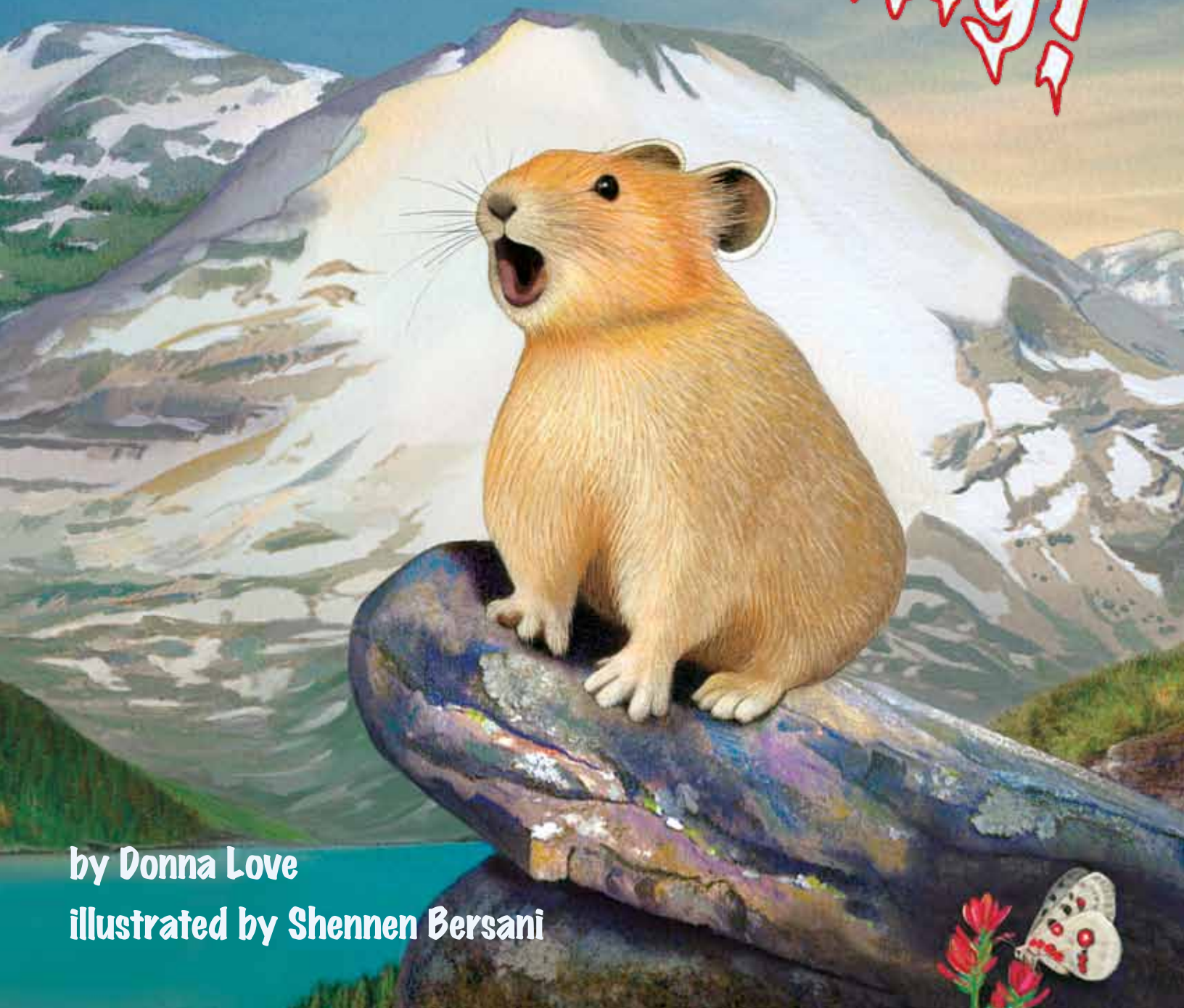


The **Glaciers** are **Melting!**



by Donna Love

illustrated by Shennen Bersani

front flap

The Glaciers are Melting!

Chicken Little may have thought the sky was falling but Peter Pika is sure the glaciers are melting and is off to talk to the Mountain Monarch about it. Joined along the way by friends Tammy Ptarmigan, Sally Squirrel, Mandy Marmot, and Harry Hare, they all wonder what will happen to them if the glaciers melt. Where will they live, how will they survive? When Wiley Wolverine tries to trick them, can the Mountain Monarch save them? More importantly, can the Mountain Monarch stop the glaciers from melting?

