



# Study of a Sand Flat Ecosystem

## (Distribution of animals)

### Background information:

Sand flat is a general description of a sheltered bay with gentle slope and weak wave action. The substratum is mainly composed of sand with different particle sizes and hence resulting in differences of interstitial spaces, water and nutrient content and thus animal species. In addition, the freshwater outflow at sand flat may favour the survival of some species. Sand flat is similar to other sea shores, from the terrestrial environment (back shore) to intertidal and even the submerged sub-tidal zones, marine organisms distribute unevenly at various positions depending on their ability to withstand dehydration. However, the zonation pattern is not so obvious as the rocky shore.

Sand flat has another characteristic that the animals are not only distribute on the substratum surface, but also living in the sand. These animals have to cope with lack of oxygen in the deeper area. Animals may show a vertical distribution within the sand.

### Task:

Design and implement a survey to find out the distribution of animals along the seashore line (if there is freshwater outflow, different sand composition etc. would be more suitable), from the backshore across the intertidal zone until reaching the water edge, from the surface to different depth (e.g. 0.5m depth). Propose a research topic and list out the research method. Write a full report based on your field investigation and data.

### Available equipment and material:

- |   |  |
|---|--|
| 1. Clipboard  | 2. Light meter   |
| 3. Digital thermohygrometer                         | 4. Soil thermometer  |
| 5. Digital anemometer                               | 6. Trowel  |
| 7. Forceps  | 8. Water sampling bottles  |
| 9. Transect (50 m)                                  | 10. Quadrat (0.5 m X 0.5 m)  |
| 11. Magnifying glasses                              | 12. Plastic bag  |
| 13. Abney Level                                     | 14. Refractometer (to be used in Lab.)                             |
| 15. Filter paper dried in oven (to be used in Lab.) | 16. pH meter (to be used in Lab.)                                  |
| 17. Dissecting microscope (to be used in Lab.)      | 18. Compound microscope and glass slides (to be used in Lab.)      |
| 19. Standard glass wares (to be used in Lab.)       | 20. Hong Kong Field Guides- Sandy Shore (Book)                     |
| 21. Hong Kong Coastal Plants (Book)                 | 22. Estuarine Organisms- mangrove, mudflat and seagrass bed (Book) |
| 23. Wildlife Pictorial Guide (Book)                 |  |

*Some items listed above may not be useful, students should decide what to be use. Additional equipment or material can be provided upon request, as long as the request item is available.*

### Procedure and time allocation:

1. Group discussion and formulation of investigation plan - 50 mins
2. Distribution of equipment - 10 mins
3. Field work - 90 mins
4. Laboratory work - 60 mins
5. Group discussion and interpretation of results - 90 mins
6. Write up the full report

