

Purple Loosestrife

Purple Loosestrife activities are directly tied to the fourth spread - pages 7 and 8 of "Our Wetland Project".

How are all plants different?

How are plants the same?

Students will be introduced to the 6 plant parts and participate in a hands-on investigation of plant parts and the function of each part.

Levels

Grades 1 and up: Parts of a Plant

Grades 4 and up: Mapping a Wetland and Controlling Purple Loosestrife

Subjects

Language Arts, Science, Performing Arts

Skills

Observing, Brainstorming, Discussing, Examining, Sketching

Concepts

Structure and function of plants

Interactions of things in the environment

Objectives: Students will be able to:

Describe plants using their senses and observation skills

List the six plant parts

Identify three or more plant parts on plant specimens

Describe the function of two or more plant parts

Materials (20 student class-size)

Purple Loosestrife specimens or photos

Plant part worksheet

Time Considerations

Preparation - 30 minutes

Activity - 90 minutes

Lesson Overview

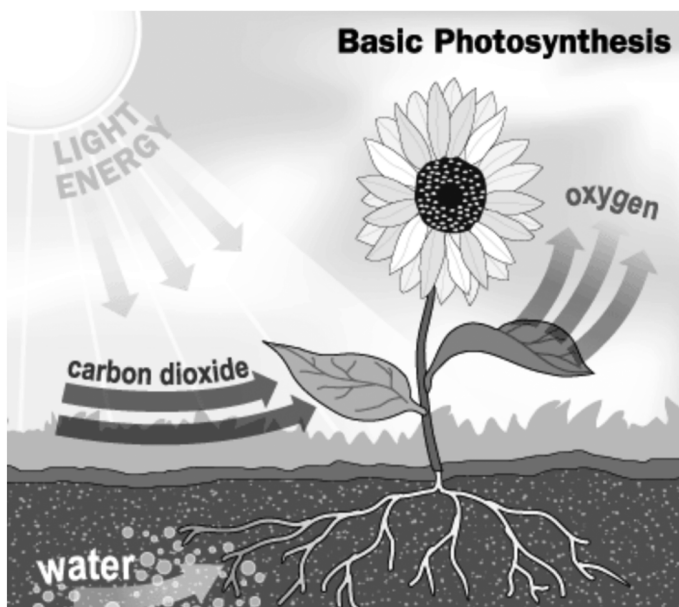
● **Parts of a Plant** (30 minutes)

● **Mapping a Wetland and Controlling Purple Loosestrife** (60 minutes)

Background

Explain terms that help describe plant part functions:

- roots - are below ground and absorb nutrients and water from soil, they also anchor plant and support the stem
- stem - carries nutrients and water between roots and other parts of the plant, in some plants the stem stores food
- leaves - absorb sunlight transforming it into food for the plant, this is called Photosynthesis (see below)
- flowers - hold the fruit, the reproductive part of the plant
- seeds - contain new baby plants either in a shell like a nut or a fruit
- fruit - the fleshy part of the plant that contains the seeds; humans and animals eat this part, which can then spread the seeds



Briefly discuss photosynthesis.

*What do plants eat?
Where do they get their energy to grow?*

Introduce the term photosynthesis and discuss the basic mechanisms.

Plants are called “producers” because they produce their own food. They actually produce sugars for food.

What do plants use to produce their own food? (carbon dioxide, water, light energy)
Why are plants very important to people and animals? (we need oxygen to breathe)

Parts of a Plant Lesson Details - 30 minutes

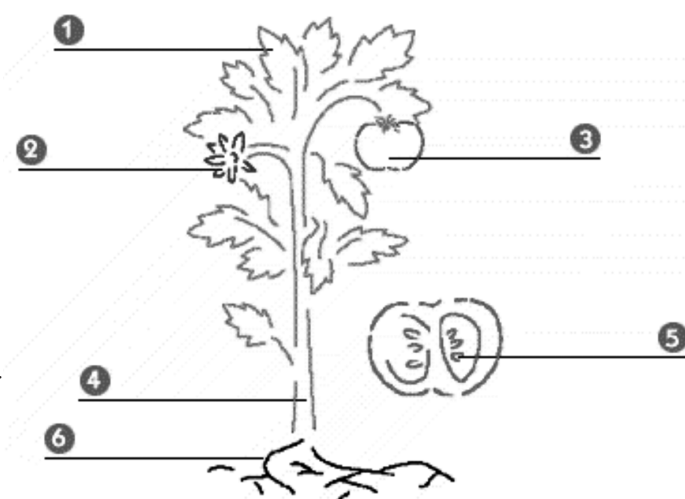
Six Parts!

What are the different plant parts?

STEP ONE. Using the Loosestrife specimen, have students point out the various parts of the plant and review the different parts of a plant (stems, leaves, roots, seeds, fruits, flowers). Lead a discussion about the needs of a plant, and how the plant’s parts fulfill the needs. Generalize the discussion to the needs of living things and how those are met for different living things. Have them complete the plant part worksheet as you go.

Name the Plant Parts Using These Clues

- 1 absorbs sunlight
- 2 holds the fruit
- 3 contains the seeds
- 4 carries nutrients and water
- 5 contains new baby plant
- 6 absorb nutrients and water from soil



Map Rubricn (rule/guideline) for Mapping a Wetland (next page)

- ☐ All the items on my map are labeled
- ☐ I have indicated areas infested with Purple Loosestrife
- ☐ I colored my map
- ☐ I have at least 3 examples that show I made detailed observations
- ☐ My map shows the variety of ground cover (different soil, grass, plants, etc.)

