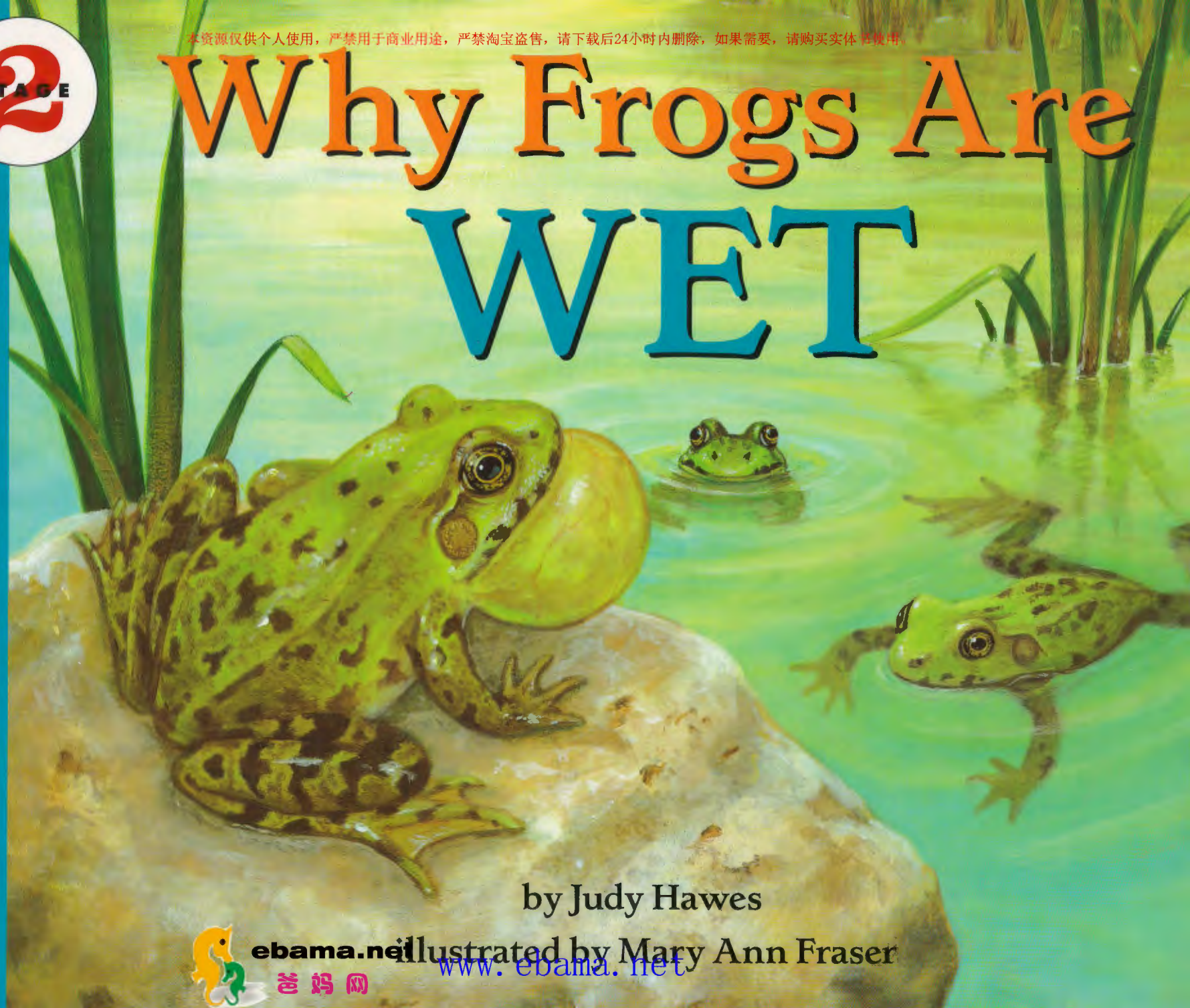


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# Why Frogs Are WET

LET'S-READ-AND-FIND-OUT-SCIENCE®



by Judy Hawes

ebama.net illustrated by Mary Ann Fraser



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2  
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*For Eric Damon*  
—M.A.F.

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*of the National Aquarium of Baltimore*  
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The art for this book was created in acrylic.

