

**Curriculum topics:**

- Natural Selection
- Ecosystems
- Probability
- Design

**Subject:**

**Life Science**

**Grade range: K-12**

# TABLETOP CAMOUFLAGE

How many insects can hide in a picture?



In this compact camouflage activity, students create a world of hidden creatures on a single sheet of paper.

**Who we are:**

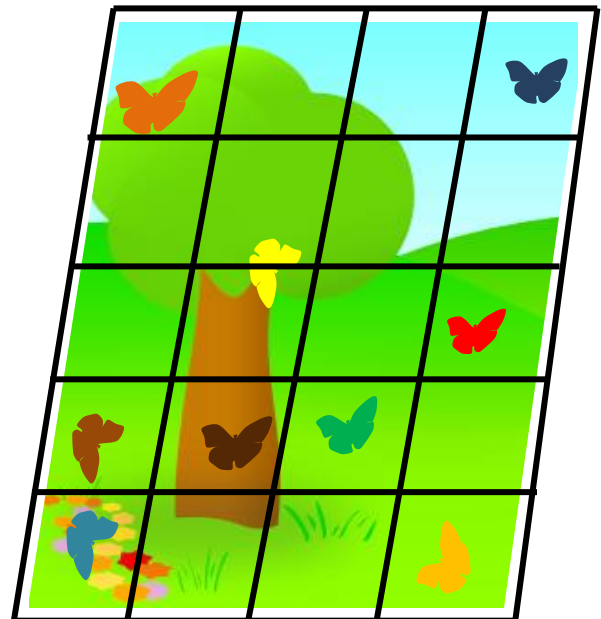
Resource Area for Teaching (RAFT) helps educators transform the learning experience through affordable “hands-on” activities that engage students and inspire the joy and discovery of learning.

For more ideas and to see RAFT Locations

[www.raft.net/visit-raft-locations](http://www.raft.net/visit-raft-locations)

**Log Sheet**

1	12	grass
2	20	grass
3	4	sky
4	6	tree
5	13	grass
6	17	flowers
7	1	leaves



# Materials required

Per student or pair of students:

- Nature scene - color poster, photo, magazine page, preferably without words - 22 cm x 28 cm (8½" x 11"). Ideally, all pictures used in a class are the same scene.
- Insect shapes, cut out of paper that blends with the scene above. (Suggestion: use pieces trimmed from the poster used or an identical poster), ~2.5 cm (1"), 6
- Insects, or other shapes, cut out of brightly colored paper that contrasts with pictures, ~2.5 cm (1"), 6
- Sticky "dots", re-positionable & double-sided adhesive, 6.4 mm (¼") diameter, 12 or tape
- Sheet protector that will fit nature scene, clear, preferably heavy weight, 1
- Optional: Locator grid, print on clear transparency, 1
- Log Sheet, 1

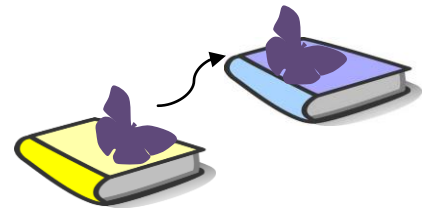


**WARNING:**  
**CHOKING HAZARD—Small parts**  
**Not for children under 3 yrs.**

[Download masters for Locator Grid and Log Sheet at <http://www.raft.net/raft-idea?isid=742>]

## To do and notice

- 1 At the beginning of the activity, hold up a sample insect that is a bright color.** Ask the students to observe what happens as it “moves” from place to place in the room. Where should it stop if it wants to hide from predators? Put it where they suggest. Is it hard or easy to see?
- 2 Hold up a second, camouflaged insect that was cut from the poster.** Where should this one hide?
- 3 Give each student or team a poster and a selection of 6 camouflaged and 6 bright insects.** Challenge them to position the camouflaged insects on the poster so they blend in to the background. Position the bright insects where they are easy to spot. Use “sticky dots” or tape to hold the insects in position.
- 4 Carefully slide the finished poster into a sheet protector.**
- 5 Give each student or team a Log Sheet and Locator Grid (optional) and go over their use.** Explain that each team should make notes in their Log Sheet listing the time, shape color and background color for each insect in the order that they find them. Release the students to start the search! (Note: instructions are also printed on the Log Sheet for student reference.)
- 6 Have each student/team exchange the poster they made for a poster made by a different team.** (This way they will not know where the insects are located.)
- 7 Quickly have the students find and note the location of every insect on the new poster.** The students should keep searching until all insects are found.



