

## Activity Title:

## Importance of sand dunes

## Focusing questions

Why are sand dunes important?

What important functions do sand dunes perform?

## Resources required

- Part 2 – DVD / Video
- Worksheet – The importance of sand dunes – page 148
- Pens
- Large sheets of paper and coloured pens OR student exercise books

## Prior learning

1c Beach diagram

1f Beach Vocabulary

## Method

- 1 The objective of this activity is to investigate why sand dunes are important and to begin exploring the functions that dunes perform.
- 2 Watch Part 2 of the DVD/Video (from 1:50s to 7:11s), project or hand out worksheets **The importance of sand dunes** and get students to fill in the gaps while watching the DVD/Video a second time.
- 3 Go through the answers (provided) for the worksheet.
- 4 Break into small groups to create a mind map of the different roles played by sand dunes. Consider: weather, natural disasters, people, human activities, animals and plants, buildings... (For example: sand dunes protect houses behind the dunes, act as a habitat for animals, plants and insects, and as a buffer protecting from tsunamis).
- 5 Each small group shares their mind map with the rest of the class. On a large piece of paper or the board record all the functions and roles that have been thought of collectively by students.
- 6 Discuss:
  - What would the beach be like if there were no sand dunes?
  - Are dunes important? And if so summarise why sand dunes are important?

## Possible next steps

- 4b Dune formation – an activity exploring in more detail the formation of dunes.

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## Environmental Education Aspect:

About the environment

## Environmental Education Concept:

- Interdependence
- Sustainability

## Curriculum Links:

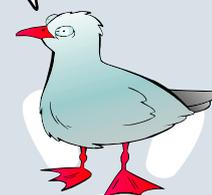
- English
- Social Science
- Science

## Suggested Curriculum Level:

Any

## SUSTAINABILITY TIP!

Project a digital image of the worksheet and save paper.



## Worksheet

# The importance of sand dunes

Watch the DVD/Video and then complete the paragraph by filling in the missing words.

When the wave breaks it surges up the beach in a foaming turbulent mass, carrying sand particles with it which are deposited or dropped on the beach. This is called the \_\_\_\_\_.

When the \_\_\_\_\_ drains back down the beach it is called the \_\_\_\_\_. Some waves have a strong \_\_\_\_\_ and weak backwash. These are called \_\_\_\_\_. They are flatter and break gently which means more sand is deposited on to the beach. These waves occur during periods of calm weather.

Other waves have the opposite effect – a weak swash and strong backwash. These waves are called \_\_\_\_\_. They are steeper and break more forcefully resulting in sand being carried away and therefore eroding the beach. This type of wave occurs in stormy weather.

Depending on the weather, beaches receive both \_\_\_\_\_ and \_\_\_\_\_ waves. The beach will either be built up or eroded depending on what kind of wave is most common.

### Answer the following questions:

- 1 What are the three roles of the sand dunes?
- 2 What would happen if we had no sand dunes?
- 3 What happens to the sand that is eroded off the sand dunes by the destructive waves?
- 4 How is sand returned to the sand dunes?
- 5 Describe the important role that plants play in the dune environment.

# The importance of sand dunes

Watch the DVD/Video and then complete the paragraph by filling in the missing words.

When the wave breaks it surges up the beach in a foaming turbulent mass, carrying sand particles with it which are deposited or dropped on the beach. This is called the **SWASH**.

When the **SWASH** drains back down the beach it is called the **BACKWASH**.

Some waves have a strong **SWASH** and a weak backwash. These are called **CONSTRUCTIVE WAVES**. They are flatter and break gently which means more sand is deposited on the beach. These waves occur during periods of calm weather. Other waves have the opposite effect – a weak swash and strong backwash. These waves are called **DESTRUCTIVE WAVES**.

They are steeper and break more forcefully resulting in sand being carried away and therefore eroding the beach. This type of wave occurs in stormy weather. Depending on the weather, beaches receive both **CONSTRUCTIVE** and **DESTRUCTIVE** waves. The beach will either be built up or eroded depending on what kind of wave is most common.

Answer the following questions:

- 1 What are the three roles of sand dunes?**  
(1) RESERVOIR OF SAND FOR STORMS  
(2) HABITAT FOR PLANTS, ANIMALS AND INSECTS  
(3) PROTECTION OF AREA IMMEDIATELY BEHIND DUNES
- 2 What would happen if we had no sand dunes?**  
WAVES WOULD TRAVEL FURTHER INLAND AND THREATEN WHAT IS ON THE COAST.
- 3 What happens to the sand that is eroded off the sand dunes by the destructive waves?**  
CARRIED OFFSHORE TO FORM AN OFFSHORE BAR.
- 4 How is sand returned to the sand dunes?**  
ONSHORE WINDS AND CONSTRUCTIVE WAVES.
- 5 Describe the important role that plants play in the dune environment.**  
PLANTS TRAP WINDBLOWN SAND AND HELP BUILD UP THE RESERVOIR OF SAND.