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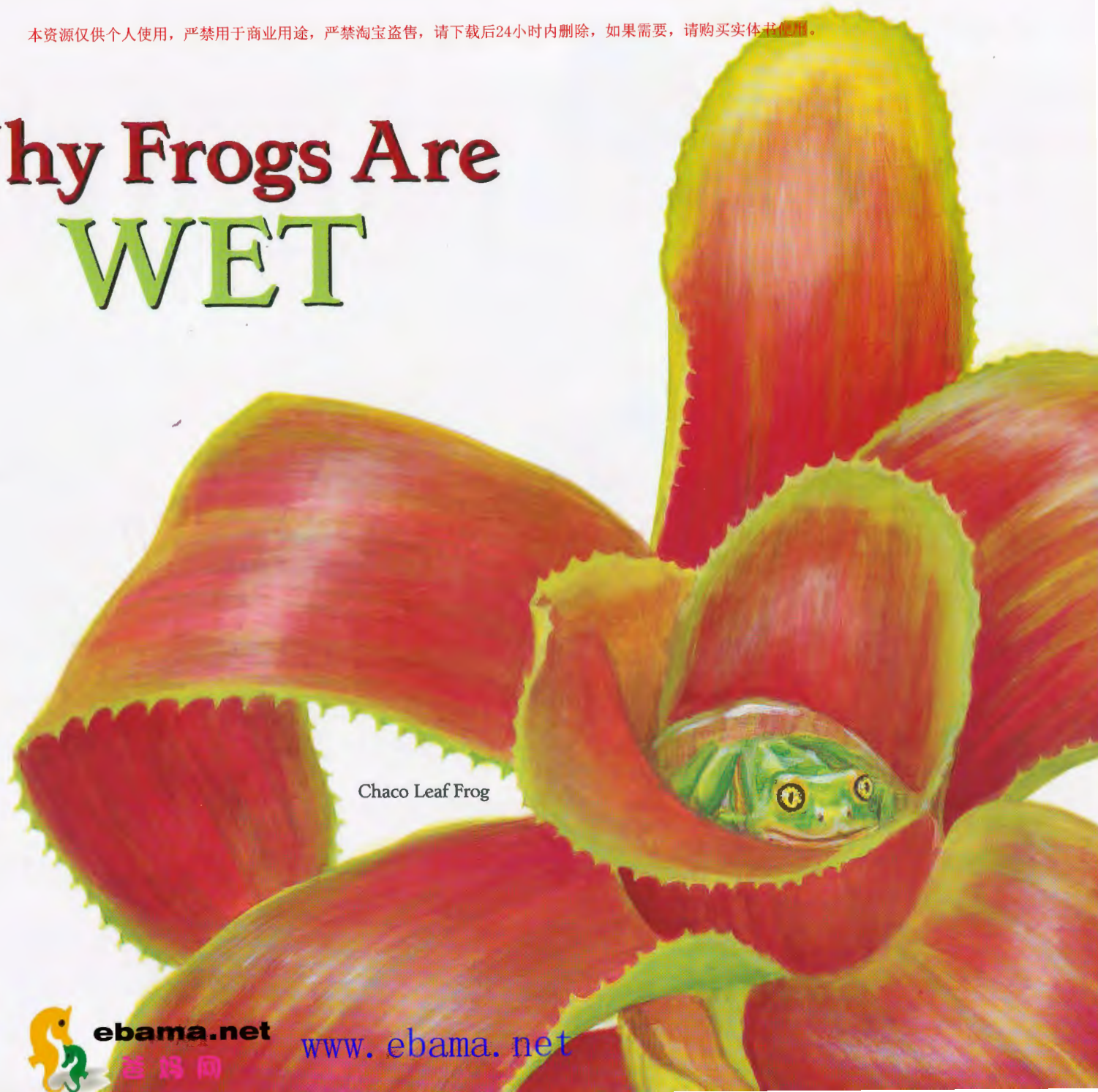


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# Why Frogs Are WET



Chaco Leaf Frog



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Frogs were here on earth before people. They were here before monkeys, or cats. Frogs were here before giraffes. Frogs have been here for millions of years.

