Internet research: Investigating wildlife on coastal sand dunes

Sand dunes are hostile environments for plants and animals:

- Coastal sand dunes are exposed to strong winds
- Sandy soils are dry because they are very free draining
- Salty coastal conditions are hostile for many plants, causing them to lose moisture
- Freshwater is often deep below the surface
- People can trample and harm young plants

Despite these hostile conditions, coastal sand dunes are home to a wide variety of plants, insects, birds, and animals. In the following activities, you will use internet research to investigate wildlife and biodiversity on sand dunes.

Investigating marram grass

Marram grass is one of the most important and widespread plants found on sand dunes. If you have visited sand dunes, you will certainly have seen it!

Marram grass is amazingly well adapted to survive -and, indeed thrive – in hostile sand dune environments. Use internet research to find out more about marram grass by answering the following questions:

1. Using a labelled photo or sketch, **describe the characteristic features of marram grass** (height, shape of leaves, roots).
2. **How has marram grass been used by people**, for example, in craft and construction?
3. **How is marram grass well adapted** to cope with the hostile conditions associated with coastal sand dunes?
4. **Why** is marram grass often used to stabilise and regenerate sand dunes?

Here are some useful websites to start your investigation:

- https://dynamicdunescapes.co.uk/species/marram-grass/
- https://naturalresources.wales/media/r4tawyj5/information-note-marram.pdf
- https://www.talkinggrass.co.uk/2012/09/07/marram-grass-designed-thrive-tough-conditions/



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Investigating sand dune biodiversity

Despite the hostile conditions – lack of water, strong winds and salt – sand dunes can have a rich biodiversity of plants, insects, birds and animals. Use the internet to find out more about sand dune ecosystems.

1. **Identify one common plant** found on coastal sand dunes (other than marram grass). Using a labelled photo or sketch, describe their characteristic features. How are they well adapted to living on sand dunes?
2. Plants provide food and shelter for many insects. The Silver-Studded Blue Butterfly is a common species found on Cornwall's sand dunes. **Find out more about this butterfly and why it at attracted to Cornwall's sand dunes.**
3. Access the Dynamic Dunes website. Scroll down the page to find information about a range of wildlife found on sand dunes. **Choose a species that is of interest to you and write a short, illustrated report describing why it is found on sand dunes.**

Useful links to help with your investigation:

- https://dynamicdunescapes.co.uk/about-sand-dunes/dune-wildlife/
- https://dynamicdunescapes.co.uk/species/silver-studded-blue-butterfly/



Silver-Studded Blue Butterfly

Investigating invasive species

1. Access the internet to define **what is an invasive species?**
2. **Find out about Japanese rose.** What does the plant look like and why does it thrive on coastal sand dunes? Why is it an example of an invasive species?
3. **What can be done to address the problem of Japanese rose?**

A useful website to find out more about Japanese rose:

- https://dynamicdunescapes.co.uk/2022/12/rosa-rugosa-removal-sefton-coast/

Japanese rose



Student worksheet: introducing sand dunes

1. The photo below shows sand dunes at Gwithian Towans on the coast of North Cornwall. Add labels to describe the characteristics of the sand dunes. Use the term marram grass.