Animals in the book include pika, ptarmigan, ground squirrel, marmot, snowshoe hare, wolverine, and bighorn or Dall sheep.

It's so much more than a picture book . . . this book is specifically designed to be both a fun-to-read story and a launch pad for discussions and learning. Whether read at home or in a classroom, we encourage adults to do the activities with the young children in their lives. Free online resources and support at www.ArbordalePublishing.com include:

- For Creative Minds as seen in the book (in English & Spanish):
 - Glaciers
 - Are Glaciers Melting?
 - Water and Glaciers
 - Glaciers Around the World: True or False?
 - Animal Matching Activity
 - Alpine and Arctic Animal Adaptations
 - Food for Thought
- Teaching Activities (to do at home or at school):

◦ Reading Questions	◦ Math
◦ Language Arts	◦ Geography
◦ Science	◦ Coloring Pages
- Interactive Quizzes: Reading Comprehension, For Creative Minds, and Math Word Problems
- English and Spanish Audiobooks
- Related Websites
- Aligned to State Standards (searchable database)
- Accelerated Reader and Reading Counts! Quizzes
- Lexile and Fountas & Pinnell Reading Levels

eBooks with Auto-Flip, Auto-Read, and selectable English and Spanish text and audio available for purchase online.

Thanks to Doug Capra, Lead Interpretive Ranger, Exit Glacier, Kenai Fjords National Park for verifying the accuracy of the information in For Creative Minds.

back flap



Award-winning author **Donna Love** brings nature to life for children through her books: *The Glaciers are Melting!*; *Henry the Impatient Heron*; *Loons, Diving Birds of the North*; *Awesome Ospreys, Fishing Birds of the World*; *Animals Count in Grand Canyon National Park*; and *The Totally Out There Guide to Glacier National Park*. Donna lives in Montana, where her husband is a district ranger on the Lolo National Forest. They have three grown children, and one granddaughter.

Award-winning children's book illustrator **Shennen Bersani** has two million copies of her illustrated books cherished and read by families throughout the world. She has been a freelance illustrator since 1989. She works primarily with colored pencils, sometimes using a mixed-media technique of colored pencils, crayons, and paint. Her art delivers a unique blend of realism, heartfelt emotion, love of nature, and life lessons for children of all ages. In addition to *The Glaciers Are Melting!* and *Astro: the Steller Sea Lion* for Arbordale, she has illustrated a number of best selling books, including, *Nana, What's Cancer?*; *Snakes: Long, Longer, Longest*; *Ocean Counting: Odd Numbers* and *My Sister, Alicia May*. Her art also appears in many magazines, newspapers, and publications. Shennen lives with her family near Boston, Massachusetts.

