ABOUT THE BOOK
Although a frozen continent, Antarctica supports a variety of wildlife on and around it. Bone-chilling cold and wind, combined with dry conditions, form a hostile environment but certain species have adapted to live there successfully. From the giant to microscopic algae that provide photosynthesis and the animals depending on these producers to support the food web, to the apex predators reliant on the sea ice and life there, Antarctica forms a delicate and balanced ecosystem that has thrived for ages. Unfortunately, changes have begun that may upset the balance and eliminate many of the life forms that call it home. As author Mary Batten writes, “Antarctica’s creatures depend on the ice. In the long term, so do we.”

THEMES
Ecosystems | Food webs | Survival
Adaptations | Changing climate
Environmental awareness
Plant and animal life

SKILLS
Listening | Main idea | Vocabulary development
Critical thinking | Comprehension | Connecting concepts

BEFORE YOU READ
RI.1.3, RI.1.6, RI.2.3, RI.2.7, RI.3.3, RI.3.7, RI.4.3, RI.4.7, RI.5.3
• Show the students the endpapers and ask if they recognize what is occurring. Then explain the Aurora Australis (Southern Lights) and discuss where they could see them. Show the video to explain them: https://www.youtube.com/watch?v=nHn5OO1t1yc
• Show several of the spreads. Ask what they think this book will be about.
• Tell them it’s a book about Antarctica and the life there. Discuss the climate in Antarctica and ask what kinds of life they know of that live here.
• Show the location of Antarctica on a globe. Discuss the fact that it is a continent while the Arctic is not and explain why.

AS YOU READ
RI.1.3, RI.1.4, RI.2.3, RI.2.4, RI.3.3, RI.3.4, RI.4.3, RI.4.4, RI.5.3, RI.5.4
• Read the first page. Ask what the author means by the coldest, windiest, driest place on Earth. Use the NASA information here to describe it: https://www.nasa.gov/audience/forstudents/k-4/stories/nasa-knows/what-is-antarctica-k4.html
• Ask the students to look for examples of how the life depends on one another and to look for ways the animals have adapted or fit in to live there successfully.

AFTER YOU READ
• Have the students identify the kind of book it is—fiction or nonfiction—and explain why. RL.1.5
• Discuss how the different life forms depend on one another and why they need this. RI.1.1, RI.1.3, RI.1.8, RI.2.1, RI.2.3, RI.2.8, RI.3.1, RI.3.3, RI.4.1, RI.4.3, RI.4.8, RI.5.1, RI.5.3, RI.5.8
• Ask students why they think it took so long for people to discover Antarctica. **RI.1.1, RI.2.1, RI.3.1, RI.4.1, RI.5.1**

• Observe the people in the art as a class. Describe what they are wearing and explain why they need those sorts of clothing. **RI.1.7, RI.2.7, 3.7, 4.7**

• Ask each person if they would like to visit Antarctica and have them tell why or why not.

• For more information about Antarctica, show the video to reinforce the book’s concepts:
  [https://www.youtube.com/watch?v=t3StWheKtq8](https://www.youtube.com/watch?v=t3StWheKtq8) **RI.1.4, RI.2.4, RI.3.4, RI.4.4, RI.5.4**

**CURRICULUM CONNECTIONS**

**LANGUAGE ARTS**

• Hold up the book and identify the parts of the book: front and back cover, title page.

• Name the author and illustrator and discuss the part they played in making the book. Show several examples of the books Mary Batten has written. How do they compare and contrast? Show Thomas Gonzalez’s website ([http://www.tomprints.com/](http://www.tomprints.com/)) and look at some of the examples of his art in other books or show some of his other books to compare the art. Discuss the style he uses and how they compare.

