



## Virtual Creature Festival: Frogs and Toads

*Is there anything cuter than a little Fowler's toad sitting quietly beneath a fern on the forest floor?*

*Or anything as relaxing as the musical calls of spring peepers on a warm night?*

Believe it or not, these amphibious creatures live among us in even the most unexpected of places! Whether you live in a city, suburb, farm, or somewhere in between, you are more than likely to find them happily munching insects and other small invertebrates beneath the ring of a street light, under a log in a forest, or beneath your patio furniture. In this packet created for Duke Farms' Virtual Creature Fest, you will find a whole host of "edu-taining" material suitable for anyone interested in learning more about our native frogs and toads! For formal educators, these materials align with all current Next Generation Science Standards and can offer you a wonderful guide for exploring in the classroom with your students. For informal educators, caregivers, and families, this packet has been designed to lead exploration and learning in whatever environment where you live and work!

As an introduction to the information found in this packet, we recommend you watch the recording of our virtual *I Spy a... Frog!* on the Duke Farms Youtube channel. Conducted by Kate Reilly, Manager of Education at Duke Farms, and Educator Von Scully, this short class includes information about native frog and toad species, habitats, and behavior, then offers viewers a chance to see some live frogs on camera! This was just one installment of the *I Spy a...* class series, so be sure to check out the Duke Farms classes page to check out all our upcoming programs.

This packet includes:

- ✓ **A Calculated Leap** – mathematics/movement connection activity (Pages 2-3)
- ✓ **All Grown Up!** – life cycle study activity and answer key (Pages 4-6)
- ✓ **Which is Which?** – compare/contrast activity (Page 7)
- ✓ **Where are You Frogs?** – habitat exploration activity (Pages 8-12) and object cutouts (Pages 13-16)
- ✓ **Read All About It!** – literary extensions (Page 17)

We thank you for taking part in our Virtual Creature Fest and wish you happy explorations!

*If you have any questions, please do not hesitate to contact Kate Reilly at [kreilly@dukefarms.org](mailto:kreilly@dukefarms.org).*

## A Calculated Leap

Looking for a fun activity to engage kids with mathematical concepts AND get them up and moving? Here is a great way to get them leaping into active exploration! Both frogs and humans have the ability to jump due to their strong leg muscles, but in comparison, frogs are truly leaps and bounds better at jumping than humans. In this activity, you can use movement to help children learn about froggy biology and introduce them to relative mathematical concepts.



*Image courtesy of Fine Art America*



*Image courtesy of Zachary Nelson via Unsplash*

## Materials

- Tape measure/yard stick
- Masking tape/rope
- Marker
- Photos of frogs
- Optional popsicle sticks

## Set up

Depending on whether you do this activity inside or outside, set up may vary. If outside, you can stretch out a length of rope, marked every foot with labeled tape. If inside, you can stretch out tape on the floor, similarly marked with foot-long intervals. Mark the beginning position at the end of the rope/tape and then mark out the appropriate distances for each example frog's jumping distance. You can do this by either sticking popsicle sticks in the ground at the correct distance from the starting position, or with tape on the floor.

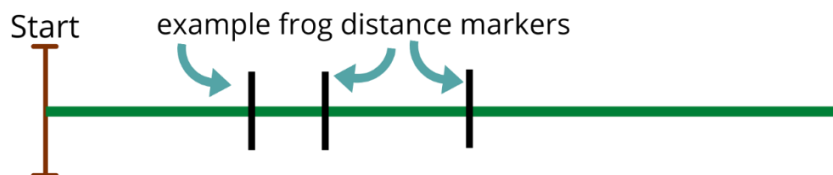
## Activity Procedure

Begin by showing the children the pictures (see below) of the various types of frogs and introduce their anatomy; talk about how their legs are structured to act as springs, with long, lean muscles that contract to propel them forward and unfold their long legs. Can the children fold their legs the same way that frogs do when in a sitting position? Can they leap in the same way as a frog, or do their legs need to bend differently? Can frogs walk as well as the children or do they have to move differently? Can they predict which frog will have the longest jump?

Explain that, relative to a frog's small size, they have an incredibly long jumping distance. Present the sizes of these example frogs (see below) by marking them on the rope/tape or showing the size on the tape measure/yard stick. Then explain how to calculate the ratio of body size to jump length.

