On Thin Ice

By Johnna Rizzo

• For polar bears, ice is both home and hunting ground. What happens when that ice begins to melt?

A polar bear walks on the crunchy ice. Seals swim under the ice. The bear can smell them. A polar bear can smell seals one kilometer (0.6 miles) away. It can smell them beneath one meter (three feet) of snow.

Sniff, sniff. The bear finds a hole in the ice. It tucks in its legs under its big body and sits at the edge of the hole. It waits and waits.

Finally, a seal pops up for air. Dinner has arrived. The bear pounces.

Waiting by a hole in the ice is one way a polar bear grabs a meal. It’s called “still hunting.” A polar bear’s life is mostly about finding food and eating.

Putting on the Pounds

For a polar bear, fat is where it’s at. A polar bear usually eats every four or five days. Bears need to build up layers of blubber, or fat.

Blubber helps bears stay warm and survive when it is hard to find food. Polar bears can get pretty big. Female bears can weigh up to 300 kilograms (660 pounds). Males usually weigh twice that.
The Ice Kingdom

Lots of blubber helps polar bears survive. They live in the Arctic. The Arctic is the area around Earth's North Pole. Winter temperatures can fall to -40° Celsius (-40° Fahrenheit).

It is so cold there, the ocean water freezes. It turns to ice. Bears and other animals can walk on it. To understand polar bears, you need to understand ice.

Map: Polar Bear Range

(Credit: Sean C. Finnegan)

Waiting for the Ice

When ice first forms over the sea, it is very thin. As the weather gets colder, the ice gets thicker. Ice chunks join together to make larger blocks.

As winter comes, the blocks freeze together. This forms pack ice. Pack ice is thick and strong. It can support a lot of weight. Heavy polar bears can safely walk on it.

Many polar bears live in the southern part of the Arctic. Here, the pack ice melts in the summer. So the bears must move onto land. Land is not the best habitat for polar bears. Food is harder to find. It's also easier for the bears to hunt on the ice.

Too Hot to Handle?

Ice is key to a polar bear's survival. Polar bears must move from ice to land, then back to ice. They can travel up to 4,800 kilometers (3,000 miles) a year. Yet what happens to the bears if the ice changes?

The Arctic is changing. It is heating up. Pack ice is melting earlier. Early melting is not good for bears. It means bears must go onto land sooner. Bears use more energy when they hunt on land. Just 12 seconds of running can use more energy than the bear would get from eating a seal.

Dangerous Ice

Polar bears are built to swim. Their powerful, webbed paws pull them through the water. They can swim up to ten kilometers (6.2 miles) per hour. They can dive up to
six meters (20 feet).

Swimming long distances comes naturally for polar bears. They can swim 100 kilometers (60 miles) at a time to get to their hunting ground.

Melting ice is making it harder for bears to swim. When the pack ice melts, the gap between ice and land grows. This makes rougher waves. Rough waves can tire bears.

**Watching and Waiting**

These are difficult times for polar bears. The Arctic is getting warmer. Pack ice is breaking up earlier. The bears’ season on land is lasting longer. Finding food is getting harder.

Polar bears need to eat a lot. They need to store extra energy. Without it, they could starve during the lean months on land. To survive, the bears are moving into areas closer to humans. There, they find a new source of food—trash. Eating trash is not healthy for bears. It doesn’t give them the fat they need to survive.

**Searching for Survival**

Getting closer to people also is not good for polar bears. Humans are the only predators bears need to fear.

What will happen to polar bears? We don't know. Polar bears have adapted before. Long ago, they probably lived in warmer regions. Gradually, they moved north. They adapted. Their eating habits changed. They survived.

Scientists continue to study polar bears. Maybe the polar bears will adapt again. Maybe they will be able to live in a warmer world.

**Wordwise**

*blubber:* layers of fat
**habitat**: place where an animal lives

**pack ice**: floating ice that has been driven together into a single mass

**still hunting**: method of hunting

**Comprehension Strategy**

As you read this story, look at the text and pictures. Look for details. Ask yourself: "Which details are the most important?"

**About the Story**

In this story, readers will learn about the life of polar bears in the wild. What is their favorite food? How big do they get? Where do they live? But more importantly, readers will find out that the Arctic is getting warmer and this is creating problems for polar bears. Will these climate changes mean doom for polar bears or will they adapt?

**Before Reading**

**Preview and Predict** Say: *The title of this story is "On Thin Ice." What do you think the story will be about?* Take several student responses. Next, have student pairs preview the photos, captions, headings, and bold-faced words in the story.

Distribute the activity "Preview and Predict," below. Have students complete the first section by listing three things they learned from previewing the story. Then have them complete the second section by filling in their story predictions. After students have read the entire story, remind them to return to this activity to check their predictions.

**Comprehension Strategy**

**Determine Importance** Have students read the story "On Thin Ice" alone or in pairs. Then tell students that when we read non-fiction, it is important to figure out the writer’s message. Say, *In this story we know the topic is polar bears, but we need to read carefully to find out what about polar bears the author wants us to know.* Further point out that sometimes there is a clue in the opening statement. Often it
is summed up in the last paragraph. Read aloud the deck of the story. Then read
the last paragraph of the story. Ask: What do you think the author wants us to
learn?

Lead students to look for details in the story that support the idea that polar bears
are having to deal with the effects of a warmer **climate**. Display the details students
locate in the story. (Possible answers: Ice packs are melting earlier; bears must go
onto land sooner; melting ice is making it harder for bears to swim; finding food is
getting harder)

**Explore Science**

• Understanding how polar bears live is key to understanding some of their current
challenges. In pairs, have students review the first four section of the article, and
then have students write responses to the following questions about polar bears.

