**Investigating Ecosystems at the Local Scale:**

***How typical a psammosere are the dunes at Morfa Dinlle?***

**Methodology:**

This is a half-day exercise and requires investigation of different characteristics of the sand dunes at Morfa Dinlle so that a comparison with the ‘textbook’ description can be made. Reasons for any differences can then be sought in relation to site-specific conditions:

1. **Dune profile**

*Rationale:* This will enable a cross-section to be drawn to illustrate the dune ridges and trough in between. It could then be used as a ‘framework’ to present other characteristics of the succession with an aim to finding connections between them.

*Data types:* This will be quantitative and needs careful measurement in 2 dimensions.

*Equipment:* Continuous measurements need to be taken along a transect line through the dunes. There are two ways this can be done, but both require the same equipment: a clinometer, sighting poles and a 20m tape. Gradients can be taken at regular intervals, or between breaks of slope. In either case repeat readings are needed to improve accuracy, especially as angles could be small in some cases. Care is also needed to ensure sightings are made from/to the same height above the ground on the ranging poles. Notebook.

1. **Wind speeds along the profile**

*Rationale:* As the dunes have been formed by and shaped by the wind, this is an important piece of data that could help confirm similarities or offer reasons for differences.

*Data types:* This will be quantitative and needs careful measurement.

*Equipment:* Hand-held anemometer. Regular, consistent measurements are needed along the transect used above. Things to consider: where and how long to record the wind speed; what data to record (your anemometer has a number of settings); how to hold the anemometer – height above the ground, direction, where the holder stands… and how to achieve a consistent, repeatable position. Notebook.

1. **Characteristics of the succession: vegetation and soils**

*Rationale:* This is the core data for this investigation as it will enable you to describe the changes along the transect.

*Data types:* This will be quantitative but it would be useful to have some photographic evidence, too, especially as some data will be qualitative and potentially subjective. Plant identification can be difficult in the field, so photos can help.

*Equipment:* Ideally, soil samples would be collected and processed under controlled conditions in a lab, but in this exercise a field test kit will be used to assess pH. [Moisture and organic content can be measured in the lab, but not in the field]. Sampling at regular intervals along the same transect as above is required: vegetation cover and species diversity/identification (count or %?), soil pH and colour. Decisions need to be made about how frequently samples need to be taken, and how to collect the soil (from the surface or just below it?). Identification of spp can be very difficult (especially if you have not done it before!) as plants flower at different times, and in the harsh conditions of the dunes, many plants go dormant in the drier, summer months. It is often simpler to focus on a few spp that would be expected to be found here, and that characterise different ‘stages’ of the succession, e.g. the active, yellow dunes and the wasting/fixed, grey dunes. Camera/notebook.