# Edexcel A Biology A-Level

## Core Practical 10

Carry out a study on the ecology of a habitat, such as using quadrats and transects to determine distribution and abundance of organisms, and measuring abiotic factors appropriate to the habitat.

The distribution of a species is determined by a range of different variables. These can be grouped into **abiotic (non-living)** and **biotic (living)** factors. Abiotic factors include **light intensity**, amount of **water and nutrients**, and **temperature**. Biotic variables include **competition for resources**, the number of **predators** and **disease**. Note: there are other ways of completing this practical than the method listed below. You might also have used quadrats and random sampling or measured other abiotic variables.

## Equipment

- Quadrat
- Transect (20m rope marked at 1m intervals)
- Clipboard
- Appropriate equipment to measure variable

## Method

1. Choose a site where there is an obvious gradient in an abiotic variable. Place the transect down. Select a species that changes in abundance along the gradient.
2. Place the quadrat at each of the marks on the transect, placing the **bottom left corner** on the mark every time.
3. Record the **percentage cover** for the chosen species. This can be done by recording how many of the quadrat's 100 squares contain the chosen species. A square should only be counted if **half or more** of it is covered.
4. At each coordinate, a measure of the **independent variable** should be taken. For example, if investigating **light intensity**, a **photometer** can be used to take a reading for the light intensity at each coordinate.

## Risk Assessment

| Hazard | Risk | Safety Precaution | In emergency | Risk Level |
|---|---|---|---|---|
| Biohazard | Allergies; soil bacteria; contamination | Wash hands after practical | Seek assistance | Low |
| Slippery surfaces | Slip hazard | Wear appropriate footwear; don't run | Seek appropriate medical attention | Low |

## Graph/Data Analysis

- Plot a graph of the **percentage cover** against the chosen **independent variable.**
- Various **statistical tests**, including **Spearman's Rank**, **T-test** and **Chi Squared**, can be carried out on the collected data.

## Conclusion

- You should be able to see a correlation from the graph which will indicate the effect of the chosen variable on the distribution of the species.
- Be aware that **correlation is not necessarily causation**: there could be a **range of factors** that influence the results.