

# Educator Resource Guide

## IN A CAVE

Written by Heather Ferranti Kinser

Illustrated by Bonnie Kelso

Strap on your headlamp! You're invited to journey into the Earth. It's chilly and damp as we exit the light, but a wonder-filled underground world awaits—*IN A CAVE*. See stalactites, bats, troglobites, and work up an appetite for cave popcorn in this subterranean celebration.

Juvenile Fiction

32 Pages ~ 8.5 x 11

Grades K to 3rd ~ Ages 5+

**ISBN:** 978-1-957655-18-5 (trade); **ISBN:** 978-1-957655-19-2 (eBook)

**Key Concepts:** STEAM learning (natural sciences), spelunking/exploration, rhyme/meter, environmental stewardship

**About the author:** Heather Ferranti Kinser writes at the intersection of story, poetry, and nature from her home on the San Francisco Peninsula. She's a former technical editor who now spends her days writing small stories—to make a big difference for kids! Heather loves to enter natural landscapes with an open mind and leave with a head full of poetry. She has been plunged into darkness at Mammoth Cave, trekked a spiral stair into Moaning Caverns, spotted bats at Lake Shasta Caverns, and been dazzled by formations at Mercer Caverns and Cave of the Winds. Visiting more show caves is high on her to-do list! In addition to *IN A CAVE*, she is the author of *SMALL MATTERS* and *NATURE IS A SCULPTOR*, both from Millbrook Press.

**About the illustrator:** Bonnie Kelos is an author, illustrator and teaching artist. She has explored many backcountry caves and canyons. One time, she rappelled 328 feet just to see a glow worm! Bonnie loves everything about caving: the fabulous formations, the fascinating wildlife, and those neat drippy sounds. She studied art at the Rhode Island School of Design and worked as an exhibit designer for the Smithsonian. She lives in Las Vegas, Nevada with her family. You can learn more about her and her art at [BonnieKelso.com](http://BonnieKelso.com).

### Using this guide:

This educational resource guide can be used by anyone interested in sharing enthusiasm about *In a Cave* with children of all ages. If you are a teacher, librarian, home school instructor, camp counselor, or super cool parent, grandparent or guardian, this guide is for you! Feel free to adapt

the suggested learning projects and activities according to your needs, interests, time, audience, and goals.

***We have done our best to provide information, discussion points, and resources that may be useful for you and your learning participants. However, this is not an exhaustive list of ideas or topics. Also, website content and accessibility is subject to change. Please review all suggested resources and websites prior to sharing them in your learning environment to ensure they meet with your individual standards and contain age-appropriate content for your participants.***

This guide is broken down into two general categories: 1) learning opportunities (with associated activities) related to caves and cave formations and 2) learning opportunities (with associated activities) related to environmental stewardship and safe exploration. These are broad categories with overlap between subjects, and each activity will vary in complexity depending on the age of the participants. Please modify as you see fit.

Suggested learning activities can be found for each category and are intended to align with appropriate Common Core, NGSS and/or National Core Arts Standards. To inquire about additional materials or if you have questions about this guide, please view our website at: [www.gnomeroadpublishing.com](http://www.gnomeroadpublishing.com).

## **PART 1: ALL ABOUT CAVES**

### **Learning Opportunity #1: Let's talk about where caves are found and what lives there!**

- *In a Cave* introduces readers to a wonderful part of Earth not seen every day. Caves can be found all over the world and on every continent (although there are no show caves on Antarctica). They can be formed in many different ways, including chemical reactions, wind and water erosion, creation of lava tubes, and glacier movements (for more information, see: <https://nckri.org/caves/types/>). Think about the place you live. Are there any caves nearby? How do you think they were formed?
- The author and illustrator share information in the back of *In a Cave* about show caves and cave tours in the United States. Both of them have toured multiple caves and drew upon this experience to create the text and artwork found in the book. Have you ever been on a cave tour? Did you see any of the cave formations or animals depicted in the book on that tour? What was your favorite part of this story? Did you learn something new?
- Healthy cave systems are important for the creatures that call them home. What animals did you read about or see in the book, *In a Cave*? Did you know that some cave species are considered endangered? They rely on humans to care for caves and keep their environment clean to continue living there.

