develop. Dune heaths are usually dominated by heather *Calluna vulgaris*. Acidic dunes which are heavily grazed by rabbits may support lichen communities. Dune slack vegetation occurs in wet depressions between dune ridges; it is often characterised by creeping willow *Salix repens* sap. *argentea* and a number of mosses. Fixed dunes and dune heath are particularly threatened habitats and are regarded as priorities under the EC Habitats Directive.

The fixed dune communities mentioned above are, or have been, maintained by grazing, whether by domestic stock or by rabbits. In their absence, the succession proceeds to rough grass and scrub. Dune scrub can include several species but only one of them, sea buckthorn *Hippophaë rhamnoides*, is largely confined to dunes; it is native to eastern England and south-east Scotland and has been widely introduced elsewhere, where its very invasive nature can cause problems. Wetter parts of dune systems may become colonised by willows *Salix* spp., birches *Betula* spp. or alder *Alnus glutinosa*.

Sand dune communities vary geographically: lyme grass *Leymus arenarius* is increasingly common in northern Britain, growing alongside marram grass in mobile dunes; wild thyme *Thymus polytrichus* is characteristic of south-west England; and common juniper *Juniperus communis* occurs on dunes only in two locations, both in Scotland.

Dune grassland and dune slacks, especially on the more calcareous systems, support a wide variety of colourful flowering plants, including a number of species of orchid. Sand dune systems are also very rich in invertebrates, including butterflies, moths and burrowing bees and wasps.

The Sand Dune Survey of Great Britain (1993–1995) gives the total area of sand dunes as 11,897ha in England and 8,101ha in Wales. The ongoing Sand Dune Vegetation Survey of Scotland indicates that there may be as much as 48,000ha of dune and machair in Scotland, of which 33,000ha is dune. There are approximately 3,000ha of dunes in Northern Ireland. Major dune systems are widely distributed within the UK, being found on all English coasts except the English Channel (other than Sandwich Bay) and the Thames Estuary. They occur on the north and south coasts of Wales and in the northern part of Cardigan Bay. In Scotland dunes are found on all coasts but are less frequent in the north-west and in Shetland; they are particularly extensive in the Western Isles and Inner Hebrides where they are associated with machair. In Northern Ireland the largest dune systems are located along the north and south-east coasts.