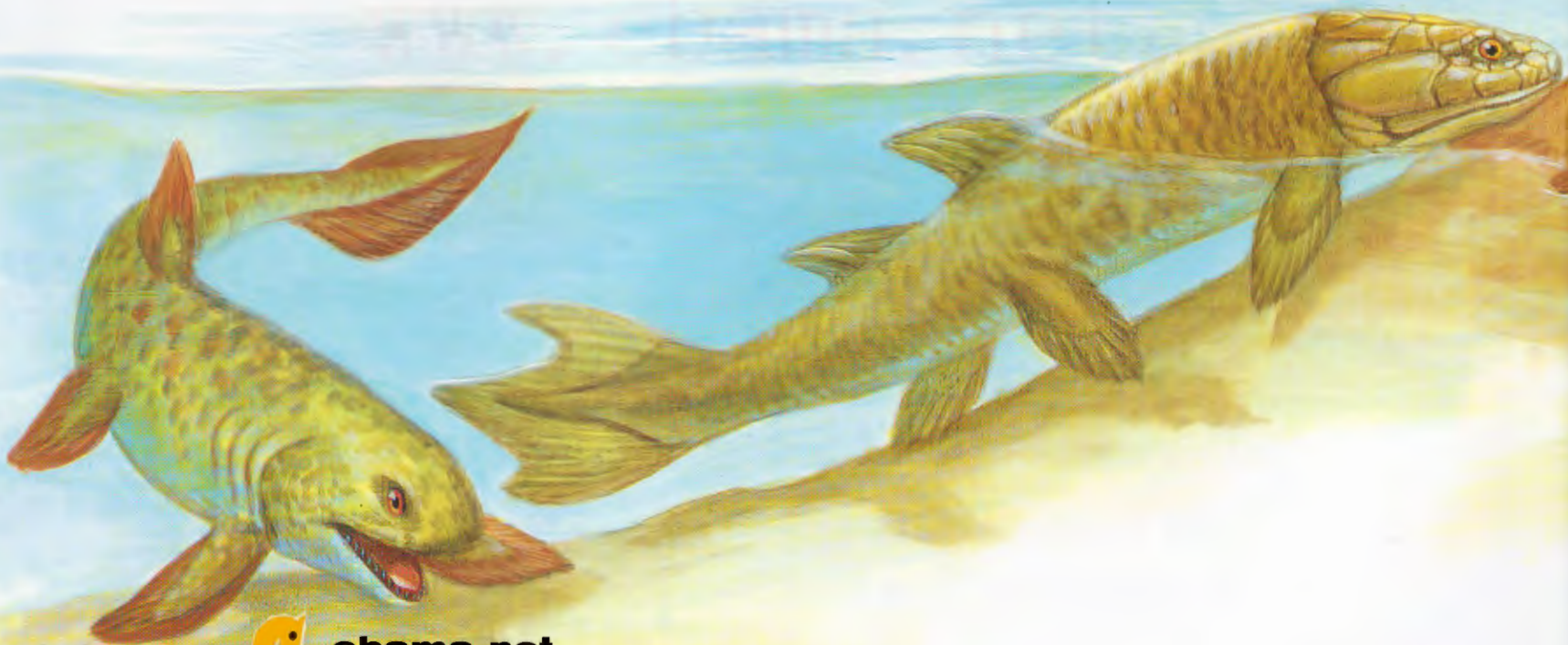


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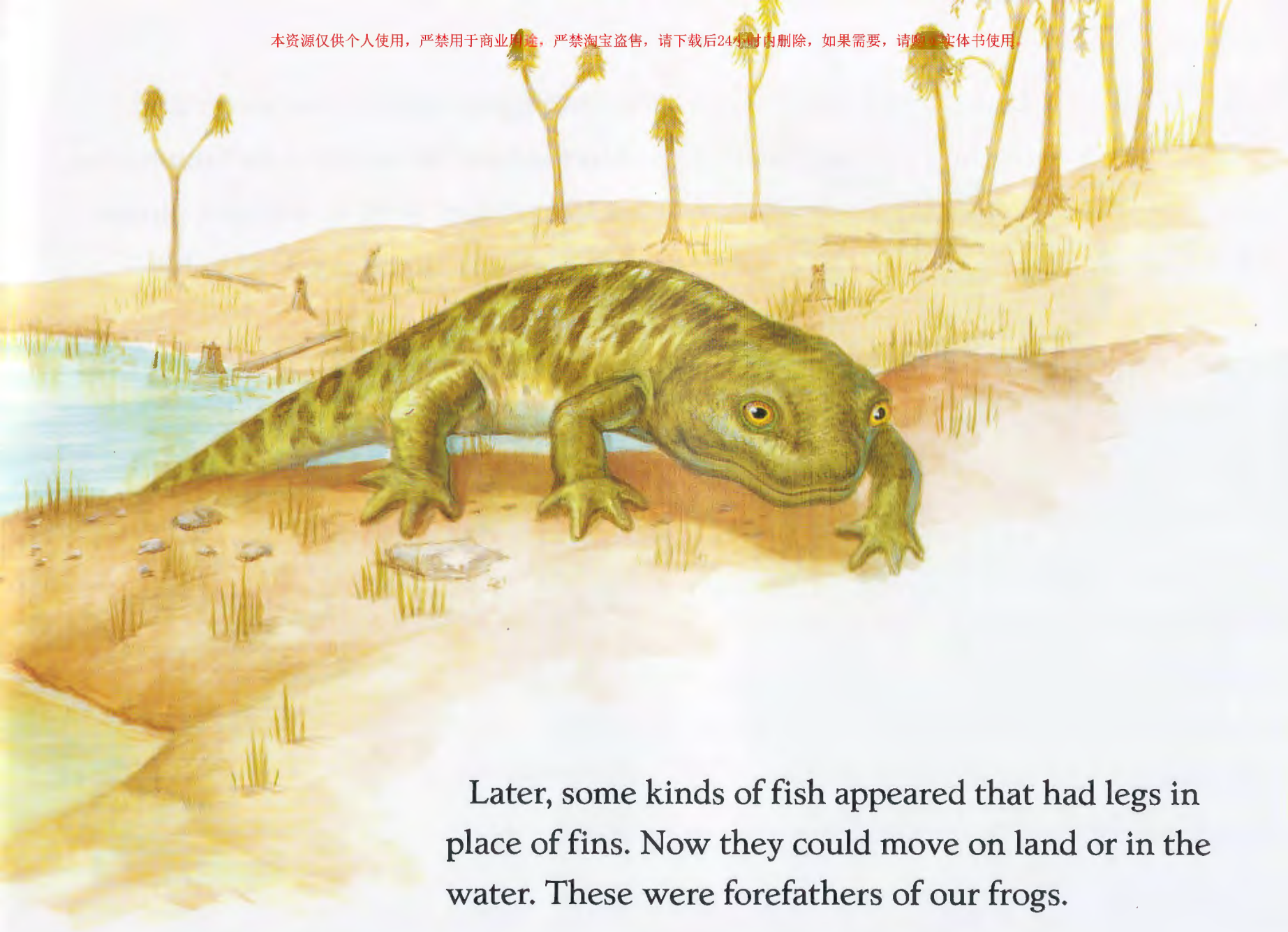
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Long before there were frogs, there were fish. The fish breathed through their gills. After a long time, new kinds of fish appeared. These new fish had lungs for breathing. They could live out of water for a little while. When their ponds dried up, they were able to flop about on land. They had to flop, because they had no legs.





