



Surprising Animal Senses

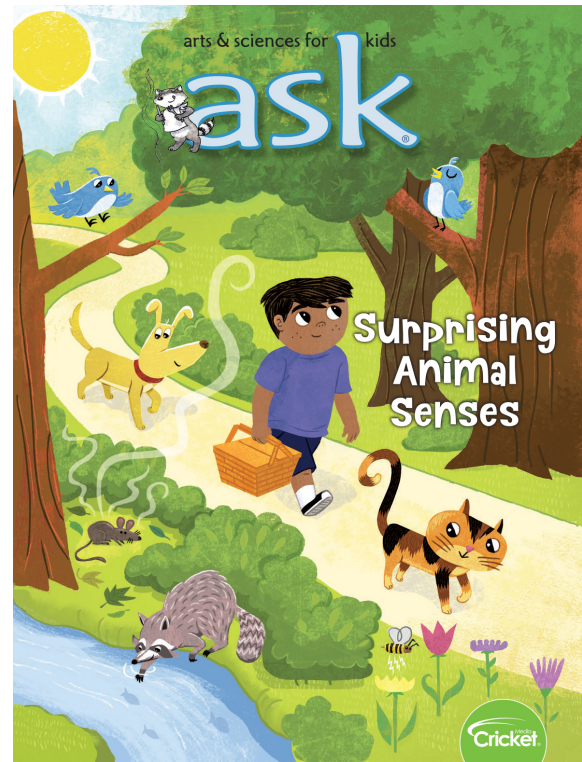
Beautiful photographs and interesting articles will lure children into the animal kingdom. This issue of ASK examines the familiar five senses, as well the extraordinary “special senses” that some animals utilize to navigate and thrive in the world.

CONVERSATION QUESTION

How do creatures of the land, sea, and air use their senses to navigate the world?

TEACHING OBJECTIVES

- Students will learn how different animals have different sensory abilities.
- Students will learn why windows and lights can be hazardous to birds.
- Students will learn about the shark’s sixth sense of electroreception.
- Students will collect evidence to support a conclusion.
- Students will identify problem-and-solution relationships.
- Students will identify the structure-and-function relationship.
- Students will write a piece of expository nonfiction.
- Students will study the mutual respect between humans and wildlife.
- Students will create a graphically enhanced article about animal senses.



In addition to supplemental materials focused on core STEM skills, this flexible teaching tool offers vocabulary-building activities, questions for discussion, and cross-curricular activities.

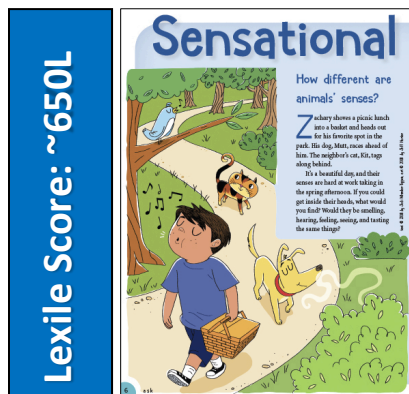
SELECTIONS

- **Sensational Pet Picnic**
Expository Nonfiction, ~650L
- **Why Do Birds Run into Windows?**
Expository Nonfiction, ~550L
- **Fishy Sixth Sense**
Expository Nonfiction, ~850L

Sensational Pet Picnic

pp. 6–11, Expository Nonfiction

Take a leisurely stroll to the park with Zac, Mutt, and Kit. Students will learn how sensory abilities vary among different species and how they are adapted to help each animal thrive in its environment.



RESOURCES

- Superior Senses

OBJECTIVES

- Students will learn how different animals have different sensory abilities.
- Students will collect evidence to support a conclusion.
- Students will write a piece of expository nonfiction.

KEY VOCABULARY

- **brush** (p. 7) woody material piled on top of other natural materials; scrub vegetation
- **network** (p. 8) a system of interconnected things
- **receptors** (p. 7) cells that receive stimuli

ENGAGE

Conversation Question: How do creatures of the land, sea, and air use their senses to navigate the world?

Set up simple sensory stations around the classroom (e.g., a canister filled with something fragrant, a box containing a textured object, etc.). Instruct children to visit each station and to identify the mystery object using the appropriate sense. Regroup, share answers, and lead a discussion about the important role that senses play for humans and for animals.

