National Education Nature Park

Grassland indicator species

What is an indicator species, and how can we use them to learn about the ecosystem in an area? This resource guides learners through using indicator species to determine the abiotic and biotic factors present in a grassland ecosystem.

Used with the Grassland Plant Survey, learners will develop their understanding of grasslands around the school and how they might better benefit local ecosystems.

Learning outcomes

- understand that abiotic and biotic factors affect plant communities
- understand that human activities have effects on soils, and that this affects the surrounding ecosystem
- able to infer information about soil chemistry and structure by using the presence or absence of indicator species

Key words

Indicator species - an organism whose presence, absence, or population size tells us something about the environment or ecosystem
Generalist - organisms that can live and reproduce in a wide range of habitats
Compaction - squashing together soil particles. This reduces the rate at which air and water can move through the soil
Nutrients - any substance that living things need to survive and grow. Nutrient concentrations have big impacts on an ecosystem

Teaching time 30-45 minutes

Suitable for KS4

Green skills

Identification and ecology
Learners will develop their ability to recognise common plants and use them to infer information about the ecology of the area.

Environmental stewardship and horticulture
Learners will develop their ability to make evidence-based decisions about the care and maintenance of local landscapes.

Common daisy in grass

Subject area

Science, Biology

What you need

- grassland indicator species presentation

Optional

- indicator species tables
- example quadrat images
- survey results from your Grassland Plant Survey
- photos of your quadrat areas

Related resources

Grassland ecosystems

Grassland plant survey

Habitats: biotic and abiotic factors

Accredited by

RMetS Royal Meteorological Society

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Learning outcomes (slide 3)

Key vocabulary (slides 4-5)

Overview of key vocabulary in this resource. For more detailed definitions and examples see the Grassland indicators vocabulary presentation.

Indicator species profiles (slides 6-15)

These can be used to introduce the plants learners will look for as part of the Nature Park Grassland Plant Survey.

Using the indicators to characterise habitats (slides 16-23)

Slide 17 explains the specific conditions that the indicator plants are associated with.

Slides 18-23 guide learners through some of the key factors that the indicator plants can provide information about.

Types of grassland (slides 24-27)

Profiles of the grassland categories and what the indicator species can tell us about an area.

Comparisons of related or similar species (slides 28-34)

Profiles of more specialist species related to the indicators used in the Grassland Plant Survey.

Learners could also use a plant ID guide or iNaturalist to identify the other plant species they find in their quadrats. A plant guide or the internet can then be used to learn about the habitats these are associated with.

Practice (slides 35-37)

- Learners examine photos of three quadrats showing different amounts of area covered by clover and greater plantain. Learners compare the pictured quadrats to infer the characteristics of the area.
- Use the indicator species tables and the Example Quadrats presentation to practice doing the survey and inferring the quality of the habitat using indicator species.
- Get outside and find a few areas where you can do the Grassland Plant Survey, then use the tables with your survey results to learn more about the qualities of the grasslands around your site.

Example quadrat with common mouse-ear, daisy, and dock, indicating neutral soil pH and nutrient enrichment.

Nature Park groups together several types of biodiverse grassland under the label meadow.

Next steps

Now that learners have a better idea of the qualities of the grasslands around their site, use the Find that Plant! resource, or research the habitats in the National Plant Monitoring Scheme, to find other species that live in similar habitats.

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