

NAME

STUDENT ACTIVITY – YEARS FOUR TO FIVE

ACTIVITY 1: HOW DO WAVES ERODE A BEACH?

Ocean waves can build up sand on a beach but they can also take it away. Storms which have large waves often dig out the sand dunes, this is called erosion. During calmer conditions the sand dunes and beach are built up. This is a much slower process called accretion.

Aim: To investigate how waves change the beach.

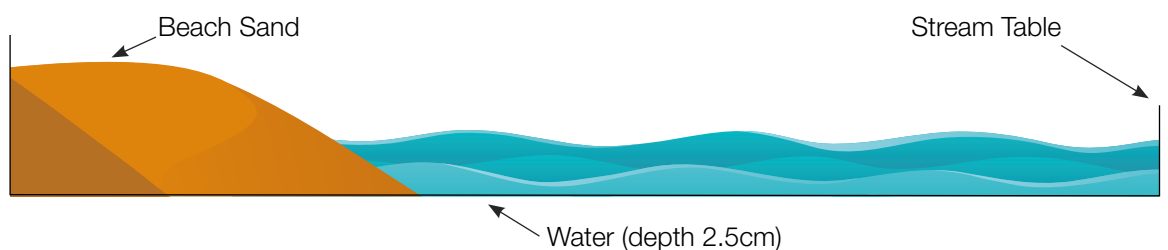
What I already know about waves and erosion:

Prediction: read the method and then make a prediction about what you think will happen to the beach with the different waves.

You will need:

- stream table (or long rectangular tray)
- wooden block (20cm x 10cm) or 30cm long ruler (a wide ruler works best)
- sand (needs to be free of any leaf litter)
- ruler
- timer (with seconds)

Diagram:



Method:

1. Fill the stream table with water to a depth of 2.5cm.
2. Add sand to one end of the stream table to make a beach.
3. Using a pencil, draw the profile of this beach - name it Beach 1 - calm.
4. Place the wooden block (or ruler) at the opposite end of the stream table to the beach.
5. Slowly move the block back and forth to create small waves. Do this for three minutes. The waves should only move the sand a little bit.
6. Using a pencil, draw the profile of this beach - name it Beach 2 - small waves.
7. Rebuild the beach.
8. Move the block back and forth rapidly to create large (storm) waves. Do this for three minutes.
9. Using a pencil, draw a profile of this beach - name it Beach 3 - storm waves.

Results:

Draw your beach profiles here.

Beach 1 – calm



Beach 2 – small waves

Beach 3 – storm waves

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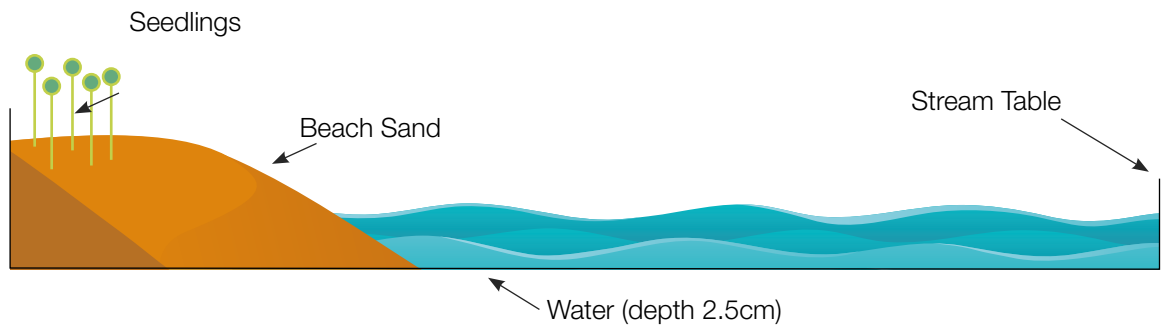
STUDENT ACTIVITY – YEARS FOUR TO FIVE

ACTIVITY 2 : HOW DO PLANTS HELP STOP EROSION?

You will need:

- stream table (or long rectangular tray)
- wooden block (20cm x 10cm) or 30cm long ruler (a wide ruler works best)
- sand (clean beach preferably)
- timer (with seconds)
- seedlings (to mimic beach plants)

Diagram:



Prediction: read the method and then make a prediction about what you think will happen to the planted beach with the different waves.