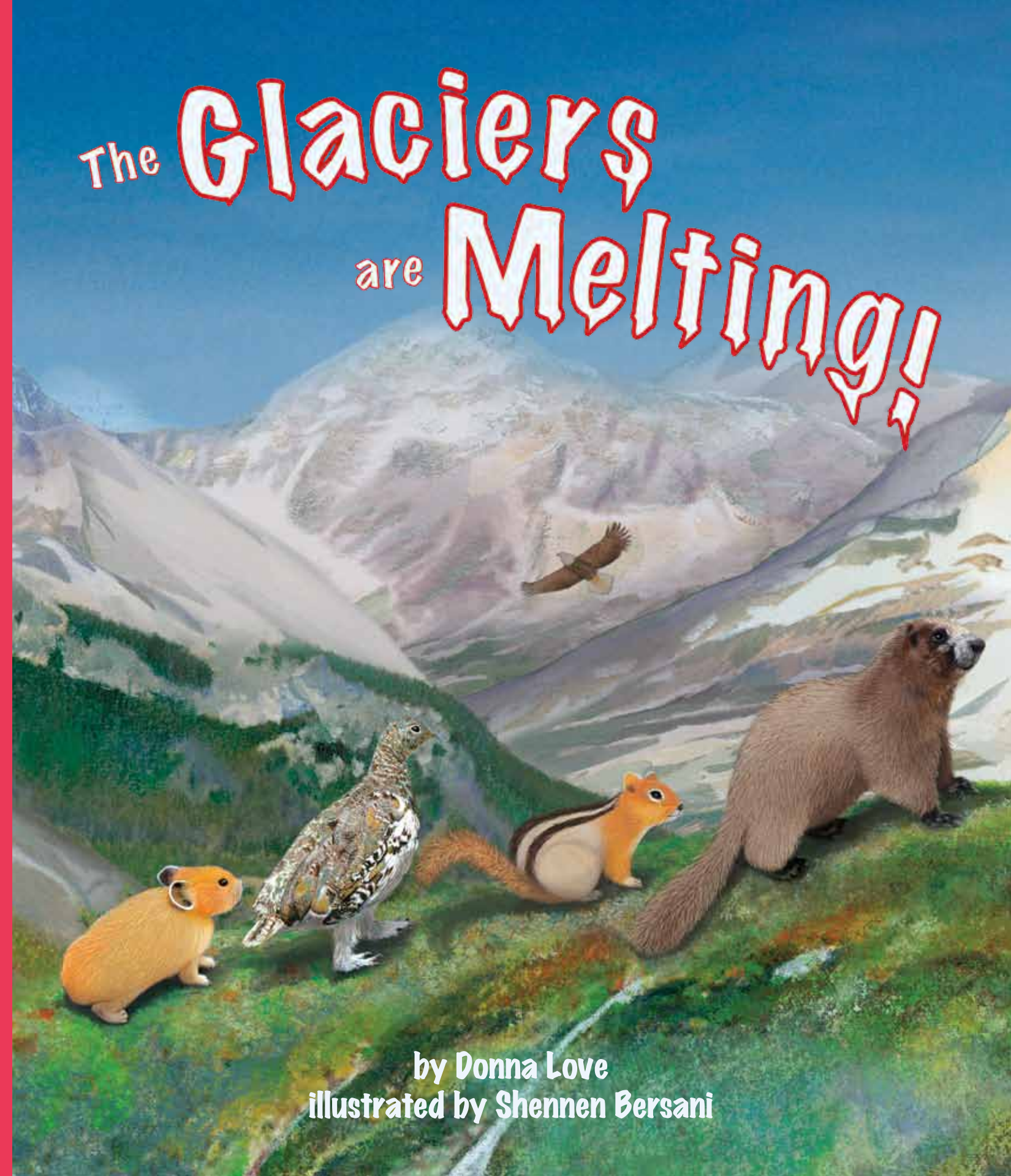


Donna Love



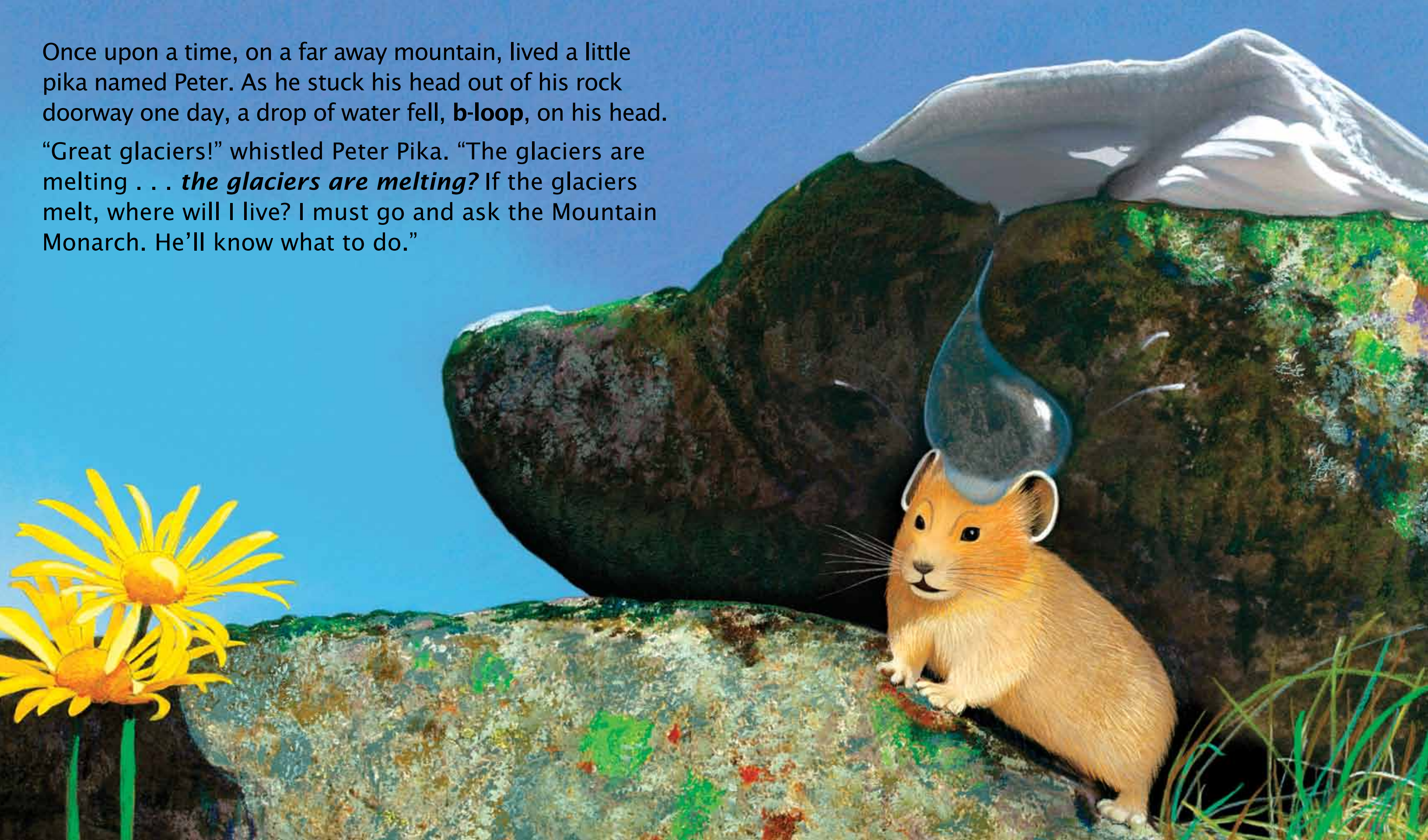
Shennen Bersani

The Glaciers are Melting!



by Donna Love
illustrated by Shennen Bersani

Once upon a time, on a far away mountain, lived a little pika named Peter. As he stuck his head out of his rock doorway one day, a drop of water fell, **b-loop**, on his head. “Great glaciers!” whistled Peter Pika. “The glaciers are melting . . . *the glaciers are melting?* If the glaciers melt, where will I live? I must go and ask the Mountain Monarch. He’ll know what to do.”



Peter Pika scrambled up the face of the mountain as fast as he could. On a high ledge, he met Tammy Ptarmigan.

“Where are you going?” Tammy Ptarmigan asked Peter Pika.

“The glaciers are melting,” whistled Peter Pika. “And I’m going to tell the Mountain Monarch.”

“Gleaming glaciers!” chirped Tammy Ptarmigan. “If the glaciers melt, will I still turn white in winter? I will go with you to ask the Mountain Monarch.”



The two climbed onward until they came to Sally Squirrel.

“Where are you going?” Sally Squirrel asked Tammy Ptarmigan and Peter Pika.

