



## **SAND DUNE WORKSHEET 4 SUCCESSION ON THE DUNES**

### **INTRODUCTION**

General Features of a healthy dune system

Our coastline is constantly under the influence of high temperatures, strong winds and stormy seas. These physical factors regularly create and destroy sand dunes. The sand dunes on the coast are a buffer zone between the land and the sea and serve to protect the delicate land plants from the salt air and wind coming from the ocean.

The sand dune plant community consists of various species, each occurring within a certain zone in the dune system. Each zone is subject to a specific set of conditions according to how close it is to the ocean, and the plants serve a certain function in their zone. The vegetation of the dune system is generally sparse and poor in species which is characteristic of all sand dunes that are open to the ocean.

If a dune system is not healthy there may be one or more zones absent and some of the buffering effect will be lost for the nearby land vegetation. Unhealthy dunes are also less likely to be able to withstand strong winds and stormy seas and as a consequence the beach can disappear regularly from this type of environment.



## AIMS

- Identify and give the common names of the native plants found on the sand dunes
- Discuss the importance of plants, especially the natives, to the coastal dune system
- Identify the physical factors effecting the growth of the plants
- Discuss the process of dune stabilization and succession on the dunes

## EQUIPMENT

- Sunscreen and Hat
- Mosquito repellent
- Water Bottle
- Clipboard folder
- Notepad, pen and pencil
- 50 metre tape measure
- 10 metre string (marked at 1m intervals)
- Books to help identify native plant species

## PROCEDURE

In order to study succession on the dunes it is necessary to find an established dune with a vegetated fore dune, mid dune and hind dune. You should notice that the species that dominate the newly formed fore dunes are gradually replaced by other species as you move away from the ocean. The first species to colonise bare dunes are called **pioneer species**. These are gradually replaced as conditions change and the final layer of vegetation is referred to as the **climax community**.

Observe carefully the changes in vegetation and answer the questions that follow. At the end of this study you should be able to describe the gradual changes in vegetation from **pioneer species** to **climax community**. In addition, it is important that you can suggest valid reasons for the vegetation changes.



**Answer the following questions after you have carefully noted the vegetation changes from fore dune to hind dune.**

1. Sketch the characteristic shape of the sand dune.

2. Name the first colonists on the sand dunes and sketch a picture of the plant.

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3. What features of the spinifex plant make it suitable for colonisation?

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4. Which plants follow the grasses onto stabilised sand?

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5. Water drains away quickly through the porous sand so that it is generally in short supply. Succulent plants can store water. How does spinifex overcome the water problem?

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6. What does each successive invading plant do to remove the previous colonist from the area?

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7. Tea tree becomes a dominant species in the more protected dunes. Herbs and creepers have soft leaves. Why would these be unsuited to the foredune?

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8. Why are most fore dunes covered by low shrubs rather than by forest or woodland?

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9. Humus increases water retention of the soil. What other factors differ between the forest and the fore dunes?

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10. What is the name given to the community at the end point of succession? How is this community different from the communities on the front dunes?

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11. Is there an end point to succession, or if left alone will communities continue to change?

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