Investigation into factors affecting the abundance and distribution of a species

Introduction

Daisies are a common plant species that can be found on a school field. Using quadrats for random sampling allows you to estimate the numbers of daisy plants growing in this habitat. This technique also reduces sampling bias. A simple calculation can then be used to estimate the total number of daisy species in the entire school field habitat.

Apparatus

2 × 20 m tape measures
2 × 20 sided dice
1 m^2 quadrat

Diagram of Apparatus
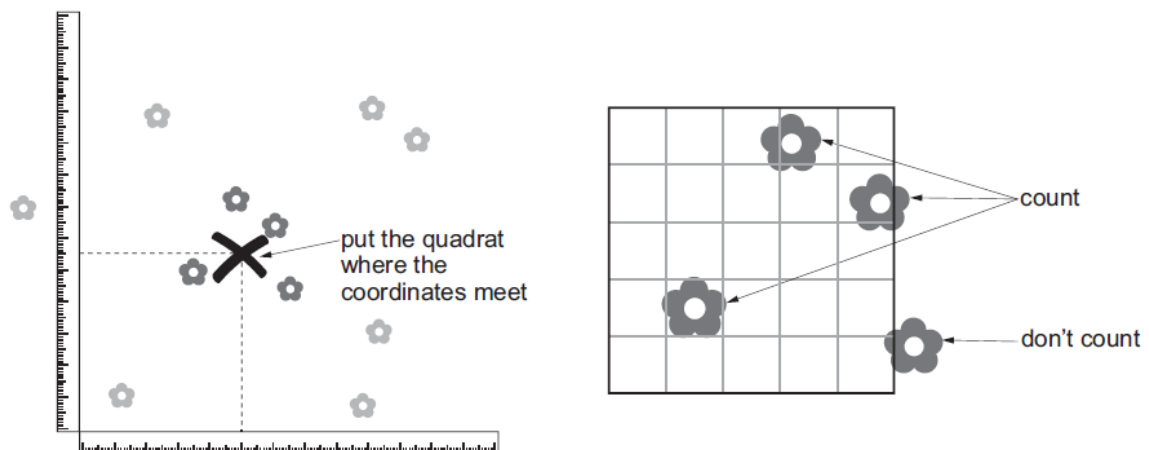
Method

1. Lay two 20 m tape measures at right angles along two edges of the area to survey.
2. Roll two 20 sided dice to determine the coordinates.
3. Place the 1 m² quadrat at the place where the coordinates meet.
4. Count the number of daisy plants within the quadrat. Record this result.
5. Repeat steps 2-4 for at least 25 quadrats.

Analysis

1. Use the following equation to estimate the total number of daisy plants in the field habitat:

$$\text{Total number of daisy plants in the habitat} = \text{total number in sample} \times \frac{\text{total area } (m^2)}{\text{total sample area } (m^2)}$$

Where:
total area = 400 m²
total sample area = number of 1 m² quadrats used