Measure each child's height and write it down. Then, measure how far each child can jump by having them stand with their toes touching the edge of the starting line. From a standing position have them jump as far as possible and mark where the back of their heel lands. Repeat if needed to help them learn how to land. Calculate the ratio of their body size to jump distance and compare it to that of the frogs.

Finish the activity by repeating the jumping exercise, but now from a squatting position; discuss if it is easier or harder to jump farther from this position. Return to the discussion of relative anatomy and how frogs are structured to move compared to other animals.



**American Bullfrog**  
 Length of frog = 20.3 cm / 8 inches  
 Maximum jump = 213 cm / 83 inches  
 Jump/Body Length Ratio: >10



**Northern Leopard Frog**  
 Length of frog = 20.3 cm / 8 inches  
 Maximum jump = 162.5 cm / 64 inches  
 Jump/Body Length Ratio: 13



**South African Sharp-Nosed Frog**  
 Length of frog = 7.6 cm / 3 inches  
 Maximum jump = 334 cm / 131 inches  
 Jump/Body Length Ratio: 44

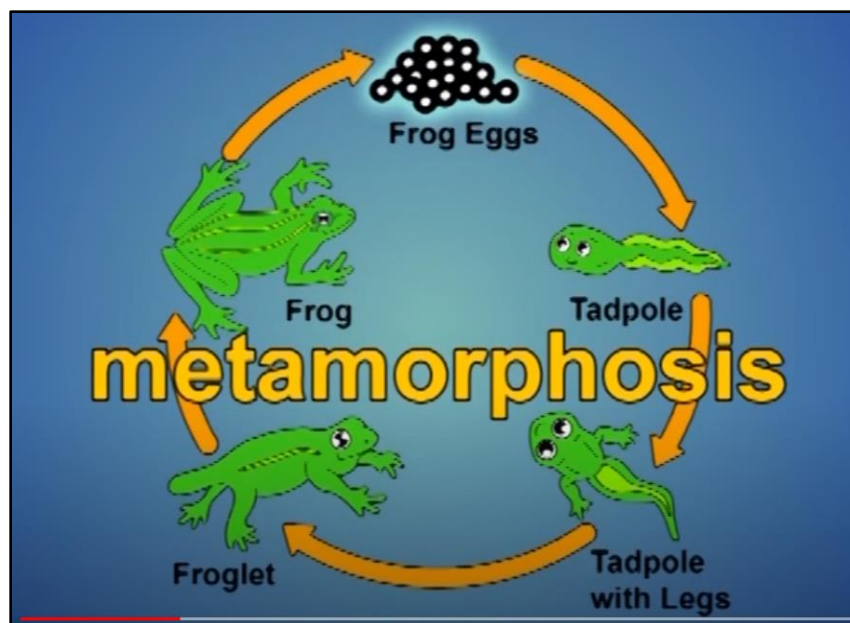
## All Grown Up!

*In this lesson, kids will learn about the life cycle of frogs! We encourage you to read this informational section either to or with them and let them do the activity on the following page. The answers for all photos are on the final page of this packet. Have fun!*

Frogs and toads are fascinating animals because their life cycle includes a full *metamorphosis* (or change) to grow from a baby into an adult! Many types of animals, such as mammals like humans, look very similar as babies and adults, but frogs and toads are *amphibians*, and they completely change their bodies through metamorphosis to grow up. Their story begins when a female frog lays a pile of clear, jelly-like eggs in a pond, vernal pool, lake, etc. These eggs are usually laid in big masses stuck around underwater plants or structures. Then, after a few days of developing inside the egg, tiny tadpoles emerge and begin swimming in the water! Tadpoles look much more like fish than frogs, because they have no legs, gills to breathe with, and long, flat tails. For several weeks, all the tadpoles do is swim and eat algae. Then, they slowly begin to develop back legs and lungs. At this stage it starts to use those back legs to kick through the water while still using its powerful tail to swim. Next, the front legs begin to develop and once they are almost done growing, the tail starts to be reabsorbed back into the tadpole's body! This acts like a food source for the growing frog. When the tail is almost gone, the little frog is called a *froglet*. When the froglet's tail is gone, it's ready to hop out of the water and onto land, where it uses its new adult lungs and legs! It then hops off to find a mate of its own and start the cycle over again.



