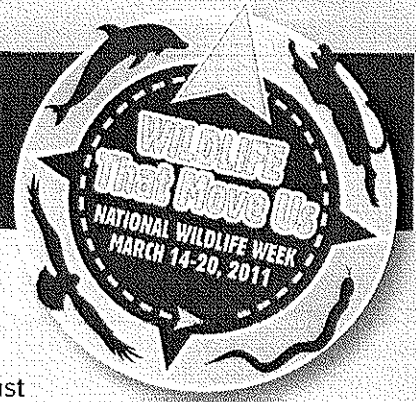


Call of the Wild



Goals:

1. For K-2, to understand the frog has 3 main stages in its life cycle—eggs, tadpoles, and frogs.
2. For 3-4, to understand the frog has 5 stages of development—eggs, tadpoles, tadpoles with legs, froglet and adult frog.

Objectives:

- Students will name each stage of a frog's life cycle and give one defining characteristic.
- Students will listen to frog calls and be able to identify the sounds as coming from frogs.

Grade Level: K-4

Subject Areas:

science and music

Materials Needed:

- science notebook
- recordings of frog calls — *Sounds of North American Frogs* at <http://www.folkways.si.edu/albumdetails.aspx?itemid=2421>
- device for recording students' versions of frog calls
- Pictures of frogs with inflated vocal sacs (use Google images—insert the species and the words "vocal sacs")
- pictures of frogs, frog eggs, and tadpoles (see activity for specific species)
- flashlights
- first-aid kit
- insect repellent (optional)

Time to Complete:

40 minutes, with 30-45 minutes for night observation

Background

If someone asked you to imitate the sound of a frog, you probably wouldn't grunt like a pig or whistle. But some frogs make sounds just like these! And others "snore," "trill," or even "bark."

Here's a way for your kids to become familiar with the sounds some amphibians make and learn why they make them. They'll also get a chance to hear (and maybe even see) some singing frogs in action. Note: Most scientists use the term "frog" to refer to both frogs and toads. In this activity we're using "frog" the same way.

Making Sense of Sounds

Frogs can make all kinds of sounds including clicks, whistles, grunts, and trills. Here's a run-down of the types of calls they make and why and how they make them.

Why They Call

Mating Calls: The number-one reason frogs call is to attract a mate. And almost all male frogs make mating, or advertisement, calls. (Female frogs don't make mating calls.) Each species has its own particular call and characteristic place (or places) to call from. For example, some frogs call from the water, some call from shore, others call from shrubs or other vegetation, and so on. Only receptive females—those that are ready to lay their eggs—respond to the mating calls of the males. (In some species the sound of the mating call is believed to make the females ready to breed.)

Many male frogs don't "sing" alone. Instead small numbers of them gather, often within a relatively small area, and call in a group, creating a mating chorus. Frog choruses are often loud and are believed to help attract females to suitable mating areas. When several different species chorus in the same general area at the same time, they create a mixed chorus. In many parts of the country different species mate at different times of the year, and mixed choruses may not be made up of more than just a few species. But in Florida and some other areas in the South, there may be as many as 14 species contributing to a mixed chorus.

Territorial Calls: During the breeding season, some male frogs warn other males to stay away by giving a territorial call. In some species, the mating call also serves as a territorial call. In some other species, territorial calls are part of the mating call. For example, in Puerto Rico, Coqui frogs have a two-note call, "co-qui." The "co" tells other male frogs to stay away, and the "qui" invites females to come closer. And some frogs have territorial calls that are completely distinct from their mating calls.

Call of the Wild



Release Calls: During the frenzy of the breeding season, adult male frogs may grab at almost anything that moves. But sometimes they grab another male or an unreceptive female. By giving a release call, the frogs that have been grabbed let the male know that he's wasting his time and should let go. (When frogs give release calls they also vibrate their bodies. These body vibrations may be even more important than the call in letting the male frog know he's making a mistake.)

Distress Calls: Sometimes referred to as "screams," distress calls are given by some frogs when they are grabbed by predators. These calls are very loud and may startle the predator into dropping the frog, allowing it to escape. They may also warn other frogs to watch out for danger. In some species both the males and females make distress calls.

