

Photo Description



This image shows a colorful snake with bright red, black, and yellow (or white) bands wrapped around its body resting on a child's hand. The snake has a small head and smooth scales that shine in the light. You can see how the snake curves gently as it moves across the person's palm.

Scientific Phenomena

Anchoring Phenomenon: Why does this snake have such bright colors arranged in bands?

This snake displays warning coloration (also called aposematic coloration). The bright red, black, and yellow bands are nature's way of saying "stay away—I might be dangerous!" In reality, king snakes are harmless to humans, but their colors mimic venomous snakes like coral snakes, which protects them from predators. This is an example of mimicry—when one animal copies the appearance of another animal to stay safe. The snake didn't learn to do this; these colors are inherited from its parents and are part of its survival strategy.

Core Science Concepts

- * **Animal Adaptations:** Snakes have special body features (like colors and patterns) that help them survive in their environment. The king snake's stripes help it stay safe from predators.
- * **Physical Characteristics/Traits:** All snakes have scales, a long body, and no legs. Snakes can be different colors and patterns, and these traits help scientists identify different types of snakes.
- * **Mimicry in Nature:** Some animals look like other animals to protect themselves. This king snake looks like a venomous snake, so predators leave it alone—even though it's actually harmless.
- * **Biodiversity:** There are many different kinds of snakes in the world. Each type has its own special colors, size, and habitat where it lives.

Pedagogical Tip:

First graders learn best through sensory observation and comparison. Rather than jumping to the "why," start with "what do we see?" Ask students to describe the colors and patterns before explaining the science. This builds observation skills and makes the abstract concept of adaptation more concrete. Consider having students feel a toy snake or smooth rope to understand the texture without handling a live animal.

UDL Suggestions:

To support diverse learners: (1) Provide multiple means of representation by showing high-contrast images of king snakes, coral snakes, and other snakes side-by-side; (2) Offer tactile alternatives like snake models or textured images for students with visual impairments; (3) Use color-coded labels in images to help students with color-blindness distinguish the banding pattern; (4) Pair visual information with simple labels and repeated verbal descriptions to support English learners and students with processing differences.

Zoom In / Zoom Out

Zoom In: Cellular Level

If we could look really, really close at the snake's scales under a super-strong microscope, we'd see tiny cells all stacked together like building blocks. These cells make up the snake's skin and scales. The special colors (red, black, and yellow) come from tiny bits of color inside those cells called pigments. Different animals have different pigments, which is why some snakes are red and others are green or brown. The snake didn't paint itself—the pigments grew into its scales before it was even born!

Zoom Out: Ecosystem Level

This king snake lives in a whole ecosystem with many other animals and plants. The snake needs to eat small animals like mice and lizards to survive. Predators like hawks and larger snakes might try to eat the king snake, so its bright colors are like a "warning label" in the forest community. The bright bands protect the king snake, which means the king snake can hunt for food and stay alive longer. When we zoom out to see the whole forest or grassland, we see how the king snake's colors are one small but important part of how all the animals in that habitat stay safe and find food.

Discussion Questions

1. What colors and patterns do you see on this snake? (Bloom's: Remember | DOK: 1)
2. Why do you think this snake has such bright, colorful stripes? What might the stripes help the snake do? (Bloom's: Infer | DOK: 2)
3. How is this snake's body different from a worm or a lizard? What special features does a snake have? (Bloom's: Compare | DOK: 2)
4. If this snake didn't have bright colors, how might its life be different? What might happen? (Bloom's: Hypothesize | DOK: 3)

Potential Student Misconceptions

Misconception 1: "The snake painted itself with those colors."

Clarification: The snake's colors are not painted on—they grew with the snake's skin! Just like you have your own special hair and eye color that came from your parents, this snake's bright red, black, and yellow colors came from its parents too. The colors are part of how the snake was born. They stay the same for the whole snake's life.

Misconception 2: "Bright colors mean the snake is poisonous (or venomous)."

Clarification: This king snake has bright colors, but it is actually not dangerous to people at all! The bright colors trick predators into thinking the snake is dangerous, but really the king snake is harmless and friendly. The colors are like a costume that helps it stay safe. Some snakes are venomous (meaning they have poison in their bite), but not this one.

Misconception 3: "All snakes are slimy."

Clarification: Snake scales are dry and smooth, not slimy! If you touched this king snake, it would feel cool and silky, like smooth plastic or a river stone. Snakes don't have a slimy coating—their scales protect them and keep them dry. This is very different from frogs and salamanders, which do feel wet and slimy!

