THE ACADEMY OF NATURAL SCIENCES

A Teacher's Guide to
Animals with Bad Reputations
Grades Pre-K -2

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 some common misconceptions and some commonly labeled "bad" animals while exploring the natural behaviors behind these "bad reputations."

Suggested Activities Before Your Outreach:

Vocabulary

survive	predator
scavenger	prey
defense	

- Create a K-W-L chart about animals with bad reputations and fill in what the students already know about animals that have a bad reputation and what they want to know about animals with bad reputations. With younger students, the discussion can center around animals that are "scary," "gross," or "annoying" if the concept of reputations has never been addressed. Leave the "What We Learned…" column blank and have students fill in new information after the outreach. You may want to focus on one animal (shark, snake, insect, etc.).
- Talk about what it means to have a bad reputation. Read No, David! by David Shannon. Talk to the students about how they see David. Then, look at the story from the mother's perspective. Ask the class what they think it will be like when David goes to school. Will his reputation follow him there? Will David be a good student? Then, read David Goes to School by David Shannon. See if their guesses based on David's reputation were correct.

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? Fill in the final column of the K-W-L chart. Ask if their feelings about any of the animals have changed.
- 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. Use a field guide to identify the insects.
- Complete a word web on snakes. Have the students include not only their knowledge on the physical and behavioral aspects of snakes, but also their emotional reactions to snakes. Talk

about why students have those feelings about snakes. As a class research snakes and their behaviors and repeat the activity.

Homework Assignments:

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

Interdisciplinary Activities:

- See "Animals with Bad Reputations Activities: Bats" for an activity that explores perceptions of these winged mammals!
- See "Animals with Bad Reputations Activities: Measure up!" for a measurement activity using animals with bad reputations.
- Color the attached illustrations of animals from Wildlife of Pennsylvania (http://www.pgc.state.pa.us – Go to the "Education" link off the home page, then, the coloring book is under "Wildlife for Kids") Discuss why these animals might have a bed reputation. Draw new illustrations of other animals in your area that might have bad reputations and write captions describing some cool facts about each animals.

Writing/Drawing Prompts:

- I think (an animal of the student's choosing) is an awesome animal because…
- Last night I saw a bat fly in the sky. I wonder where it was going.
- My name is Sylvia/Sylvester Snake…

Class Project Ideas:

- See attached "Paper Garden™ Bee" and "Paper Garden™ Worm." Create these critters as your own animal ambassadors. Copy each paper animal onto construction or cardstock paper. Then, follow the directions attached. As a class, talk about why people might be grossed out or afraid of these invertebrates. Then, research as a class how these animals help us. What do they do to make sure our fruits, vegetables, and flowers grow? Then, put on your own outreach! Go to different classrooms with your paper bee or your paper worm. Talk to others about their bad reputations and why we need them -even though we might be scared of them.
- Write and perform a play that would show the rest of the school what you have learned about animals with bad reputations. Research animals and create realistic costumes. Invite other classes to see your play and encourage them to ask questions about the animals you chose after the performance.

Resources for Students

- Honey Bees by Deborah Heiligman
- Compost Critters by Bianca Lavies
- Nature's Yucky!: Gross Stuff that Makes Nature Work by Lee Ann Landstrom & Karen I. Shragg
- Shark (Eyewitness Book) DK Publishing (2004)
- The Yuckiest Site on the Internet! Check out fun information about worms and cockroaches at http://www.yucky.com.
- The Creepy, Crawly Book by Bobbi Katz
- Diary of a Spider by Doreen Cronin

- Eyewitness: Reptiles by Colin McCarthy
- Insects (Eyewitness Books) DK Publishing (2004)
- Amazing Insects (Eyewitness Juniors) by Laurence Mound

