Capture – Mark - Recapture

Capture – Mark – Release – Recapture

Population size = $\frac{\text{Sample 1 x Sample 2}}{\text{Recaptured}}$

Sample 1 is the number of organisms initially caught, marked and released.

Sample 2 is the total number of organisms in the second sample.

Recaptured is the number of organisms in the second sample that are marked.

Key points

- Capture humanely so that the organism is unharmed and stress minimised;
- Mark in such a way that the organism is not harmed or its survival rate affected;
- Allow sufficient time for the released organism to distribute itself amongst the population;
- Do not wait too long or the population size may change due to birth, death and migration.

Calculating a Mean

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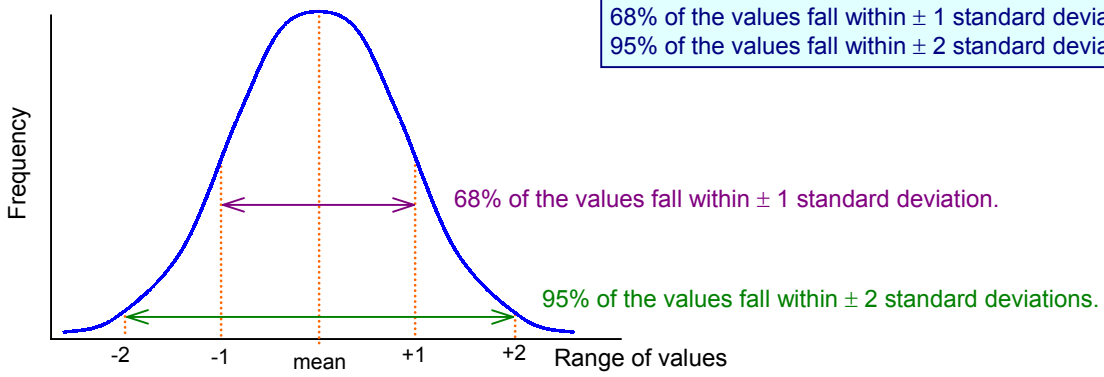
Mean = $\frac{\text{Sum of the values}}{\text{Number of values}}$ Mean = $\frac{\Sigma x}{n}$ A value, x, is an individual reading.

Standard Deviation

Standard Deviation

Standard deviation is used to measure the spread of values around the mean.
68% of the values fall within ± 1 standard deviation.
95% of the values fall within ± 2 standard deviations.



Key points

- A large standard deviation means the population is spread widely about the mean.
- A small standard deviation means the population is clustered closely about the mean.

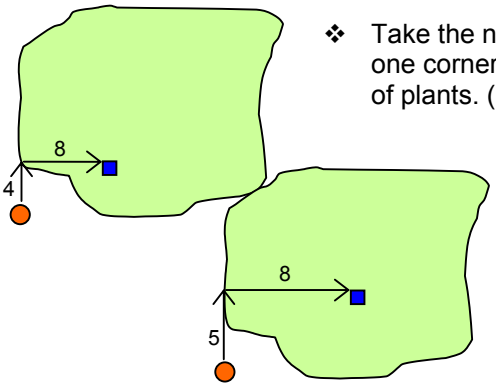
Random Sampling

Random Sampling

To determine population numbers of plants in an area the usual procedure is to record 5%. For small plants we would usually use a 50cm quadrat.

- Measure the area. Let us say this is 520m^2. 5% of this is 26m^2. Four of our 50cm quadrats = 1m^2 so we need to record 4 x 26 = 104 quadrats.
- Use a set of random numbers, eg. -

4	8	5	8	3	7	5	4	10	8	9	1	5	6	7	2	3	3



- Take the numbers in pairs and use them as co-ordinates. From a starting point in one corner go 4m north and 8m east and place your quadrat. Record the number of plants. (If a metre is not suitable use any standard unit of distance).
- From the starting point now go 5m north and 8m east.
- Continue to take pairs of numbers until you have the required number of samples.
- Calculate mean number of plants per quadrat.
- Population size = $\frac{\text{mean number per quadrat x total area}}{\text{area of each quadrat}}$