Survival Strategies

Animals of Antarctica

Antarctica is the coldest place on Earth and one of the driest. Animals have developed amazing ways of surviving in this icy desert.

The Mini Page talked with an expert on Antarctic life to find out more about the incredible creatures that live at the southern end of the world.

Ice about one mile thick covers most of Antarctica. This is about 90 percent of all the ice in the world.



In the sea and air

No large animals live on the Antarctic land year-round. They live in the sea and air around the continent, coming onto land for only part of the year. During the winter, the Antarctic waters are warmer than the land.

On land, animals are surrounded by salt water, which they can't drink. They get their water from their diet or from ponds of melted ice.

Tiny insects are the biggest organisms living year-round on the land. Some go into hibernation, or a kind of long sleep, in harsh conditions.



Many animals survive in Antarctica by migrating north to escape the harsh winter conditions. For example, the humpback whale moves to warmer northern waters during the winter. It returns to dine on the abundant life in summer Antarctic waters.

Antifreeze fishes

Fish in Antarctic waters have a real problem. Water temperatures often fall below freezing, and ice crystals form in the fish's blood.

If ice crystals touch one another, they form a solid sheet of ice. Fish could not survive with ice sheets in their bloodstreams.

About 250 species of fish conquered this problem by developing antifreeze in their blood. The antifreeze forms physical barriers that prevent ice crystals from touching each other.

Some tiny insects and bacteria that stay on Antarctic land have also developed antifreeze in their bodies.

Icy waters

Antarctic fish have very slow heart rates. They have only enough energy to swim slowly through the icy-cold water. They don't speed by like warmwater fish.

For at least three months each winter, so much additional sea ice forms that it doubles the size of the continent. In spring, the sea ice breaks up, and in the summer, it becomes open water again.

In some cases, fish live below layers of ice. Some live in the cracks in the underside of the sea ice. Others live on the sea floor. They feed on tiny crustaceans (kruh-STAY-shuns), or animals resembling crabs and shrimp.



The icefish in Antarctica has white blood. not red. It is the only known vertebrate, or animal with a backbone, in the world to have no hemoglobin, a substance that carries oxygen and turns our blood red. Experts believe this may be tied to the high amounts of oxygen in the cold waters.

Mini Spy ...

• heart

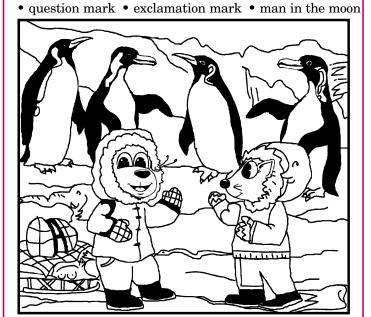


Mini Spy and Basset Brown are exploring the Antarctic

and visiting some penguins. See if you can find:

• letter A tooth • ruler • number 3

• elephant • caterpillar • word MINI • letter L • snake ullet number 2





You'll need:

- 2 large ripe tomatoes, sliced thick lemon pepper to taste 2 tablespoon Dijon mustard 2 tablespoons grated mozzarella • lemon pepper to taste
- 2 tablespoons grated parmesan cheese
 • 2 tablespoons mayonnaise • 1 tablespoon fresh basil (optional)
- What to do:

 1. Place tomato slices on a rimmed baking sheet. Sprinkle with lemon
- pepper.
 2. In a small bowl, mix together parmesan cheese, mayonnaise and mustard. Top tomato slices with mixture.
- Top slices with mozzarella cheese and sprinkle with fresh basil.
 Bake at 350 degrees for 13 minutes.
 Broil for additional 1 minute to lightly brown. Makes 8 to 10 slices.
- You will need an adult's help with this recipe.

Meet Hullabaloo



The folk duo Hullabaloo's latest CD for kids is "Raise a Ruckus." The band includes songwriter Steve Denyes, who sings and plays the guitar, and Brendan Kremer, who sings and plays a percussion instrument called a **cajón** (cah-HONE).
Steve and Brendan have been friends since

kindergarten. They first played music together in their fifth-grade band. As adults, they began performing as a duo at Brendan's twin Brendan and Steve daughters' first birthday party.

Steve has taught music to kids in kindergarten through sixth grade. He loves to surf, skateboard, ski, play soccer and go camping

Gus Goodsport's Report

his potential. Since then the slick, quick point guard has played in five All-Star games and was the NBA finals MVP in 2007.

At 31, Parker is still tough enough. He again led the Spurs to the 2013

NBA finals with explosive scoring and assists. His star status is secure in

Aside from playing, Parker's interests include providing Spurs homegame tickets for deprived youth and making music. He has produced an album, so stay tuned. If the music matches his performance on the basketball court, it will be a big hit.

It's hard to believe now, but Tony Parker once wasn't considered tough enough to play for the San Antonio Spurs

Fortunately, Spurs coaches took a second look and saw

Brendan earned the money for his first drum set by delivering newspapers in the sixth and seventh grades. He enjoys playing football and baseball and watching car racing. from The Mini Page @ 2013 U

Height: 6-2 Birthdate: 5-17-82 Weight: 185 Grew up in: France

Supersport: Tony Parker

That was 13 years ago.