Additional Resources for Educators

- Peterson First Guide to Insects of North America (Peterson First Guides(R)) - by Christopher Leahy, et al. If you decide to do a "bug walk" this is a handy, easy-to-use guide to bring along.
- Beautiful, fun, and informative information on insects. http://www.pbs.org/wnet/nature/alienempire
- A great resource on wolves. Contains some great "mythbusting" information! http://www.wolf.org
- Janice VanCleave's Insects and Spiders: Mind-Boggling Experiments You Can Turn into Science Fair Projects by Janice VanCleave (great general insect resource!)
- This is a great site by a "spider expert" located in Washington, D.C. It dispels quite a few widely held and incorrect beliefs about spiders. http://www.washington.edu/burkemuseum/spidermyth/
- Janice Van Cleave's Animals: Mind-Boggling Experiments You Can Turn into Science Fair Projects- by Janice VanCleave (great general animal resource!)
- How Nature Works (How It Works) by David Burnie (great general animal resource!)
- A Dictionary of Nature: 2,000 Key Words Arranged Thematically by David Burnie (great general animal resource!)
- This Canadian site has a great "WormWatch" section. The virtual worm is especially helpful, but may take some interpretation for younger students. http://www.naturewatch.ca/english/

AAAS's Project 2061 Benchmarks

5. The Living Environment: Diversity of Life

By the end of the 2nd grade, students should know that:

- Some animals and plants are alike in the way they look and in the things they do, and others are very different from one another.
- Plants and animals have features that help them live in different environments.
- Stories sometimes give plants and animals attributes they really do not have.

5. The Living Environment: The Evolution of Life

By the end of the 2nd grade, students should know that

- Different plants and animals have external features that help them thrive in different kinds of places.

Pennsylvania Academic Standards in Environment and Ecology

4.7.4 A. Identify differences in living things.
B. Know that adaptations are important for survival

Pennsylvania Academic Standards in Science and Technology

3.3.4 A. Know the similarities and differences of living things.
B. Know that living things are made up of parts that have specific functions.

New Jersey Standards

5.10. A.1 Associate organisms' basic needs with how they meet those needs within their surroundings.

Animals with Bad Reputations Activity: Bats

Bats: From Dracula to Stellaluna

Introduction: Mention bats to most people and immediately images of Dracula and Halloween come to mind. Bats have one of the worst reputations. They've been a staple in horror movies and urban legends for so long that it's become difficult to distinguish fact from fiction when it comes to these amazing animals. With this activity, explore the truth behind bats and help to spread some "bat friendly" opinions!

Background: Bats make up about 20% of all mammals on earth and can be found in many different habitats from cities to jungles - just about anywhere below the Arctic Circle. There are about 930 known species of bat. Within those species, there are bats that eat nectar and pollen, insects, fish, rodents, other bats, and, yes, blood. No other mammal has wings and is capable of "true flight"- that is, bats do not glide like some species of mammals, but actually fly. Some bats rely on echolocation to help them navigate through their environments. Echolocation involves the bat calling at a higher frequency that is usually higher than we can hear. Those sounds bounce off objects in the bats environment and bounce right back to the bat. The bat then interprets the returning echoes and can better navigate through the darkness. For more information: http://www.batcon.org

Activities:

- Have the students make a list of words they think of when they hear the word "bat." Encourage all responses. Have the students draw a picture in response to the word "bat." Talk about experiences students may have had with bats. These experiences can be first- or second-hand. Save the lists, pictures, and notes from the discussion.
  Read Stellaluna by Janell Cannon as a class. Discuss Stellaluna as a character. Is she a good friend? Do the students like her? Why or why not?
  Have the students repeat the initial activity. They are again to make a list of associative words and draw a picture in response to bats. Come together as a class and look at the first and second sets of pictures. Are the pictures different? Why or why not? How did the story change their feelings about bats?
- As a class, become bat experts! Look into some of the habits and behaviors of bats. Have small groups of students research what bats eat, what kinds of bats live in your area, their family structure, and how they really use echolocation. Present your findings to the class.
- Why save bats for Halloween? Decorate your classroom with bats all year long to help combat any scary feelings about bats. As a class, come up with a sign to place in the hallway explaining that your classroom is a "bat-friendly" space- not just on Halloween! Be sure to include neat facts you have discovered about these amazing animals. Encourage other classes to celebrate bats every day of the year.
- Build a bat house! Ask parents to help small groups of students to help build bat houses for placement in the schoolyard, backyards, and all around town. Learn all about the importance of bat houses, how to build one, and how to hang it properly at www.batconservation.org.

Animals with Bad Reputations Activity: Measure Up!

How do these animals with bad reputations measure up?

The following handout is intended to reinforce measurement concepts as well as to give the class an opportunity to discuss some animals that have some awful reputations. Therefore, in addition to an answer key, some interesting and amazing facts about each of the animals used on the handout are provided below.