Method:

1. Fill the stream table with water to a depth of 2.5cm.
2. Add sand to one end of the stream table to make a beach.
3. Plant seedlings across the top of the "sand dune". Leave a space of 3cm around each seedling.
4. Using a pencil, draw the profile of this beach - name it Beach 1 - calm.
5. Place the wooden block (or ruler) at the opposite end of the stream table to the beach.
6. Slowly move the block back and forth to create small waves. Do this for three minutes. The waves should only move the sand a little bit.
7. Using a pencil, draw the profile of this beach - name it Beach 2 - small waves.
8. Rebuild the beach.
9. Move the block back and forth rapidly to create large (storm) waves. Do this for three minutes.
10. Using a pencil, draw a profile of this beach – name it Beach 3 – storm waves.

Results:

Draw your beach profiles here.

Beach 1 with seedlings – calm

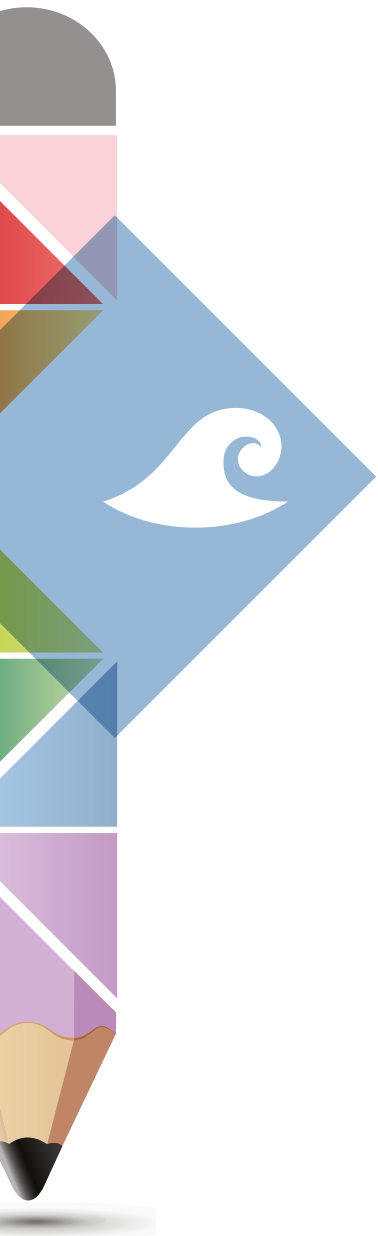


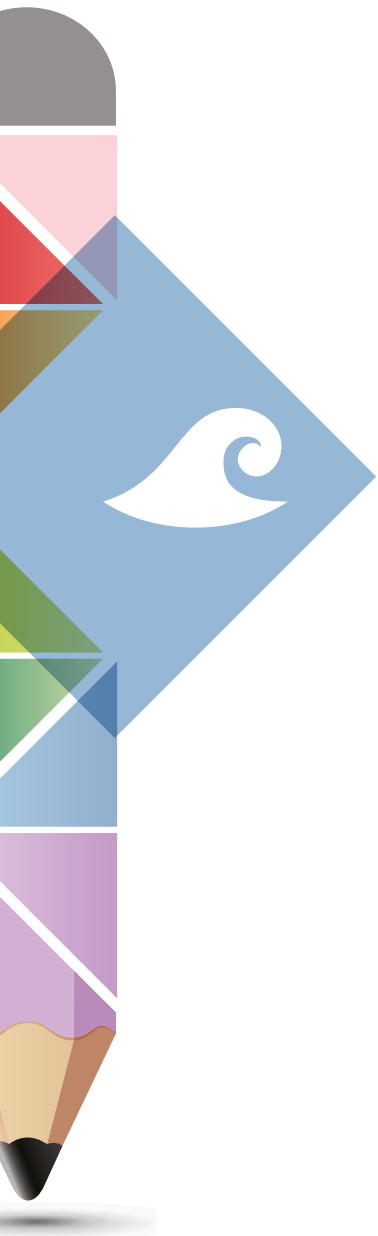
Beach 2 with seedlings – gentle waves

Beach 3 with seedlings – storm waves

Discussion: Complete the table below by writing a description for each type of beach.

Type of waves	Beach Observations	
	Beach with no seedlings	Beach with seedlings
1. calm		
2. gentle		
3. stormy		





Questions:

1. Did your prediction match your results? _____
2. Which beach had the least amount of erosion? _____
3. Why do you think it had the least amount of erosion?

4. Which beach had the most amount of erosion? _____
5. Why do you think it had the most amount of erosion? _____

6. Did the seedlings stop the beach from being eroded? _____
7. How did the plants help to stop the erosion? _____

Evaluation:

8. Did you have any problems using the equipment? _____
9. If you did, how could you conduct the investigation better next time? _____

Conclusion: Write a paragraph that summarises the results.
