A Teacher's Guide to Animals with Bad Reputations

Grades 1–12

Description: Slimy? Scary? Sneaky? Separate fact from fiction in this investigation of fascinating animals that are often misunderstood.

Outcomes: Students will understand that animals look and behave in ways that allow them to better survive in their environments. Students will recognize common misconceptions and animals stereotyped as "bad," while exploring the natural behaviors behind these "bad reputations."

Suggested Activities Before Your Outreach

Vocabulary

Myth
Reputation
Scavenger
Impression
Biodiversity

- Discuss what it means to have a bad reputation. Read Jerry Spinelli's *Maniac Magee.* Discuss what characters in the book think of Jeffrey "Maniac" Magee. What causes the other characters to perceive him as a "bad" kid? How does the idea of a bad reputation apply to the theme of racism in the book?
- Have the students brainstorm a list of animals they think would have bad reputations. Have the students choose one of the animals from the list and freewrite about that animal. Encourage them to include not only what they know about the animal but also how they feel about the animal.
- Take a bug walk. Look for different kinds of insects. Have the students keep a journal using pictures and words to describe the insects they encounter. How do these insects challenge their reputations? Use a field guide to identify the insects.

Suggested Activities After Your Outreach

Classroom Activities:

- Discuss the lesson with your students. What new ideas or information did they learn? Was anything confusing? What did they like best?
- Go back to the list of animals you made before the visit. Pay particular attention to the emotions that were listed. Do your students feel differently about any of those animals now? What, if anything, has made them change their minds? How would research on the animals change their opinions of the animal? Test the theory! Choose several of the animals and research why they do what they do and why they look the way they look.
- Conduct interviews with people in your community about their feelings and knowledge of sharks. Look for common themes or trends in your results. Report your findings to the class. Do your results match the class results? Are most people afraid of sharks? How do most people in your community feel about sharks? Why do you think people in your community feel this way? Would your results change if you lived in a different part of the country? Why?
- See the attached **Animals with Bad Reputations Activities: Fact or Fiction** for a game that encourages players to really think about what they think they know about animals!

Homework Assignments:

- Try the Crazy and Cool Critter Crossword (attached) and reinforce vocabulary concepts.

Interdisciplinary Activities:

- See **Animals With Bad Reputations Activities: Wolves** for activities that explore the role of these mysterious animals in literature, music, and mythology.
- See **Measure Up!** (attached) for a math activity that allows students to take a closer look at some animals with bad reputations.

Writing Prompts:

- Using the interviews of different worms at http://www.middleschoolscience.com/worminterviews.pdf as a guide, have the students write their own interviews with an animal with a bad reputation. Allow them to set the record straight about some misunderstood animals. Research the animal and publish the interviews so the whole community can learn about some amazing animals.

Class Project Ideas:

- In groups, plan a public service announcement about animals with bad reputations. After discussing with your class what PSAs are and how they are used, come up with a plan to use PSAs as a way of helping educate the community about animals with bad reputations. Research your animals. For great examples of PSAs to share with your students, check out The American Heart Association website http://www.heart.org hey can choose to do a television spot, a print ad, or a billboard. Spread the word!
- Join Project Pigeon Watch.
  Observe pigeons in your area to help scientists learn about the behavior of these animals with bad reputations—from communication to courtship behavior and more. For details, visit http://ehrweb.aaas.org/ehr/parents/Pigeons!.html

Resources for Students

Websites:

- Learn about the earthworm. Check out *The Virtual Worm* to get a really close look at this amazing animal! http://www.naturewatch.ca/english/
- The aye-ayes of Madagascar seem very strange to us, but they are really amazing animals. Learn more about aye-ayes on this National Geographic page:
  http://animals.nationalgeographic.com/animals/mammals/aye-aye/

Print:

- *In the Trees, Honey Bees*, Deborah Heiligman
- *Eyewitness: Life*, David Burnie
- *Shark* (DK Eyewitness Books), Miranda MacQuitty
- *Insects* (DK Eyewitness Books), Laurence Mound
- *Reptile* Eyewitness), Colin McCarthy
- *Compost Critters*, Bianca Lavies
- *The Kid's Guide to Research*, Deborah Heiligman