Answer Key:

1. **8 cm.**
2. **12 cm.**
3. **8 cm.**
4. **Answers may vary.**
5. **Answers may vary.**
6. **Answers may vary.**

Lions:

- Lions have an average of 30 teeth in their mouths.
- One female lion can have 1 to 6 cubs per litter.
- When lions greet each other, they will rub their heads together and loop their tails up in the air.
- Lions can roar around 1 year old.
- Female lions do most of the hunting for a pride.
- Lions would rather run away from a human than try to eat it!
- For more info: Check out the online Animal Diversity Web at http://animaldiversity.ummz.umich.edu

Sharks:

- Sharks can never loose all of their teeth. If a tooth breaks, falls out, or is shed, a new one in a row of teeth right behind it will replace it.
- Sharks were around long before the dinosaurs. The first sharks date back about 400 million years ago.
- Sharks cannot swim backwards!
- Some sharks lay eggs when they reproduce while others give birth to live young.
- Sharks can detect vibrations from other animals moving through the water.
- Some sharks have three eyelids on each eye! The third eyelid is called the nictitating membrane.
- For more info: Check out the online Animal Diversity Web at http://animaldiversity.ummz.umich.edu

Monitor lizards:

- The largest living lizard (The Komodo dragon) is a monitor lizard. They can grow to be almost 11 ft. length and weigh up to 550 lbs.
- Monitor lizards use their tongues in very much the same way that a snake might use its tongue- to sense the world around them!
- Monitor lizards use their tails to defend themselves by whipping them at any predators.
- Monitor lizards can't shiver.
- Most monitor lizards can stay under water for up to 1 hour at a time.
- For more info: Check out the online Animal Diversity Web at http://animaldiversity.ummz.umich.edu

Earthworms:

- One of the world's longest earthworms is almost 10 ft. long. (The Giant Gippsland Earthworm)
- Earthworms do not have lungs- instead they absorb oxygen through their skin.
- Earthworms have 5 hearts!
- Baby earthworms hatch from cocoons no bigger than a single grain of rice.
- Charles Darwin once said of earthworms "It may be doubted whether there are many other animals in the world which have played so important a part in the history of the world...."
- There are a little less than 3,000 earthworm species.
- For more info: Check out Worm World at http://www.yucky.com

Tarantulas:

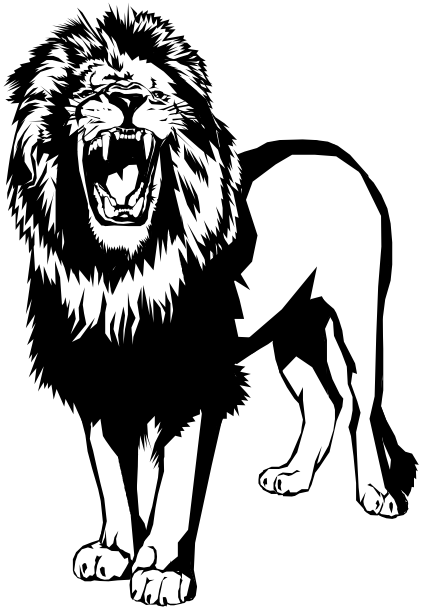
- Some tarantulas like the Mexican Red-knee tarantula will dig burrows for themselves and then line the burrow with their own silk.
- Even though tarantulas have eight eyes, their vision is not great. They rely on sensitive hairs on their legs to get around.
- Female Mexican pink tarantulas can live up to 30 years!
- Tarantulas often employ a "sit and wait" strategy to catch their food. They use their silk to help them detect vibrations from possible moving prey.
- The tiny hairs that cover the body of a tarantula are part of an effective defense strategy. These hairs, once released from the body are an irritant to the eyes, nose, and skin of many predators.
- For more info: Check out the online Animal Diversity Web at http://animaldiversity.ummz.umich.edu

*The following handout is double-sided. The students may use any standard ruler with centimeter markings. If the students are also working on measurement using inches, they may also get an approximate inch measurement.