### **Suggested Activities ~**

### *Map it out!*

- How many big caves can you find around the world? Put your research skills to use and with a partner, group or on your own, see how many you can find out about on each continent. You can use these printable maps of each continent here: [Continent Maps](#). A fun challenge would be to assign groups a continent and see who can find out about and label the most caves. No need to worry about the tiniest ones; focus on show caves (the ones you can tour). Remember to show others what you have learned (compare notes!) when you are done.

### *Protecting Our Animal Friends!*

- Thinking back to the cave creatures featured in the book, is there one you would like to know more about? Or maybe one that isn't featured in the book that you're excited to research? Start a research project by choosing a specific cave with an animal you want to know more about, or by selecting one of the endangered cave species throughout the world. (Hint: A search of websites should help you find this information quickly!). First draw a picture of your creature on the handout provided with this resource guide. Then, use the back of the sheet or a blank piece of paper to write out what you learn about the animal. For example:
  - What is its name?
  - What kind of animal is it?
  - Where does it live in the cave system?
  - How does it move? How does it eat? What eats it?
  - Where in the world can we find this animal? Is it endangered, and if so, for what reasons?

### **Learning Opportunity #2: Let's talk about cave formations!**

- The illustrator of *In a Cave* had a lot of experience exploring caves before working on the book. It's easy to see that she knows quite a bit about the different cave formations. What did you know before reading the book? What new wonders did you learn about? Which one was your favorite?
- Cave formations take years to develop. In some cases, those years number in the millions! How long do you think it takes to make cave popcorn? A giant stalactite? Or rimstone? For more information about how these are formed and how long it takes to grow or start to erode/decay, take a look at these resources:
  - <https://www.youtube.com/watch?v=dK5opPOJZKs>
  - <https://people.uwec.edu/jolhm/cave/caveform2.htm>
  - <https://www.britannica.com/science/cave/Solution-cave-features>
  - <https://www.youtube.com/watch?v=EX0q5I3-HZI>

### **Suggested Activities ~**

#### *Show You're a Cave Expert!*

- Discovering a new place often means discovering new words to describe it. The author provided "Vo-cave-ulary" in the back of the book to help readers understand the meaning of some of the terms found throughout the text. Take the Vo-cave-ulary

Matching Quiz provided with this resource guide to test out your new-found knowledge! For extra fun, complete the word search handout, too!

*Draw Your Own Cave!*

- Do you think it would be fun to design your own cave? What features do you want to include? Use what you've learned from reading *In a Cave* and mix in your imagination to make a show cave like no other! If you have extra time, feel free to make the coloring sheets included in this guide sparkle with color, too.

## **PART II: CAVE ENJOYMENT, SAFETY AND ENVIRONMENTAL CONCERNS**

### Learning Opportunity #1: *Let's talk about spelunking and cave safety!*

- People have been exploring caves throughout human history. We know this because they left traces of exploration behind. Check out some of the cool artwork present-day humans have discovered [HERE](#) and [HERE](#).
- Of course, back when those examples of cave art were being created, there wasn't fancy equipment or gear available for cave exploration. Modern humans are lucky to have so many tools available. What was some of the equipment you saw in the book, *In a Cave*?
- Cave exploration is often referred to as "spelunking". It's as fun word to say, right? Like other hobbies, spelunking and cave exploration has risks. You should follow safety rules and always be prepared. What are some of the safety rules you learned in the book? (Hint: The two explorers had a trusted guide who they stayed with the whole time. That seems like a good idea, doesn't it?)
- What are some hobbies that you like? Do they have safety rules, too? How about special equipment? What would you include in a book about your hobby if you were writing one like *In a Cave*?

### **Suggested Activities ~**

*Make Your Own Cave Art!*

- If you were the first human to enter a cave and wanted to share something about yourself and our world with future generations, what would you draw or paint? Use the handout provided in this resource guide to add your art to the "cave wall". If you want to use your own materials, make an art collage on a poster board, cardboard box, or even a paper plate. Then share it with your learning group or a friend or family member.