How They Do It

Frogs make almost all of their calls with their mouth closed. (Most frogs make distress calls with their mouth open.) And most frogs make their calls using vocal cords. First they take air into their lungs and then they close their mouth and nostrils. Next they push the air back and forth between their lungs and mouth. As the air travels back and forth, it passes over the vocal cords and makes them vibrate, producing sound.

The speed at which air passes over a frog's vocal cords affects the type of sound the frog makes. For example, some species trill by pushing air back and forth more than 60 times per second! The size of a frog and the way its vocal cords vibrate also affect the type of sound it makes.

Many male frogs also have vocal sacs that resonate their calls. These sacs are stretchy pouches of skin located near the frog's mouth or neck. The male inflates his vocal sacs by pushing air through slits in the floor of his mouth. As he calls, his inflated sacs resonate the sound.

Depending on the species, a male frog may have one or two vocal sacs. When they're inflated, some vocal sacs look like balloons.

Preparation

Frogs and Their Calls

1. Listen to and try the calls yourself, and bookmark these pages to share with your students.

- Gray Tree Frog - flutelike trill (put tongue on roof of mouth and trill) [recording: <http://www.enature.com/fieldguides/detail.asp?recnum=AR0020>]
- Spotted Chorus Frog - rasping trill (say "wrrank, wrrank, wrrank," trilling the Rs) [recording: <http://www.enature.com/fieldguides/detail.asp?recnum=AR0562>]
- Strecker's Chorus Frog - clear, sharp whistles (give high-pitched whistle, two whistles per second) [recording: <http://www.californiaherps.com/noncal/misc/miscfrogs/pages/p.streckeri.sounds.html>]
- Northern Cricket Frog - metallic, measured clicking (say "gick, gick, gick," one "gick" per second) [recording: <http://www.enature.com/fieldguides/detail.asp?recnum=AR0554>]
- Great Plains Narrow-mouthed Toad - high-pitched nasal sound (say "NEEEEEEE") [recording: <http://www.enature.com/fieldguides/detail.asp?recNum=AR0545>]

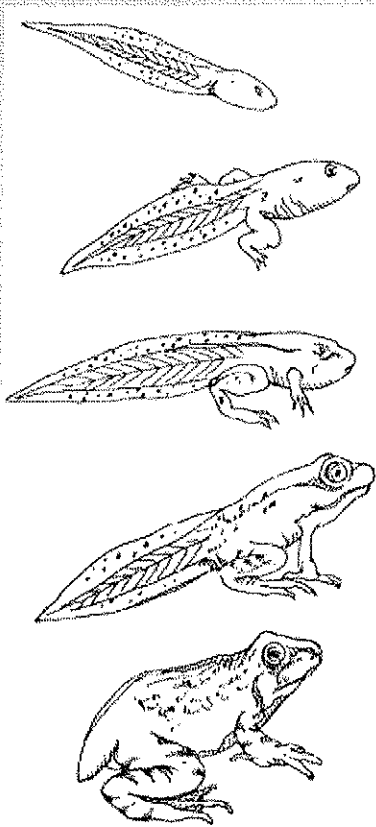
2. Send home note for a "Frog Watch and Call" party.

Procedure

Part 1: Frog Life Cycle

1. Begin by showing the kids a picture of a bullfrog. Then, using the information under "Bullfrog Basics" below, discuss the bullfrog's life cycle. Point to the egg mass, tadpole, and adult photos you searched for earlier as you discuss each stage. Put pictures away and have the kids describe how each stage looks different from the others to their closest partner.
2. Now hang the diagram of frog metamorphosis where all the kids can see it. Explain that it shows what a tadpole looks like as it grows and changes into a frog. What changes do the kids notice in the tadpole as it becomes a frog? (the tail gets shorter and eventually disappears, the back legs and then front ones appear, the mouth gets much bigger, and so on)
3. Next tell the kids that in addition to the differences they can see between the frog and the tadpole, the two are very different from each other on the inside too. For one thing, the frog breathes with lungs instead of gills. And the frog has different mouthparts and internal organs (its diet has changed from plants to animals).
4. Depending on the grade level have

Call of the Wild



students enter the new information into their science notebook. Use a 3-5 circle Thinking Maps® for describing each stage of growth. Again detail will depend on grade level. As long as their new knowledge is in their notebook the format is not important.