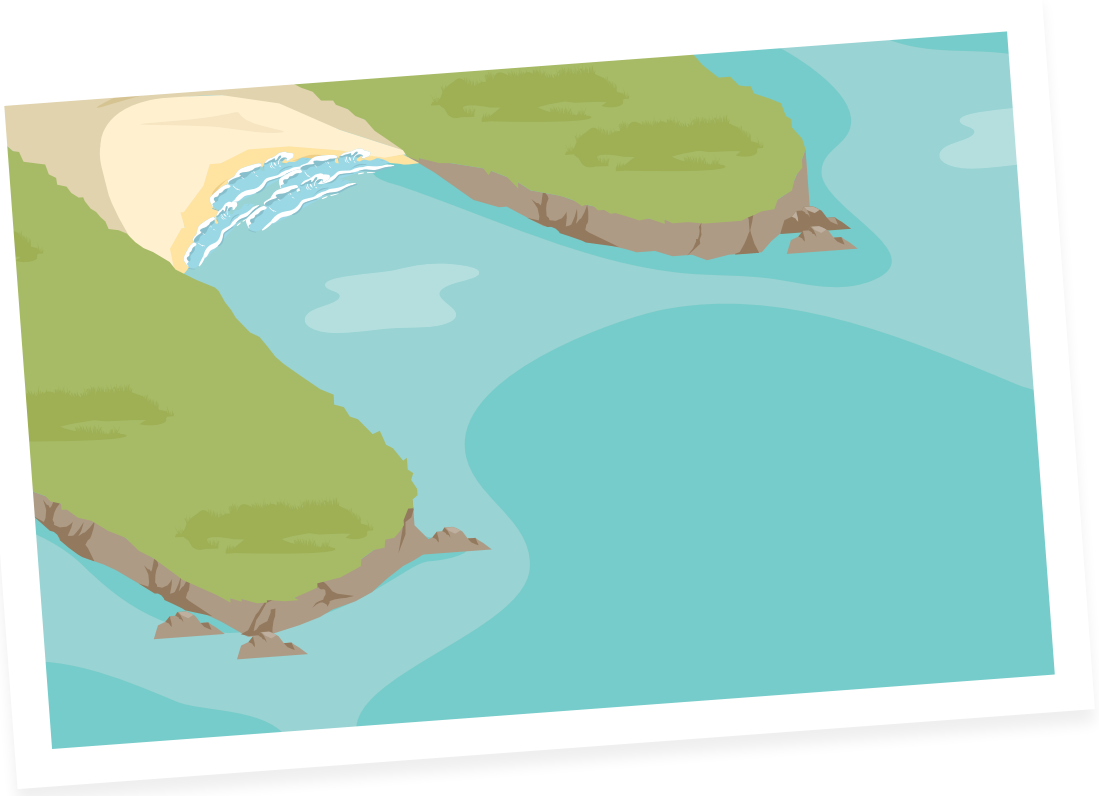
Student worksheet: introducing sand dunes

2. Sand dunes are commonly found in sheltered bays between two headlands.

a. Write labels to identify the following landforms: headland, bay, cliff, beach

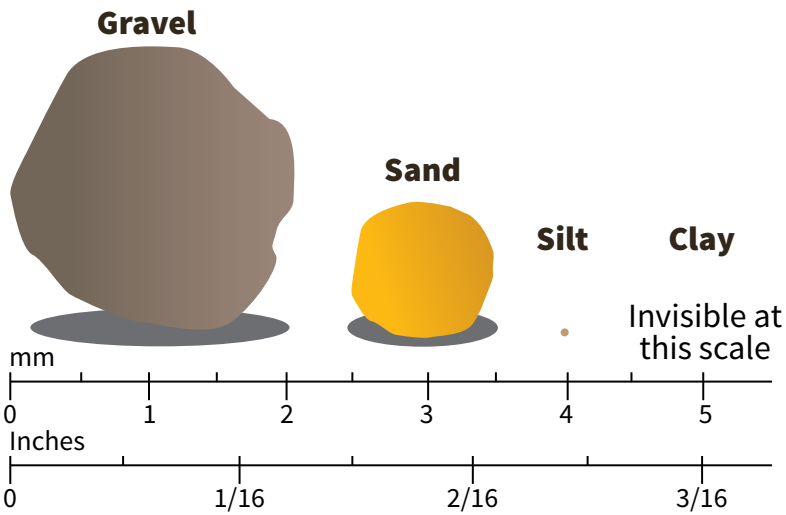
b. Locate and label where you would expect to find sand dunes.

c. Suggest why you would not expect to find sand dunes in front of headlands.



Student worksheet: introducing sand dunes

3. The diagram below shows particle size of different sediments.



a. Measure the diameter of gravel:

_____ mm.

b. Measure the diameter of sand:

_____ mm.

c. Sand particles carried by the wind become rounded. Can you suggest how this happens?
Clue: investigate the process of 'attrition'.

Student worksheet: introducing sand dunes

4. **Sand dunes form over hundreds of years. To form, three important conditions are required:**

- Large supply of sand deposited at the coast, for example, in a sheltered bay
- Broad area of inter-tidal sand that dries out at low tide
- Frequent onshore winds to blow sand above the high tide line

Add labels to the photo below to show how these conditions operate.



Penhale beach, north Cornwall.
Photo courtesy of CoastSnap participant.

Student worksheet: introducing sand dunes

5. **Complete the flow diagram below to describe the 5 stages in sand dune formation.** The first one has been done for you. Add simple illustrations alongside the text boxes.

Obstacles such as driftwood are deposited on the beach

6. **Sand dunes and beaches are very popular attractions for people.**

a. In the box below, make a list of the opportunities for leisure and recreation on sand dunes and beaches.

b. How can people cause environmental issues on sand dunes and beaches?