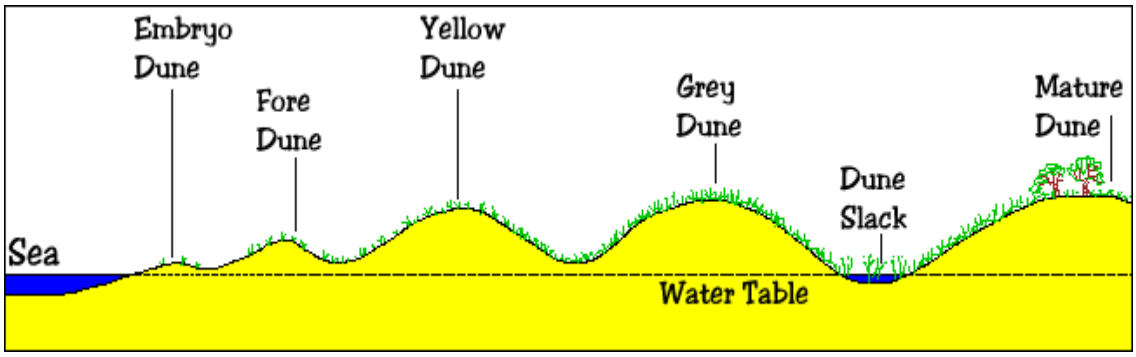
GEOGRAPHY FIELDWORK

A SAND DUNE SUCCESSION (PSAMMOSERE)

SAND DUNE STRUCTURE



The sand dunes show a typical **transect** with low embryo dunes near the shoreline and much taller mature dunes several hundred metres back from the shore. As you follow the transect from the beach, the dunes get older and the vegetation changes, gradually covering more and more of the bare sand.

Adaptation to the sand dune environment

1. It is **often dry.** Sand, especially when, as here, it lacks organic matter, has very low water retention properties, and so, as soon as it stops raining, it rapidly dries out .
2. It is sometimes **affected by seawater**, at least at high tide when the sea is rough. The salts in the seawater cause a desiccating effect as a result of osmosis .
3. It has an **unstable surface** which makes seedling establishment difficult.
4. It is **nutrient deficient** because it lacks the organic matter which is present in most soils and provides a pool of nutrients that is continually liberated by micro-organisms. It also has low cation exchange capacity (the ability to retain cations) which, in most soils is provided by organic matter and clay.

Change and succession

Succession in the psammosere might go as follows: Sand twitch (Agropyron junceiforme) thrives under the initial conditions of the psammosere. As it grows, its underground rhizomes stabilize the sand dune reducing ground shift and abrasion.

Marram grass (Ammophila arenaria) can now grow more easily although it has also been know to be a pioneer plant. It stabilizes the dune more with its rhizomes.

Both species contribute organic plant matter increasing soil quality. Later grasses such as lyme grass (Elymus arenarius) come in at this point further stabilizing and improving the soil. Eventually, the land is built up and away from the sea. Protected from the higher winds and sand abrasion at the coast and containing more organic matter, the land can now support more pasture type grasses and wildflowers. Eventually, shrubs and trees will emerge.

FIELDWORK ACTIVITIES

1. Decide how far along the beach your transect will be by using a random number table to tell you how many metres (strides) from the starting place you will begin.
2. Use the same table to generate 10 distances at which to collect data along each transect. This will be the distance from the strand line, a line of deposition of sea weed, driftwood etc.
3. Complete the table below for the transect.
4. Starting at the strand line use the pantometer to record the angle of slope and whether it is up or down for each 2 metre section across your transect to the back of the dune belt.

Sampling Site	1	2	3	4	5	6	7	8	9	10
Dist. in m from strand line										
Soil Temp										
Soil Colour										
PH value										
Wind speed m/s 2m										
1m										
Surface										
Max plant height m										
Quadrat analysis										
% ground cover										
% Marram grass										
% Sea couch										
%Lyme grass										
% Red fescue										
% Mosses										
% Willow herb										
% Others										
No. of species										

FIELDWORK DATA COLLECTION SHEET **SAND DUNES**
GROUP ..... TRANSECT .....

PANTOMETER MEASUREMENTS

A. START AT THE STRAND LINE
B. RECORD THE ANGLE IN DEGREES
C. INDICATE UP (+) OR DOWN (-)

Number	Angle	+ / -
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No	Angle	+ / -
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