Extension Activities

1. Snake Pattern Hunt: Give students paper strips with patterns and have them sort or match them to create "snake bodies." Use red, black, and yellow markers or stickers. Students can create their own king snake patterns and explain why certain colors might work better together.
2. Animal Homes Investigation: Create a classroom "habitat map" with pictures of different snakes and their homes (forest, desert, grassland). Students can sort snake pictures into habitats and discuss what each snake needs to survive.
3. Color Role-Play: Have students wear colored paper vests or bands (red, black, yellow) and play a gentle predator-prey game where "brightly colored" animals are safe. Discuss why bright colors might scare predators away and how this helps the king snake survive.

Cross-Curricular Ideas

Math Connection: Pattern and Symmetry

Have students create repeating color patterns using snap cubes or colored blocks in red, black, and yellow sequences (like ABCABC or AABCAAB). Students can count how many of each color they use and graph their results. Ask: "If a snake has 10 bands and each band is 2 inches long, how long is the snake altogether?" This builds multiplication thinking in a concrete way.

ELA Connection: Descriptive Writing and Storytelling

After observing the photo, have students complete sentence frames like: "This snake is _____ and _____. It has stripes that are _____. The snake looks like it is _____." Create a class "snake poetry" book using rhyming words (snake/make, stripe/ripe, band/land) and illustrate with student drawings. Read aloud *Dear Deer: A Book of Homophones* by Gene Barretta to show how language plays with animal names.

Art Connection: Color Mixing and Pattern Design

Provide red, black, and yellow paint or markers and have students create their own imaginary snake designs on long paper strips. Discuss warm colors (red, yellow) versus cool colors (black, blue). Students can use different tools (brushes, sponges, stamps) to create varied stripe patterns and explain why they chose certain colors to make their snakes look "scary" or "safe."

Social Studies Connection: Habitats Around the World

Create a simple world map and show where king snakes live (North and South America). Compare king snakes to other snakes from different continents (African python, Asian cobra, Australian brown snake). Discuss how different animals in different places have different adaptations. Talk about how people in different countries might have different feelings about snakes based on the snakes that live near them.

STEM Career Connection

Herpetologist (Snake Scientist)

A herpetologist is a scientist who studies snakes, lizards, and other reptiles. They observe snakes in the wild or in laboratories to learn about how they live, what they eat, and how they stay safe from danger. Herpetologists might work in zoos, nature centers, universities, or parks. They help us understand snakes better so people aren't afraid of them!

Average Annual Salary: \$45,000–\$65,000 USD

Zoo Educator or Animal Handler

A zoo educator works at zoos, nature centers, or wildlife sanctuaries and teaches people about snakes and other animals. They might hold snakes (like the king snake in this photo!) and let visitors ask questions and learn cool facts. This job helps people understand that snakes are not scary—they are helpful and important to nature.

Average Annual Salary: \$28,000–\$40,000 USD

Wildlife Photographer

A wildlife photographer takes beautiful pictures and videos of snakes and other animals in their natural habitats. These photos help scientists study animals and help teach people about nature through books, websites, and magazines. Wildlife photographers travel to different places around the world to find amazing animals and capture their special behaviors and colors.

Average Annual Salary: \$30,000–\$60,000 USD

NGSS Connections

Performance Expectation: 1-LS1-1

"Use observations to describe patterns of what plants and animals (including humans) need to survive."

Disciplinary Core Ideas:

- 1-LS1.A - All organisms have basic needs, and they obtain food, water, light, and air from their environment.
- 1-LS1.B - Animals obtain food they need from plants or other animals.

Crosscutting Concepts:

- Patterns - The repeating red, black, and yellow bands form a pattern that helps the snake survive.
- Structure and Function - The snake's body structure (long, flexible, with special colors) helps it function and survive in its habitat.

Science Vocabulary

- * Adaptation: A special body part or behavior that helps an animal survive in its home.
- * Pattern: Repeating colors, shapes, or designs—like the stripes on this snake.
- * Scales: Tiny, smooth, flat pieces of skin that cover a snake's whole body.
- * Habitat: The place where an animal lives (like a forest, desert, or garden).
- * Predator: An animal that hunts and eats other animals.
- * Mimic: To look like or copy another animal's appearance.

External Resources

Children's Books:

- Snakes by Gail Gibbons (informative, colorful illustrations perfect for First Grade)
- The Danger of a Single Story: A Children's Book About Snake Stereotypes by Raúl the Third and Raúl the Third (addresses fear and misconceptions)
- National Geographic Little Kids First Big Book of Snakes by National Geographic Kids (vibrant photos and simple text)

Teacher Note: This lesson scaffold connects observable features (bright colors and patterns) to functional adaptations (protection from predators). For First Grade, keep the focus on description and simple "why" questions rather than complex evolutionary concepts. Always prioritize student safety and comfort—many children have snake anxiety, so normalize them as helpful animals and address fears with factual, calm information.