



Wild Kids

Animal Mimicry

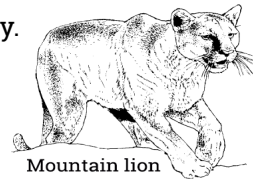
STUDENT GUIDE

Have you ever tried to imitate someone by acting or dressing like that person? This is called mimicry. You were the mimic. The person you were imitating is the model. Many animals are mimics also. But for wildlife, mimicry can help prey animals avoid being eaten or help predators avoid being detected by prey.

CRYPISIS

In crypsis, an animal blends in with its environment. It blends not only by looking like something it is not but also by behaving like something it is not. Appearance and behavior are both important components in crypsis. For example, katydids are green, oval-shaped grasshoppers. Their body is flattened vertically to look like a leaf. But, they act like leaves too. When there is a slight breeze, katydids will sway back and forth, mimicking a blowing leaf. As such, they can be very difficult to see and identify.

Crypsis is also used by predators. Many predators use the 'lying-in-wait' technique to capture prey. In this technique, a predator mimics some part of its environment and waits for the prey to get close. Mountain lions are such predators. They are tan or tawny in color. When not moving, mountain lions are difficult to see because they blend into the background. When a deer approaches the area where a mountain lion is waiting, it may not sense or see the lion. If the deer approaches close enough, the mountain lion will spring out of its cover and capture it.



APOSEMATIC MIMICRY



Striped skunk

Have you ever wondered why a Gila monster has black and cream markings, a skunk is black and white, or a coral snake has brightly colored red, black and yellow bands? Bright colors are often an advertisement telling other animals that it has a defense against predators. It might taste or smell bad. It might bite or sting. Warning coloration is called aposematic coloration.

Aposematically colored organisms are brightly colored, usually with black and red, black and yellow, black and orange, or black and white markings. Their coloration causes them to stand out and be seen in their environment. A few animals mimic aposematically colored animals. The mimics have similar coloration even though they may not have the defenses of their model animal. There are two types of aposematic mimicry - Batesian and Müllerian.

Batesian mimicry is named after the nineteenth century English naturalist Henry Bates. Bates traveled extensively in South America collecting butterflies. During his trips to the Amazon, he collected examples of edible butterflies that mimicked inedible aposematic butterflies (edible to predators at least). The inedible butterflies were the models. He observed that the aposematically colored mimics were not eaten by predators as much as nonaposematically colored butterflies. Why?

Predators learn what is edible through trial and error. If a predator tries to eat an aposematically colored individual, it quickly learns not to eat it again. In Batesian mimicry, the mimics trick predators into believing they are inedible.

Batesian mimicry works only if there are far fewer mimics than models. If there were more mimics than models, predators would encounter the mimic more often than the model. Predators would learn that the brightly colored mimics were edible and easy to find.

Müllerian mimicry is named after the nineteenth century German zoologist Fritz Müller. He also collected butterflies. Müllerian mimicry involves two or more species that are all inedible and similarly aposematically colored. All species are protected from predators because predators need to learn only one color pattern. In Müllerian mimicry, mimics and models are found in similar numbers.

Sound confusing? Yes, that's the point of mimicry!

WHICH IS IT?

Below are natural history notes of mimics and their models. Identify each relationship as either crypsis, Batesian mimicry or Müllerian mimicry. Can you identify the mimic and the model in each relationship?

1. When soaring, turkey vultures hold their wings in a characteristic V-shape. They are dark birds with grey tips on the underside of their primary feathers. Vultures are not predators. They are scavengers. As a result, most animals don't pay attention to vultures because they are not a threat. Zone-tailed hawks, on the other hand, are predators of many small mammals, birds and reptiles. The underside of their primary feathers is light, similar to the turkey vulture's. Zone-tailed hawks are known to soar with vultures as they look for food below.

2. There is a saying related to venomous snakes. One version goes, "Red next to yellow can kill a fellow. Red next to black is a friend of Jack." This saying is used to help distinguish between the mountain king snake, milk snake and the venomous coral snake. All three have red, yellow and black bands from head to tail tip. Many people confuse the three.

