



Classroom Camouflage

Appropriate Ages 8-12
Expected Time: 50 min

Students will describe how camouflage can benefit an animal by testing camouflage techniques in the classroom.

This activity satisfies one of the required JNMN lessons needed to complete the Junior Zoology Master Badge.

BEFORE YOU TEACH

Learning Objectives:

Students will be able to describe advantages of camouflage.

Students will define and model different kinds of camouflage strategies and test the effectiveness of each strategy.

NE Science Standards:

Grades 3,4,6

SC.3.7.2.C

SC.3.7.2.D

SC.4.6.3.B

Did You Know...

Some caterpillars attach pieces of leaves to their bodies to camouflage from predators.

Some invertebrates are red because this color stands out. It doesn't camouflage, but instead its coloration is a signal to warn predators to stay back.

BACKGROUND KNOWLEDGE

Invertebrates are animals that lack a backbone or any internal skeleton. Instead, they possess some kind of exoskeleton that serves as a protective shell for the animal. Examples of invertebrates include snails, butterflies, aquatic insects, spiders, ants and caterpillars. They can range in size from microscopic organisms to giant squid. Invertebrates make up over 90% of all living animal species.

Invertebrates are important to our ecosystems as they are a great food source for other animals but also serve as pollinators, decomposers, and more.

MATERIALS AND PREP: JNMN Provided

8 Slides of camouflaged organisms
28 insect blocks
Types of Camouflage chart
3, 4 or 5 Insect collections
Macrobenthic Invertebrate gear
Insect trays
Invertebrate ID chart
Sampling unit, mesh sieve
Dip nets
Long handled nets
Nighttime insect sampling photo

Engage: 5 min

To begin this lesson, explain to students they will have to find animals in a series of images. Show the images on your smartboard or projector and have students circle or point out where the animals are in each photo. Ask which animals were hardest to find and which were the easiest. What makes the animals difficult to find? Explain that when animals blend in with their surroundings it's called camouflage. Ask students why it is beneficial for an animal to camouflage. Can they think of any other examples of animals that use camouflage?

VOCABULARY

Adaptation: A special skill or feature which helps an animal to better survive its environment. Adaptations could be physical features on an animal's body or behavioral traits.

Camouflage: A way of hiding something by covering or coloring it so that it blends in with its surroundings.

Invertebrate: An animal that does not have a backbone or internal skeleton.

Patterns: Are spots, stripes, shapes that help break up an animal's silhouette.

Mimicry: When one organism copies the physical traits of another organism in order to receive a selective advantage.

Blending: A matching background that the invertebrate can conceal itself.

Disguise: Imitating something that's not food in an invertebrate's environment.



Explore: 10 min

Both leader and students will alternate hiding and finding insects in the classroom. Before class, hide the provided insects where they will camouflage the best. Ask students what predators eat insects; lizards, birds, bats, frogs and turtles are a few. Tell students that you have hidden camouflaged insects around the classroom and instruct them to find them. Make this a competition by awarding the student who is the most successful predator or instruct students to sit down after they find one or two. Play animal charades using the five species of predators from above before hunting for the camouflaged insects.

Now the tables are turned and students get the chance to hide one insect each throughout the classroom. Leaders will act as predators and attempt to find as many insects as they can. When an insect is found, it should be taken out of the classroom 'ecosystem' and displayed somewhere where students can see which insects have been found. If any insects remain at the end of the class, congratulate the students and let them know their insect 'survived'! You can award successfully camouflaged insects with bonus points or another prize if you'd like. Have students whose insects were not found talk about what strategy they used to hide their insect.

Explain: 15 min

For the insects that have been found, which ones were camouflaged the best, the worst? Does camouflage help predators or prey more?

Bring out the insect collections, and after students look them over, use the provided "Four types of Camouflage Worksheet" to teach students about the four types of camouflage: blending, disguise, mimicry, and patterns. Blending is defined as background matching. Patterns are usually many spots or many stripes that help break up an animal's silhouette. Mimicry is copying the appearance of another living thing. Disguise is like pretending to be something that's not food, for example, a walking stick.

