

THE SECRET OF THE BIRD'S SMART BRAIN...AND MORE!

Age Range: 8-11 years
Grade Level: 3-6
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About the book:

Take a look at the brains of birds and discover what makes some birds very smart. Next, learn about the junco bird's "secret" perfume. Find out about the curious strategy mama bears use to protect their young, as well as, understand the message behind pig grunts. Lastly, examine the tonal quality of an alligator's bellow!

About the author:

Ana María Rodríguez is the daughter of Spanish immigrants, was raised in Venezuela, and moved to the United States in 1987. After being a scientist for 20 years she decided to focus on writing about science, nature, and people. She has authored 26 books for children and adults and contributed over 80 magazine articles. Her accolades include the "Highlights for Children" History Feature of the Year Award, books in Science Books & Films' "Best Books Lists", and awards from the Society of School Librarians International. She lives in Houston, Texas. Learn more about Ana by accessing her website at www.anamariarodriguez.com.



Discussion Questions:

THE SECRET OF THE SMART BIRD'S BRAIN

- Identify why dolphins and dogs are known as the "smart animal club."
- Explain why birds are not considered to be smart.
- Click [HERE](#) to observe a crow and a kea solving a complicated puzzle. Discuss how the video proves that birds can use tools, plan, and learn from their own experiences.
- Study the anatomy of a brain cell by clicking [HERE](#) to watch a video. Consider how having a brain developed with a denser amount of brain cells causes a bird to be smart—actually twice as smart as a mammal.

- Click [HERE](#) to watch different types of birds preening. Consider that the junco's preen gland contains oil that not only helps to keep them clean and safe, but also serves as a perfume to attract a mate. Discuss the effect preen oil may have had upon the juncos featured in the earlier video.

THE MYSTERY OF MAMA BEAR

- Describe the protective "move away" tactic used by mama bears. Examine reasons why mama bears need to keep their cubs safe in this way.
- Consider the subtitle "The Enemy of My Enemy Is My Friend." With regards to the mama bear and her cubs, establish who her enemy is. Identify who is, ultimately, her friend and why this is so.
- Click [HERE](#) to watch a video featuring a mama bear and her cubs playing on a beach occupied by humans. Discuss how the behavior exhibited in the video shows how humans, which are typically enemies of bears, can be this mama bear's friends.

THE SECRET OF THE JUNCOS' PERFUME

- Click [HERE](#) to observe a relationship between two dark-eyed juncos. Notice that the juncos seem to be engaged in a song-singing competition.

PIG GRUNTS TELL A STORY

- The word *underestimated* means belittle, think too little of, and underrate. Determine why and how boars and pigs are “underestimated” as intelligent creatures.
- Click [HERE](#) to watch a video in which a kunekune pig enjoyed being petted so much that it rolls over in sheer pleasure. Explore how this reaction suggests that kunekune pigs can be playful and friendly. Listen to the pigs’ grunting sounds. Tell what the grunting sounds suggest regarding their reaction to being petted in this way.
- Discuss the connection between the tone of the kunekune pig grunts and their size. Explain how the video suggests that the connection between size and sound is true.

ALLIGATOR BELLOWS

- Define the term “formant.” Explain how formants benefit an animal’s existence in their habitat.
- Click [HERE](#) to watch and listen to the effect helium has on a man’s voice. Discuss the connection between a person’s altered voice tone and the effect of heliox, formants, and the tone of an alligator’s bellow.
- Click [HERE](#) to watch and listen to an alligator’s bellow. Imagine how the bellow might sound like if it were altered by heliox.
- Describe the importance of an alligator being able to announce his size to other alligators. Explain how this ability benefits the ecosystem of their habitats.

Extension Activities:

BECOME A WILDLIFE PHOTOGRAPHER

Scientists create environments, much like a bird’s natural habitats, in which to study their behavior. Scientists document observations by taking pictures, shooting video, and other forms of recording. Click [HERE](#) to watch a video of how a wildlife photographer establishes a natural perch as a place for birds to pose to be photographed. Become a wildlife photographer by replicating his process. Perhaps, even video yourself while doing so! (Note that it is not necessary to use a camera as elaborate as the photographer’s. An iPhone camera will suffice.)

Consider the following points before beginning the project:

- Research all the elements required to construct the photographic natural habitat. Food, water, foliage, sunlight...make sure your setting consists of everything necessary to attract birds.
- Construct a perch from natural material such as the moss-covered branch used in the video.
- Use food as bait.
- Set up your camera equipment. Be very quiet and patient. When birds arrive, take action! Have fun!

Write about and share your completed project with your class. Describe your process. Identify the species of your photography subjects. Prepare for your next shoot.

THE SECRET OF THE BIRD’S SMART BRAIN...AND MORE THE VERTICAL PUZZLE ANSWERS

p r e d A t o r
p r e e N
f o r e b r a | n
c h e M i c a l
m A m m a l
h e L i o x
x - r a y S
t a m E
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m i c R o b e
n E u r o n
f o r m a n T
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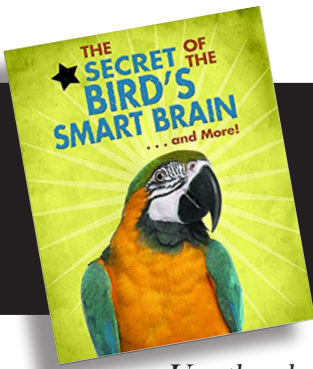


Common Core State Standards - Anchor Standards: Reading: R.1, R.2, R.4, R.7, R.10.
Writing: W.2, W.4, W.7. Speaking & Listening: SL.1, SL.2, SL.4, SL.5.
Next Generation Science Standards: 3-LS4-1, 3-LS4-2, 3-LS4-3, 3-LS4-4.

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THE SECRET OF THE BIRD'S SMART BRAIN... AND MORE! The Vertical Puzzle

Use the clues printed below to solve this puzzle. Note that the words included in this puzzle are featured in the Glossary.

1. _ _ _ _ A _ _ _ _
2. _ _ _ _ N
3. _ _ _ _ _ _ _ _ I _
4. _ _ _ M _ _ _ _
5. _ A _ _ _ _
6. _ _ L _ _ _
7. _ - _ _ _ S
8. _ _ _ E
9. _ _ _ C _ _ _
10. _ _ _ R _ _ _
11. _ E _ _ _ _
12. _ _ _ _ _ T
13. _ _ S

1. An animal that kills other animals.
2. The act of birds cleaning and straightening their feather with their beaks.
3. The frontal part of the brain.
4. Any substance of matter.
5. A warm-blooded animal that has hair, secretes milk to feed young, and usually gives birth to live babies.
6. A mixture of gases helium and oxygen.
7. Radiation used to take pictures of the inside of a body.
8. An animal that is not dangerous to or frightened of people.
9. A group of similar living organisms that have babies.
10. Organisms that are so small they can only be seen with a microscope.
11. A nerve cell.
12. Sounds formed in the vocal tract of animals.
13. Global Positioning System