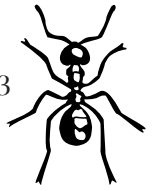
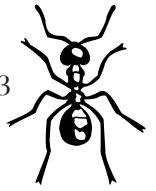


Collecting a Scientific Specimen

- 1) Survey your surroundings. Take some time observing the various trees, shrubs, and grasses you see. Notice the differences in leaf shapes and reproductive structures (seeds or fruits). Jot down some notes in your field notebook about the habitat. Is the soil rocky, sandy, volcanic, hard, or soft? Is the terrain steep or hilly? How many different plants can you identify?
- 2) Don't choose an especially woody or succulent plant for this exercise, as it will be difficult to press. Use gloves to avoid coming in contact with thorns or sap. Your sample should represent the average size, variation, and appearance of the plant. Include several leaves, flowers, fruits and/or seeds, and roots, if possible.
- 3) Use masking tape or a paper tag to label your specimen with a collection number that corresponds to an entry in your field notebook.
- 4) In your field notebook report the following information:
 - Your name
 - Date
 - Exact location. (Include address and specific reference to land features. Describe well enough for someone to return to this location. If you have a global position system [GPS] unit, include the coordinates.)
 - Habitat, topography, vegetation, soil type, altitude
 - Frequency: rare, occasional, or common
 - Plant description: height of plant; scent; color, shape, and orientation of leaves, flowers, and fruits.
- 5) Draw and/or photograph the plant as it appears in nature, focusing on the above-mentioned characteristics.
- 6) Tips for pressing:
 - Press plants as soon as possible after collection. If you need to keep them overnight before pressing, seal them individually in plastic bags with plenty of air and a paper towel to absorb moisture, and place in the refrigerator.
 - Before pressing, shake or wash roots to remove any mud or sand. Be sure to dry thoroughly before pressing, otherwise specimen will rot.
 - Arrange the specimen carefully on acid-free paper. Placement is important; once dry, plant parts cannot be arranged without incurring damage. If necessary, fold the stem to insure a portion of the base is intact and no plant parts project beyond the newspaper.
 - Both top and bottom surfaces of the leaves and reproductive structures should be visible, so at least one leaf and one flower should be turned over.
 - Some flowers should be pressed open, some closed. If possible, one flower should be dissected to show internal structures.



- Large fruits or bulbs are cut in half lengthwise or in slices prior to pressing. Succulent materials such as cactus stems may need to be sliced open and some of the fleshy interior scraped out.
- 7) Place newspapers above and below specimen to absorb moisture and prevent rot. Place specimen and newspapers between two pieces of wood or stiff cardboard and secure with clamps. If necessary, replace moist newspapers after first or second day. Otherwise, do not disturb the press until the plant material is completely dry. (A week should be sufficient for most plants.)



Weedy Checklist

Your assignment is to collect a weedy species from your schoolyard or backyard. You probably already know how to spot a weed. Biologists use the following characteristics to identify pest plants. A plant may have one or two of these qualities and not be a pest. If it has several of these characteristics, it's probably a weed.

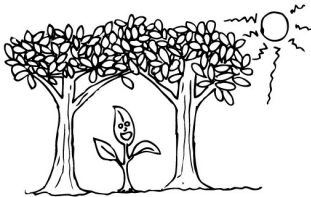
How does it grow?



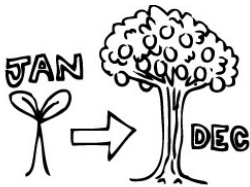
Is there a lot of it growing in one area? Plants that grow in dense thickets deprive other vegetation of light, water, and nutrients. They can prevent other plants from growing in an area. Such thick growth also impedes the movement of humans and animals in an area.



Is it climbing on or smothering other plants? Vines and climbing plants can completely shroud other vegetation, including trees, blocking out sunlight and eventually weakening or killing the underlying plants.