Chain of Life

Walking "trees"

Soft corals are animals that live in colonies that look like colorful trees. The corals eat plankton, or tiny organisms drifting in the sea. In warmer waters, where there is more food, corals grab food as it drifts by.

But because plankton is scarce in winter Antarctic waters, one type of soft coral has developed an amazing way to survive. Rather than relying on food floating by, the entire coral "tree" lies down and rolls around in circles, picking up food from the sea

floor. Then it stands up and moves to a new area.

The soft coral in Antarctic waters is the only coral in the world known to get up and walk.



that all the krill in Antarctic waters would weigh more than all the people on Earth. Small shrimp-like creatures called

krill are one of the most important food sources in Antarctic waters. They depend on winter sea ice.

Tiny one-celled plants called diatoms (DIE-uh-toms), a type of algae, live on the underside of winter sea ice. Young krill gather under the sea ice to dine on diatoms. The sea ice also protects the krill during the icy winters. Diatoms are also an important food source for fish.

Staying warm

Many birds, such as penguins, have tightly woven layers of feathers that help keep out the cold. As with many seabirds, their feathers are waterproof.

Birds in the southern polar region also have extra layers of fat to keep them **insulated**, or protected from the cold.

Mammals, such as seals and whales, have layers of fat, or **blubber**, to insulate them. Seals also have fur to keep them warm.

On land, seals lie around most of the time. This lack of movement conserves their energy. They don't really move fast until they hit the water.

Animals and birds may also have smaller **extremities**, or body parts away from the main body, such as bills and ears. Having smaller parts of the body exposed to the cold helps the animals keep more heat in their bodies.

Fragile Habitat

The emperor penguin

The emperor penguin spends more time on land than any other type of penguin in Antarctica. Females come onto land to lay their eggs. The males hold the eggs on their feet, warming them with their skin and feathers throughout the bitter winters.

The males form big circles of penguins. The inner circles are the warmest because the outer penguins help block the cold winds.

In order to survive the frigid winters, emperor penguins take turns in the circles. After warming up in the inner circle, penguins move to the outer, coldest circle. The coldest penguins get to move to the warmer circles. They take turns all winter.



take turns caring for chicks.

The Mini Page thanks Dr. Jim McClintock, endowed professor of polar and marine biology, University of Alabama at Birmingham, for help with this issue.

Look through your newspaper for stories and pictures of ani als in far-off places.

Next week, The Mini Page is about the president's Cabinet.



The Weddell seal hunts its food under the ice. It comes onto land to rest.

Safety on ice

The female Weddell seal uses the sea ice to protect herself and her young from enemies, or **predators**. The female has special ice-chipping teeth. When she is ready to give birth, she swims under the winter sea ice. She finds a weak spot and chips away at the ice until she creates a breathing hole.

She keeps chipping away until she has made a big enough hole that she can push herself through it and up onto the sea ice. She delivers her young on the ice away from land. Enemies such as leopard seals and killer whales can't get onto the ice to reach her or the seal pups.

A changing environment

The Antarctic Peninsula* is one of the most rapidly warming areas of the planet. In the last 60 years, average midwinter air temperatures have gone up about 10 degrees Fahrenheit. There have never been such rapid changes in the history of Antarctica.

*The Antarctic Peninsula is a long area of land stretching toward South America.

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Some animals in trouble

The rapid warming in the Antarctic Peninsula is causing the winter sea ice and glaciers to decrease in the area. Ice sheets connected to land float in the ocean year-round. These massive ice sheets have lasted for thousands of years, but now they are breaking apart.

Entire ecosystems are changing within 10, 20 or 30 years. Normally, these types of major changes would take thousands of years to occur.

Many creatures may not have time to adapt. Some are unlikely to survive. For example, in warmer areas, krill are disappearing.

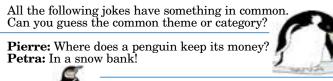
Vanishing Adelie

The warming climate is causing it to snow later in the year, during the time when Adelie (uh-DAY-lee) penguins usually lay their eggs. These late snowfalls can bury entire Adelie colonies under the snow. When the snow melts, the melt-water drowns the chicks in their eggs.

In some areas of the northern Antarctic Peninsula, 90 percent of the Adelies have apparently died.



Adelie penguins slide across sea ice to reach their food. The melting sea ice is forcing the Adelies to swim farther offshore to find food. This leaves them less energy to care for their young.

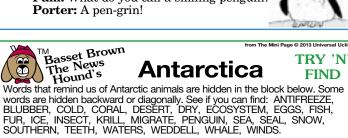




Paula: What do you call a penguin walking in the desert? Pete: Lost!

Mighty Mini Jokes

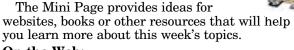
Pam: What do you call a smiling penguin? **Porter:** A pen-grin!





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Ready Resources



On the Web:

• bit.ly/13Xxt0d • bit.ly/16nBlLT

• bit.ly/18xszs3

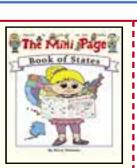
At the library: • "March of the Penguins," DVD

• "Frozen Planet," DVDs

• "The Arctic and Antarctica" by Philip Steele

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