Name:_____ Date:_____

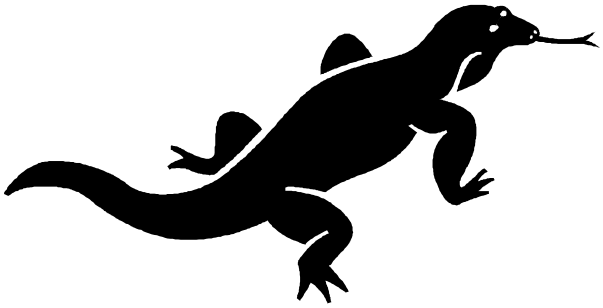
Do you like animals? Even though we may think some animals are scary, weird, or disgusting, we share our world with some pretty amazing animals!

1. How many centimeters tall is this picture of a lion? Use your ruler to find out!



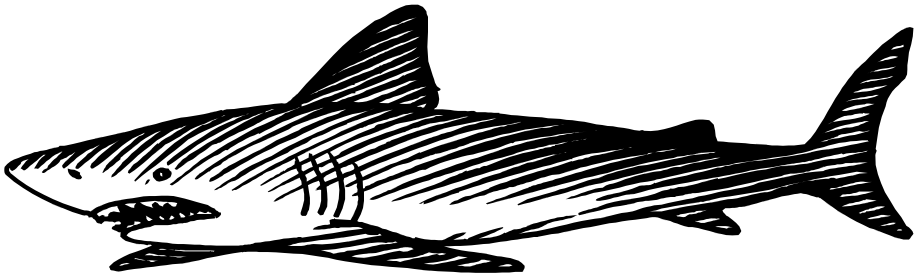
_____

2. How many centimeters long is this picture of a monitor lizard? Use your ruler!



_____

3. How many centimeters long is this picture of a shark? Use your ruler to find out?



Continued on Back!

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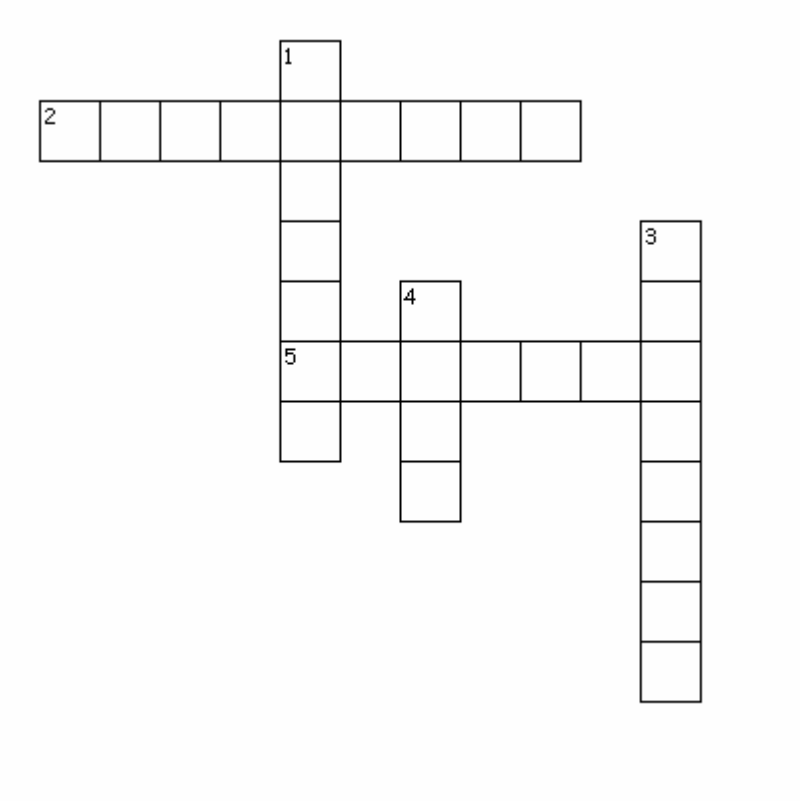
4. Draw an earthworm that is 6 centimeters long.

5. BONUS! Draw a tarantula with 8 legs that are each 2 centimeters long.

Crazy and Cool Critters Crossword



Word Box

survive

predator

scavenger

prey

defense

Across

2. A cockroach that eats animals and plants that are already dead is an example of a _____.

5. A shark has big and sharp teeth. You may think those teeth are scary, but they help the shark to eat its food and _____ in the ocean!

Down

1. A skunk's spray may gross you out, but for the skunk it is an awesome _____.

3. A _____ is an animal that hunts, kills, and eats other animals.

4. A _____ animal is an animal that is eaten by predators.