**Be Prepared! What Do You Need to Go Spelunking?**

- Show your knowledge and share what you learned after reading *In a Cave*. Match up the equipment and gear names with the images on the handout provided with this resource guide. Go one step further and take the Cave Safety quiz. Are you an expert in spelunking now?

## Learning Opportunity #2: *Let's talk about protecting cave ecosystems!*

- The author and illustrator of *In a Cave* left a note at the end of the book to not only discuss cave safety but to emphasize how important it is to protect fragile cave environments from harm. These subterranean spaces are typically part of a larger ecosystem, meaning damage inside a cave can impact other systems that are somehow connected to it. (For a description of what an ecosystem is, follow this link here: <https://education.nationalgeographic.org/resource/ecosystem/>) How do you think caves are connected to other parts of the earth?
  - (Hint: What travels through a cave and then deeper underground or re-emerging above ground?) (Additional hint: Are there animals that live in caves but also travel outside of them?)
- One of the most important ways caves are connected to human life is through the water cycle. It turns out these spaces are really important to the health of water systems and availability of fresh water for human use and consumption. Have a look at this website for more information about how caves do this by acting like a sponge or filter of ground water systems: <https://www.nps.gov/articles/caves-and-aquifers.htm>.
  - Knowing this, is there anything you can think of that would maintain healthy cave systems. (Hint: You might find inspiration for your answer on the page of *In a Cave* where the young explorers are about to enter the cave system. What does the sign say at the entrance?)

## **Suggested Activities ~**

### *Filtering Fun!*

- Want to learn more about how water is filtered? Try this experiment (with adult helpers) provided in the link below and see what you learn. What does this tell you about the rocks found in caves?
  - <https://kids.nationalgeographic.com/books/article/water-wonders>

### *A Call to Action: Protecting Cave Systems*

- Is there a cave near you? Perhaps a local or regional organization that is set up to care for or protect cave or karst systems? If so, you can reach out and find out more information on what can be done in your area to help protect and preserve nearby caves. If not, put those research skills to use and find out about resources and activities that can help cave systems. Make sure to write up what you find and present these strategies with your classmates or a learning group.

## **Wonderful websites about our world's caves:**

- <https://whc.unesco.org/en/list/310/>
- <https://www.nps.gov/subjects/caves/index.htm>
- <https://traveltriangle.com/blog/famous-caves-in-the-world/>
- <https://www.coolkidfacts.com/caves/>
- <https://nckri.org>
- <https://kids.kiddle.co/Cave>

Wonderful websites about cave animals and ecosystems:

- <https://www.nps.gov/articles/caves-and-aquifers.htm>
- <https://www.nps.gov/ozar/learn/education/cave-biology.htm>
- <https://www.nhm.ac.uk/discover/creatures-that-lurk-in-caves.html>
- <https://tpwd.texas.gov/education/resources/keep-texas-wild/cave-creatures/background-for-teachers-life-in-a-cave-part-2>
- <https://tpwd.texas.gov/education/resources/keep-texas-wild/cave-creatures/student-research-pages-life-in-a-cave-part-1>



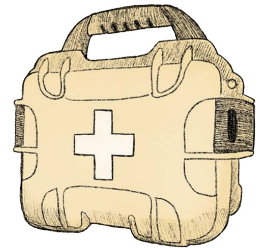
# BE PREPARED!

(Match the word in the center column to its picture by drawing a line between them.)