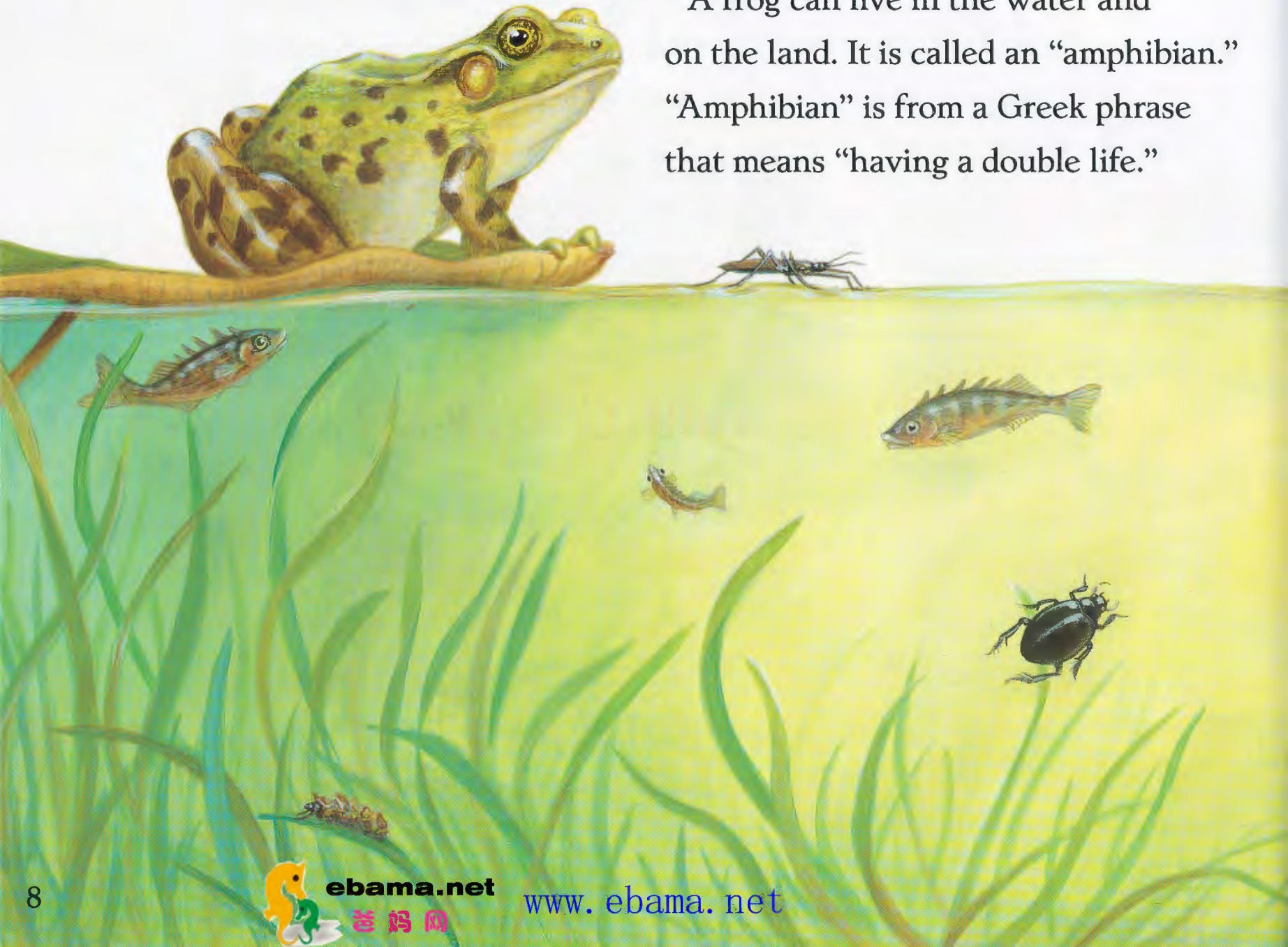


Later, some kinds of fish appeared that had legs in place of fins. Now they could move on land or in the water. These were forefathers of our frogs.





A frog can live in the water and on the land. It is called an “amphibian.” “Amphibian” is from a Greek phrase that means “having a double life.”





The frog has wet skin. The wet skin holds the secret of its double life. The frog breathes through its skin. It also breathes through its lungs.



Green Frogs





Northern  
Leopard Frog

Underwater a frog breathes through its skin. It gets air out of the water. On land a frog breathes through its lungs and its skin. But it can breathe through its skin only when the skin is wet. It cannot get enough air through its lungs alone. If the skin dries out, the frog cannot breathe. The frog dies.



A frog's skin is always fresh. It sheds its skin often.  
New, wet skin has already grown under the old.  
The frog eats the old skin.



European Common Frog





In the fall and winter frogs dig into the mud under streams and ponds. They stay there for months and months. They hardly breathe, and their hearts slow down. They hibernate.

As soon as frogs come out in the spring from their hibernation, they hunt for mates.



