Lesson 27

The Frog in the Milk Pail

"I'm tired of sitting on this log," croaked a frog one sunny morning. So he jumped out of his pond and hopped off to explore.

Before long, the frog reached a fence. "How curious," he said. "I wonder if it tastes good." He flicked out his long tongue.

"Ugh!" he said.

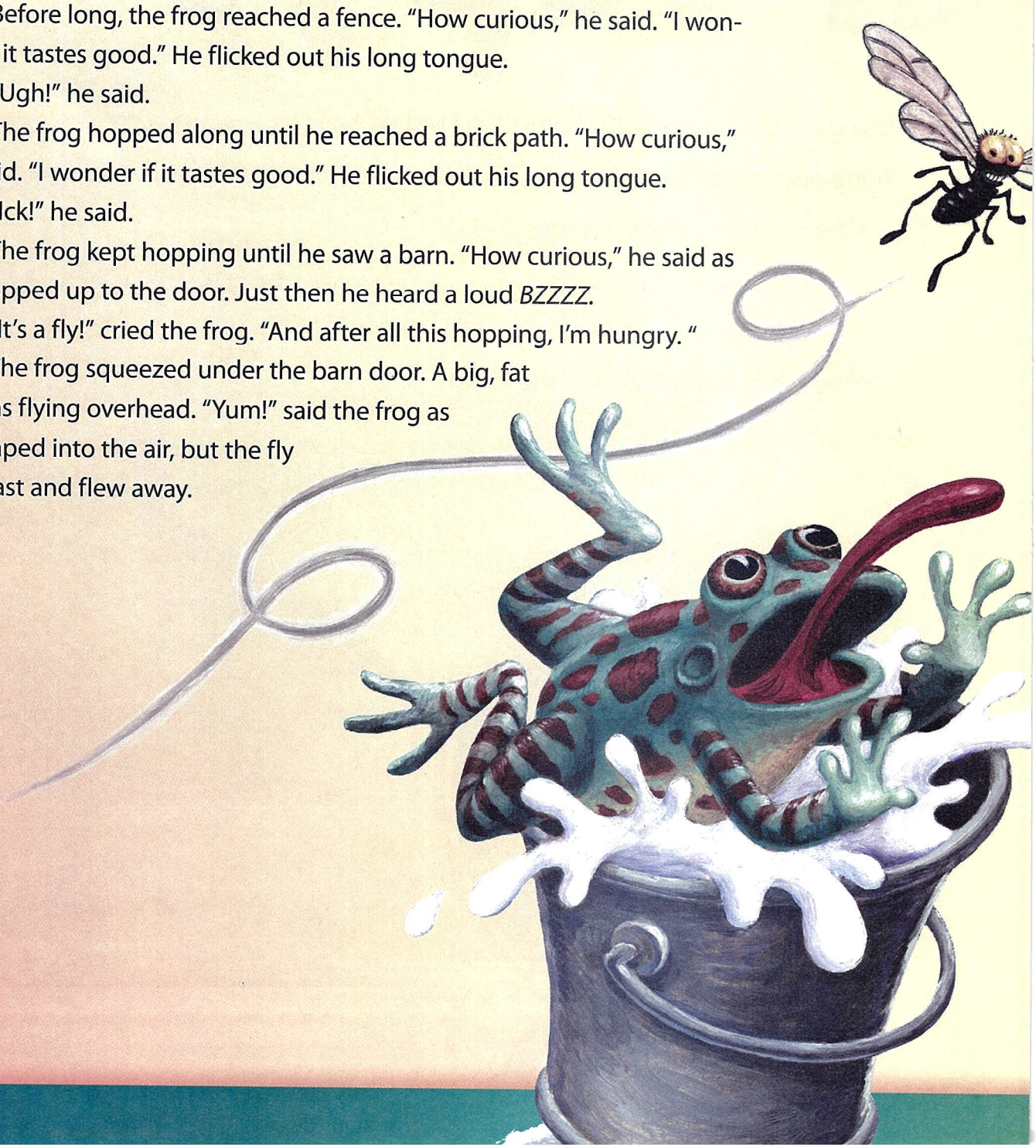
The frog hopped along until he reached a brick path. "How curious," he said. "I wonder if it tastes good." He flicked out his long tongue.