Bullfrog Basics

Eggs: As far as scientists know, bullfrogs lay more eggs at one time than any other frog. (Some females lay over 20,000 eggs!) They lay their eggs in still, shallow water from May to July. (In areas that stay warm most of the year they

lay eggs from February to October.) The eggs are laid together in a big clump, or egg mass, that floats near the surface of the water. Like other frogs' eggs, bullfrogs' eggs are covered with a jellylike substance that helps protect them. As the eggs are laid, the jelly soaks up water and begins to swell. Sometimes the swollen egg masses are huge—covering as much as five square feet (1.5 m²).

Tadpoles: Bullfrog tadpoles are olive green. They feed mostly on algae that they scrape from rocks, large plants, and other surfaces in the water, and they may grow to be over four inches (10 cm) long. In parts of Louisiana and other areas in the South, the tadpoles complete metamorphosis as early as late summer. But in many other areas, they remain tadpoles until the following spring. And in northern areas, such as Maine, they usually don't complete metamorphosis until the spring after that—almost two years after they hatched from their eggs.

Adults: Bullfrogs are the largest frogs in North America. They may be eight inches (20 cm) long and they can weigh over a pound (450 g). They usually live along the banks of ponds, lakes, and slow-moving streams. And they feed on all kinds of animals including insects, other frogs, crayfish, small fish, and even small birds and snakes.

Part 2: Frog Songs

1. Begin by having the kids imitate any frog calls they know. Then, using the information under "Making Sense of Sounds", discuss why and how frogs call. Point out the variety of sounds these animals make—from flutelike trills to pig-like grunts. Play recordings of real frogs making each of the different types of calls. And show the kids pictures of frogs with inflated vocal sacs as you explain how these sacs work. (You might also want to explain to the kids that not all frogs make sounds. For example, in many species only the males call and in others both the males and females are voiceless.)
2. After your discussion tell the kids that they're going to get a chance to imitate the calls of some different frogs. Now show each group a picture of the frog and explain its call to them. (The calls are listed above under "Frogs and Their Calls". We've also included suggestions for how to imitate the calls. These are given in parentheses after each call.) Then have the class practice the call. Encourage them to give their calls clearly and not to shout them out.
3. In their science notebook have students sketch a frog along with applicable labels and descriptions as you see fit. Write a sentence or two about frog calls—similarities and differences. Could do a double bubble Thinking Map®.
4. After your discussion, have the kids form a circle. Then tell them they're going to sing a song about a bullfrog tadpole that hatches from an egg and slowly changes into a frog. First go over the words and movements and then let the kids perform!

Call of the Wild



Song: Froggie Grows Up!

Sing to the tune of "Froggie Went a-Courtin'!"

(<http://www.youtube.com/watch?v=iFJLbMVgS-E&feature=related>)

Froggie was a-floatin' in a big ol' pond, uh-huh, uh-huh.
Froggie was a-floatin' in a big ol' pond, uh-huh, uh-huh.
He was one black spot in a jelly glob,
One small egg in a great big blob, uh-huh, uh-huh, uh-huh.

Soon froggie was a-swimmin' on his owri, uh-huh, uh-huh.
Soon froggie was a -swimmin' on his own, uh-huh, uh-huh.
His fast-moving tail helped him get around.
And he munched on tiny plants he found, uh-huh, uh-huh, uh-huh.

And froggie was a-changin' day by day, uh-huh, uh-huh.
And froggie was a-changin' day by day, uh-huh, uh-huh.
First he got back legs and then front ones too.
And he lost his tail and his lungs grew, uh-huh, uh-huh, uh-huh.