**Want a fun and funky way to remember a frog life cycle? [Here's a silly song about metamorphosis to dance along to!](#)**

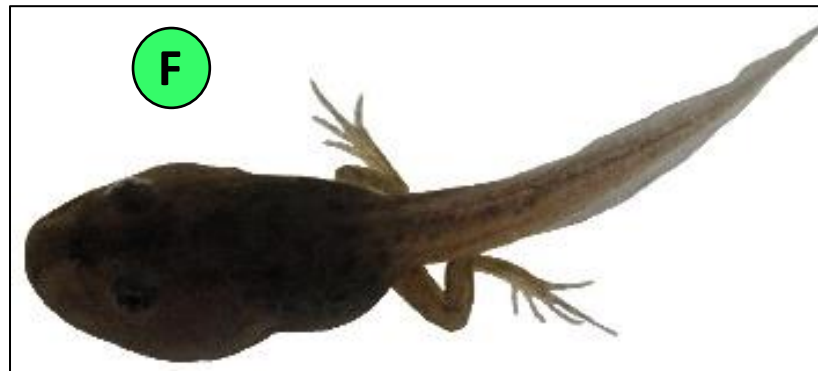
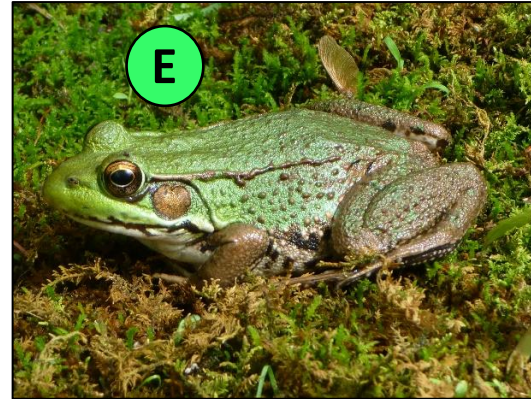
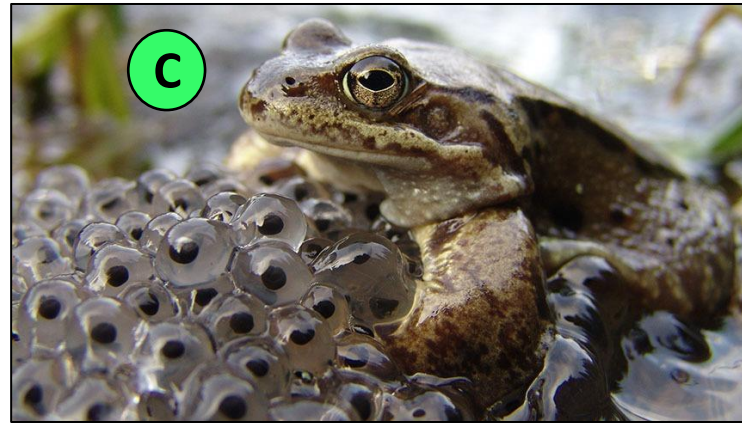
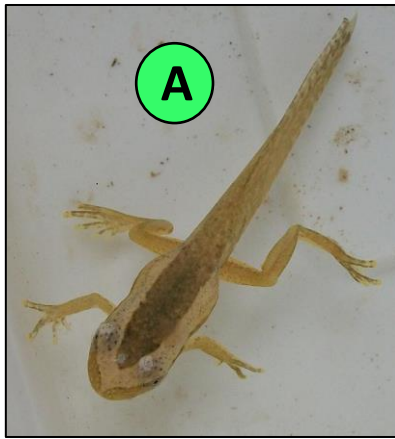