**Teacher tip:** If some students find shapes quickly, ask them to help those that have not found any.

- 8 At the end of the search period, **gather the students and have them share the notes from their Log Sheets.**

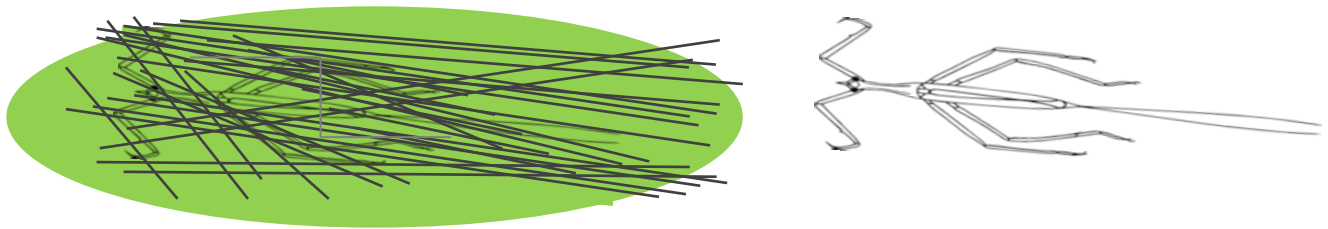
What did they notice about the shapes that were easiest to find? Where were they located? Were the shapes and backgrounds the same color, or different colors?

Were some color combinations harder to find?

If the posters were real environments, which insects would be most like to be eaten first?

**Teacher tip:** For younger children, use a simple “show of hands” to learn which students found brightly-colored insects first and camouflaged insects last.

## The science behind the activity



**Camouflage** means “to veil, hide, or disguise.” Soldiers and hunters often wear patterned outfits designed to make them disappear into their surroundings. Animals have many forms of natural camouflage. Many blend into their **habitat**, such as a brown snake hiding among the brown rocks where it lives. An octopus can change color to blend into different environments. Some animals, like zebras, are covered with wild patterns that make their outlines hard to see. Animals use **mimesis** (imitation) to copy the shapes around them. A “Walking Stick” insect is very hard to find among the branches of a small bush!

Over time, changes in camouflage occur as a result of **natural selection**. Nature selects phenotypes (individuals) that can avoid predators more readily, and thus the survivor’s characteristics (such as their coloring) are passed on to future generations. The color distribution in a certain population of moths gradually shifted from white to gray when the amount of smoke and ash in their forest increased. The white moths were easier for the birds to find on the darkened trees. When pollution was reduced, the white coloration once again became more common!



“Field work” is what scientists do when they go outdoors to make observations. Often, scientists use sticks and string to create square grid patterns above the area being studied. Then, notebooks or log sheets are used to carefully record what is discovered in each square of the grid. In **Tabletop Camouflage**, students learn to use a grid to make systematic observations.

## Curriculum Standards:

Traits of organisms are influenced by the environment  
(Next Generation Science Standards: Grade 3, Life Science 3-2; Middle School, Life Science 4-4)

Characteristics & survival  
(Next Generation Science Standards: Grade 3, Life Science 4-2 & 4-3)

Science & Engineering Practices  
(Next Generation Science Standards: Grades K – 12)

# Learn more

- Vary the shapes used as well as the colors and/or patterns used. Try it using black and white images.
- Bring in hidden object books such as “I Spy” and “Where’s Waldo?” Have the students examine them using their new knowledge of camouflage. What tricks did the artists and photographers use to make the hidden objects hard to find?
- Have students set up a similar camouflage activity for younger students.
- Sometimes environments change. For example, trees can become dark with soot. Simulate this human impact by placing insects on darker/lighter pictures. Notice how this changes the ability of the insects to hide.
- Use this activity as part of a “creative thinking” activity. Why is it valuable to see details? How can noticing little things make us more creative and inventive?

**Related activities:** See RAFT Idea Sheets:

**Camouflage –**

<http://www.raft.net/ideas/Camouflage.pdf>

**Evolution by Natural Selection –**

<http://www.raft.net/ideas/Evolution by Natural Selection.pdf>

**Nesting Like a Birdbrain –**

<http://www.raft.net/ideas/Nesting Like a Birdbrain.pdf>

# Resources

Visit [www.raft.net/raft-idea?isid=742](http://www.raft.net/raft-idea?isid=742) for “how-to” video demos & more ideas!

See these websites for more information on the following topics:

- **Photos** - <http://dsc.discovery.com/tv-shows/curiosity/topics/animal-camouflage-pictures.htm>
- **“Where’s Waldo?” (on-line game)** - <http://art-sci.blogspot.com/2011/07/10-wheres-waldo-puzzles.html>
- **Videos on evolution and natural selection from the Khan Academy** - <https://www.khanacademy.org/science/biology/evolution-and-natural-selection>