Additional Resources for Educators:

- *Insects* (Peterson First Guides), Christopher Leahy

General Animal Resources

- *Janice Van Cleave's Animals: Mind-Boggling Experiments You Can Turn into Science Fair Projects*, Janice VanCleave
- *How Nature Works* (Eyewitness Science Guides), David Burnie
- *Dictionary of Nature: 2,000 Key Words Arranged Thematically*, David Burnie

Pennsylvania Academic Standards in Environment and Ecology

- 4.1, 4.4

Pennsylvania Academic Standards in Science and Technology

- 3.1.A

New Jersey Standards

- 5.1, 5.3

Animals With Bad Reputations Activity: Fact or Fiction

Fact or Fiction?

Test your knowledge of these misunderstood animals!

This game can be played in just about any "game show" format. Each card that follows has a statement written in bold that is to be read aloud. The "contestant" must then decide whether or not the statement is true. The answer is written below the statement, and a brief explanation is given. You may need to spend time discussing the difference between the terms "fact" and "fiction."

- One option is to turn it into a "Flyswatter Showdown!" The class can be split into two groups. Before you start, draw a line down the center of the blackboard. Then, write both "fact" and "fiction" on each side of the board. Each group will send one student up to the board. The chosen students will grab a flyswatter and wait for the statement to be read aloud by the teacher. Read the statement aloud and have each student swat the correct word: "fact" if the statement is true, "fiction" if the statement is false.

- Grab a ball and shoot some hoops! Divide the class into groups (at least two groups) and give each group a dry erase board. The teacher reads the statement and the groups get a chance to discuss their answers. They must then write their answers (fact or fiction) on the dry erase board. All groups reveal their answers and give a short explanation as to why they think that they have the correct answer. Any groups with the correct answer get a chance to shoot a ball into a basket for a point.

- Choose your own game. The cards can easily be adapted to your class' favorite game. Be creative!

Follow-up:
1. How did your class do? Were there any answers that were particularly surprising? Why were you surprised?
2. Many of the "fiction" statements were statements that real people believe about animals. Why would some people assume those statements to be true? Can you think of movies or books that contain any of the false statements included in this game?
3. Try your hand at setting the record straight! As a class, write your own Fact or Fiction cards.

Geckos are amphibians like frogs or salamanders.

Fiction: Geckos are reptiles. Both amphibians and reptiles are cold-blooded, but a closer look at a gecko's skin tells us that they are not amphibians. They have dry, scaly skin like snakes, not moist, smooth skin like frogs.

Some reptiles have three eyes.

Fact: Some lizards have what is called the pineal eye or "third eye" that helps them to regulate their body temperature among other things. It has some of the same structures that our eyes have like a lens, cornea, and nerves that connect it to the brain. It can't see clear images like our eyes, but it can sense light.

An adult giraffe and an adult human have the same number of bones in their necks.

Fact: All mammals (except for sloths), no matter how big or small, have 7 vertebrae in their necks. The vertebrae in a giraffe are simply larger than your vertebrae.

Snakes can eat prey larger than their heads.

Fact: The structure of a snake's skull allows it to eat prey larger than its head. A snake's jaw has two joints where we only have one. Also, where our chin is solid, a snake's lower jaw separates at the front. The two sides are joined by a stretchy ligament (tissue that helps connect bones to one another).

Some birds have three eyelids on each eye.

Fact: Some birds have a top and bottom eyelid like you do, but they have an additional eyelid called the nictitating membrane. The third eyelid sweeps across the eye from side-to-side. The bird can see through this eyelid so it can keep its eye free from dirt and still hunt its prey.

Rats' teeth are so strong, they can chew through concrete.

Fact: Rats have long incisors that are basically like little chisels in their mouths. Their teeth continue to grow their entire lives. These teeth must be worn down by gnawing. Sometimes that gnawing is even through concrete!

Mice are invertebrates. (That means that they don't have any bones!)

