

Fieldwork in the forest: Random sampling of flora and fauna

How to randomly sample fauna and flora in two different woodland types (conifer plantation and mixed broadleaf woodland)



Enquiry questions

What species and frequency of fauna and flora are found in a conifer plantation and a mixed broadleaf woodland?

Does woodland type and forest management have an impact on the species present and their frequency?

How can a woodland manager achieve multiple management aims of forestry, recreation, education, and habitat conservation?

Fieldwork methods

To compare the species and frequency of flora and fauna in two contrasting woodlands a quadrat is used to randomly sample a defined area (eg 10m x 10m square). The methods are replicated in both woodlands.

1. Mark out a 10m x 10m square on the woodland floor using two tape measures. Use a random number generator to select two numbers. Each pair of random numbers can be used as x and y co-ordinates, and the metre intervals on each tape measure are the axis. Put the quadrat on the forest floor where co-ordinates meet. Take at least 10 quadrat samples in each 10m x 10m square area.
2. Sampling with a quadrat: place a metre squared quadrat on the ground. Sample plants by counting the number of plant species present and their frequency (presence/absence) or percentage cover within the quadrat. Record the species of animals present and count the number of individuals of each species within the quadrat.
3. Sampling with a sweep net: within the 10m x 10m area use a figure of eight sweeping action to collect fauna from the plants at knee height. Record the species of animals present and count the number of individuals of each species found in the sweep net.
4. Sampling with a tree tap: within the 10m x 10m area put a white cloth under tree branches. Tap the branches and catch any animals on the white sheet. Record the species of animals present and count the number of individuals of each species found on the white sheet.
5. Make a note of any other observations of animal life within the 10m x 10m square eg feathers (birds), tracks and scats (mammals), holes in soil, uneaten prey and live sightings.

Look at the woodland management plan: contact the woodland owner and ask if they have a management plan to share with you. This will help you learn about the management aims for each woodland and draw conclusions about impact of woodland management on flora and fauna.

Equipment

- Quadrat (1 square metre)
- White sheet for tree tap (up to 2 metres square)
- Sweep net
- Invertebrate collecting pots with lids
- Magnifying glass
- Animal, plant and tree species identification resources
- First Aid Kit
- Mobile phone or walkie talkie
- Risk assessment and emergency procedures



Images

1. equipment
2. method

Analysis and presentation

- The fauna and flora data can be collated in a table and the mean, median and mode calculated. To find the average frequency of each species per habitat, calculate the total number found for one species and divide it by the total number of quadrats. This will give an average number for one species in the 10m x 10m square in the woodland surveyed.
- The average number of each individual species can be shown on a bar graph per woodland type, or a comparative bar chart can show the values of each woodland type next to each other.
- If enough data is collected, more robust statistical tests can be done to identify if any significant correlations exist between woodland type and flora and fauna.
- Conclusions can then be drawn about how different types of woodland management can impact fauna and flora.