"Ick!" he said.

The frog kept hopping until he saw a barn. "How curious," he said as he hopped up to the door. Just then he heard a loud *BZZZZ*.

"It's a fly!" cried the frog. "And after all this hopping, I'm hungry. "

The frog squeezed under the barn door. A big, fat fly was flying overhead. "Yum!" said the frog as he leaped into the air, but the fly was fast and flew away.



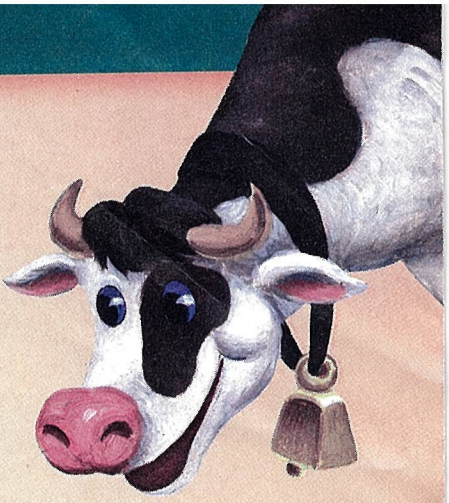
The frog, though, didn't land where he expected to. "How curious," said the frog. "I've landed in a pond with white water and shiny silver banks." Of course, it wasn't really a pond. It was a metal pail half-full of fresh milk.

The frog tried to climb out of the pail. But he just kept sliding back into the milk. He swam and splashed and kicked. He went faster and faster.

Then the frog noticed yellow globs floating in the milk. "How curious," he said. He went on swimming and splashing and kicking. He saw more yellow globs.

Before long there was a yellow hill in the middle of the pail. All that kicking and splashing and swimming had churned the milk into butter!

The frog climbed up the butter hill and jumped out of the pail. He hopped all the way home.



The moral of the story:
Never give up.

The Science of Butter

Is making butter a chemical or a physical change? In a chemical change, a new chemical substance forms. Making butter is a physical change. The chemical makeup of the milk doesn't change. Churning simply makes drops of fat in the milk stick together to form butter.

AMPHIBIAN

Frogs, toads, salamanders, and newts are amphibians. The word *amphibian* means "double life" because these animals live part of their lives in water and part of their lives on land. An amphibian starts life in the water and then lives on land as an adult.

Amphibians lay their eggs in the water. These eggs do not have a hard shell. They are more like jelly. Young amphibians that hatch from the eggs look very different from adult amphibians. The young breathe with gills. They have tails that help them swim.

As young amphibians grow, their bodies change. They grow legs. Lungs develop and their gills disappear. These changes allow amphibians to live on land and breathe air with their lungs.

The skin of amphibians is not protected by hair, feathers, or scales like other animals. Their skin is permeable, which means they can absorb air and water through their skin.

Amphibians are found on all the continents except Antarctica. They are ancient animals that have been around for about 360 million years. However, their lives are being seriously threatened in today's world.

TREE FROG
Most amphibian species are frogs. This is a common tree frog.

ALERT!

Scientists know of approximately 6,000 different kinds of amphibians, but this number could change quickly. Scientists say that more than 120 amphibian species have already disappeared from the world. These kinds of amphibians are extinct, meaning that all members of the species have died.

Many different things are threatening the lives of amphibians, including habitat loss, pollution, introduced species, and a parasitic fungus. Scientists say that 2,000 to 3,000 of the amphibian species in the world are now threatened with extinction. It is the biggest extinction crisis in today's world.

NEWT
Most newts and salamanders are found in the cool forests of North America, Europe, and northern Asia.

This fire salamander lives in Hungary.

Habitat Loss and Pollution

Amphibians often live in swamps and ponds. But many of these swamps and ponds are being filled in to make way for roads, houses, and malls. Amphibians also live in rain forests that are being cut down or destroyed by fire. The loss of these habitats often leaves the amphibians nowhere to live.