• Discuss what the book is about. Identify the main idea and find details from the book that support the main idea. **RI.1.2, RI.2.2, RI.3.2, RI.4.2, RI.5.2**

• Discuss how the art and the words work together to tell the story and the part each plays to provide information. **RI.1.6, RI.2.7, RI.3.7, RI.4.7**

• Ask what students can tell you about the climate in Antarctica from the animal adaptations and the illustrations. **RI.1.1, RI.1.6, RI.2.1, RI.2.7, RI.3.1, RI.3.7, RI.4.1, RI.4.7, RI.4.1**

• Explain why melting ice in Antarctica is not good for the environment and the life living there. **RI.4.3**

• Discuss what text features are used in the book? How do they help you understand what the book is about? For older students, what is the overall text structure and how does that provide information? **RI.1.6, RI.1.7, RI.2.5, RI.3.5, RI.4.5, RI.5.5**

• Discuss what can be done to help prevent a warming climate so that Antarctica remains as it is. **RI.1.1, RI.2.1, RI.3.1, RI.4.1, RI.5.1**

**VOCABULARY**

**RI.1.4, RI.2.4, RI.3.4, RI.4.4, RI.5.4**

• Show the YouTube video of a calving glacier. [https://www.youtube.com/watch?v=Y-9foDzGKwg](https://www.youtube.com/watch?v=Y-9foDzGKwg) (may contain ad at first)

• Discuss the danger that exists when a glacier calves.

• Read the examples of other keystone species. Compare and contrast one of them to the keystone species of krill in Antarctica and what would happen if they disappeared. [https://examples.yourdictionary.com/examples-of-keystone-species.html](https://examples.yourdictionary.com/examples-of-keystone-species.html)

• Divide the class into small groups. Assign each group a vocabulary word. Define the word and use it in context in a sentence. Ask the groups to draw a picture to help illustrate the meaning. Each group will present their word.

  - **species** kind or sort
  - **evolved** changed to fit in over time
  - **microscopic** tiny or very small
  - **phytoplankton** a kind of algae
  - **krill** a shrimp-like small animal
  - **keystone species** a group that supports the ecosystem
  - **gills** take oxygen from water
  - **antifreeze** substance that keeps things from freezing
  - **blubber** a thick layer of fat
  - **baleen** long strips in whales that strain out their food
  - **molt** to shed or lose
  - **blizzard** snow storm with blowing snow
  - **invertebrates** without a backbone
  - **pristine** pure and clean
  - **organism** a living thing
  - **bedrock** the rock below the surface
  - **humidity** the amount of water in the air
  - **calving** ice breaking off a glacier
**WRITING**


- Ask students to choose a favorite animal discussed in the book and tell why using facts from the book. Older students can research more facts about their favorite animal.
- Have each child write a paragraph about the consequences of the ice melting in Antarctica.
- Ask students to write a poem based on one of the vocabulary words listed in the vocabulary section of this guide. RI.1.4, RI.2.4, RI.3.4, RI.4.4, RI.5.4

**SCIENCE (NGSS)**


- Ask students to create a food chain that exists in Antarctica using words and arrows to show the energy flow. Have volunteers share their food chain. Younger students can draw an example of a food chain.
- Discuss why algae is so important in the Antarctic food chain. What would happen if it disappeared?
- In small groups, describe the adaptations of one animal in the Antarctic and explain why those adaptations are important.
- Read about ice cores [https://climate.nasa.gov/news/2616/core-questions-an-introduction-to-ice-cores/](https://climate.nasa.gov/news/2616/core-questions-an-introduction-to-ice-cores/) and describe how and what kind of information ice cores provide to scientists.
- The weather in Antarctica is extreme. Have students cite evidence from the book and illustrations to support that statement.
- Individually or in small groups, have students research one of the life forms from the book. Make a poster to present the information about that organism. Include a picture of the animal as well.

**MATH**


- “A blue whale can eat four tons of krill a day.” As a class, calculate how many pounds of krill this would be.
- “A meter of sea-level rise comes from only two percent change in the Antarctic ice sheet, and a meter of sea-level rise displaces a hundred million people around the planet.” —Gary Wilson, Professor of Marine Science Otago University, New Zealand

As a class, calculate what sea-level rise would come from a four percent change in the Antarctic ice sheet. Then convert that rise into feet or yards.

**ART**

- Ask students to draw a picture of a whale using its baleen to feed.
- Next, ask students to draw two examples of invertebrates found in and around Antarctica. Label the drawings. Post the pictures.
- Show the video of penguins making their nest. [https://www.youtube.com/watch?v=6RdYbv6Y2AM](https://www.youtube.com/watch?v=6RdYbv6Y2AM)

Students can then use drawing paper to create an image of a penguin on its nest.