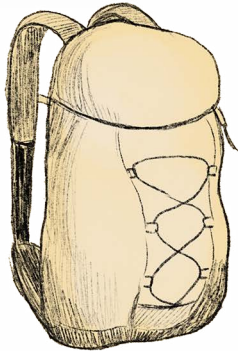


map

helmet

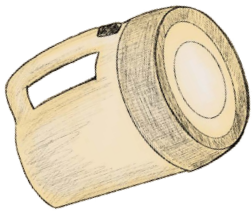


headlamp



sturdy shoes

flashlight



backpack

compass

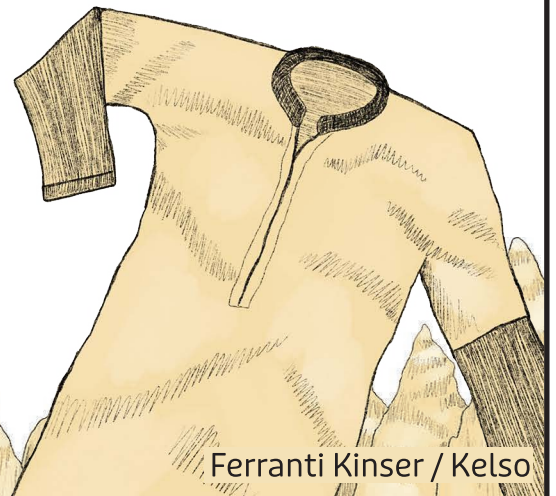
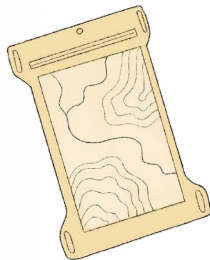


first aid kit

coveralls



jacket





# CAVE SAFETY QUIZ

*(Circle the correct answer)*

It is okay to explore a cave by yourself. TRUE FALSE

---

There are over 80 show caves in the US alone. TRUE FALSE

---

Water pollution does not affect caves. TRUE FALSE

---

Touching a cave formation will not hurt it. TRUE FALSE

---

It takes some cave formations thousands of years to grow. TRUE FALSE

---

The caver's motto is "Take nothing but pictures. Leave nothing but footprints. Kill nothing but spiders." TRUE FALSE

---

The National Speleological Society promotes responsible management and care of cave systems. TRUE FALSE

---

Bats are troglobites. TRUE FALSE

---



The image depicts a cave entrance. At the top, a row of yellow, textured icicles hangs down. A bright yellow flashlight beam originates from the bottom left, illuminating the cave floor. The cave floor is dark and features several jagged, brown rock formations. The overall scene is set within a black rectangular frame.

# MY CAVE CREATURE

IN A CAVE

Ferranti Kinser / Kelso



# WORD SEARCH

S S H K E C C Q E V  
Z T E N O C A B T E  
X A A U E M V I I M  
H L C L G T E H C C  
B A T E A P E C L R  
C C I P S G I O A E  
A T T S S L M R C V  
W I E M A U I I B I  
E T H O P C T R T C  
M E P O P C O R N E