Carpenter Frog

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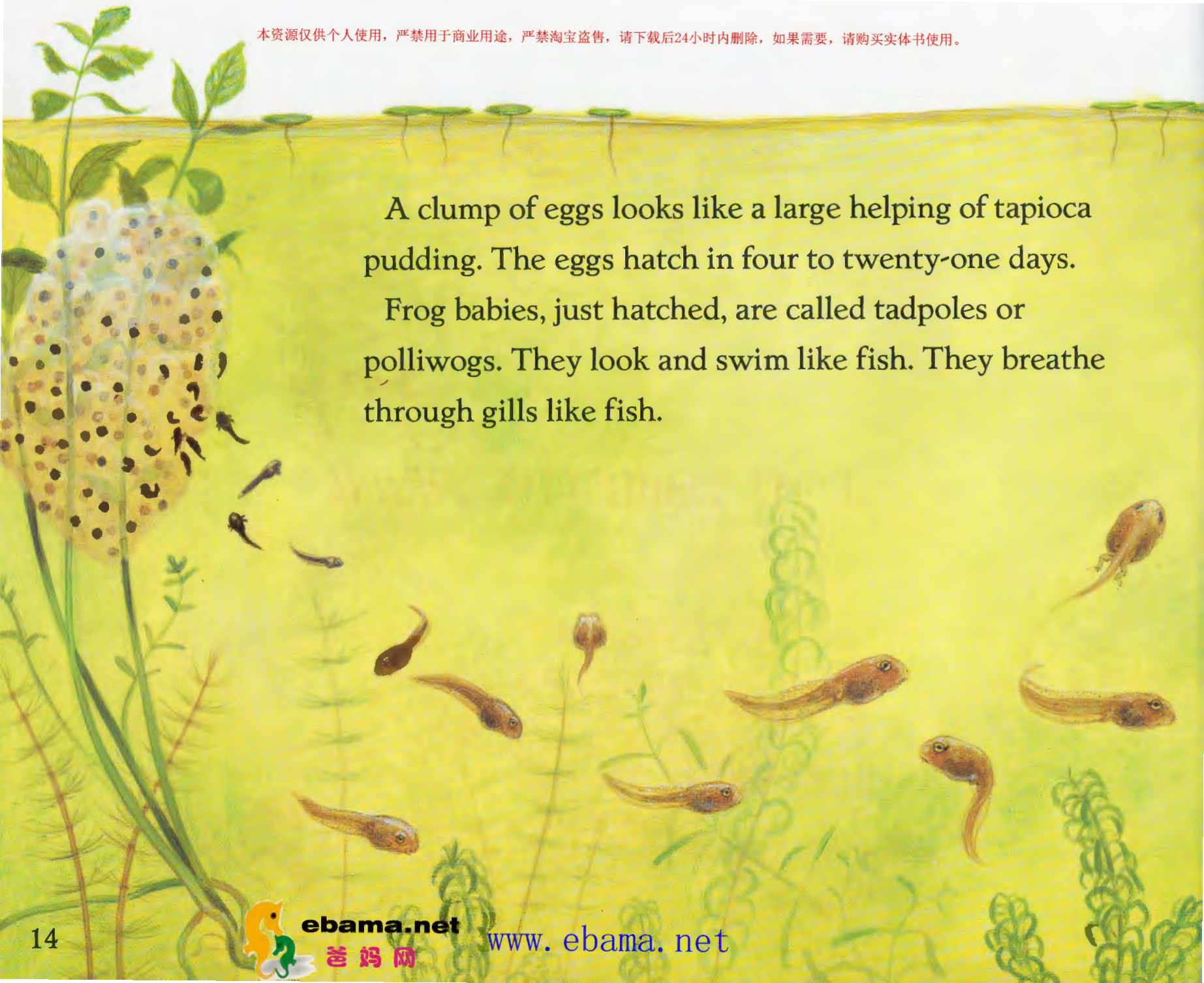


Eastern Wood Frogs

Some kinds of frogs live all their lives in water. Others live in damp woods or marshland. But all frogs return to lakes, ponds, or puddles to mate and lay their eggs. The female frogs lay their eggs in the water. Then the male frogs fertilize the eggs.







A clump of eggs looks like a large helping of tapioca pudding. The eggs hatch in four to twenty-one days.

Frog babies, just hatched, are called tadpoles or polliwogs. They look and swim like fish. They breathe through gills like fish.



The gills look like fingers on either side of the tadpole's head. After a few days the gills are covered over with skin. Then you can see hind legs growing. Next the front legs appear. The tail is slowly taken into the body. Lungs for breathing on land grow inside the frog. Now the little frog is an amphibian. It can live on land or in the water.





**Blue Poison Dart Frog**

*Surinam*

The male carries the eggs and tadpoles on his back until they are well developed.



**Glass Frog**

*Costa Rica*

These frogs are transparent underneath.



**Common Gray Tree Frog**

*North America*

This frog changes color according to its mood. It may be gray, green, or brown.



**White's Tree Frog**

*Australia*

This frog is often found in people's bathrooms.



**Arum Frog**

*Southern Africa*

This frog is ivory when the ivory swamp lilies are in bloom. The rest of the year it is brown with silvery stripes along its sides.

There are more than two thousand kinds of frogs. They are found all over the world. All of them have wet skin. Many frogs are green or brown, but there are frogs of almost every color.





Darwin's Frog  
*Chile*

This frog floats upside down in the water to imitate a fallen leaf.



Poison Dart Frog  
*Colombia*

This is the most poisonous frog in the world.



Painted Reed Frog  
*Tanzania to South Africa*  
During warm months hundreds of these frogs call with a series of shrill whistles.



Tomato Frog  
*Madagascar*

The tomato frog spends most of the year in hiding, but comes out during spring rains.



Asian Horned Frog  
*Southern Asia*

This frog looks like a brown leaf on the forest floor.





There are big frogs and little frogs.  
A giant frog lives in Africa.  
It is twelve inches long,  
not counting its legs.

The largest frog in  
America is the bullfrog.  
Its body is six to eight  
inches long. The smallest  
frog in America is a tree frog  
called a Little Grass Frog.  
It is only half an inch long.



## Actual sizes



Goliath Frog



Bullfrog



Little Grass Frog



Frogs were some of the first creatures on earth to have voices. They use them when they hunt for mates in the spring. When a frog sings, its throat looks like a blown-up balloon. The voices of bullfrogs are deep and low. They seem to say “jug o’ rum!” Tree frogs have a high-pitched song. It rings like distant bells. Other frog calls are grunts, squeaks, or squawks. Most female frogs do not sing, but they scream when they are frightened.