Now froggie is a-hoppin' on the land, uh-huh, uh-huh.
Now froggie is a-hoppin' on the land, uh-huh, uh-huh.
His long, sticky tongue helps him catch his prey,
As he feeds on bugs and worms all day, uh-huh, uh-huh, uh-huh.

Movements

Make wave motions with hands.

Hold forefingers and thumbs together to show egg.

Make a tail by placing palms together behind back. Wiggle tail back and forth to swim.

Hold a leg up and wiggle it, then wiggle both arms.

Hop in place.

Stick out tongue and quickly pull it back in.

Extension

Part 3: Out at Night!

Now that the kids are familiar with frogs and some frog calls, take them on a night hike to hear a "live" performance! Here are some suggestions to make your trip more enjoyable and as always be sure to have students write in their science notebooks:

- Ponds and wetlands are some of the best places to hear frogs calling. Be sure to visit the area during the daytime to familiarize yourself with it and to find safe spots where the kids can get close to the water's edge. Also be sure to go out the night before you take the kids to see if the frogs are calling. If there are no ponds or wetlands in your area, try a wooded area that has temporary pools in it.
- A damp, warm night in springtime or early summer is probably the best time to go out to hear frogs calling. But, depending on where you live, you may be able to hear frogs "advertising" at other times of the year as well. Check with a local nature

center, zoo, natural history museum, or university department of biology, zoology, or herpetology for tips on which species you can hear at different times of the year.

- If possible, play recordings of some of the species you are likely to hear before you go on your trip.
- Wear rubber boots or old sneakers for the hike. It's easy to get your feet wet while tromping around the edges of ponds and wetlands! And depending on the time of year, you may want to bring along some "bug juice" to ward off biting insects.
- Don't forget flashlights! Once you've gotten close to some calling frogs, you can use the flashlights to get a look at them.

Safety Note: Going out at night to hear frogs calling can be a lot of fun. But it also means taking extra precautions. Be sure to get permission before visiting an area, and bring plenty of adults along to help supervise. And carry a first-aid kit with you, just in case.



Call of the Wild



Assessment

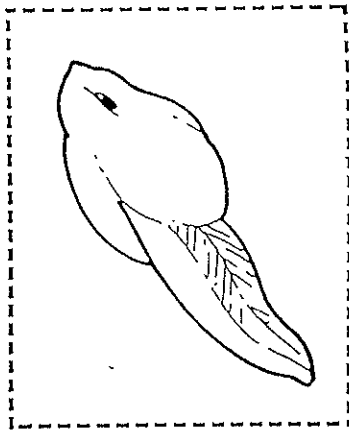
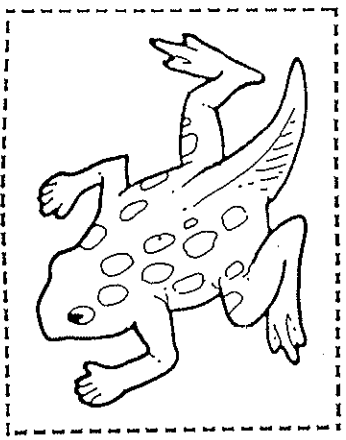
1. **Creative Writing:** Have students use this prompt to write about "Last night you'll never guess what I heard!" Students will make a story using the frog species presented in this lesson along with information about the reasons for the sounds they heard. Be sure to have students use their keen sense of observation to describe the habitat they are in.
2. Create a series of pictures on the computer detailing what they have learned about frogs.
3. Participate in Wildlife Watch: <http://www.nwf.org/WildlifeWatch/>. After looking at the site this would be a great way to encourage your students to get outside and connect with nature. Wildlife Watch is not only a great family adventure, but would also be fun to do with your class.