Clean water is extremely important to amphibians. Adult amphibians need clean water to keep their skin moist. Adults lay their eggs in water, and young amphibians live completely in water.

Some ponds and creeks are close to farms. Chemical fertilizers are used on farms to grow better crops. Pesticides are used to kill insects that destroy crops. However, when it rains, these chemicals are washed into the nearby ponds and creeks that lead to swamps and rivers.

Many frogs in these areas have been found with deformities, such as missing legs or extra legs. Deformed frogs like these have been found in 44 of the 50 United States. Some scientists believe that the chemical pollution in the water is absorbed by the soft eggs of amphibians and by their permeable skin. The chemical pollution affects the eggs and growth of the young, causing these deformities.

Blue poison dart frogs are endangered and found only in five forests of Suriname in South America.

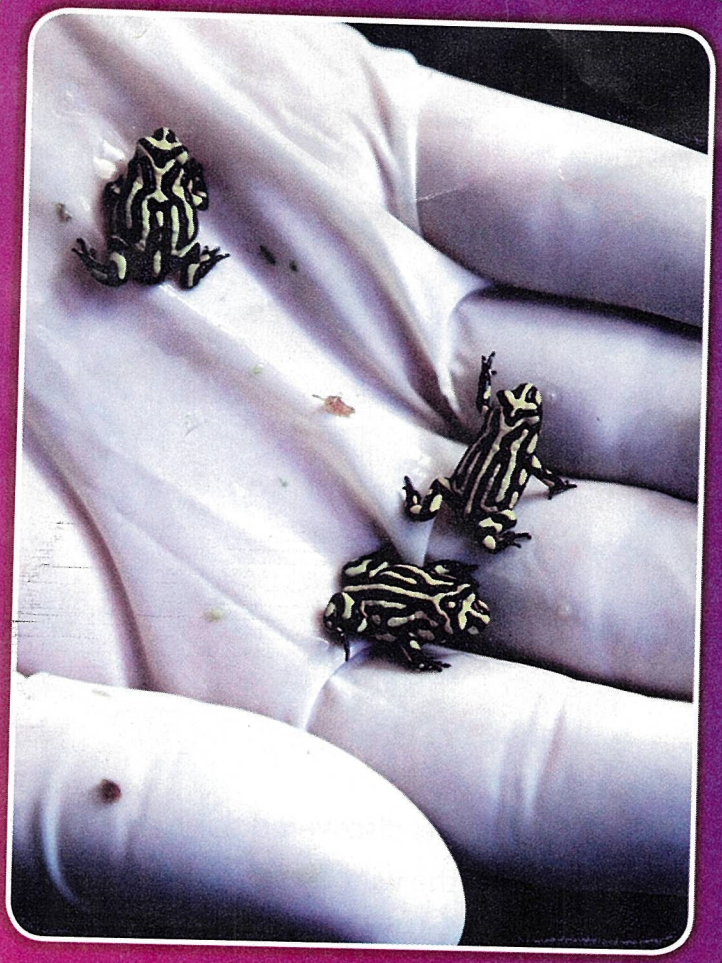
Introduced Species and Fungus

Since the 1930s African clawed frogs have been shipped around the world by the thousands. These frogs are used in laboratory studies and for other purposes. Some exotic amphibians are shipped to other countries as pets or for food. Sometimes these amphibians escape or are released into their new habitat. In their new habitat they can cause problems.

The introduction of African clawed frogs into new areas has caused two major problems. African clawed frogs are more aggressive than many frogs, and they have been known to eat other frogs. But the bigger problem is that African clawed frogs carry a fungus called amphibian chytrid (KIT rid). This fungus does not hurt African clawed frogs, but it is deadly to many other kinds of amphibians.

This cane toad lives in the Amazon jungle in Peru.

Scientists discovered this fungus in 1993. In the wild the fungus is unstoppable and untreatable. It can kill 80 percent of the amphibians in an area within months. Scientists suspect that dozens of frog species have gone extinct because of this fungus.



About 130 critically endangered Corroboree frogs are being protected and preserved at Taronga Zoo in Sydney, Australia. Only about 200 of these frogs are left in the wild.