cave

bacon

stalactite

bat

popcorn

stalagmite

calcite

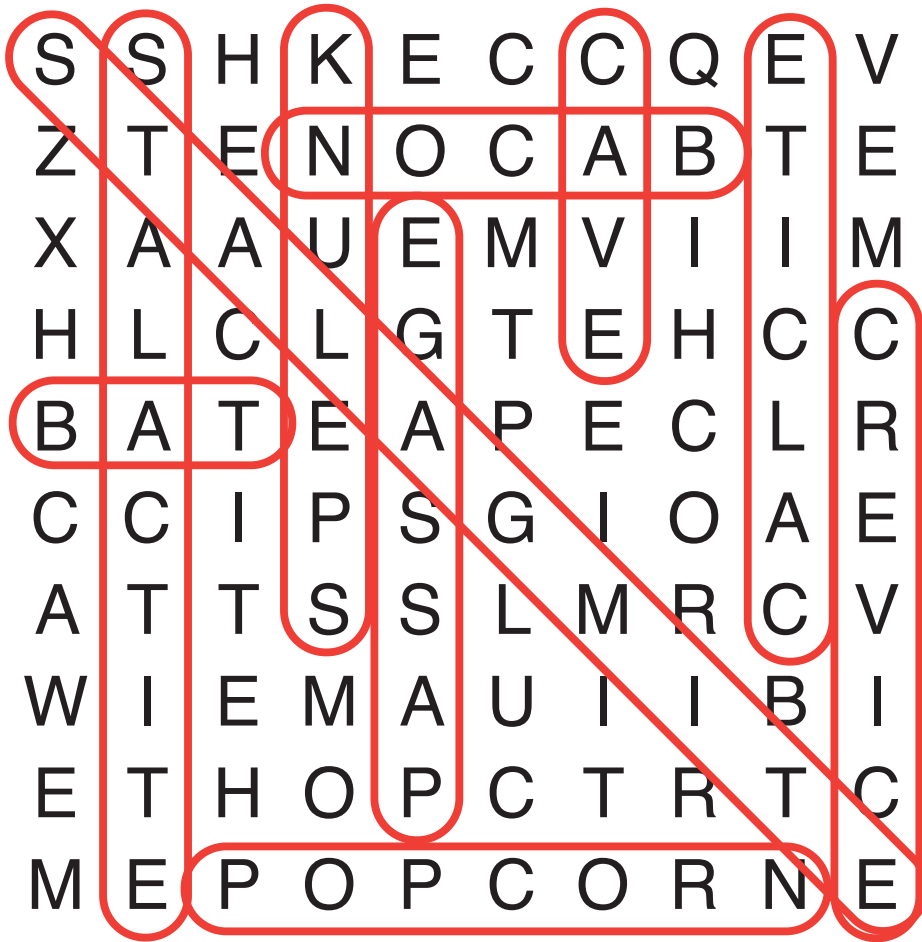
crevice

passage

spelunk

# WORD SEARCH

**Answer  
Key**



cave

bacon

stalactite

bat

popcorn

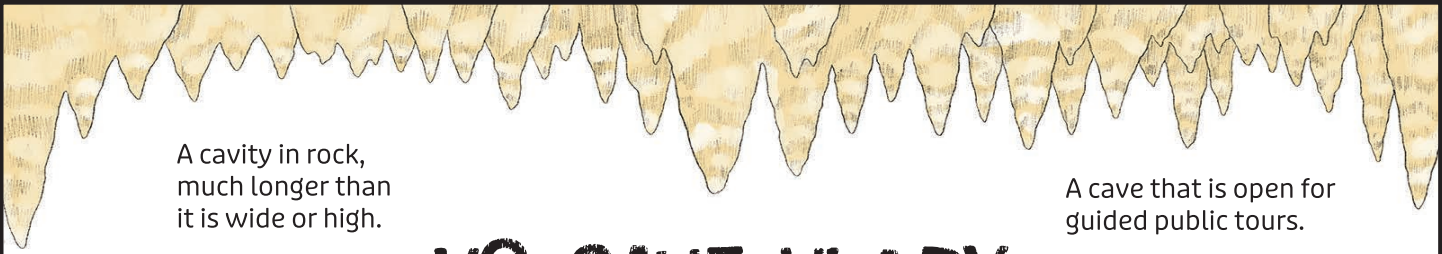
stalagmite

calcite

crevice

passage

spelunk



A cavity in rock,  
much longer than  
it is wide or high.

A cave that is open for  
guided public tours.

A natural opening in  
rock, large enough to be  
entered by a human.

# VO-CAVE-ULARY

*(Match the word in the center column to its  
meaning by drawing a line between them.)*

A formation that hangs  
from the roof or wall of  
a cave and resembles a  
wavy or folded sheet.

An animal that lives in a  
cave for its whole life.

**calcite**

A cave deposit  
resembling a flat  
ledge, formed at  
the edge of an  
underground pool.

**cave**

Small, lumpy,  
white or yellow  
cave formations  
caused by seeping  
or splashing water.

**cave bacon**

**cave curtain**

**cave glowworms**

**cave pearls**

**cave popcorn**

A cone-shaped deposit  
hanging down from a  
cave roof or wall.

**cavern**

**crevice**

**dripstone**

**flowstone**

**helictite**

**limestone**

**passage**

**rimstone**

**shelfstone**

**show cave**

**soda straw**

**spelunk**

**stalactite**

**stalagmite**

**troglobite**

A cave deposit resembling  
a ridge or dam, formed by  
water flowing over the rim  
of an underground pool.

A natural opening in  
rock, large enough to  
be entered by a human.

A cave formation that  
changes direction, in  
a curve or angle.

Smooth, polished,  
round cave formations  
caused by water drips.

A type of smooth  
flowstone with  
colored stripes.

A mineral found  
in limestone.

A type of stalactite  
in the form of a  
thin, hollow tube.

The larvae of a fungus gnat  
that (in rare instances) live on  
cave ceilings, attracting insects  
with a bioluminescent glow.

A cone-shaped deposit  
rising up from a cave  
floor and formed by  
drips from above.