Fiction: Mice have bones just like all of the students in this class. They can very often squeeze under and into small spaces because of the stretchy ligaments (tissue that helps to connect bones to one another) between their bones.

Penguins only live in cold places like Antarctica.

Fiction: Some penguins live in much warmer places than Antarctica. The Galapagos penguin, for example, lives in an area that during the summer reaches temperatures of around 88° F.

An iguana will only grow as big as its cage, so if you want a small iguana, keep it in a small cage.

Fiction: Iguanas grow to about 6 ft. in length. They need large spaces in which to climb, eat, sleep, drink, and move around. If an iguana is housed in a cage or an enclosure that is too small, that iguana will not be healthy and most likely will die due to poor care. Always make sure you know exactly what your pet needs to be healthy and happy.

You get warts from touching toads.

Fiction: You cannot get warts from touching toads. Warts are caused by human viruses, not by bumpy amphibians.

Turtles can remove their shells in order to dry off.

Fiction: Turtles and tortoises cannot remove their shells. Their backbone and ribs are fused to their shells. You can't take off your backbone…and neither can a turtle!

All bats drink blood.

Fiction: Not all bats drink blood. Most bats are actually insectivores (which means that they only eat bugs!) There are even some bats that only eat nectar or fruit. There are actually only three species of bats that drink blood out of about 930 species.

Opossums hang by their tails.

Fiction: Opossums do not hang by their tails. Opossums can grasp with their tails in order to drag materials like leaves to make a nest. They also use their tails to help them to balance when climbing trees. An opossum's body is too heavy for them to hang upside down by their tails.

When you see a peacock with big, beautiful tail feathers, you're always looking at a male.

Fact: All peacocks (those beautiful birds with the lovely tail feathers) are male. Peahens are mostly brown in color, and while they do have tail feathers, they are not as large or brightly colored as the male peacocks. The males use their gorgeous tail feathers to attract a mate.

Turkey vultures throw up to defend themselves.

Fact: Turkey vultures have very acidic stomach acid so that when they vomit the contents of their stomachs it smells really bad. They can also project that vomit up to 6 feet! That defense is foul enough to keep quite a few predators away.

Only female mosquitoes bite humans.

Fact: Mosquitoes mainly eat a diet of nectar, but females also need the blood from other animals-including you! The females need the proteins in the blood from other animals to produce and lay eggs.

Flamingos can fly.

Fact: A flamingo flies in very much the same way that a goose might fly. In fact, it has been said that the noise that they make during flight sounds very similar to a flock of geese. Flamingos don't spend their whole day on one leg!

Skunks fart at their predators in order to defend themselves.

Fiction: A skunk's spray is a liquid made up of the chemicals sulphur, butane, and methane. It's not gas, but instead a chemical that can be sprayed up to 6 ft in either a fine mist or a stream.

Animals with Bad Reputations Activity: Wolves

The Big Bad Wolf…

Introduction

Blowing down the homes of respectable swine. Eating poor old Grandma and stealing her nightie. Chasing young men through the forest and swallowing their friends whole. Let's face it; the wolf is one mean villain. In the activities that follow, students are asked to not only examine the works that place the wolf in such a bad light but also to look into why this majestic animal is always the "big, bad wolf."

Activities

- As a class, brainstorm the stories that use the wolf as the bad guy. Many of the stories have been around for centuries, but they are still popular today. Discuss why these stories have lasted so long and are still being told in books and movies. Take an example, such as Little Red Riding Hood, and change the wolf character to a different animal. Would the story be the same if Grandma was eaten by a fuzzy bunny? Allow the students to read modern books that change these old stories and place the wolf-villain in a different light. Here are some interesting examples:

Little Red Riding Hood: A Newfangled Prairie Tale (Aladdin Picture Books)
Lisa Campbell Ernst

Three Little Hawaiian Pigs and the Magic Shark
Donivee M. Laird

The True Story of the Three Little Pigs
Jon Scieszka, Lane Smith

Politically Correct Bedtime Stories: Modern Tales for Our Life and Times
James Finn Garner
(For your more advanced readers)

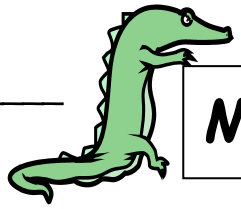
Little Red Riding Hood in the Big Bad City
John Helfers, Martin Harry Greenberg
(Editors)

How does changing the setting or the perspective of the story change the character of the wolf? How would these stories change if the wolves behaved like real wolves? Research the real wolf's behavior. Rewrite these stories to reflect real wolf behavior and facts.