Plans to Help

Scientists and conservation groups from around the world are putting plans together to help save amphibians. Much of their work focuses on the amphibian chytrid fungus because the disease it causes is the most serious and immediate threat.

Some scientists are researching how the disease spreads and why it kills only some individuals in one species, but kills all of another species. Other scientists are assessing the damage the disease has caused. The areas most affected so far include Central America, the Caribbean, Australia, and parts of Asia. However, scientists warn there is no continent or amphibian species that is safe.

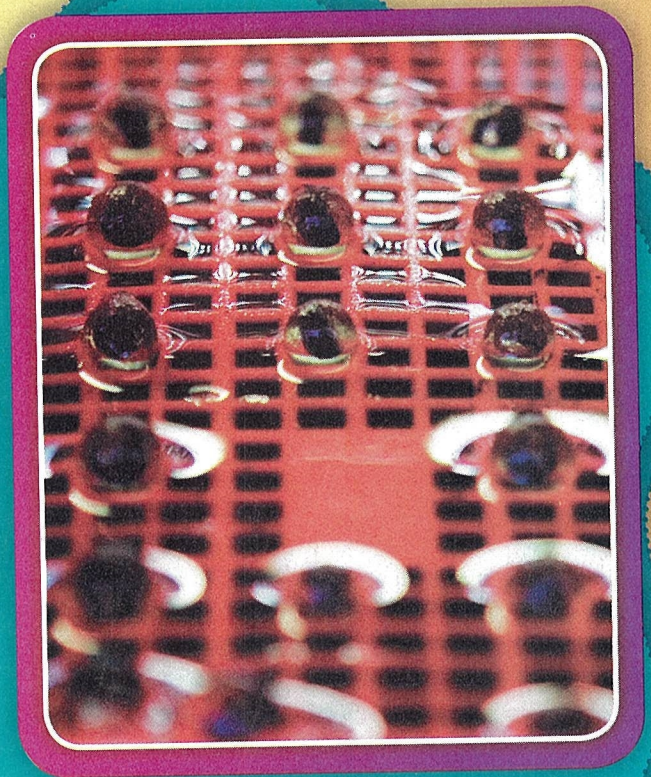
Conservation groups that include many zoos are taking in many of the threatened amphibian species to protect and preserve them. In the future when the research scientists find ways to control the disease, the conservation groups will release these animals back into their natural habitat.

