

## Practical Skills in Biology

1 or 2 Day Option

(choose two activities for 1 day option and four activities for 2 day option)



## Introduction to Ecology and Sampling Techniques

### Freshwater Ecology Investigations

Activity option 1: To investigate if there is a relationship between trophic level and type of pond habitat.

Activity option 2: To investigate if the abundance and size of freshwater shrimp in riffles and pools at Cuckoo Brook.

*Students will gain experience of:*

- stratified sampling (sweep or kick sampling technique)
- identifying species using a dichotomous key
- writing a risk assessment and collecting quantitative biotic and abiotic data in the field using a range of scientific equipment
- calculating chi-squared statistical test (and Simpson's Diversity if required – Activity 1 only) and interpreting the result
- evaluating data collection methods, assessing the limitations and suggesting improvements

### Plant species investigations in Epping Forest

Activity option 3: To investigate the effect of environmental factors on the distribution and abundance of plant species from grassland into woodland.

*Students will gain experience of:*

- option of planning investigation independently (to include research and referencing) between day 1 and 2 to meet CPAC requirement
- systematic sampling using a belt transect and a gridded quadrat
- identifying plant species
- writing a risk assessment and collecting quantitative biotic and abiotic data in the field using a range of scientific equipment
- calculating Spearman's Rank statistical test and interpreting the result

- evaluating data collection methods, assessing the limitations and suggesting improvements

Activity option 4: To investigate the height or leaf length of a named species in two contrasting areas.

*Students will gain experience of:*

- random sampling using an open quadrat
- collecting quantitative biotic data in the field using scientific equipment
- calculating Student's t-test statistical test and interpreting the result

### **Population size investigations**

Activity option 5: To investigate the population size of a mobile terrestrial species (woodlouse) using capture-mark-release-recapture.

*Students will gain experience of:*

- Carrying out the method and collecting quantitative data
- Considering the limitations of the study
- Calculating the Lincoln Index and interpreting the result



### **Specification links**

Carry out required practical 12: Investigation into the effect of a named environmental factor on the distribution of a given species

3.7.4. Populations in Ecosystems (including succession)

Common practical assessment criteria 1-5

Use of apparatus and techniques (a) and (k)

Range of practical skills