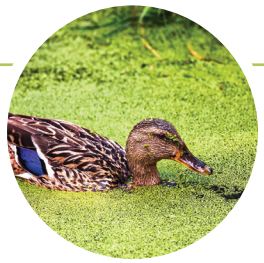
# Comparing Land and Water Plants

*A Carolina Essentials™ Activity*



## Overview

This exploratory activity examines the phenomena of plant structure. Regardless of habitat, all plants have distinguishing structures with predictable functions. In this activity, students compare an aquatic plant, common duckweed, to a terrestrial plant of their choosing. Students are guided to examine leaves, stems, and roots and make a summary statement about how adaptations can be beneficial to a plant in different habitats.

**Life Science**
**Grade: 2**

## Essential Question

How are land and aquatic plants different? How are they alike?

## Activity Objective

Describe how plants change to live in different habitats.

## Next Generation Science Standards* (NGSS)

**PE 2-LS4-1.** Make observations of plants and animals to compare the diversity of life in different habitats.

| Science and Engineering Practices | Disciplinary Core Ideas | Crosscutting Concepts |
|---|---|---|
| **Planning and Carrying Out Investigations**<br>• Make observations (firsthand or from media) to collect data that can be used to make comparisons. | **LS4.D: Biodiversity and Humans**<br>• There are many different kinds of living things in any area, and they exist in different places on land and in water. | **Patterns**<br>• Scientists look for patterns and order when making observations about the world. |

## Safety Procedures and Precautions

When taking students outside to collect plants, be mindful of bug bites and plant allergies. Make certain you and your students can recognize and identify poisonous plants like poison ivy, poison oak, and poison sumac.

## Teacher Preparation and Disposal

Prior to taking students outside, locate an area where they can easily dig up a weed or small plant without harming school landscaped areas. Ensure that the terrestrial plants have roots, stems, and leaves after students dig them up. If the school grounds are not appropriate for plant samples, purchased plants like coleus, marigolds, and pansies work well. To dispose of duckweed, place it in a resealable bag, freeze it for several days, and then dispose of the bag in the classroom trash. **Do not dump duckweed into a body of water.**

*Continued on the next page*

### TIME REQUIREMENTS

| PREP | ACTIVITY |
|---|---|
| 15 min | 1.25 hrs |

**Teacher Prep**: 15 min
**Student Activity:** 30 min outside for collecting plant samples
30 to 45 min activity time

### MATERIALS (PER GROUP)

Duckweed, 2–4 plants
Land plant of your choice or coleus, 2–4 plants
Deli cups or applesauce cups
Magnifying glass, 1 per student
Garden trowels, 2–3
Newsprint or craft paper

### HELPFUL LINKS

Aquatic Plants Care Guide
Video: Care and Handling of Aquatic Plants
Carolina® Living Plants

### REFERENCE KITS

Wisconsin Fast Plants®: Elementary Exploration of Plant Life Cycles Kit

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## Student Procedure

1. Cover the desk with paper or newsprint.
2. Put both plants on the paper, 4 to 6 inches apart.
3. Trace around both plants.
4. Look at both plants with the magnifying glass.
5. Fill in the data table.

## Teacher Preparation and Tips

*Have students remove soil from the plant roots before beginning.*

*Encourage students to write their observations on the paper.*

*Emphasize the difference in overall shape between the plants.*

*Emphasize form and function.*

| | Land Plant | Aquatic Plant |
|---|---|---|
| **Shape of leaf** | *Will vary* | *Oval and thick or spongy* |
| **Number of leaves** | *Will vary* | *Probably 2 to 4* |
| **Color of leaves** | *Green* | *Green* |
| **Where roots are attached** | *At the bottom of the stem* | *At the bottom of each leaf* |
| **Number or roots** | *Will vary* | *One per leaf* |
| **Color of roots** | *White to cream* | *White to cream* |
| **Shape of stem** | *Will vary* | *No stem visible* |
| **How leaves are attached to the stem** | *Attached by another short stem, the petiole* | *NA* |
| **Color of stem** | *May vary, usually green* | *NA* |
| **Shape of plant** | *Taller than broad* | *Broader than tall* |
| **Other observations** | *Will vary—students should note leaf veins* | *Will vary* |

## Analysis and Discussion

1. How are land plants and aquatic plants similar? *Answers will vary, but key points should include that they are both green and have leaves and roots. Both types of plants do produce flowers.*
2. How are land plants and aquatic plants different? *Land plants have stems and a branched root system. Land plants are taller than they are wide. Aquatic plants have roots that hang into water. Each leaf has its own root. The leaves are thicker and somewhat spongy. There is no visible stem on the duckweed.*
3. What makes land plants better able to live on land? *Branched roots hold the land plant in place and extend outward for water. Stems allow for more leaves, resulting in more photosynthesis and food for the plant. Broader and bigger leaves also allow for more photosynthesis.*
4. What makes water plants better able to live in water? *Spongy leaves allow the aquatic plant to float on the surface of the water. Leaves are broad and flat so the plant can float. Aquatic plants don't have to stay in place. Roots hang directly into water so they don't have to branch.*

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## TEACHER NOTES

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