Mink Frog







Spring Peepers



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Southern Cricket Frog

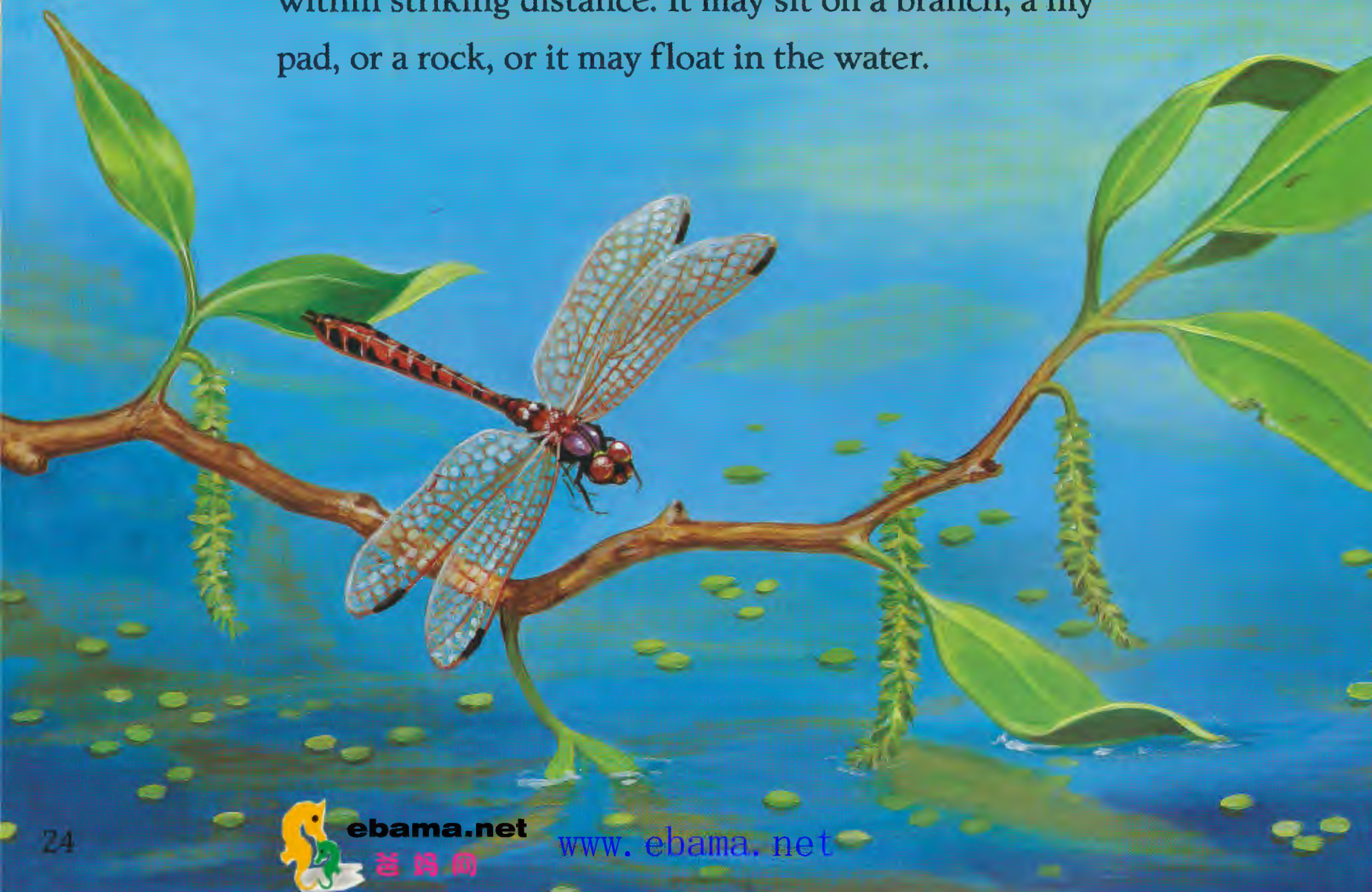
Frogs are great jumpers. They can leap ten, twenty, or thirty times their body length. They jump very fast and in zigzags.

The frog jumps to get away from its enemies. Sometimes it jumps to catch its food.





When it looks for food, the frog does not jump about carelessly. It usually waits, motionless, for insects to fly within striking distance. It may sit on a branch, a lily pad, or a rock, or it may float in the water.





Its big, bulging eyes can see in all directions.  
Frogs stare without blinking. They can protect  
their eyes from drying by shutting them halfway.  
They can still see, because they can look right  
through their lower eyelids.