All Grown Up! Activity

1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_

4. \_\_\_\_\_ 5. \_\_\_\_\_ 6. \_\_\_\_\_

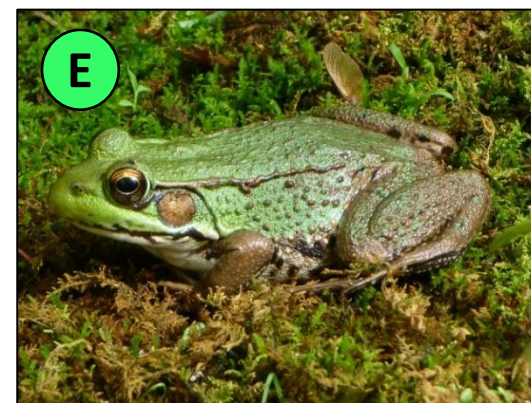
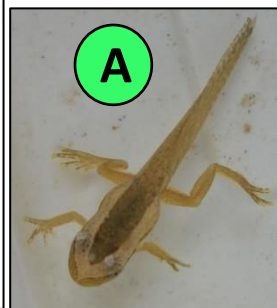
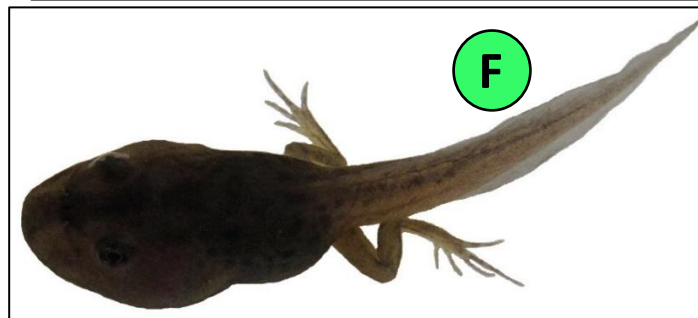
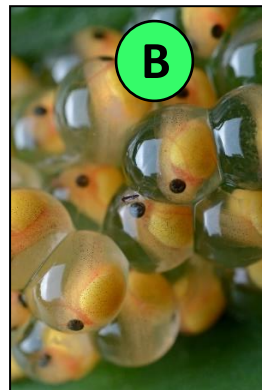
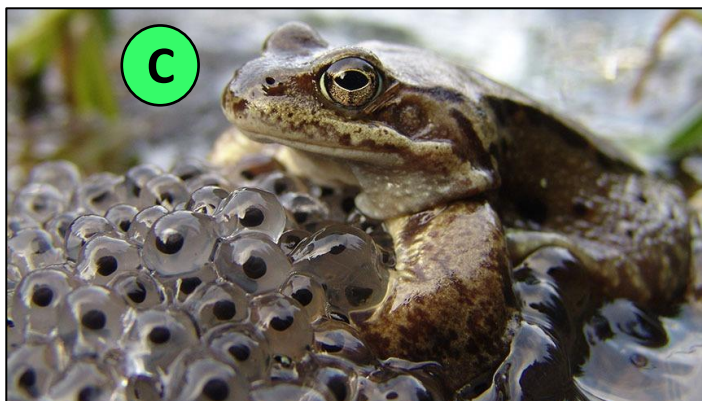




All Grown Up! Answer Key

1.  C  2.  B  3.  D

4.  F  5.  A  6.  E





### Which is Which?

These long-legged friends are so fascinating to study! During our program today, you learned many ways that frogs and toads are similar but also different! Can you list them here? If you want even more details about their differences, [this video from SciShow Kids](#) (not an affiliate of Duke Farms) goes into even more detail!

Another detailed video is [this one from Snake Discovery](#), (not an affiliate of Duke Farms) which includes even more crazy facts along with ways that you can help protect our froggy friends' safety at home!



