



# Nature-Watch Activity Kit

## Leaf and Flower Press

(Nature Watch Kit #166)

This page includes the Next Generation Science Standards (NGSS) mapping for this kit and a Science, Technology, Engineering, and Math (STEM) chart (on back) to use in adapting and extending this activity to other subject areas.

### Leaf and Flower Press

#### Kit Contents

<u>Item:</u>	<u>Kit Size</u>	
	25	100
Chipboard Squares with holes	50	200
Carboard Squares	50	200
Cotton Squares	50	200
Nylon Screws	50	200
Nylon Wingnuts	50	200
Name / Leaf Sheets	25	100
Glue Bottles	2	6
Instructor's Manual	1	1

### Next Generation Science Standards Alignment

#### K-LS1-1:

Use observations to describe patterns of the things that plants and animals (including humans) need to survive.

#### 2-LS2-1:

Plan and conduct an investigation to determine whether plants need sunlight and water to grow.

#### 3-LS3-2:

Use evidence to support the explanation that traits can be influenced by the environment.

#### 4-LS1-1:

Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

#### 5-LS1-1:

Support an argument that plants get the materials they need for growth chiefly from air and water.

#### MS-LS1-6:

Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

**See Back for STEM Extensions Chart**



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## Science

Look at your specimens under a microscope before pressing them. Can you identify any of the specialized cells or cell parts? If you are looking at a leaf, you will probably be able to spot the green chloroplasts where plants perform photosynthesis. Try looking at seeds or pollen under the microscope too. What do you notice? Have you seen an animal cell before? How does it look different from a plant cell?

Do you know how plants are able to survive during periods of drought? Many plants have adaptations that help them avoid desiccation (drying out) and some specialized plants can survive in areas where only a few inches of rain fall per year. Determine what kinds of adaptations are common among plants, and how they work to help plants survive during periods of intense heat or low levels of rain.

## Engineering

Invent a plant that has specialized adaptations for surviving during a drought. Consider things like creative methods to store water, or ways to keep the water from escaping through transpiration (when water escapes through the leaves). How do these adaptations differ from those of plants that live in flood-prone areas? Is it possible to design a plant that is resistant to both drought and flooding? What kinds of features would such a plant need? Draw and carefully label your ideas. Present them to your friends and ask for their suggestions to build on your ideas.

Plants are very important for controlling soil erosion because their interlocking roots act as a net to keep the soil in place despite wind and rain. If we didn't have plants to do this, what do you think would happen? If all of the plants along a riverbank or field disappeared, what could you build or invent to prevent erosion in their place?

## Technology

Are you able to identify the kind of plant you have collected to press? There are many apps that help with the identification of flowers, grasses, and leaves. Some apps allow you to take pictures with your smart phone and upload them in order to identify what they are. Others are more like field guides where you can answer questions about the appearance of your plant in order to identify it. Try using one of these with your specimen, and then go outside and conduct some field work, identifying as many plants as you can.

Use a transect, or a square frame, to determine the plant biodiversity in an area. You can build one of these using simple materials (straws taped together or a wooden frame glued or nailed together). Simply place your transect on the ground and count every unique species you can identify within its border. You might be surprised by how many types of plants are in one area!

Using the internet, research the life cycle of your plant. Determine how it reproduces, and the stages of growth it experiences. Add this information to a presentation on your plant. Does your plant have any special features that makes it unique? Are they similar to any man-made features in manufactured items?

## Math

Collect different specimens of the same type of plant and measure their length and width. Are they all the same? What is the average length and width?

Gather a group of leaves and weigh them on a scale. Let the leaves air dry and then weigh them again. What is the difference between the two weights? What is the percentage difference? Why do you think the weight changed? What does that tell you about the makeup of leaves?