---What is the story about? (polar bears)

---Where do they live? (in the Arctic)

---What is their main source of food? (seals)

---How do they get their food and how often do they eat? ("still hunt" on pack ice –
every four or five days)

---Why do they need to eat so much? (to add fat, or blubber, to stay warm)

Ask: Why is land not the best place for polar bears to live? (Food is harder to find.)

• After reading the fifth and sixth sections, ask: What is our weather today? Then
ask: What kind of weather do we have where we live most of the time? Explain that
the kind of weather an area has over months and years determines its **climate**. (For
example, Phoenix, Arizona, has a hot, dry **climate**. Green Bay, Wisconsin, is known
for its cold **climate**.) Ask: What kind of **climate** would you say the Arctic has?

Point out that scientists have been observing the temperatures in the Arctic for
many years and know it is getting warmer. These changes are impacting the polar
bears. Ask: What happens to the bears when the pack ice melts earlier? (They are
forced onto land sooner, and they can't find enough food to eat.)
Display the words *first* and *second*. Explain that in the last four sections of the story the author describes a chain of events that are occurring in the Arctic and causing problems for the bears. Have students skim the sections locating something that happens first, then what happens second.

Distribute the activity below. Explain that they will be looking for four examples of chain reactions that are occurring in the Arctic. Complete one example with the class. (First – Arctic is getting warmer. Second – Pack ice is breaking up earlier.) Then have students finish the rest of the student activity page in the same way. Take time to review some of the cause-and-effect chains.

**Academic Vocabulary**

Display the vocabulary words: *blubber*, *habitat*, *pack ice*, and *still hunting*. Read aloud the definitions for each word in Wordwise. Then have students scan the story to find the word in bold. Invite student volunteers to read the sentence containing the vocabulary word.

Next, have student pairs practice using these words in original sentences. After trying several sentences, have students write down their best ones on paper. Invite volunteers to share their sentences aloud.

Have students add these words to their *Academic Vocabulary Logs* or to your classroom science word wall.

**Fast Facts**

- A polar bear’s fur is not really white. It is made of hollow hairs that reflect light and trap the sun’s heat to keep the polar bear warm.

- Polar bear fur is oily and water repellent which helps them dry quickly after a cold swim.

- Polar bear paws are rough to help keep them from slipping on ice.

**Comprehension Quick Check**
What does blubber do for bears? (Blubber helps bears stay warm. They need to build up layers of fat under their skin for their body to use when food is hard to find.)

Since polar bears are great swimmers, how is the melting ice making it harder for bears to swim? (As the pack ice melts, the gap between the ice and land is getting wider. Rough waves appear in the larger areas of ocean, which makes it harder to swim.)

Why is eating trash not good for bears? (Trash doesn’t give bears the fat their bodies need to survive.)

Engage Students

Sensory Setting Have students work in pairs. Encourage them to think about the environment that polar bears live in. Partners should brainstorm details to describe the setting. Have them use a Five-Senses Chart to organize their ideas (sight, sound, taste, touch, smell). Then individually, have students write a descriptive paragraph as if they were National Geographic explorers seeing this environment for the first time. Invite volunteers to share their descriptive writings.

Critical Thinking Tell students that just as polar bears are being affected by changes in their climate, humans can also experience problems when climate changes. Have students think about what could happen if your climate totally changed. Have students brainstorm what might happen and display ideas. (For example: If you live in a hot, dry area and it became rainy and wet, explain how that would affect crops that are grown in your area, businesses that cater to hot weather (like water parks), recreation areas, clothes people wear, even the food you eat.)

Extend the Learning

Pictures and Words Have students select a photo from the story that they like. Ask them to write a description in three to five sentences that describes what they see happening in the photo. Explain they should not use the caption in their descriptions. Then have students read aloud their descriptions and have the other students guess which picture they were describing.
Teach and Learn Explain to students that one way to help polar bears is to teach other people about what is happening in the Arctic. Have students create an informational poster that tells two or three things that they think are important for others to know. Their poster should include pictures that are labeled with a factual statement.

Preview and Predict

Scan the story, "On Thin Ice," by looking at the pictures, reading captions, titles, and bold-faced words. Then complete the following exercises. List three things you learned from scanning the story.

1. _______________________
2. _______________________
3. _______________________

Make a prediction! What do you think the story is going to be about? Name one new thing you think you'll learn.

Cause-and-Effect

A cause is what makes something happen. An effect is what happens as a result. Review the "On Thin Ice" story. Fill in an effect for each cause listed below.

<table>
<thead>
<tr>
<th>CAUSE</th>
<th>EFFECT</th>
</tr>
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<tbody>
<tr>
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Comprehension Check

Write the correct letter of the word that matches each definition next to its number.

___ 1. method of hunting
2. floating ice that becomes a single mass

a. pack ice

b. still hunting

Read the question. Circle the correct answer.

3. Which is not a result of warming Arctic temperatures?

A. Bears have less time to still hunt.
B. Bears have greater distances to swim.
C. Bears store food in the snow.
D. Bears are looking for food in people's garbage.

Answer Key

Cause-and-Effect

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<td>Bears use more energy when hunting on land.</td>
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Comprehension Check

1. b, 2. a, 3. C

Citations

MLA 8

APA 6