### Frogs

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Both

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Toads

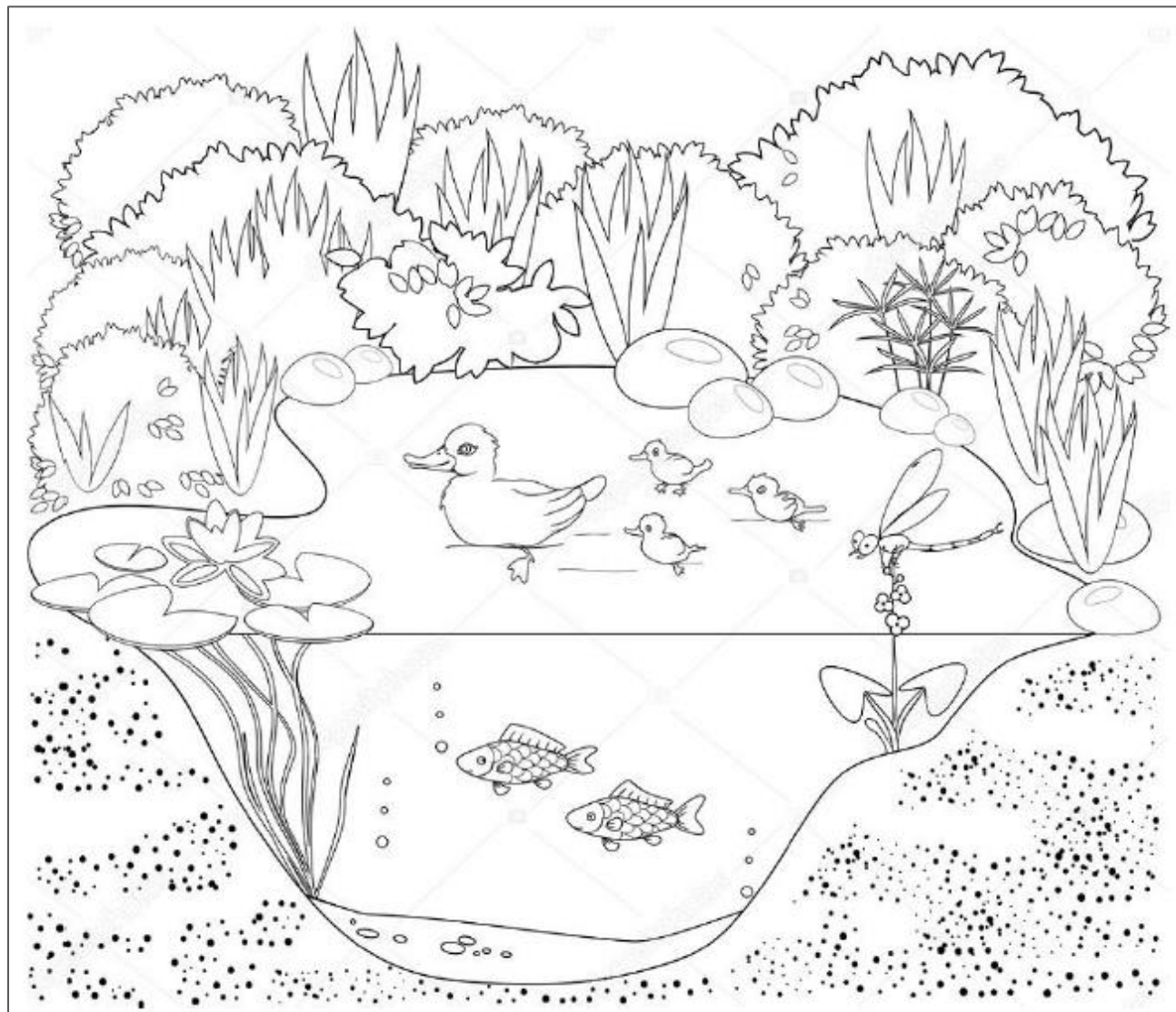
- \_\_\_\_\_
- \_\_\_\_\_
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- \_\_\_\_\_
- \_\_\_\_\_





### “Where are you, Frogs?” - Decorate and Discover

Where do you find frogs? Cut out the frog and toad pictures on the last few pages of this packet, or draw them yourself in this habitat scene, then show us your creativity and decorate the page!





### What Does Not Belong?

Frogs and toads are amphibians, which means they have very interesting bodies with specific habitat needs...the most important of which is clean water! Frogs have the ability to breathe through their skin! What would happen if you had to breathe dirty air? Can you pick out all the things in this frog habitat that could make frogs sick and hurt their habitat?





## Explore the Forest

Think about where you would find different frogs and toads in this forest habitat! Where would they be hiding? Cut out the objects in the back of this packet that you would find in this setting and add some frogs where they would naturally like to live!





## Explore the City

Just like people, frogs live in all kinds of environments! Where would you find frogs and toads in this urban habitat? Like on the previous page, use the cut-out objects from the back pages to decorate and show where you would likely meet a frog or toad!