Children's Literature

- *National Geographic Readers: Frog*, by Elizabeth Carney
- *Frogs and Toads and Tadpoles, Too*, Rookie Read About Science, by Allan Fowler
- *Frog (See How They Grow)*, by DK Publishing
- *Frogs, Toads, Turtles (Take-Along Guide)*, by Diane L. Burns
- *A Place for Frogs*, by Melissa Stewart

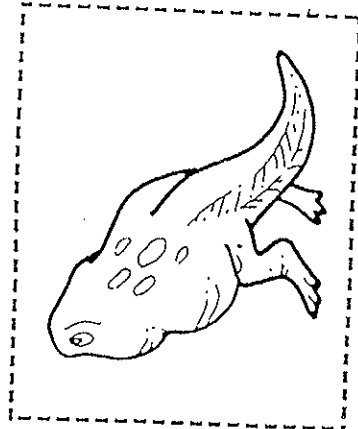
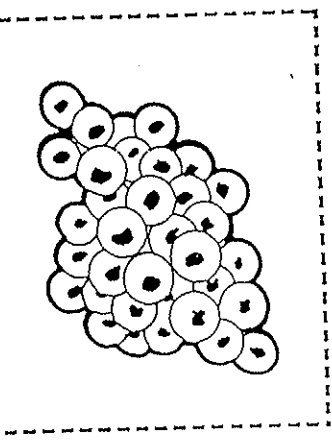
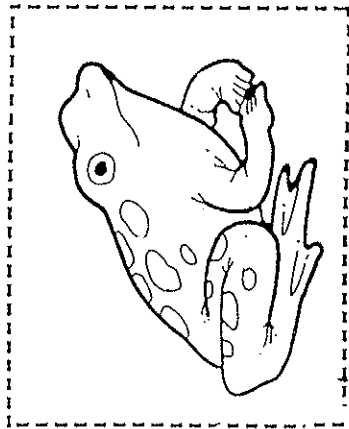
Resources

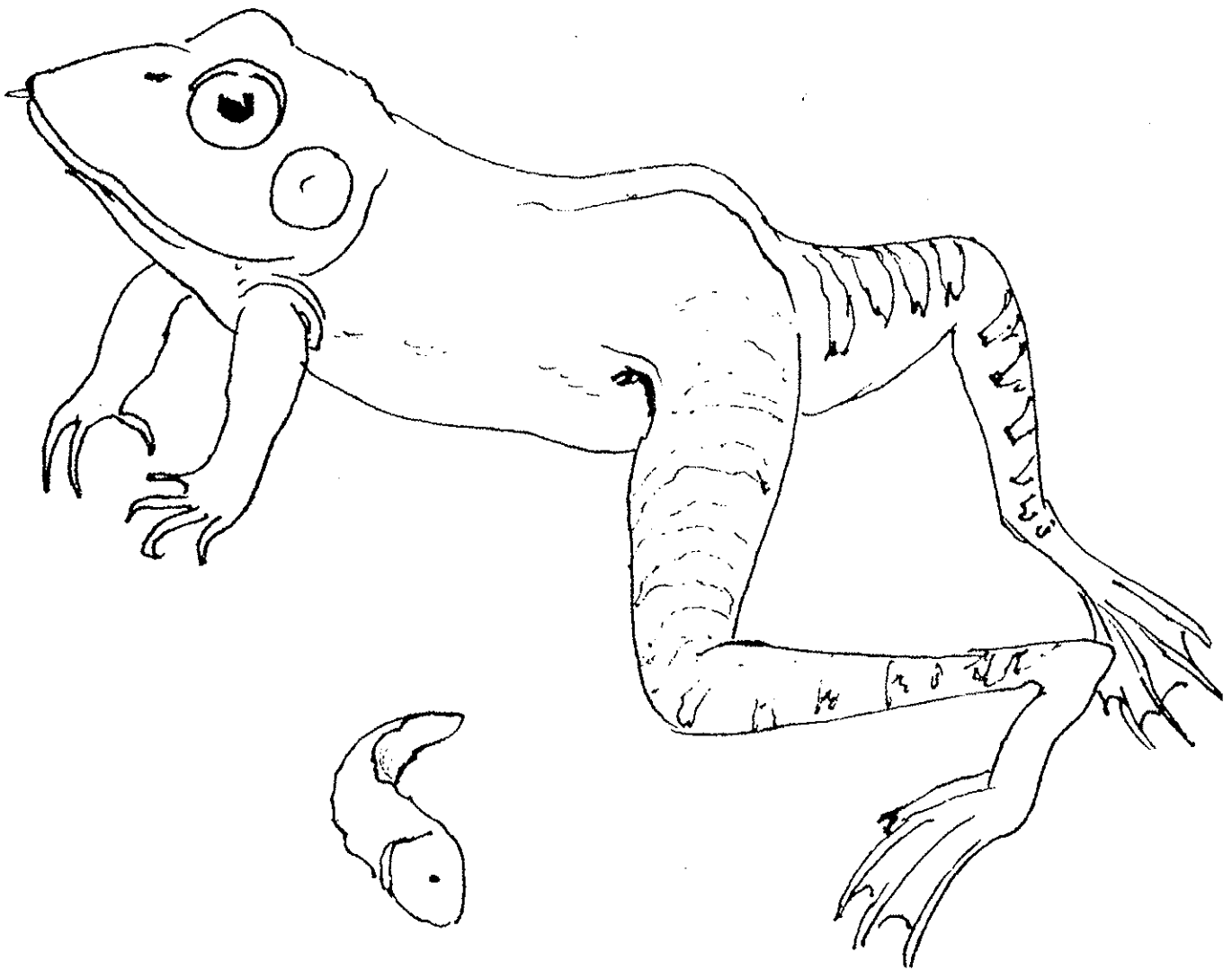
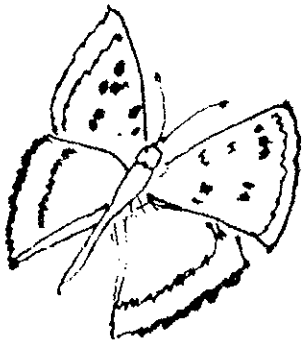
- **Welcome to Frogland!:**
<http://allaboutfrogs.org/>
- **Kidszone – Frogs:**
<http://www.kidzone.ws/lw/frogs/>
- **Kiddie House – Frogs:**
<http://www.kiddyhouse.com/Themes/frogs/>
- **Thinking Maps®:**
<http://www.thinkingmaps.com/products.php>