Evaluate: 15 min - depending on the number of insect collections.

After sharing these definitions, have them take another look at the insect collections. Ask them to point to specific examples as you challenge them to find insects that fit into each category. As they look at the insect collections again, give students pencils and paper, and have them draw the outlines of up to four insects, label them by name and with the appropriate camouflage category. Have students discuss which insects they chose and why.

Extend a: 10 min

Transition students to the display of aquatic insects, known as benthic macro-invertebrates. Explain the functions of each piece of sampling gear: dip nets, sampling screen, insect trays, nets and insect charts. Invite students to investigate the gear and explain that these aquatic insects act as bioindicators, organisms that can indicate water quality. Experience sampling for macrobenthic invertebrates involves data collection, analyzing, reporting and correlating species with abundance and pollution tolerance.

Extend b: 15 min

Play "Ranger, Ranger", a game similar to "Red Rover". Students will review the specimens provided and select an insect to represent. Head to an area with plenty of space, such as a gym or outdoors and using cones or other objects, delineate the playing area based on the size available. Like an endzone on a football field, create a safe zone for each side of the playing area. Select one or two students from the group to be the Ranger and position them in the middle of the playing area. The rest of the group will ask the Rangers, "Ranger, Ranger can I come over?" The Ranger will choose identifying characteristics of insects such as: coloration, wings, pollinator, lives underground, diet, stinger, antenna, etc... and respond, "Only if you have ____characteristic____." Students who think their insect possesses that characteristic, will try and run to the other safe zone without being tagged by the Ranger/s. If they are tagged, they will join the Ranger Team to try and tag the remaining insects (make sure Rangers remain in the middle of the playing area). Play until the number of insects remaining matches the number of Rangers. The surviving insects have won the round and are now selected to be the Ranger. Repeat as time permits. [Additional characteristics: see through wings, found on the ground, an insect that doesn't fly, lives in dying logs, loves bright lights...]

Hands On Extension

In the Lab:

Contact your JNMN Coordinator for names and contact information for your local entomologist. Ask them to bring a nighttime insect sampling setup that your students can see and replicate, each student can take one home and conduct a nighttime insect sampling of their own.

In the Field:

Discover aquatic invertebrates with Master Naturalists. Invertebrates are able to live in all kinds of different habitats. Schedule a field trip to a local body of water where students will be able to sample and identify macroinvertebrates by species. All gear and instruction will be provided by your JNMN Coordinator or volunteer Nebraska Master Naturalist. A local wetland, pond or creek makes for a good destination. Many of these insects can live in somewhat polluted waters, others however require the water quality to be a bit more clean. Identifying which insects are caught, will indicate water quality.

In the Community:

One of the easiest ways to help our insect friends is by planting native plants. This helps create habitats for pollinators and other invertebrates. Take this one step further by creating an entire pollinator garden in your community. Research what native plant species are best for our native insects, then find a space (any size will do) and create some high quality insect habitat! Contact your JNMN Coordinator and ask for a Nebraska Master Naturalist to help guide your group in planning and completing the pollinator garden.

*COMPLETING ANY ACTIVITY FROM THIS SECTION WILL COUNT AS YOUR SECOND ACTIVITY REQUIREMENT FOR THE ZOOLOGY MASTER BADGE.

RESEARCH AND RESOURCES

For information on the endangered invertebrates in Nebraska, visit <https://www.fws.gov/mountain-prairie/es/invertebrates.php>

For information on ways to support and conserve pollinators, visit <https://pollinator.org/>.

Indicators: Benthic Macroinvertebrates: <https://www.epa.gov/national-aquatic-resource-surveys/indicators-benthic-macroinvertebrates>

Mimicry: <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/mimicry>

Four Types of Camouflage



Blending



Disguise



Mimicry



Patterns

Camouflage Examples