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**ABOUT THE AUTHOR**

Mary Batten, an award-winning writer for television, film, and publishing, was nominated for an Emmy for her work on the Children’s Television Workshop’s science series 3-2-1 Contact and has written more than fifty nature documentaries for television, including the syndicated series Wild Wild World of Animals. She lives in Virginia.

[www.marybatten.com](http://www.marybatten.com)

**ABOUT THE ILLUSTRATOR**

Thomas Gonzalez was born in Havana, Cuba, and moved to the United States as a child. An artist and painter, he directed campaigns for clients such as Coca-Cola, Delta Airlines, NASCAR, the NFL, and McDonald’s, in addition to illustrating children’s books. He lives in Georgia.

[www.tomprints.com](http://www.tomprints.com)
ACTIVITY SHEET 1 – FILL IN THE BLANKS

Use the information in the book to answer the questions.

1. __________ don’t grow in Antarctica.
2. Photosynthesis is carried on by ______________ in Antarctica.
3. Algae is the main food source of _________________.
4. Krill are the _________________ of the Antarctic food chain.
5. Life in the Antarctic have _________________ to live in the harsh environment.
6. Icefish produce a natural _________________ protein to keep their blood from freezing.
7. A thick layer of insulated fat called _________________ protects whales from the freezing water.
8. _________________ acts as a strainer in certain whales to get their food.
9. Waterproof feathers, a layer of soft, warm down, and a thick layer of fat helps protect _________________ from the cold.
10. Animals without backbones are _____________________.
11. The only continent protected for peace and science is _________________.
12. Over millions of years, life in Antarctica has ____________ to live there successfully.
13. The atmosphere and ocean are _______________ around the western Antarctica Peninsula.
14. In summer, _________________ carry out different kinds of studies about Antarctica.
15. Antarctica’s climate history can be seen in _________________.
16. Large species of algae that krill prefer to eat is being replaced by smaller species as a result of _________________ sea ice.
17. A warming temperature in Antarctica has caused the _________________ to increase, causing the melting ice to drown penguin eggs.
18. Antarctic _________________ are melting.
19. Glaciers are _________________ at a faster rate due to a warming climate.
20. Melting Antarctic land ice will lead to a _________________ in sea levels.
Name: __________________________________________ Date: __________________

1. ___________ don’t grow in Antarctica. (Trees)
2. Photosynthesis is carried on by ________ in Antarctica. (algae)
3. Algae is the main food source of ________________ . (krill)
4. Krill are the _______________ of the Antarctic food chain. (keystone species)
5. Life in the Antarctic have ______________ to live in the harsh environment. (adapted)
6. Icefish produce a natural ____________ protein to keep their blood from freezing. (antifreeze)
7. A thick layer of insulated fat called ______________ protects whales from the freezing water. (blubber)
8. __________________ acts as a strainer in certain whales to get their food. (Baleen)
9. Waterproof feathers, a layer of soft, warm down, and a thick layer of fat helps protect ______________ from the cold. (penguins)
10. Animals without backbones are _________________________. (invertebrates)
11. The only continent protected for peace and science is _______________. (Antarctica)
12. Over millions of years, life in Antarctica has __________ to live there successfully. (evolved)
13. The atmosphere and ocean are ______________ around the western Antarctica Peninsula. (warming)
14. In summer, __________________________ carry out different kinds of studies about Antarctica. (researchers)
15. Antarctica’s climate history can be seen in _______________________. (ice cores)
16. Large species of algae that krill prefer to eat is being replaced by smaller species as a result of _________________ sea ice. (shrinking)
17. A warming temperature in Antarctica has caused the _____________ to increase, causing the melting ice to drown penguin eggs. (humidity)
18. Antarctic _________________ are melting. (ice shelves)
19. Glaciers are ________________ at a faster rate due to a warming climate. (calving)
20. Melting Antarctic land ice will lead to a _____________ in sea levels. (rise)

WORD BANK
- adapted
- algae
- Antarctica
- antifreeze
- baleen
- blubber
- calving
- evolved
- humidity
- ice cores
- ice shelves
- invertebrates
- keystone species
- krill
- penguins
- researchers
- rise
- shrinking
- trees
- warming