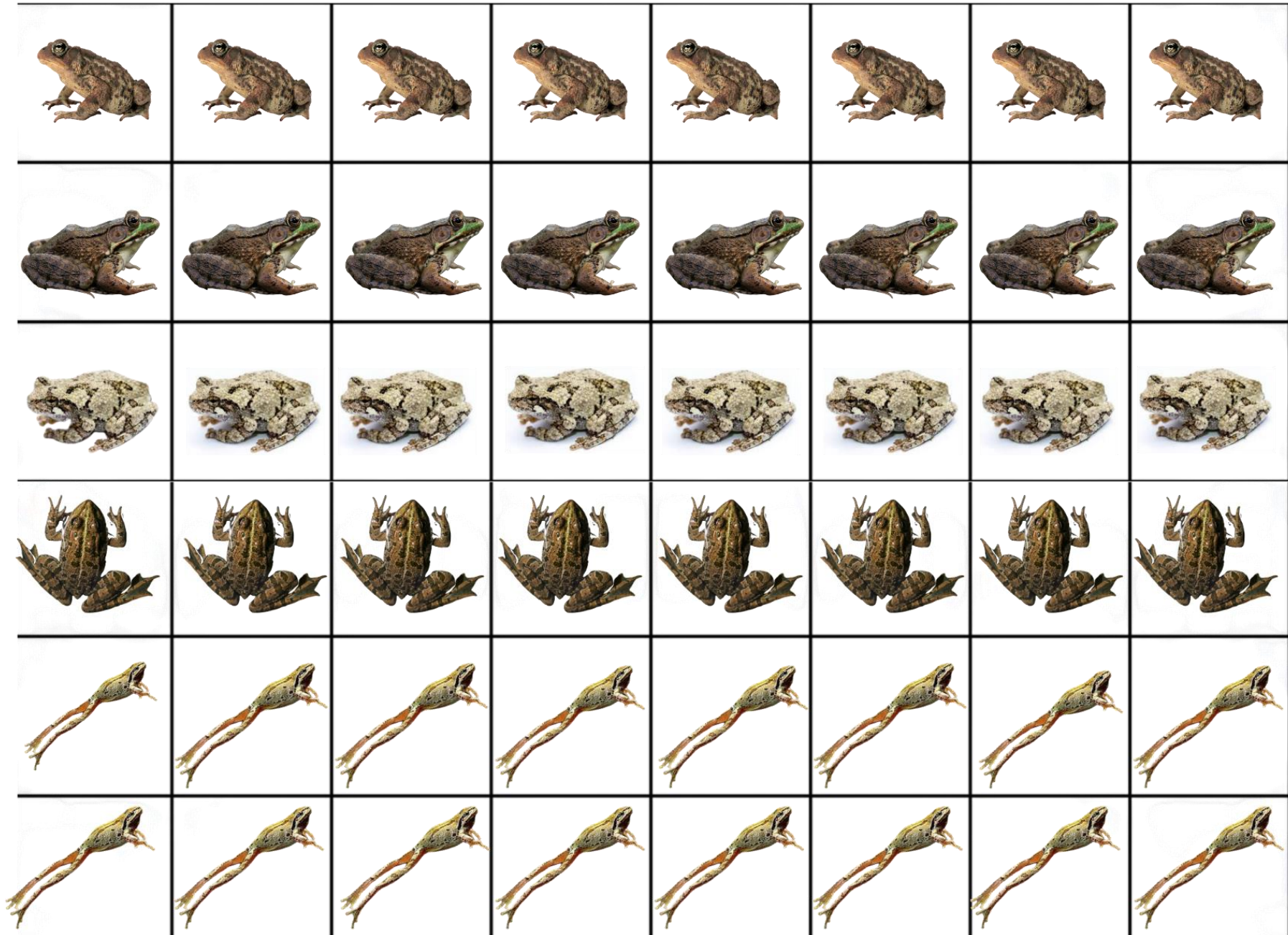


### **Create a Habitat**

Use everything you have discovered about frog and toad habitat and behavior to create your own environment! Be creative and make it as fun and inviting for them as you can. Use the cutouts, draw your own, go wild!

A large, empty rectangular box with a black border, intended for students to draw their own frog and toad habitat.