A type of soft rock, mostly  
containing the mineral calcite,  
which can be dissolved over  
time by water.

To explore a  
natural cave.

A narrow opening  
in a rock.

A deposit formed when  
calcite drops fall from  
cave roofs or walls.

A very large "room"  
within a cave.

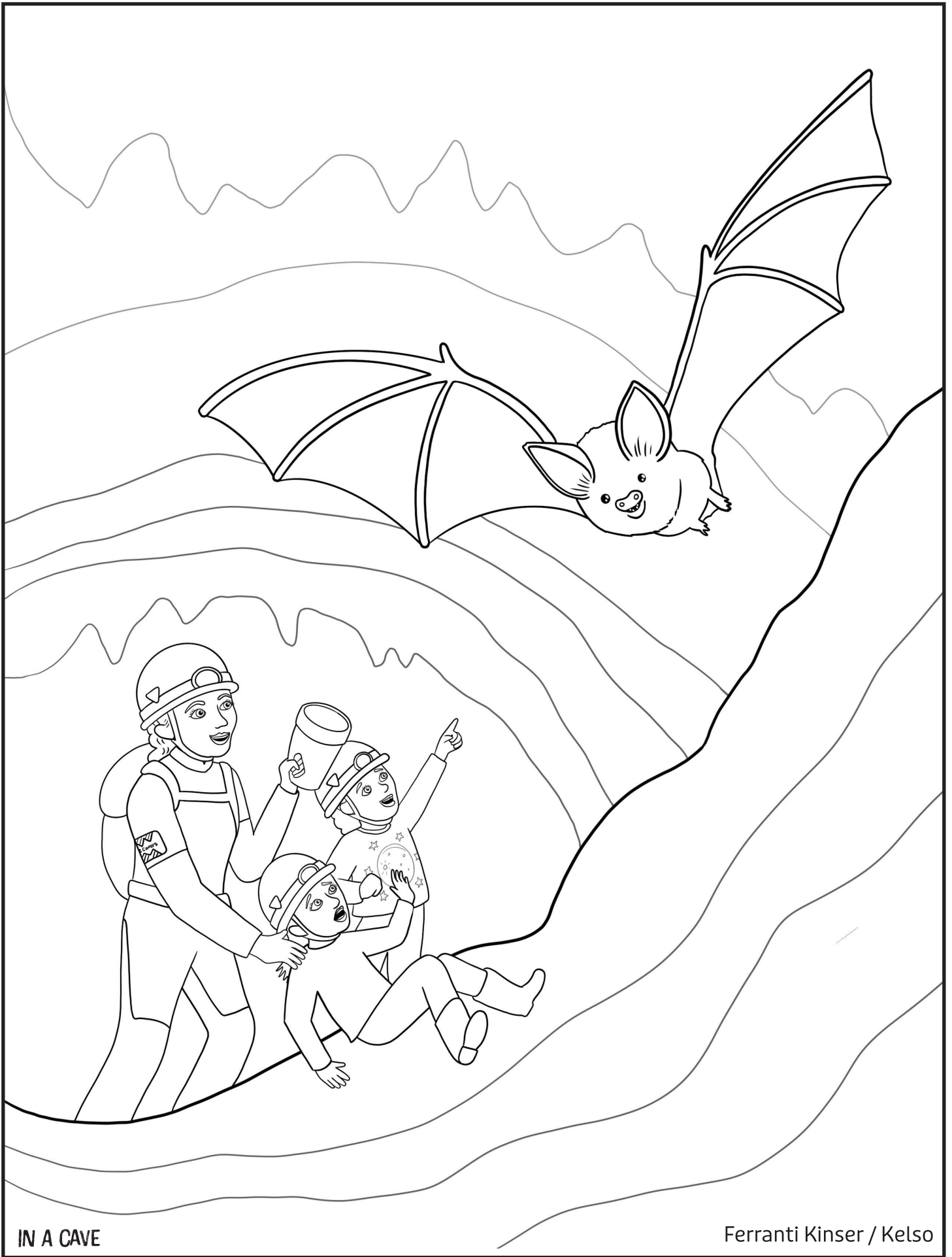


A hand-drawn illustration of a cave interior. The cave walls are textured with brown and tan colors, showing various rock formations and stalactites hanging from the ceiling. The floor is also textured with similar colors. The overall style is simple and artistic, suitable for a children's activity book.