Is it shade tolerant? Plants that tolerate low light levels are often able to invade the understory of intact, native forests and may eventually outcompete native vegetation.

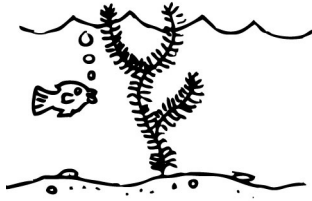
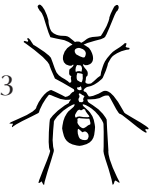


Does grow quickly? Plants that mature in one year or less are able to produce seeds rapidly. They tend to invade new areas and persist in areas much longer than slower growing plants.

What kind of plant is it?



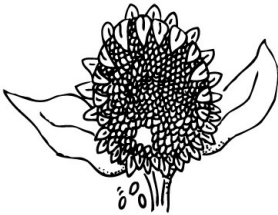
Is it a grass? Grasses tend to be very competitive. They are adapted to grow quickly, disperse rapidly, and form thick cover. They may also tolerate grazing or fires that can kill other plants.



Is it aquatic? Aquatic plants introduced into new areas almost always become highly invasive. When freed from natural competitors or predators, they often experiencing explosive growth rates and quickly dominate their new habitat.

Is it a melastome? Many plants in the melastome family have proven themselves to be fast-spreading pests throughout the Pacific. Miconia, one of the worst weeds in Hawai‘i, is a melastome. You can identify members of the melastome family by their quilted leaves.

What kind of seeds does it have?



Does it produce lots of seeds? When plants produce large numbers of seeds, they increase their ability to take over an area as well as to spread away from the site and invade new areas.



Do its seeds float? Plants with buoyant seeds or plant parts can spread rapidly and invade waterways, rivers, streams, and coastlines.



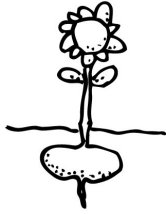
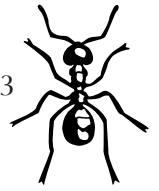
Do its seeds have propellers, wings, or other structures that easily fly away? Wind-dispersed seeds tend to be small and often have hairs, wings, or other structures that allow them to travel long distances on wind currents. These plants have the ability to invade very remote and isolated areas.

Does it have fleshy fruit? Birds like to eat fleshy or pulpy fruits that contain seeds. Birds swallow the seeds, then deposit them later, after they’ve flown somewhere new. Bird-dispersed plants have the ability to spread rapidly far from the original seed source.

Does it have other features?

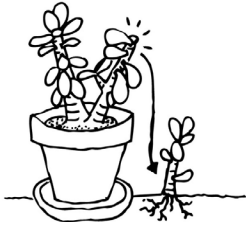


Does it have spines, thorns or burrs? Plants armed with these natural defenses can harm or injure humans and animals, and may outcompete plants lacking this protection. Spines, thorns and burrs also make removal or control of the species more difficult, and hazardous.



Does it have underground storage organs, such as corms or tubers?

Plants store energy in these structures, allowing them to resprout or grow back even after repeated cutting, browsing by animals, fires, or droughts.



Can you break off a piece of it and successfully plant it? Some plants are able to re-sprout from pieces of stems, roots, and even leaves that either break off or are cut off from the parent plant. This enables them to spread without producing seeds, and makes control or removal of these plants difficult.



Is it an allergen, or toxic to humans? Some plants have chemicals or pollen that can cause rashes, severe allergic reactions, sickness, or even death to people that come into contact with or consume them.



Is it toxic to animals? Poisonous plants can harm the health of pets and livestock that accidentally eat or come into contact with them. They can thrive even in areas with pressure from grazing animals.



Is it a fire hazard? Certain plants (especially some grasses) increase the risk of fire to both natural and residential areas. They may produce a lot of biomass that easily burns when it dries out, or they may contain highly flammable chemicals in their leaves or sap.