FREE CLASSROOM RESOURCE

Plant identification fieldwork pack

Six printable worksheets for outdoor plant fieldwork. The pack teaches a method rather than a fixed list of plants, so it works in a school yard, a park, a hedge or a wood, in any country and any season. Pupils survey the plants around them, take useful photos, record what they can see, judge how confident each identification is, and research whether each plant is native or introduced.

AGES 8 to 16 TIME one lesson outdoors COST free, no account APP not required

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Before you go: photograph, don't touch

Identify plants from a photo. Pupils should not pick, rub, taste or handle a plant they cannot name, and should wash their hands after fieldwork. Some plants sting, burn or poison. The risky plants are different in different places.

- **UK and Europe:** giant hogweed sap burns skin in sunlight; keep clear of hemlock and stinging nettle.
- **North America:** poison ivy, poison oak and poison sumac cause a rash from a brush of the leaves.
- **Australia:** stinging trees (*Dendrocnide*, including gympie-gympie) can cause a severe, lasting sting.
- **Everywhere:** treat any unknown plant as a possible irritant. Check your region's known hazardous plants before the trip, and keep an adult within reach.

Pick a site with an adult in charge, stay on paths, and dress for the weather and the sun.

How to use it

Print one pack per group and work outdoors in pairs or small groups. A pencil and a clipboard are all each pupil needs. A phone or tablet with a plant identification app helps with naming but is optional. Older pupils can use a tape measure or a length of string to mark out a survey square.

The teacher guide on sheet 6 gives timings, learning objectives and curriculum links. The pupil sheets include short notes for younger and older groups, so you can keep the same fieldwork and change the level of detail.

1 Site and biodiversity survey

Record how many different kinds of plant grow in one patch of ground.

Date _____ **Site** _____

Weather _____ **Names** _____

Habitat circle: grass / flower bed / hedge / wall or pavement / woodland / pond edge / other

Mark out a square about one metre across with string, or choose a patch of ground. List every different plant you can see inside it. You do not need the names yet. Give each one a label (Plant A, Plant B) and a photo number, then fill the name and confidence in later using sheets 3 and 4.

Label	How common (rare / some / lots)	Photo no.	Best-guess name	Confidence

Different plants found in total (species richness) _____

> **Younger:** find five different plants in one patch.**Older:** survey two squares in different habitats and compare the richness. Estimate what share of the ground each plant covers as a rough percentage.

2 How to photograph a plant

A clear photo helps a person, a field guide or an app identify the plant with more confidence.

Take these shots of each plant you want to identify. Tick each one as you go.

- [ ] **The whole plant.** Show its size and shape. Put a ruler or another familiar object beside it for scale, without touching the plant.
- [ ] **One leaf, top and underside.** If possible, place a plain card or sheet of paper behind the leaf for a clear background, without touching the plant.
- [ ] **How the leaves sit on the stem.** In pairs, one after another, or in a circle.
- [ ] **A flower or fruit,** close up, if there is one.
- [ ] **The stem or bark.**
- [ ] **Where it grows.** A wider shot of the ground and plants around it.

Take clear photos

Fill the frame with the plant, hold the camera steady, and shoot in good light without a hard shadow across it. Put a plain background behind a leaf so its shape is easy to see. Write the photo number in your survey table so you can match the picture to the plant later.

> **Younger:** take three photos: the whole plant, one leaf, and a flower.**Older:** take all six and note the leaf shape and edge words from sheet 3 as you photograph.

3 Look closely at one plant

Pick one plant from your survey. These are the features a field guide, a key and an app all use to tell plants apart.

Plant label _____ **Photo no.** _____

Rough height _____

Leaf shape

round / oval / heart / needle / strap / lobed / divided

Leaf edge

smooth / toothed / wavy / spiny

Leaves on the stem

in pairs / one after another / in a circle / in a rosette

Leaf surface

hairy / smooth / waxy / rough

Flower

colour and number of petals, or none seen

Stem

round / square, woody / soft, hairy / smooth

Where it grows

sun / shade, dry / damp, soil / wall / water

Sketch a leaf and label its shape and edge

> **Younger:** record leaf shape, leaf edge, flower colour, and a sketch. **Older:** complete every field, then try to write a two-question branching key that would tell this plant apart from another in your survey.

4 Confidence and uncertainty

An identification is a best guess with a confidence level, not a certainty. Scientists record uncertainty, and pupils should too.

Use this scale for every plant you name. A good app uses the same idea.

Strong	The features match the name well and more than one source agrees. Safe to record.
Good	Most features match. One small doubt, or only a single source.
Possible	It could be this. A key feature is missing, hidden or unclear.
Weak	A guess. Take a better photo or look again before trusting the name.