From
Tadpole
to Frog

●





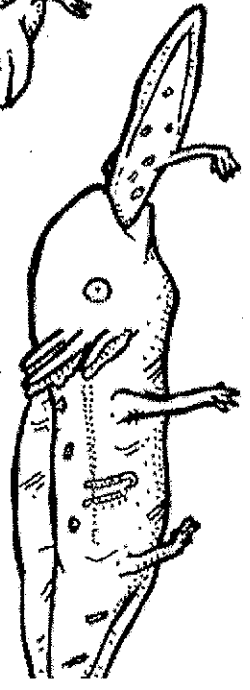
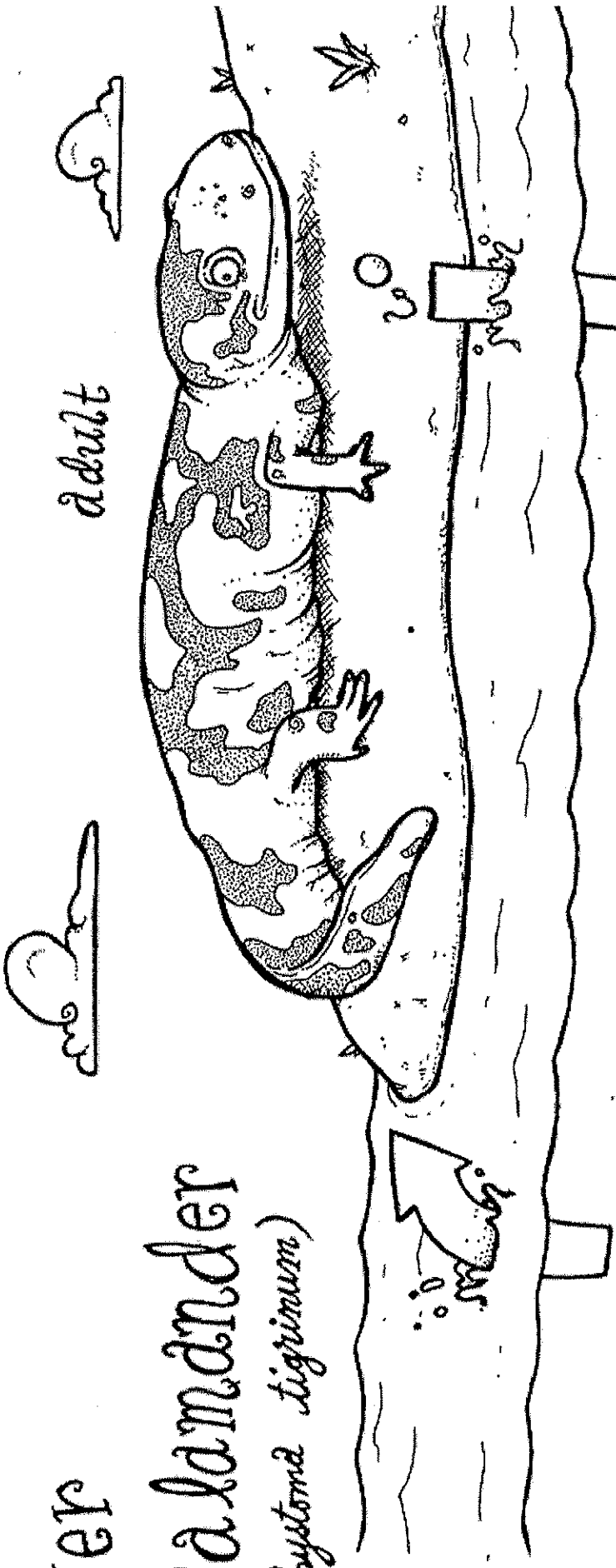
The bullfrog is named for its loud croak. It is found in waters all over Iowa.