African Bullfrog





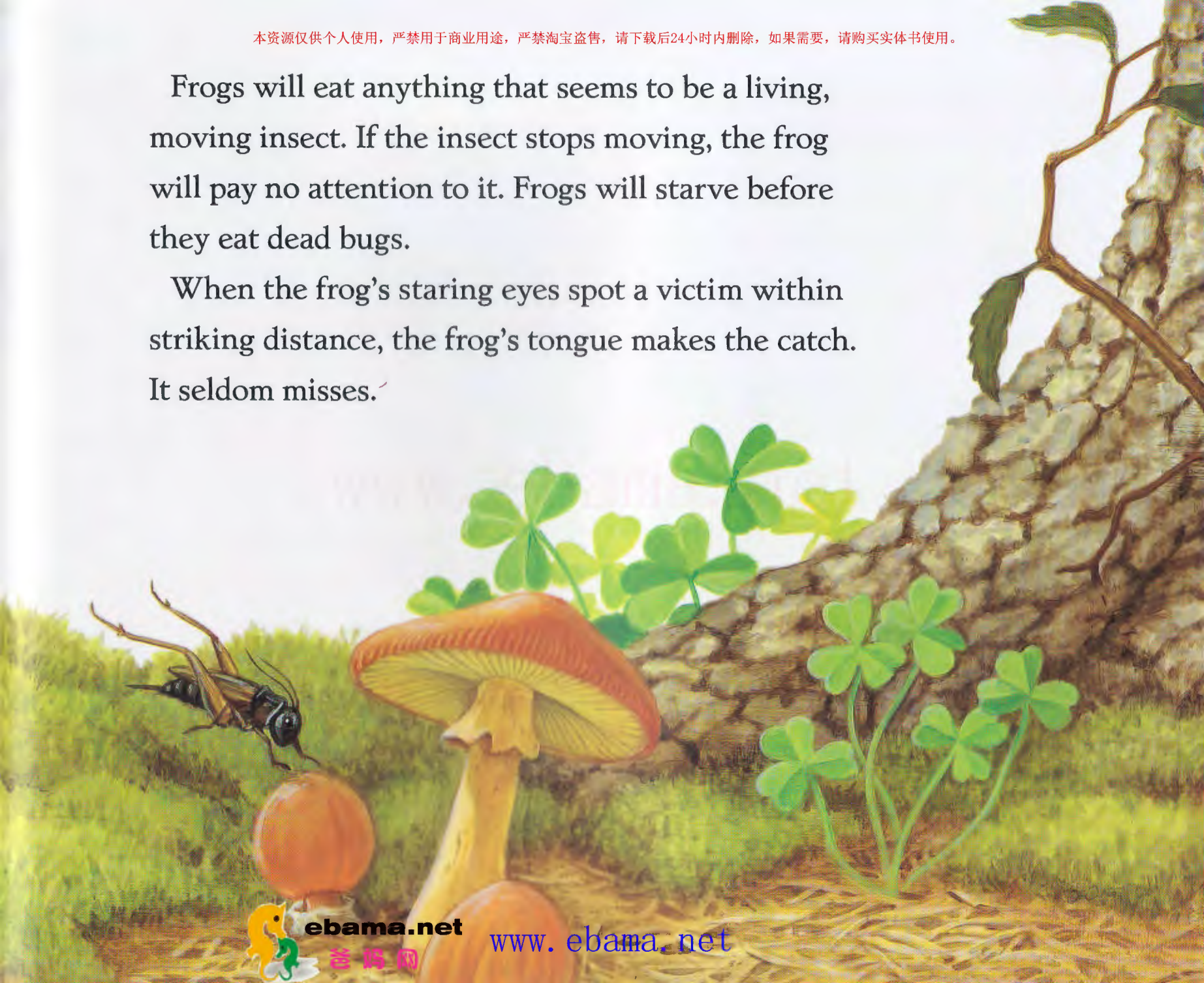
Pickerel Frog





Frogs will eat anything that seems to be a living, moving insect. If the insect stops moving, the frog will pay no attention to it. Frogs will starve before they eat dead bugs.

When the frog's staring eyes spot a victim within striking distance, the frog's tongue makes the catch. It seldom misses.





A frog's tongue is different from ours.  
It is attached to the front of its mouth.  
It folds back toward its throat.

As a frog jumps for an insect,  
its tongue flips forward.  
The far end of the tongue has  
a sticky surface.