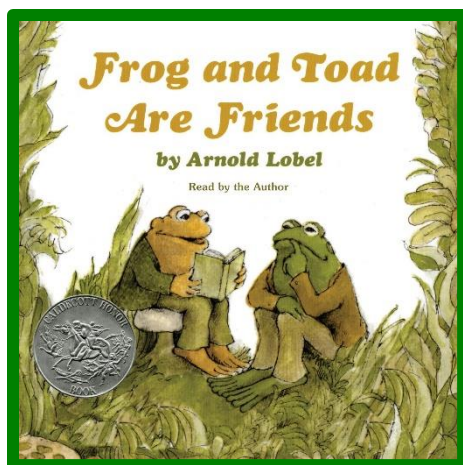
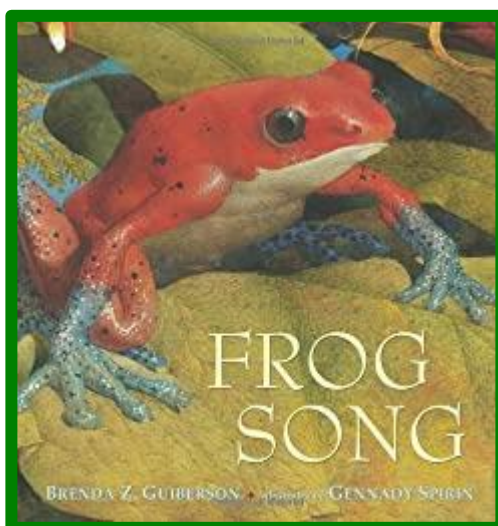
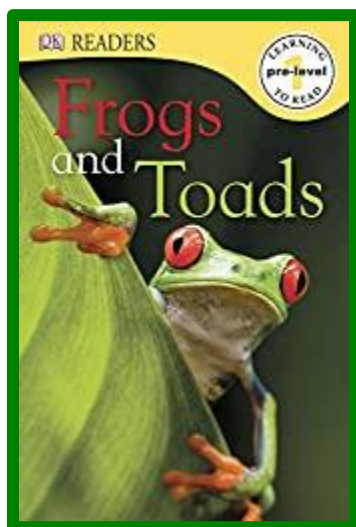






## Read All About It!

Frogs and toads never fail to captivate our imaginations, at any age! With this great list of science books about our amphibious friends, you are sure to find something to read together or alone. Organized by age group and reading level, this list of [children's science books about frogs and toads](#) is a great resource for educators and caregivers alike!



Another wonderful reading adventure awaits in **Frog and Toad Are Friends**, the first book in a 4-book series written by Arnold Lobel. The series follows the adventures in the friendship of Frog and Toad as they explore their world together. Life lessons and natural concepts can be picked up along the way as you read!

## Climate Change

Teaching and learning about frogs and toads relate directly to New Jersey's new Climate Change Curriculum mandated for K-12 public schools for 2021. As amphibians are recognized as being in decline globally, there are also many ways to introduce social studies topics, as well as geographical features, into your discussions. Students may find that the amphibian research related to climate change is unveiling very interesting findings.

Here are a few examples...



From Queen Mary University of London:

### ***Climate Change: How Frogs Could Vanish from Ponds***

By Helen Briggs, BBC News, 10 May 2019

This research looked at a disease known as ranavirus, which can kill a large number of frogs in a short time. It found mass die-offs matched historic temperature changes, with outbreaks predicted to become more severe, widespread and over a greater proportion of the year within the next few decades, if carbon emissions continue unchecked:

**“Climate change is having an impact on frogs found in British ponds, research suggests.**

A deadly frog disease is spreading due to warmer temperatures and in the next 50 years could cause entire populations to vanish, according to study. The virus could spell disaster for the common frog, which is a familiar sight in garden ponds and the countryside. Amphibians have been particularly hard hit by changes in the natural world. The study, published in [Global Change Biology](#), was carries out with Queen Mary University of London, UCL and University of Plymouth. ”



From the US Forest Service, Climate Change Resource Center, Office of Sustainability and Climate:

### ***Climate Change and Amphibians***

By the Climate Change Resource Center

“Several Factors contribute to the vulnerability of amphibians to the projected effects of climate change. First consider that for over 20 years, amphibians have been globally recognized as declining (1). Today, they are among the leading taxonomic groups threatened with losses: about 1/3 of amphibian species are already at risk of extinction (2,3). Leading threat factors include habitat loss, disease, invasive species, overexploitation, and chemical pollution.”

[Click here to read further.](#)



**For more ways to integrate the study of frogs and toads into your curriculum or for more information about the educational resources at Duke Farms contact Kate Reilly, Manager of Education, Duke Farms at [kreilly@dukefarms.org](mailto:kreilly@dukefarms.org)**