Listen to Sergei Prokofiev's "Peter and the Wolf." At the entrance of each of the characters, ask the students to guess what animal the instrument is supposed to represent. Then, using the story as a guide, reveal to the students the intended animal. Discuss how the different instruments imply an animal to the listener. How is the sound of the wolf in the piece different than the sounds of the other animals? What other instruments could represent a wolf? Gather instruments together and experiment with sound to represent different animals. Remember to include animals with bad reputations. Discuss the experience. This great "Peter and the Wolf" resource breaks down each part of the piece:
http://library.thinkquest.org/C005400/musi/prokofievpnw.html

- There are some cultures around the world that place the wolf in very high regard. For example, some American Indian cultures use the wolf as a symbol of loyalty and wisdom. The ancient Romans considered the wolf a symbol of the power of Rome and maternal love since the time that the founders of the ancient city, Romulus and Remus, were suckled as babies by a she-wolf. Research myths from other cultures involving the wolf. How are these stories different from the books above and the stories with which we are most familiar? Try your hand at writing your own.

Name:_____ Date:_____



Measure Up!

For this activity, each pair of students will need a tape measure, a yardstick, and a stopwatch. Each student will need a pencil and a piece of graph paper.

1. Killer whales are mammals just like you. They need to breathe air--they don't have gills like fish. When they swim under the water, they need to hold their breath. They can hold their breath for up to 15 minutes. How long can you hold your breath?

- Take a deep breath. Hold your breath. Your partner will then begin the stopwatch. When you need to take a breath, your partner will stop the stopwatch. Record your time in seconds.
  Your time: _____ secs. Killer whale: 900 secs.
- Discuss your results with the class. Calculate the class average length of time. Record that average below.
  Class average: _____secs.

2. Cockroaches may lay eggs, but the eggs are not quite like chicken eggs. A female cockroach lays one egg sac at a time that can have anywhere from 30 to 40 eggs inside of it. One single female can lay 4 to 8 egg sacs during her lifetime. That's more than 300 baby cockroaches! How many siblings do you have?

- Record the number of children in your family. Count all of your brothers and sisters. Don't forget to count yourself!
- Your family's offspring: _____ children Cockroach: 300 children
- Discuss your results with the class. Calculate the class average number of offspring. Record that average below.
  Class average number of offspring: _____ children

3. Brown bats are nocturnal. They hunt at night while you're in bed sleeping; but bats need to sleep, too! In fact, brown bats sleep for about 19 hours during the average day. How many hours did you sleep last night?

- Record the number of hours you slept last night.
  Your amount of sleep: _____hrs. Brown bat: 19 hrs.
- Discuss your results with the class. Calculate the class average amount of sleep. Record that average below.
  Class average: _____hrs.

(Continued on back)

- Graph your results on a separate piece of graph paper. Create a bar graph that shows your amount of sleep, the average class amount of sleep, and the brown bat's amount of sleep. Remember to label your graph and give your graph a title!

4. Turkey vultures may look silly with their bald heads and their turkey-like walk, but when these large birds take flight, they are nothing short of amazing. From tip to tip, the turkey vulture's wingspan is 6 feet. What's your "wingspan"?

- Hold your arms straight out from your sides. Your partner will then measure the distance from the fingertips of your left hand to the fingertips of your right hand. Record the length in inches.
  Your wingspan: _____in. Turkey Vulture: 72 in.
- Discuss your results with the class. Calculate the class average wingspan. Record that average below.
  Class average: _____in.
- Graph your results on a separate piece of graph paper. Create a bar graph that shows your wingspan, the average class wingspan, and the turkey vulture's wingspan. Remember to label your graph and give your graph a title!