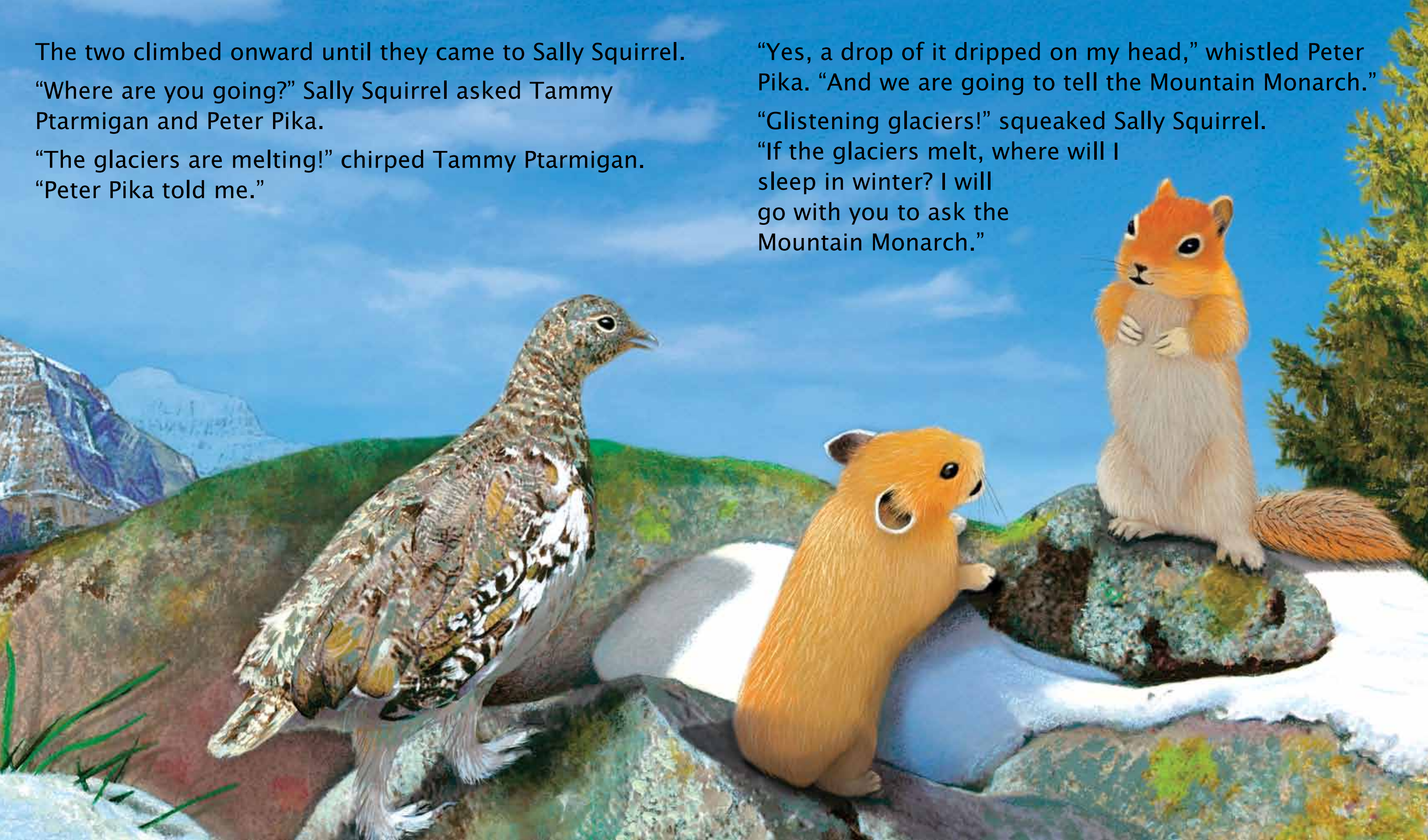
“The glaciers are melting!” chirped Tammy Ptarmigan.

“Peter Pika told me.”

“Yes, a drop of it dripped on my head,” whistled Peter Pika. “And we are going to tell the Mountain Monarch.”

“Glistening glaciers!” squeaked Sally Squirrel.

“If the glaciers melt, where will I sleep in winter? I will go with you to ask the Mountain Monarch.”



For Creative Minds

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Glaciers

If it snows where you live, it probably melts during the summer. But the North and South Poles and some mountain peaks have snow all year long. By mid to late summer, you can see a line (firn line) where the glacial ice and snow meet. Below the line, the snow melts. Above the line, the snow piles (accumulates) on top of the snow from earlier years. The weight of all the new snow turns the older snow into ice—like a metamorphic rock changed by pressure. When the ice gets as thick as 60 feet (about 18 meters) give or take, it becomes a glacier. It takes years for glaciers to form.

A “river of ice?” Rivers do not freeze to make glaciers, but glaciers do move. As the ice builds and the glacier gets heavier, gravity pulls it down.

Moving glaciers pick up rocks and dirt, carrying them along with the ice. The rocks and glaciers carve valleys, eroding the land as they move.

Some glaciers move slowly and others move quickly. You might hear loud noises from a fast-moving glacier.

During ancient ice ages and glaciations, some huge rocks were moved hundreds of miles. They are not like any rocks around them and are called “glacial erratics” or “out-of-place rocks.”