What We Can Do

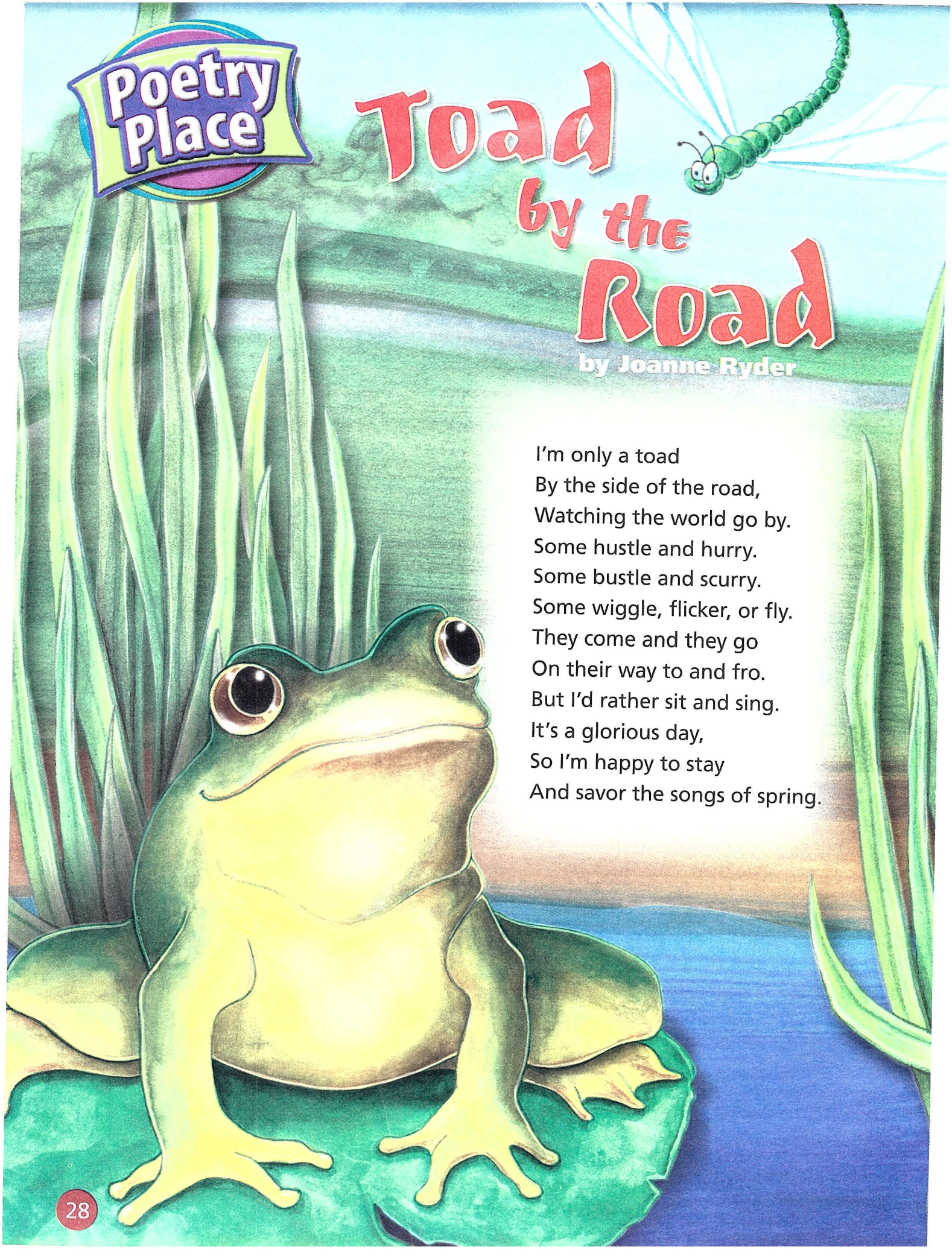
Like scientists, you can do research and learn as much as you can about the problems facing frogs and other amphibians. You can search the Internet using search words, such as *threats to frogs and amphibians*, for more information. You can find maps and lists of the amphibian species in your area.

Amphibians live all over North America and in every state of the United States. The Appalachian range is home to many different species. Contact local nature preserves, zoos, or the office of environmental matters in your state to learn about volunteer opportunities.

You can also help by keeping local ponds and creeks clean. Although these small habitats may not seem as important as others, they are home to many creatures. We need to help preserve a future for them as well as for us.



A zookeeper at Taronga Zoo cares for Corroboree frog eggs (photo at right), tadpoles, and young frogs. Zoos all around the world are developing similar conservation programs to protect amphibian species from extinction.



Toad by the Road

by Joanne Ryder

I'm only a toad
By the side of the road,
Watching the world go by.
Some hustle and hurry.
Some bustle and scurry.
Some wiggle, flicker, or fly.
They come and they go
On their way to and fro.
But I'd rather sit and sing.
It's a glorious day,
So I'm happy to stay
And savor the songs of spring.

THE POISON-DART FROGS

by Douglas Florian

Brown with oval orange spots.
Crimson mottled black with blots.
Neon green with blue-black bands.
Tangerine with lemon strands.
Banana yellow.
Ultramarine.
Almost any color seen.
And though their poison can tip a dart,
These frogs are Masters of Fine Art.

Activity Central

Match the MORAL

Three short frog fables follow, but the moral for each has gotten separated from its story. Match the moral to the fable it fits.

Morals

- Look before you leap.
- Choose your friends wisely.
- Beauty is in the eye of the beholder.

The Frogs and the Well

Two frogs lived in a small pond, but one hot summer it dried up. While looking for a new home, they came to a deep well.

"This looks like a cool, wet place to live. Let's dive in," said one frog.

"Not so fast, my friend. What if this well dries up like the pond? How would we get out?" replied the other frog.