Tiger

Salamander

(*Ambystoma tigrinum*)

Adult



"Cannibalistic"

larva

if especially large and in a pond with many smaller unrelated larvae

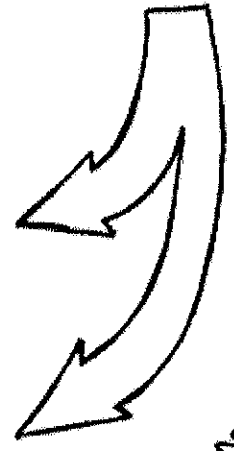
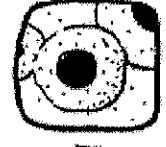


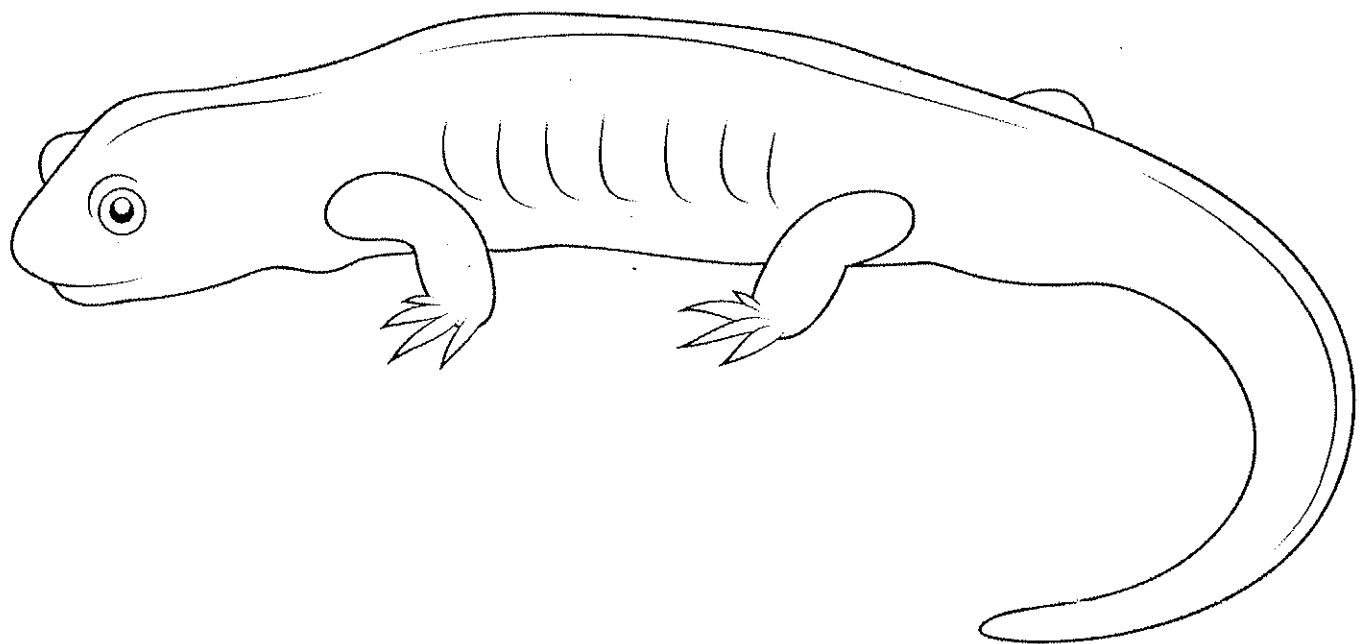
"typical"