Parts of Plants Song

To the Tune: Muffin Man

*Oh, do you know the parts of plants,
parts of plants, parts of plants?
Do you know the parts of plants
That make them grow and grow?*

*The roots, they hold the plant in place,
plant in place, plant in place.
The roots they hold the plant in place
And soak up food and water.*

*The stem moves water up the plant,
up the plant, up the plant,
The stem moves water up the plant
It brings water to the leaves.*

*The leaves soak up the rays of sun,
rays of sun, rays of sun.
The leaves soak up the rays of sun.
And help the plant make food.*

*The flower grows into a fruit,
into a fruit, into a fruit.
The flower grows into a fruit,
That holds the tiny seeds.*

*Now you know that parts of plants,
parts of plants, parts of plants.
Now you know the parts of plants,
That make them grow and grow.*

Mapping a Wetland Lesson Details - 60 minutes

Materials

Rubric for maps (rule/guideline)
pencil kit (pencil, colored pencils, eraser)
clipboard
white drawing paper
white board and marker

Background

Purple loosestrife is an invasive perennial plant that is spreading rapidly in North American wetlands, shorelines, and roadside ditches. Thick stands of purple loosestrife crowd out native plants and reduce food, shelter, and nesting sites for wildlife, birds, turtles, and frogs. After multiple introductions in the 1800s for bee keeping, as an ornamental plant, and in discarded soil used as ballast on ships, this European species has invaded nearly every U.S. state and at least six Canadian provinces.

Take students to a wetland area infested with Purple Loosestrife. Explain that today they are going to explore and make observations by making a map of a wetland.

STEP ONE. Ask students to draw a map of how to get to his/her house from the school. Ask students, *Will you be able to find your house using your map?*

What if a friend flew in from Los Angeles--would your friend know how to get there?

Use a discussion to describe differences in maps, contrasting local maps with global maps, and how perspective and scale relate to maps.

Ask students, *What kinds of maps have they seen or used?*

Why do people make maps? What do people learn when they make maps?

STEP TWO. Discuss with students how a key on a map is used.

Using the white board and marker, illustrate how students will make their maps. Begin by asking students to write the word “key” in the bottom right of their drawing paper.

Review the rubric on the previous page for the “whole view map”. The area on their map should include what students can see from where they are standing in the wetland. Keeping in mind how big or how small things are, help students set boundaries and find a spot to stand to draw their map. Remind students to refer to their map rubric on the previous page as they work.

Mapping a Wetland Lesson Details - 60 minutes (continued)

STEP THREE. Give students approximately 15-20 minutes to complete their maps and then gather them together to share their findings.

STEP FOUR. Discuss the guidelines for controlling Purple Loosestrife. Use the chart to determine a logical control method for the area students mapped. Controlling the spread of purple loosestrife is crucial to protecting vital fish, wildlife, and native plant habitat! Purple loosestrife can easily spread if improper control methods are used.

BEFORE CONSIDERING CONTROL METHODS.

Confirm the identification of purple loosestrife by looking at plant parts.
Estimate the size and density of the infestation.
Use the control method chart to choose one or more appropriate management options.

HINTS. Consider noting on your map where drainage ditches from the infestation need future monitoring to identify new plants growing from seeds traveling down the ditch. If biological control is used with herbicide application, eradication of the host plant will also eradicate the insects which are biological control agents. Herbicide application around the perimeter only, is effective to keep a large infestation from spreading while biological control works inside. In some states like Montana where purple loosestrife populations are small, the goal for this noxious weed is eradication. With samll populations of purple loosestrife, biological control is not the suggested method of control.

What combination of control methods would stop seed spread?
What if the patch is too large to pull or dig?
What if there are only a few plants?

Size of infested area			
Density of infested area			
	low 1-50 plants (1-25% of the area)	medium 50-1,000 (25-75% of the area)	high 1,000+ (75-100% of the area)
Isolated Plants			
Small less than 1 acre (0.1- 0.5 hecatres)			
Medium up to 4 acres (0.5-2 hectares)			
Large more than 4 acres (more than 2 hectares)			

KEY TO CONTROL CHART



dig/pull chemical cut biological

Follow-up methods may include monitoring or revegetation (planting and reseeding) to make sure another invasive plant doesn't fill the hole you leave.

This example purple loosestrife control chart is for the purpose of the mapping exercise only and is not meant to describe what control methods are effective in your area.

Digging and hand pulling is easiest when purple loosestrife plants are young (up to two years) or when in sand. Older plants have larger roots that can be eased out with a garden fork. Remove as much of the root system as possible, because broken roots may sprout new plants.

Cutting by removing flowering spikes will prevent this year's seeds from producing more plants in future years--remember each mature plant can produce over 2 million seeds per year. Remove last year's dry seed heads, as they may still contain seeds. Finally, cut the stems at the ground to inhibit growth.

Biological Control Agents (insects and pathogens) may be effective in areas of severe infestation--discussed in more detail in the next few pages.

Selective chemical application specific to purple loosestrife in wetlands can be effective spot treatment--be sure to obtain the appropriate permit required by your state and read and follow the manufacturer's label. Herbicide application can be an environmental problem if used incorrectly.

Get to know your county weed coordinator. Learn what opportunities are available in your community.