Frog and Toad

A frog and a toad were sitting by a pond. Each thought himself handsome and the other ugly. A girl passed by and saw the two. "Yuck!" she cried as she ran away, disgusted by both.

The Mouse, the Frog, and the Hawk

A mouse and a frog were friends. One day the frog thought it would be fun to tie his leg to the mouse's. This was fine while they were in the meadow. Later, though, the frog hopped to the pond with the mouse. The poor mouse couldn't swim and drowned. A passing hawk snatched them both and flew to its nest. Still tied to the mouse, the frog also became the hawk's dinner.

Word Relationships

An *analogy* is a comparison of two sets of words. Each set of words has a similar relationship. Sometimes the words are *synonyms*, with similar meanings. Sometimes they are *antonyms*, with opposite meanings. The words in the example analogy have opposite meanings.

Example: *good* is to *bad* as *clean* is to *polluted*

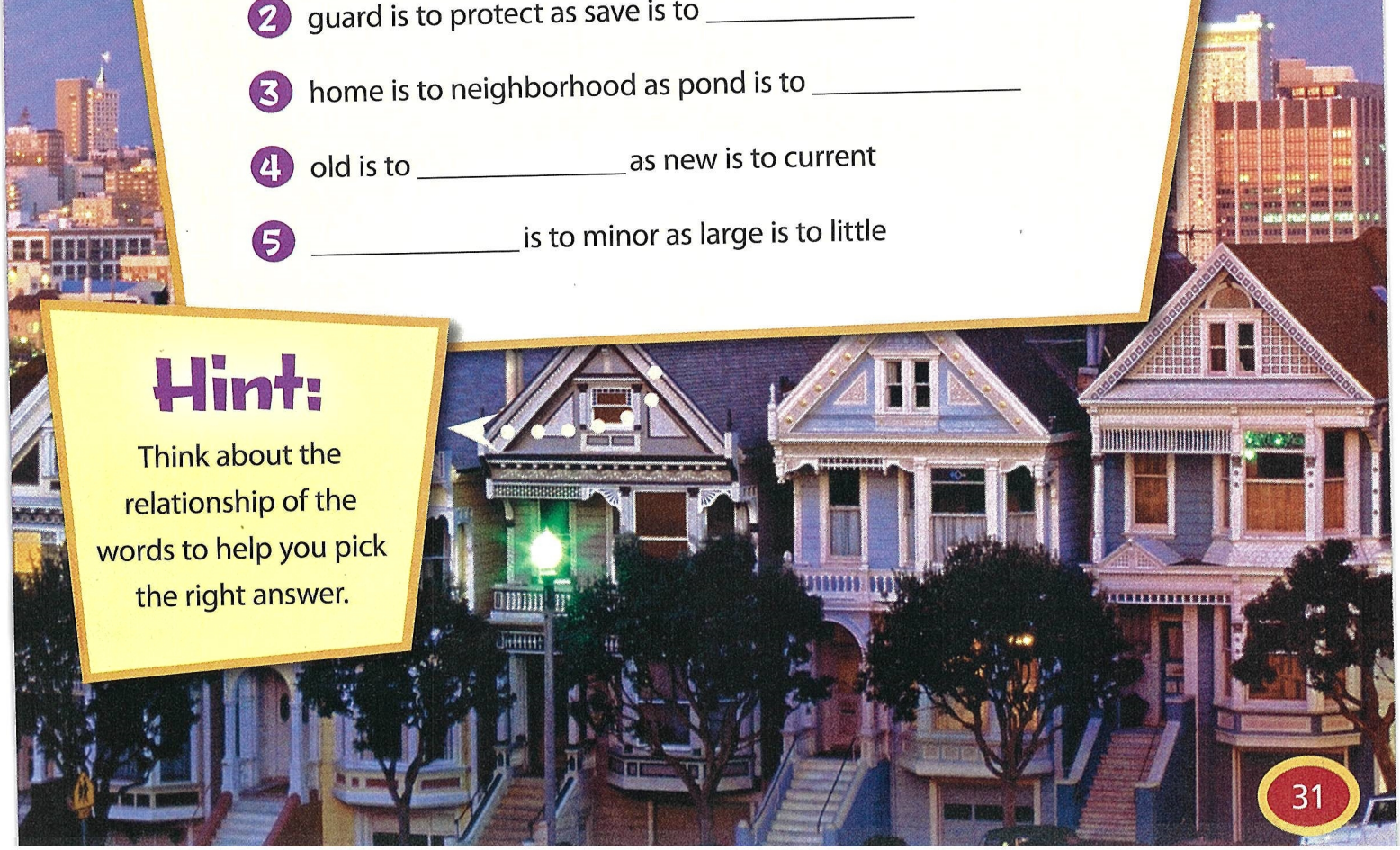
Use the words in the box to complete the analogies.

