

SAND DUNES - CONSERVATION AND MANAGEMENT

MEETING THE CHALLENGE

Sand dunes are:

- Excellent natural protection for the land
- A great recreational and educational area
- A specialised wildlife habitat

But they are greatly threatened, and can themselves threaten coastal development.

This Worksheet uses two case studies, one from South East England and one from North France, to illustrate the range of management problems that arise in dune areas.

CASE STUDY 1: CAMBER SANDS, EAST SUSSEX

Visit <http://www.ryebay.demon.co.uk/cambermanagementplan.html>

This website provides a detailed account of the management plan for the dunes at Camber.

Picture: Rendel Williams



Picture: Rye Bay Countryside Office



Camber dunes and beach in East Sussex were a magnet for holiday-makers in the 1930s and today attract as many as 25,000 visitors a day in the summer.

The dunes at Camber rise to about 20 metres high, and are an important protection to Camber Village and low-lying Romney Marsh, just inland. There is no sea wall here so coastal protection relies entirely on the dunes. The dunes are gradually building up at the moment, and it has been calculated that over 7500 cu metres of sand are deposited here every year, from the sandy beach that can be as much as 1 km wide at very low tides.



There are six main issues associated with the dunes.

- 1) Rising sea levels and more severe storms in future make it possible that the dunes will be eroded by the sea, threatening the low lying ground inland.
- 2) However, at the moment there is a problem of sand blowing over the top of the dunes into the village.
- 3) Tourism. This is an attractive recreational area and there is a lot of tourist accommodation, including a holiday camp and caravan sites. Camber is visited by day trippers from London and other parts of South East England. On hot summer weekends up to 25,000 people may cross the dunes to reach the wide sandy beach beyond, which is considered one of the finest in the South East. Trampling causes serious erosion to paths and dunes.
- 4) Blow outs can occur during major storms, as paths through the dunes are widened by wind scour.
- 5) The water table is falling because of increased demand for domestic water supply, and because of hotter drier summers. This causes increased problems for the survival of the vegetation on the dunes and especially in the dune slacks.
- 6) In addition there is a threat to the biodiversity of the ecosystem caused by the very invasive Sea Buckthorn, which is out-competing other plants.

On a separate sheet of paper:

- a) Suggest two methods to prevent the sea encroaching on the dunes. Hint: old Christmas trees can come in very useful!
- b) How would your suggestions solve the problem of sand blowing all over the village?
- c) Suggest two ways of managing tourist access to the dunes.
- d) How could you improve tourist understanding of the importance of the dune ecosystem and its fragility?
- e) Why might it be difficult to control the spread of Sea-buckthorn on the dunes. (Hint: think about its root system).
- f) If the Sea-buckthorn was cut down, how could the clippings be used to help in the management of the dunes?

DUNES AT RISK PUT COASTS AT RISK

It is all a question of balance. Sometimes there is too much sand and sometimes much too little.



CASE STUDY 2: WISSANT'S BATTLE WITH SAND AND SEA

Wissant is a small holiday resort between Calais and Boulogne in Northern France, flanked on either side by dunes. Visit www.geog.sussex.ac.uk/BAR for additional information.



Postcard mailed in 1910

Aerial view, early 1950s, showing high beach levels and recent dune development at the back of the beach, now destroyed by sea.



TOO MUCH SAND: DUNES ON THE MOVE

At times, major problems have been caused by too much sand. Blown sand has accumulated in the dunes, causing them to move landward and engulf the village, changing the course of its history.

In the Middle Ages, Wissant was a thriving port but, in the fourteenth century, encroaching sand dunes blocked the natural harbour and finally stopped any trading.

During the eighteenth century many houses in the village had to be abandoned because of advancing sand. 1738 was a particularly bad year when 43 houses were covered in a single night's windstorm. By 1777 the whole village had to be relocated.





Picture credits: Paxion, K & Cohen, O., 2002. La baie de Wissant, cent ans d'évolution en images, Mammemonde, 67, 3, 24-27.

Postcard, ca. 1958. Note the high beach levels.



Very low beach levels in 2000. A concrete sea wall has since been built.



Picture: Olivier Cohen

Dune d'Amont, 2000. New foredunes with Marram have developed in front of older dunes in Sea-buckthorn.

More recently in 1984 strong winds caused the dunes to advance again, threatening the houses shown in the picture.



Picture: Port Autonome de Dunkerque



The "Sahara Dune" advancing on a house.

g) What might be done to prevent the dunes advancing again?

TOO LITTLE SAND. DUNES IN RETREAT

During the last two centuries it has been mainly the sea that menaced the village. This was because the sea has been advancing on the dunes, which cannot build up fast enough to keep the sea out.

It seems that erosion of the sea floor has reduced the width of the beaches and thus reduced the amount of sand available on the beaches to be picked up by the wind to form dunes. Major storms cause blow outs, destroying the dunes. In one storm, which occurred at a period of high spring tides, the shore retreated by 17 metres.

To the south of the village, in the Dune d'Aval, the sea is advancing on the dunes at an average rate of 5 m per year. High tides now engulf the wartime bunkers that the German army built in the dunes.

In front of the village the beach is being seriously lowered, causing major problems for this popular holiday resort.

- h) On a separate sheet of paper, suggest what could be done to stabilise the coastline
- in front of the dunes, and
 - in front of the village.