larva



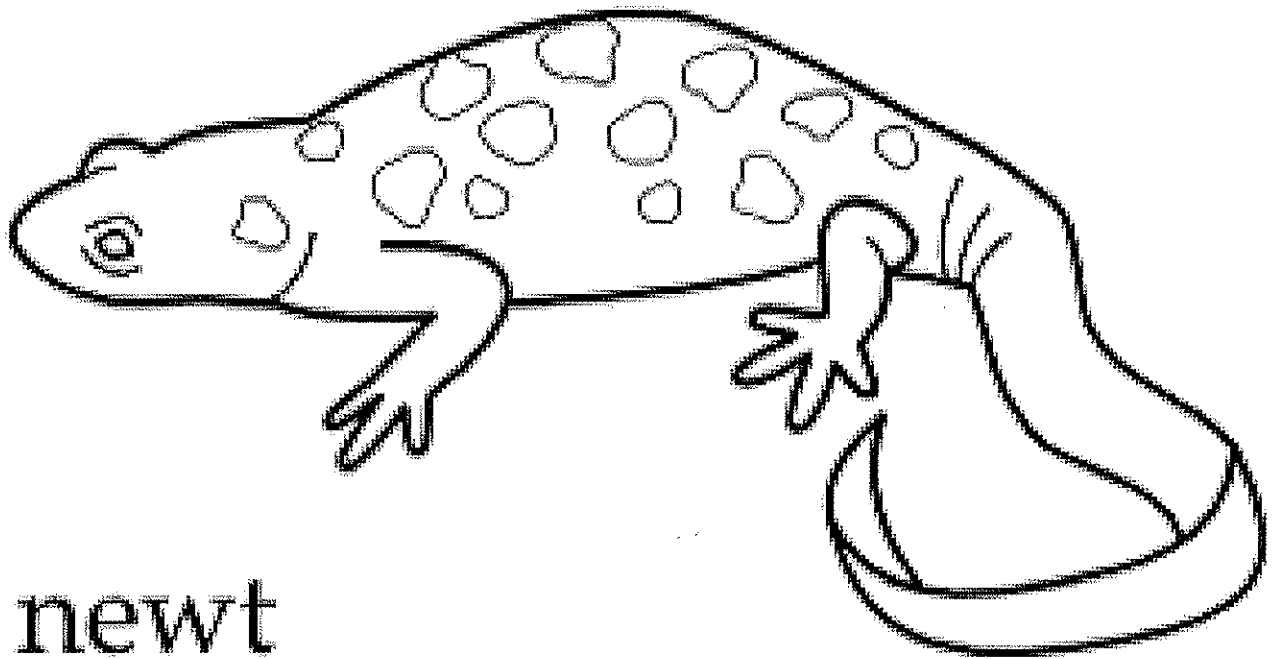
mass of fertilized eggs





not to scale
© 1997
C&G

Nn



newt