Red-legged Frogs

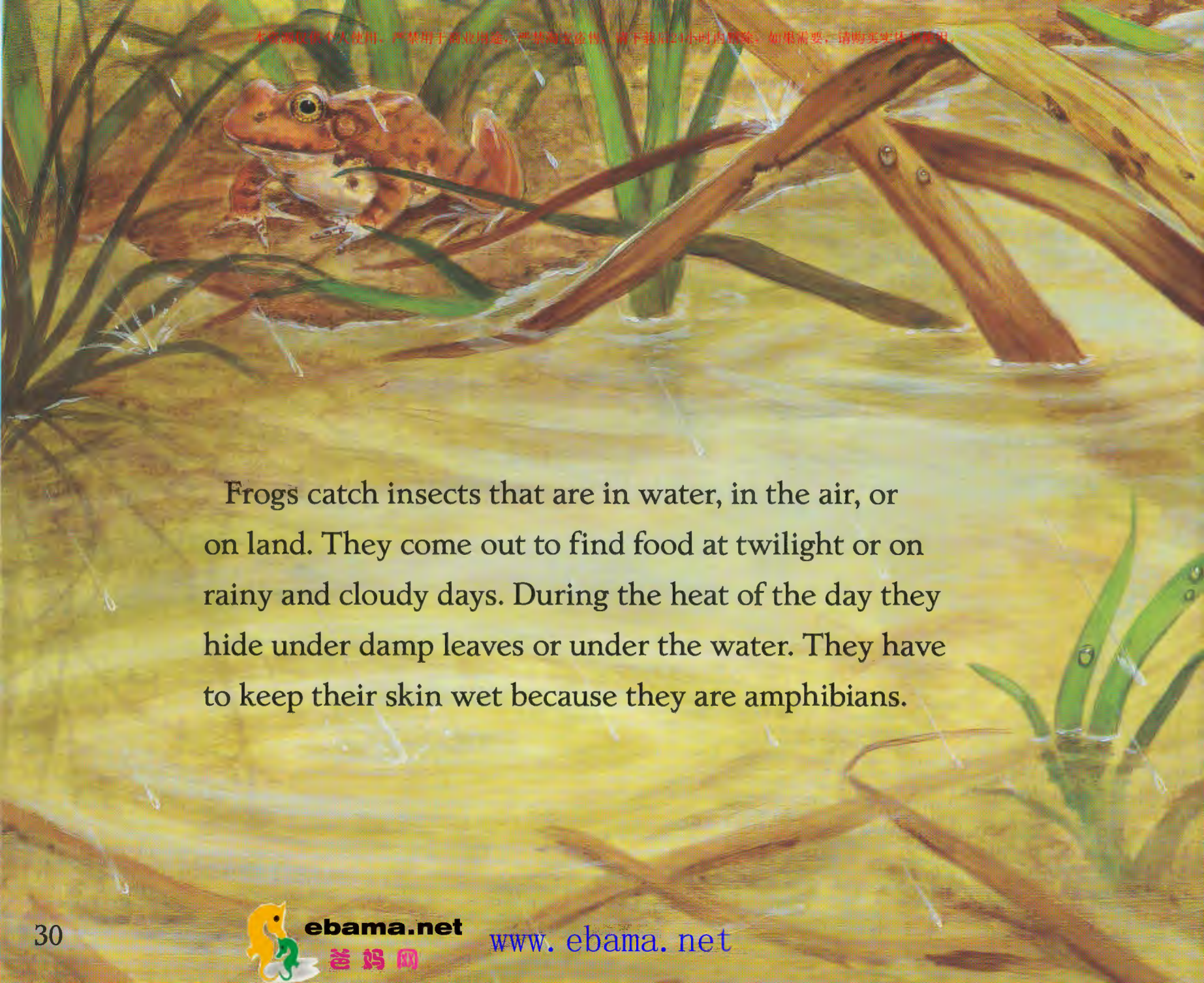




This sticky end wraps around the insect. The insect sticks to the tongue, and the tongue swings back into the frog's mouth. The frog throws the insect down its throat. All this takes less than a tenth of a second.







Frogs catch insects that are in water, in the air, or on land. They come out to find food at twilight or on rainy and cloudy days. During the heat of the day they hide under damp leaves or under the water. They have to keep their skin wet because they are amphibians.



Never forget that frogs are amphibians.  
They can live in the water or on land.  
But only as long as their skin stays wet!





## FIND OUT MORE ABOUT FROGS

### What do frog eggs feel like?

To find out, you will need:

1 egg

small pot

cooking tongs

2 bowls of water

a handful of large pearl tapioca

clock, watch, or timer

spoon

Cooked tapioca feels like frog eggs. How would frog eggs feel compared to a chicken egg?

1. Have an adult help you boil the egg.
2. When it is done, turn off the heat and carefully remove the egg from the pot with the cooking tongs. Put the egg into one bowl of water.
3. Put a handful of large pearl tapioca into the pot, bring the water back to a boil, and let it boil for 15 minutes.
4. Turn off the heat, and have an adult help you carefully spoon the tapioca into the other bowl of water.
5. Wait for 5 minutes, and then touch the tapioca and the egg. How are they different?





If a frog doesn't keep its skin wet, it will die. Frog eggs have to stay wet too. What happens when frog eggs are taken out of the water? To find out, carefully pour out the water in each bowl until only the tapioca and the egg are left.

1. After an hour, touch the tapioca. What does it feel like? Now touch the egg.

Does it feel different?

2. Touch them again after two or three hours. Now how do they feel?

3. Let the tapioca and the egg sit overnight. Touch them again in the morning.

How has each changed?

## Read More About Frogs

You can learn more about frogs in these great books:

FROM TADPOLE TO FROG by Wendy Pfeffer, illustrated by Holly Keller

RED-EYED TREE FROG by Joy Cowley, photographs by Nic Bishop

A NEW FROG by Pamela Hickman, illustrated by Heather Collins





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**Mary Ann Fraser** has illustrated over fifty books for young readers, including *WHERE ARE THE NIGHT ANIMALS?* in the Let's-Read-and-Find-Out Science series. She is the author of *IN SEARCH OF THE GRAND CANYON*, named an Outstanding Nonfiction Choice by the National Council of Teachers of English. A former member of the Southwest Herpetological Society, she lives in Simi Valley, California.







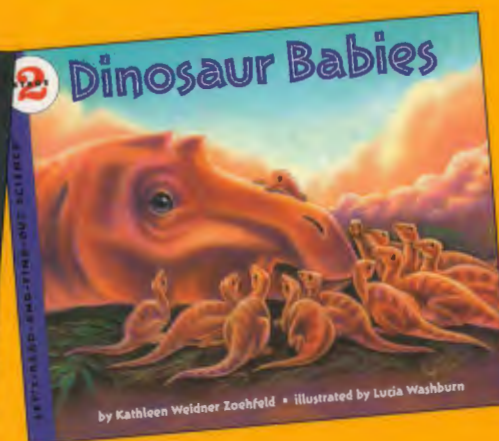
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# Frogs



Frogs can jump thirty times their own body length, catch insects on the wing, and breathe underwater or on land. But they must always keep their skins wet. Read and find out why!

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