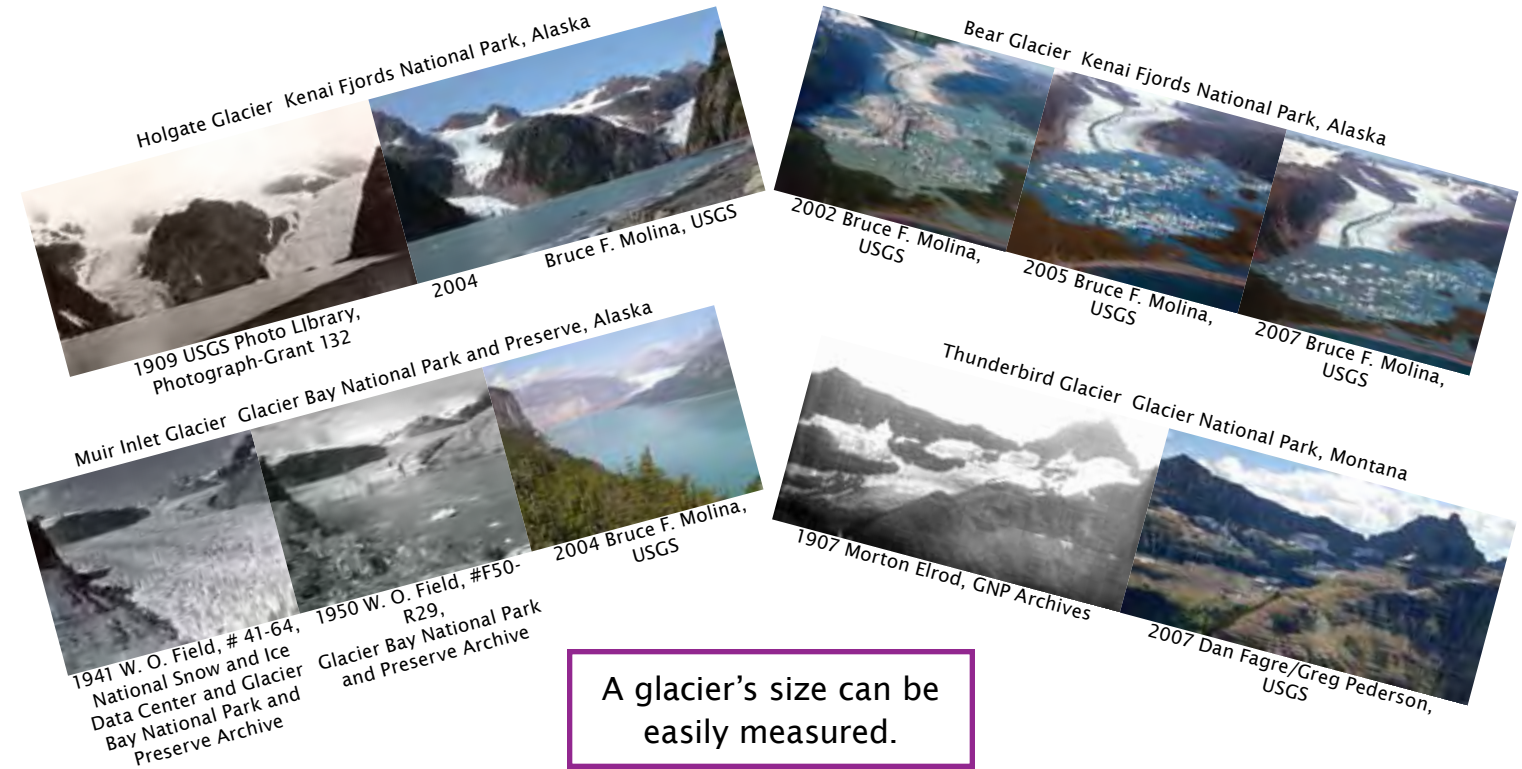
Ice sheets or continental glaciers move out from their edges on flat land. Alpine glaciers are on mountains and flow down.

When glaciers melt, they “drop” the rocks and dirt, making new land called moraine.

Glaciers grow if snow collects year after year.
Glaciers stay the same size if ice melts at the same rate as the snow collects.
Glaciers shrink if the ice melts faster than the snow collects.

Are Glaciers Melting?

Compare the pictures of glaciers below.
Do you think the glaciers are growing, staying the same, or melting?



A glacier's size can be easily measured.

Scientists know that most glaciers are melting. They think the melting is from a natural climate change speeded up by what humans do. Scientists will keep researching (studying) to learn more.

What could happen to rivers as glaciers melt and how could that affect the people who live downstream?

What could happen to the sea level as glaciers melt and how could that affect the people who live on islands or along the coasts?

How does the earth's climate affect a glacier?