For one plant, answer these before you choose a confidence:

1. Which features match the name you gave it?
2. Which features do not fit?
3. Did a second source agree (a book, a key, an app, or an adult who knows plants)?
4. How clear was your photo?

My confidence circle: Strong / Good / Possible / Weak

Cross-check, and see why a name can be wrong

Identify one plant two ways, for example with a field guide and with an app. If they disagree, write down what extra evidence you need. Plant names can be wrong when two species look alike, when the photo is poor, when a plant grows far from its usual range, or when a young plant looks different from the adult. Saying "I am not sure" makes your record more useful, because the next person knows which names to check.

> **Younger:** circle a confidence word and give one reason.**Older:** cross-check with two sources and write a sentence on what would raise your confidence.

5 Native or introduced?

Some plants are native to your area. Others were brought from elsewhere, and a few spread quickly and harm local habitats.

Whether a plant is native depends on where you are. A plant that is native in one country is introduced in another, so research your own region. Pick three plants from your survey and find out about each, back in class or with a local expert.

1. Is it native to your region, or was it brought here?
2. Where is it originally from?
3. If it was introduced, how did it arrive (through trade, gardens, or by accident)?
4. Is it treated as invasive where you live?

Which habitat held more native plants, the wild edge or the managed bed? _____

Invasive plants and the law

Some invasive plants are regulated, and the rules are set by where you live. In Britain, planting or letting certain species spread into the wild is an offence under the Wildlife and Countryside Act 1981. In the United States, federal and state noxious-weed lists apply. Other countries keep their own lists. Check your region's rules before moving or disposing of any plant, and never spread one you suspect is invasive.

> **Younger:** for one plant, is it native, and where did it come from?**Older:** research all three, and explain one way plants get carried between countries.

6 Teacher guide

Use this guide to run the fieldwork in one lesson and link it to the curriculum.

Learning objectives

Pupils will observe and record plant features, use simple botanical vocabulary and try a branching key. They will also count species richness as a measure of biodiversity, judge how confident an identification is, and use research to tell native plants from introduced plants.

Before the lesson

Print one pack per group. Choose a safe outdoor site, from the school grounds to a park or a woodland edge, and walk it first for hazards. Bring clipboards and pencils. A phone or tablet with a plant identification app is useful but optional. A tape measure or length of string helps older pupils mark out survey squares.

Running it (about 60 minutes)

- 5 min: introduce the task and the safety rule, photograph rather than touch.
- 25 min: the survey and photographs (sheets 1 and 2).
- 15 min: close observation and confidence (sheets 3 and 4).
- 10 min: introduce native and introduced species (sheet 5). Finish it back in class.
- 5 min: groups share the most interesting plant they found and how sure they are of its name.

Short on time or coverage? Run the survey and photographs outdoors, and set the observation, confidence and native-species sheets as follow-up work.

Curriculum links

Region	Where it fits
UK, KS2 science	Living things and their habitats; classification; working scientifically.
UK, KS3 biology	Interactions and interdependencies; variation and classification.
US, NGSS	3-LS4 biodiversity and habitats; MS-LS2 ecosystems; analysing data and arguing from evidence.
Australian Curriculum	Biological sciences: classification, and living things in their environment.

Region	Where it fits
Anywhere	Sampling, data handling, and drawing a conclusion from evidence.

Extensions

Repeat the survey in a different season and compare the results. Build a class species list or a digital photo herbarium. Keep photographing plants rather than picking them. Older groups can upload records to a citizen-science project such as iNaturalist, with an adult managing the account.

Why an offline app suits fieldwork

Cloud tools are awkward in fieldwork. A class can lose signal in woodland, in a park, or at the far end of the school grounds. If the identifier has to send every photo to a server, the lesson starts depending on the network. Not ideal.

Raychis runs identification on the device across 5,000 species. It works in airplane mode, uploads nothing, and needs no account to open. Pupils' photos stay on the device. It gives 5 identifications a day for free, and every result carries a confidence tier that matches the scale on sheet 4. Seehow offline identification works.

For a class, email us from a school or organisation address and we will send codes that remove the daily limit for your pupils for the school year. The details are in the next section.

Licence and citation

This pack is published under aCreative Commons Attribution 4.0 licence. You may print, copy, adapt and share it for any purpose, including in the classroom, as long as you credit Raychis with a link. Pupils keep the rights to any photographs they take.

SUGGESTED CITATION

Raychis (2026). Plant identification fieldwork pack. TerraRoxoAI. https://raychis.app/resources/plant-identification-fieldwork

Version 1.1 · September 2026