# MY CAVE ART

IN A CAVE

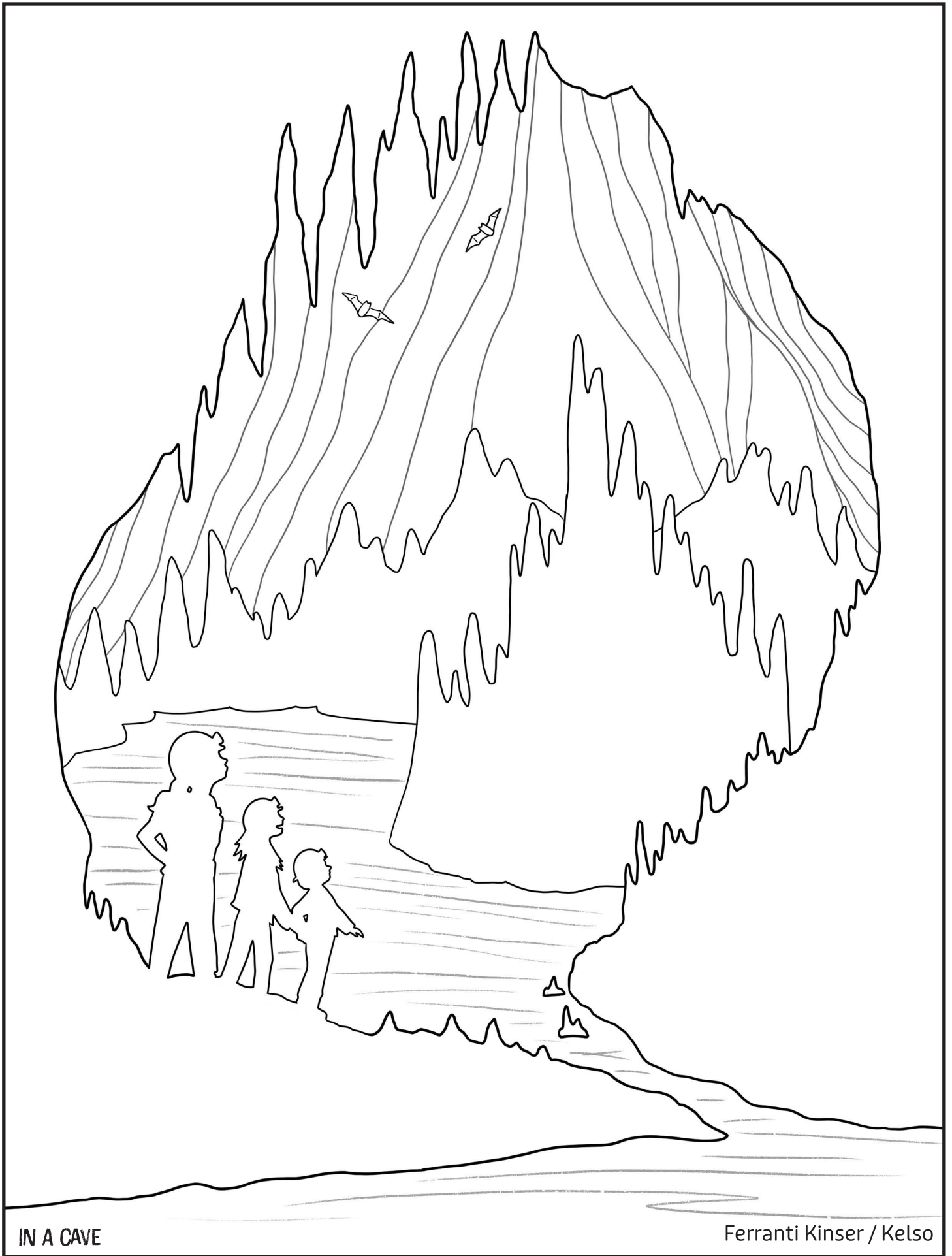
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IN A CAVE

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IN A CAVE

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