INTRODUCE VOCABULARY

Locate the sentences on pages 7 and 8 that contain the key vocabulary terms. Write these sentences on the board and ask students to infer the meaning of each word. Reveal the actual meanings and introduce the title of the article. Begin reading.

READ & DISCUSS

Pose the following questions that are relevant to the article's main idea. Facilitate meaningful conversation.

- What are the advantages of a dog's having 300 million scent receptors?
- Why do cats have such extraordinary hearing capabilities?
- How does our network of touch sensors help us to learn about our environment?

CONCEPT/SKILL FOCUS: Collecting Evidence

INSTRUCT: Review the main idea of the article with the class. (Different animals have different sensory abilities.) Have the students reread the article with a partner and highlight passages that directly address the five senses. Distribute the graphic organizer, *Superior Senses*, and have pairs of students work to complete the chart. Ask them to complete the **Think Tank** at the bottom of the page independently.

ASSESS: Visit pairs of students as they are collecting data to complete the graphic organizer. Specifically review the **Think Tank** section to evaluate individual understanding.

EXTEND

Language Arts "Sensational Pet Picnic" focuses on how animals use their senses on land, as Zac takes a journey with his dog and cat. Guide students to model the format of the article and create a piece of writing that teaches the reader about animal senses in the air or sea. Brief research will be necessary. Collect completed work and bind into a class book for your science center.

Superior Senses

Place an **X** in the column that indicates which character has the strongest sense. Support your answer with a statement from the article.

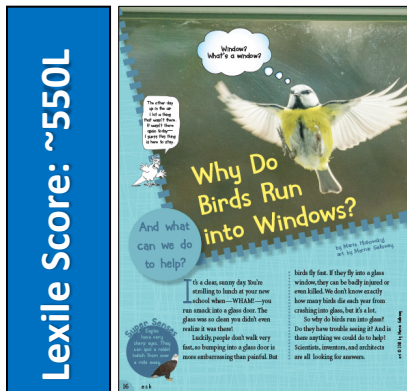
Who has the best ability to...	Zac (human)	Mutt (dog)	Kit (cat)	Page #	Supporting Sentence
see					
hear					
smell					
taste					
feel					

Think Tank: Who (Zac, Mutt, Kit) is most likely to steal your cookie? Catch a mouse? Solve a riddle? Answer these questions on the back of your paper and provide evidence to support your response.

Why Do Birds Run into Windows?

pp. 16–19, Expository Nonfiction

This article will take students on a journey through the “not-so-friendly” skies. Young readers will learn why glass and lights pose serious dangers to our feathered friends.



RESOURCES

- Trouble for Tweety

OBJECTIVES

- Students will learn why windows and lights can be hazardous to birds.
- Students will identify problem-and-solution relationships.
- Students will study the mutual respect between humans and wildlife.

KEY VOCABULARY

- **architect (p. 16)** a person who designs buildings and in many cases also supervises their construction
- **inventor (p. 16)** a person who creates a particular process or device
- **scientist (p. 16)** a person who is studying or has expert knowledge of one or more of the natural or physical sciences

ENGAGE

Conversation Question: How do creatures of the land, sea, and air use their senses to navigate the world?

Write the title question, “Why do birds run into windows?” in the center of a web on the board. Record student responses. Read the paragraph headings (Window? What Window? / Stars or Cars? / Invisible Visible Glass) aloud to the class to further activate any prior knowledge about the topic.

INTRODUCE VOCABULARY

Post the three key terms on the board and elicit the meanings from students, then display given definitions. Challenge them to state how the words are related and to list other people who could belong in the same category.

READ & DISCUSS

Have small groups of students discuss the questions below. Reconvene and share student responses.

- Why do birds often fly into glass window panes?
- Explain how the eyesight of birds is better than the eyesight of humans.
- Why are lit-up buildings also a danger to birds?

CONCEPT/SKILL FOCUS: Problems and Solutions

INSTRUCT: Revisit the discussions that groups of students had while responding to the “Read & Discuss” questions. Have the students reread the article and highlight specific sentences that examine the problem-and-solution relationship as it applies to this aviary dilemma. Distribute the graphic organizer, *Trouble for Tweety*, and allow students to meet with their groups from the earlier activity to complete the worksheet.