3. Many species of lycid beetles are black with bright orange wing-cases and are found in parts of the southwest. These beetles "reflex bleed." This means that blood oozes from their leg joints when they are disturbed. Most predators, including ants, birds and lizards, will not eat lycid beetles.

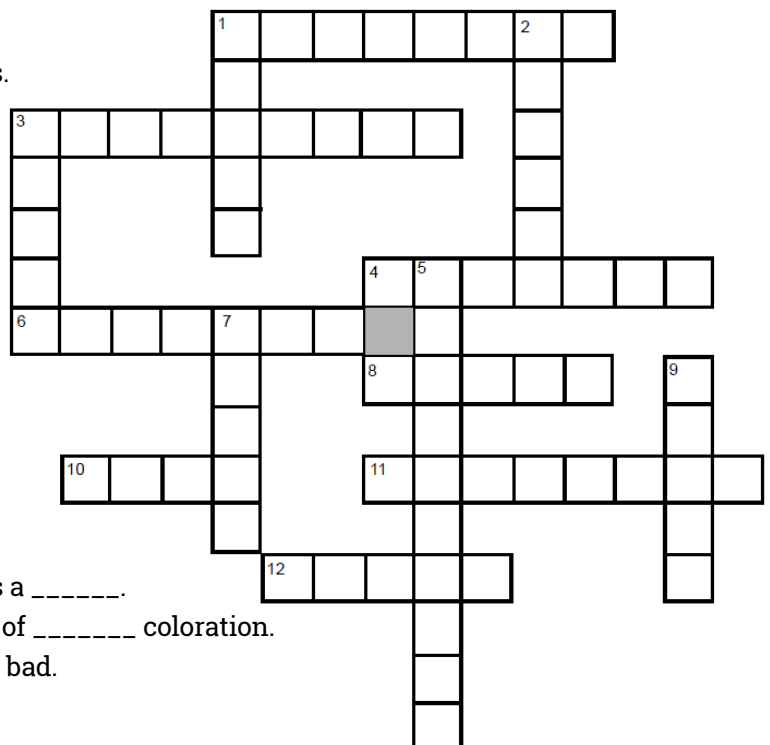
CROSSWORD

Across

- 1. Mimicry involving edible mimics and inedible models.
- 3. Mimicry involving inedible models and mimics.
- 4. Another name for aposematic coloration.
- 6. Term used to describe mimicry of a part of the environment.
- 8. Term used to describe the organism that is mimicked.
- 10. Cryptic predator in Arizona: Mountain _____.
- 11. One component of crypsis.
- 12. Predators learn through _____ and error.

Down

- 1. In crypsis, organisms into their environment.
- 2. Region where Henry Bates collected butterflies.
- 3. When an organisms looks like something it is not, it is a _____.
- 5. Black and yellow coloration is considered to be a type of _____ coloration.
- 7. Aposematically colored animal in Arizona that smells bad.
- 9. Prey use crypsis and mimicry to _____ predation.





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TEACHING GUIDE

Overview

In this activity, students will read about the different types of animal mimicry. Then, they will be provided with some examples and must use their knowledge to correctly identify the type of mimicry being represented. Finally, they will complete a crossword puzzle to help assess their understanding of the reading.

Suggested Procedures

1. Print the worksheet above. If possible, print it double sided.
2. Have the students read the article and complete the activity under Which Is It?
3. Discuss the answers.
4. Have students complete the crossword puzzle. They will need to use information from the reading.
5. Discuss the responses.
6. Ask students to answer the following questions for reflection:
 - What are the different types of mimicry discussed in the article? What is the difference between them?
 - Can you name animals (not included in the reading) that display mimicry? What type of mimicry is it?
 - How might natural selection help us understand how mimicry may have developed in some animals?

Grade

8th

AZ Science Standards

- 8.L4.U1.11

Science and Engineering Practices

- Obtain, evaluate and communicate information
- Engage in argument from evidence

Crosscutting Concepts

- Cause and Effect