How are sand dunes formed?

Nature's process of building a sand dune is called succession. Sand dunes have a predictable lifecycle, with young and mobile dunes forming at the beach and old, stable dunes pushed further inland. Waves push sand up onto the beach, then the wind picks it up and moves it around the coastline. If there are any obstacles on the beach, the wind slows as it reaches them, dropping the sand particles. Larger sand grains are dropped in front of or pushed up it, while smaller grains are often deposited behind it. As this process continues, ridges of sand build up and start to form a sand dune. The stronger the wind, the higher the dunes! As the wind is always changing, dunes are also always changing, growing and shifting...

The lifecycle of a sand dune

Sand dunes are listed as the habitat most at risk in Europe.

Since 1900, the UK's sand dunes have declined by a third, and almost two-thirds in Wales.

The largest sand dune system in England is on the Sefton Coast, and is over twelve miles long.

The oldest dunes at Sandscale Haws are around 400 years old.

Why are sand dunes important?

Sand dunes play a huge role in coastal protection. By building up higher and wider, large sand dunes can shelter the inland habitats from the sea, from coastal flooding and from the worst of the winds during storms.

They also help stop or slow beach erosion; when sand is deposited in the dunes faster than it is washed away from the beach, it is 'stored' and can be a source of sand to help maintain the beach in the future. Healthy dunes also provide habitats for a wealth of rare, specialised and fascinating wildlife, like toads, lizards, butterflies and tiny orchids, which need the shifting sand or the sanctuaries of the dune slacks to survive!

What lives in sand dunes?

Sand dunes might sometimes look a bit bare, but there's plenty of life in even the most exposed areas of sand dunes!

Lovers of the bare sand include the sand lizard, who sunbathe in warm weather and hide in sandy burrows at night, and the beautiful northern dune tiger beetle who need sand to protect their larvae.

There's plenty hiding in the waters of the dune slacks, too. Natterjack toads will mate and leave their tadpoles to grow in slack ponds, joined by many different species of insect larvae and water-dwelling bugs.

What you might see in the dunes changes with the seasons; hundreds of wildflowers can carpet dry slacks during the spring, butterflies flit across areas of bare dune and low scrub in the summer, and grey seal pups are best spotted in the winter.

Sand dune wildlife

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