ASSESS: Observe students as they are completing their organizers. Assist them in referencing pertinent passages in the article if necessary. Share and discuss finalized work.

EXTEND

Social Studies Throughout history, humans have demonstrated an active interest in saving a variety animal species. Native Americans were very mindful of natural creatures and exhibited a high level of appreciation towards all living things. Delve into this topic with the class and find examples that support the principle of mutual respect between humans and wild animals. Encourage the students to share their findings with other classes.

Trouble for Tweety

Use information from the article to detail solutions to the problems listed below.

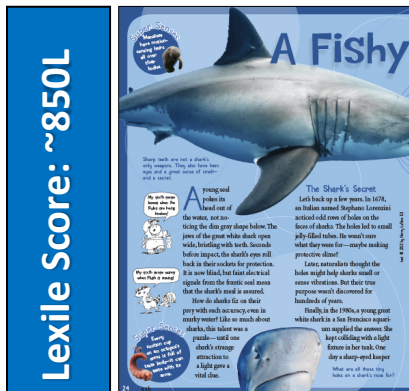
Problems	Solutions
Birds fly into clear window panes.	<ol style="list-style-type: none">1.2.3.
Bright lights confuse the natural navigational senses of birds.	<ol style="list-style-type: none">1.2.3.

What can **YOU** do to help our feathered friends? *(Use p. 18 & your own thoughts to answer.)*

Fishy Sixth Sense

pp. 24–27, Expository Nonfiction

Just keep swimming . . . just keep swimming! Students will go on a sea adventure where they will meet the ultimate underwater predator. Readers will learn why sharks are expert hunters and how they possess an exceptional inborn navigational ability.



RESOURCES

- Fishy Functions

OBJECTIVES

- Students will learn about the shark's sixth sense of electroreception.
- Students will identify the structure-and-function relationship.
- Students will create a graphically enhanced article about animal senses.

KEY VOCABULARY

- bristling** (p. 24) close-set, stiff, and spiky
- murky** (p. 24) dark and dirty liquid; not clear
- vital** (p. 24) absolutely necessary; essential

ENGAGE

Conversation Question: How do creatures of the land, sea, and air use their senses to navigate the world?

Create interest in the subject matter by showing a short clip from the movie *Finding Nemo* that contains a scene with sharks. Have students notice the change in tone and music in the movie as the sharks appear. Ask them to consider why this is the case, and encourage them to share what they know about sharks. Inform the students that they will be reading an article that explains why sharks are such powerful predators.

INTRODUCE VOCABULARY

Post the vocabulary words where they are visible to the class. Instruct students to do a word hunt through the article to locate these words. Have them underline the sentences in which they appear. Challenge students to use context clues to determine meanings. Discuss actual meanings and add definitions to the terms posted on the board.

READ & DISCUSS

Reinforce comprehension of the concepts in this article by using the following prompts to direct discussion.

- Explain why sharks are the ultimate predator.
- How do sharks “sense” electricity?
- Why are scientists studying electroreception?

CONCEPT/SKILL FOCUS: Structure and Function

INSTRUCT: Review the anatomical structures that are essential to sharks' ability to sense electricity. Distribute the graphic organizer, *Fishy Functions*, and tell the class that they will be using information from the article to record the function of each structure listed. Direct them to reread the article with a partner and to highlight relevant information before they begin working on their chart. Instruct the students that they may complete the chart with a partner, but that they are to answer the question in the **Think Tank** independently.

ASSESS: Collect the graphic organizer to determine if students were able to accurately determine structure and function. Evaluate further understanding by reviewing individual responses to the final question in the **Think Tank**.

EXTEND

Language Arts Guide students to notice how the tone of this article is enhanced by the photographs, captions, and cartoons along the borders of the text. Assign students the task of writing an article about the extraordinary senses of an animal of their choosing and to create borders around their work that serve this same purpose. They can use this issue of ASK to acquire their information and/or other resources.

Fishy Functions

Refer to the article, "Fishy Sixth Sense," to study the structure and function. Record the information below and use details to respond to the final question.

Structure	Description	Function
ampullae of Lorenzini		
electrical fields		

Think Tank: Explain how electroreception helps sharks to be the ultimate predator.

Draw a **BIG, SCARY shark on the back of this paper!