Why are some glaciers and ice sheets melting and not others? So far, the Antarctic ice sheet is not melting, but the Arctic sheet in Greenland is.

How much freshwater might come out of melting glaciers?

Animal Matching Activity

Match the animal to its description. Answers are upside down on the next page.



bighorn or
Dall sheep



ground squirrel



marmot



pika



snowshoe hare



white-tailed
ptarmigan



wolverine

1 These **mammals** easily climb up and down narrow cliffs on rocky mountaintops and feed on whatever **plants** and grass they find. The males (rams) have huge, curled horns that they use to fight each other for the females (ewes). These animals **migrate** down the mountain in the winter to where it is a little warmer and back up again for the summer.

2 These **birds** live in high mountain areas from Alaska to New Mexico. They can fly but prefer to walk and their feathered legs and toes keep them warm. Their feathers turn white during the winter to help hide in the snow but are a gray brown during the rest of the year. They eat berries and leaves from tundra **plants**. Some **migrate** down the mountain or small distances, following food in the winter.

3 There are several different types of these **mammals** adapted to a wide variety of habitats from hot deserts to cold mountaintops and the arctic. Some live in trees (maybe in your own backyard) and some live on the ground, like the one in this book. Most eat **seeds** and have a special “cheek pouch” to carry the seeds. They are related to chipmunks and most **hibernate** during the winter.

4 Because these mammals don’t hibernate in winter when it can be hard to find food, these animals cut and dry **plants** during the summer and then save the plants in a “hay pile” in their burrows to eat during the winter.

5 These social **mammals** live in underground burrows and **hibernate** during the fall and winter. During the summer, while most are playing, one animal stands guard and will let the others know if danger approaches. These **plant**-eating animals will also eat snow to get the water they need.

6 Unlike their rabbit cousins, these **plant**-eating **mammals** are born with fur and able to see. Their fur turns white in the winter so they can “hide in plain sight.” They even have fur on their long hind feet that help them to walk on top of the snow, like snowshoes. They have short ears that help them to stay warm in the winter.

7 These **meat**-eating **mammals** are shy but clever. They usually live alone and mark their territories with a strong smell. These animals have long guard hairs (on top of their fur) that trap air to help keep them warm and the snow and rain out. These fast-running animals kill prey with their very sharp teeth.

Alpine and Arctic Animal Adaptations

The animals in the book can be found in the same area (habitat) as you would find glaciers: high in the mountains (alpine) and the arctic. It gets very cold in the winter with a lot of snow and stays cold and windy during the summer. Animals living in these areas need to stay warm, hide in the snow and ice, and find or have food to eat (especially in the winter). Use the information and illustrations in the book and in the matching activity to answer the following questions. Answers are upside down, below.

1 Which animals have white fur or feathers in the winter to hide in the snow?	2 Which animals have fur or feathers on their feet?
3 Which animal gathers food during the summer to eat in the winter?	4 Which animals have little ears to stay warmer in the winter?
5 Which animal has big feet (like snowshoes) to walk on snow?	6 Which animals hibernate for the winter?
7 Which animals migrate for the winter?	8 Which animal is a bird?
9 Which animals are mammals?	10 Which animals eat plants (herbivores) and which eats meat (carnivore)?

Food for Thought

How is this story similar to and different than *The Sky is Falling*?

Why did Wiley Wolverine want the animals to go to his den? How did he try to trick them?

The animals in the story worry about what they will do and how they might live if the glaciers melt. What is each animal worried about?

Matching Answers: 1. bighorn/Dall sheep, 2. white-tailed ptarmigan, 3. ground squirrel, 4. pika, 5. marmot, 6. snowshoe hare, 7. wolverine
Adaptation Answers: 1. ptarmigan, snowshoe hare; 2. ptarmigan, snowshoe hare; 3. pika; 4. pika, snowshoe hare; 5. snowshoe hare back feet; 6. marmot, some ground squirrels; 7. bighorn/Dall sheep, ptarmigan; 8. ptarmigan; 9. bighorn/Dall sheep, ground squirrel, pika, marmot, snowshoe hare, wolverine; 10. Herbivores: bighorn/Dall sheep, ptarmigan, ground squirrel, pika, marmot, snowshoe hare; Carnivore: wolverine

For my first grandchild, Scarlet, with all my love—DL

In memory of my grandmothers, Ruth Zimmerman and Marie McNeil, with love—SB

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