5. A brown bear typically walks on all fours. However, when this awesome mammal stands on two legs and stretches to its full height, a brown bear is nearly 8 feet tall. How tall are you?

- Stand up straight against a wall. Your partner will then use the yardstick (or tape measure if your yardstick does not have foot/inch designations) to measure your full height from your feet to the top of your head. Record your height in feet to the nearest inch.
  Your height: _____ft. _____in. Brown bear: 8 ft. 0 in.
- Discuss your results with the class. Calculate the class average height. Record that average below.
  Class average: _____ft. _____in.
- Graph your results on a separate piece of graph paper. Create a bar graph that shows your height, the average class height, and the brown bear's height. Remember to label your graph and give your graph a title!

6. Crocodiles stay underwater in order to stay safe as well as to hunt their food. While a crocodile is under the water, it slows its heart rate down to about 3 beats per minute (bpm) in order to help conserve or save oxygen in its body. How often does your heart beat in a minute?

- Find your pulse by touching the first two fingers very gently at your wrist or your neck. Do not use your thumb! Your partner will start the stopwatch. Count the number of beats that you feel for 10 seconds. Multiply your result by 6 in order to get your heart beats per minute. Record your results below.
  Your heart beats per minute: _____ bpm
  Crocodile: 3 bpm
- Discuss your results with the class. Calculate the class average bpm. Record that average below.
  Class average: _____ bpm.
- Graph your results on a separate piece of graph paper. Create a bar graph that shows your heart beats per minute, the average class bpm, and the crocodile's bpm. Remember to label your graph and give your graph a title!

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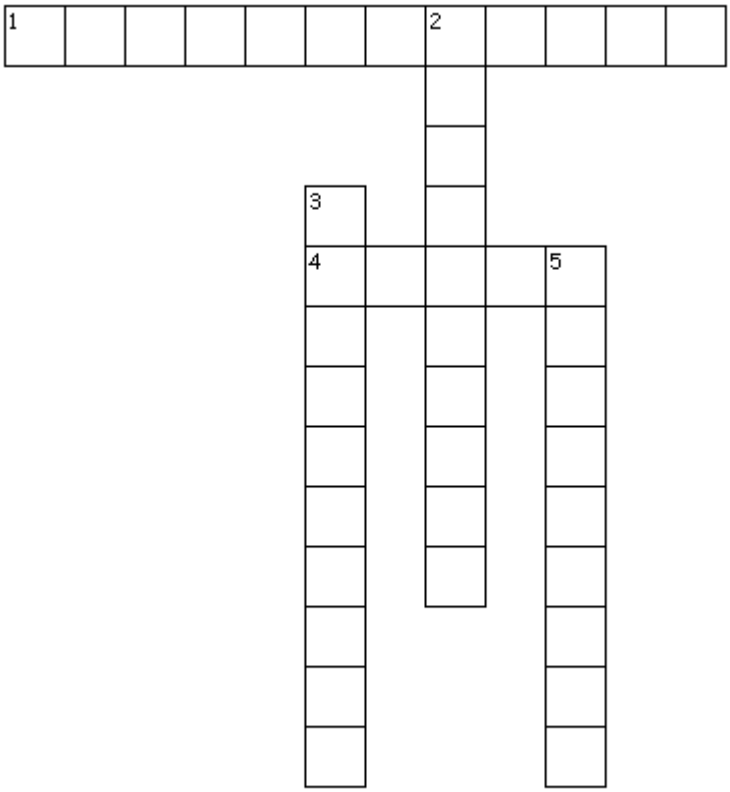
Crazy and Cool Critters Crossword



Word Box

myths

impression

reputation

biodiversity

scavenger

Across

1. _____ in an environment is important. It means that many different kinds of plants and animals can survive in the same place.
4. People often believe _____ about animals with bad reputations—even if the stories are not true.

Down

2. Animals can sometimes get a bad _____ when people do not understand why they do some of the scary or gross things that they do.
3. Seeing a movie where an animal is scary can leave you with the _____ that the animal is dangerous.
5. A cockroach that eats animals and plants that are already dead is an example of a _____.