ancient	**extinct**	**habitat**	**major**	**preserve**

1. alive is to _____ as right is to wrong
2. guard is to protect as save is to _____
3. home is to neighborhood as pond is to _____
4. old is to _____ as new is to current
5. _____ is to minor as large is to little

Hint:

Think about the relationship of the words to help you pick the right answer.



Your Turn

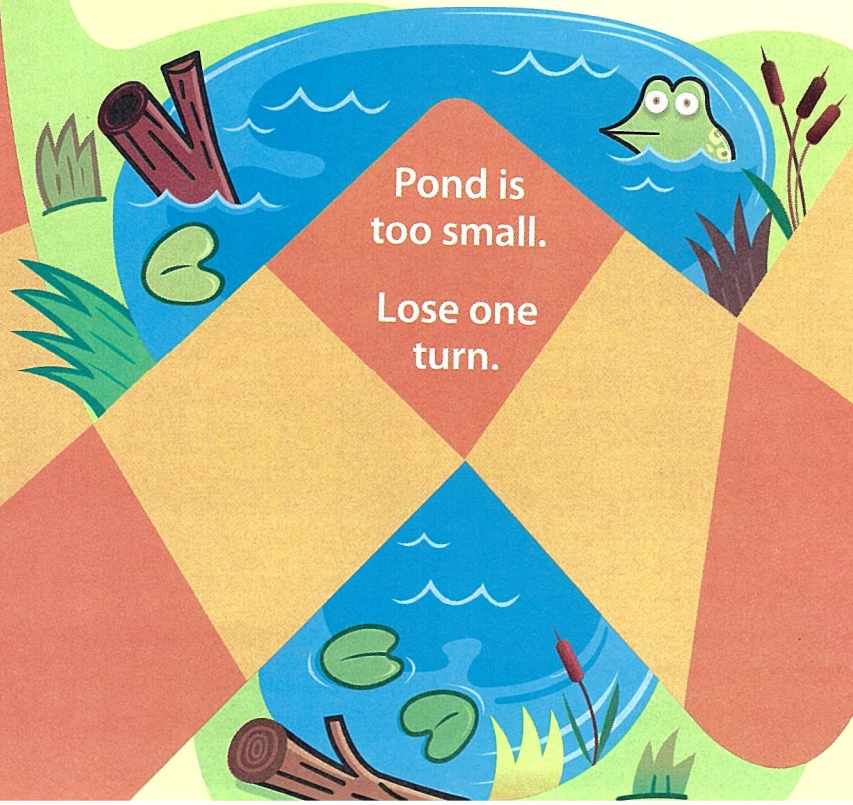
SAVE the FROGS!

and other amphibians

In "Amphibian Alert!" you learned about some of the problems that amphibians are facing in the world today. Create a board game about amphibians that are losing their home for one of the reasons given in the article. Have the amphibians look for a new home.

After you have drawn up the plan for your board game, write a set of instructions for how to play the game.

START



- Start with a sentence that states what the instructions are for.
- List all necessary materials.
- List each step in the game. Make sure the steps are in the right order.
- Tell how the game is won.

Remember to write each step in your instructions as a complete sentence.

Pond is polluted by chemicals.

Go back 3 spaces.

Deadly fungus in the area.

Return to start.

African clawed frogs live here.

Go back 2 spaces.