



Sand dune vegetation sampling

Equipment and resources

- 2 bamboo sticks or measuring poles
- Measuring tapes
- Clipboards
- Pens or pencils
- Quadrats
- Identification keys or apps
- Copies of our Information note - Soil types
- Soil pH testing kits

Task 1: Question - How and why do plant species vary across a dune system?

What is your hypothesis?	
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Task 2: Transect details

Working as a group, start from the strandline, the mark left by a high tide that represents the maximum rise of a body of water over land. It's usually easy to recognise as seaweed and other debris are deposited at this point along the beach. Insert a bamboo stick into the sand at the start of the transect and mark out a straight line up into the dunes, set a measuring tape down along the line of the transect. Insert another bamboo stick into the ground where your transect ends. The vegetation should be sampled at intervals along the line by using a quadrat. It may not be possible to survey the whole of the dune system.

Decide if your group are going to take samples at random points along the transect or systematic sample locations with a set distance between each quadrat along the line of your transect.

Sand dune location	
Date	
Describe the weather conditions	
Total length of transect in meters?	
Method of sampling - random or systematic? If systematic - frequency of quadrats? Every 5 metres? 10? 20? Explain why you have chosen this sampling method.	

Task 3: Sand dune survey

Place your quadrat in the location you are sampling and take a grid reference or what3words reading for each sample location. What percentage of bare sand is there at each sample location? Using an identification key or app, identify and estimate the percentage cover of each species present. Note your findings on this worksheet along with any other observations that you may consider important at each sample location.

At each quadrat site, swap roles within the group so that everyone has a turn at recording, measuring, observing, and identifying.

Quadrat number	1								
Grid reference / what3words	kebab. wet. fallen								
Dune habitat? Mobile, fixed dunes or dune slack?	Mobile dune								
% Bare sand	95								
% vegetation ground cover per species									
Quadrat number →	1								
Species ↓	Sea rocket 3%								
	Sea sandwort 2%								

% vegetation ground cover per species (continued...)

Quadrat number →	1								
Species (continued...) ↓									
Plant biodiversity score Count the number of different plant species per quadrat	2								
Distance from strandline (metres)	5								
Soil present? If yes - what type?	No soil present								
Soil pH if soil present?	No soil present								



Quadrat number → (continued...)	1								
Notes									



Task 4: Calculate the average % of vegetation cover of each species by dune habitat

Once you have completed the survey of your transect line, calculate the average % of vegetation cover of each species by dune habitat.

Species	Mobile dune	Fixed dune	Dune slack



Task 5: Give an estimate of the % of bare sand dune by dune habitat

Mobile dune	Fixed dune	Dune slack

Task 6: Calculate the richness of plant biodiversity score according to dune habitat type

	Example	Mobile dune	Fixed dune	Dune slack
Richness of plant biodiversity? Number of different plant species per quadrat	Mobile dune = 2, 1, and 4			
Number of quadrats sampled per habitat type?	3			
Average richness of plant biodiversity by habitat type?	$2+1+4 / 3 = 2.3$ plants			



Task 7: Forming conclusions

Were there any anomalies in your findings? Were there any species that seemed out of place or were there more, or less, than expected?

Which dune habitat had the greatest plant biodiversity? Why is this?

Do your results confirm your hypothesis? Explain your answer.

Taking all your results into account, what conclusions can you make about the dune ecosystem from the information and data you have gathered?

Task 8: Evaluation

Fieldwork is not an exact science and there are many factors that can have an influence on your results and therefore, your conclusions. Carrying out some evaluation is therefore key to recognise if, and how, these factors may have influenced the data you have collected.

Consider and explain:

What worked well?



What didn't work well?

Have the strengths/weaknesses of your investigation affected your data or influenced your conclusions?
Were there any anomalies in your data?

Is the data you have gathered accurate and reliable? Was bias introduced in any way? If so, what, and how?

What would you do differently next time?

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