



August 2012 – What is a Life Cycle?

How does a frog become a frog? Get the answer to that question and many others! Find out what metamorphosis is, watch the life cycle of a beetle, and read interesting facts about all sorts of animals and insects.

Make a Mealworm Habitat

The best way to learn about something is to watch it. Scientists do a lot of watching, or *observing*, to learn about things like insects. Mealworms are a perfect insect to observe since they are easy to take care of and have a short life cycle. If you do not have time to order mealworms, look for beetles outside. Ladybugs (also called ladybird beetles) like to hang out around rose bushes or tall grass. If you find a beetle outside it is better to observe it for a short time and then let it go.

What You Will Need:

- A glass jar or other clear container
- Tin foil
- Rubber band
- Toothpick
- [Wheat bran](#) (plain bran cereal may be used)
- Oatmeal
- Carrots
- [Mealworms](#)
- Notebook
- Pencil
- Ruler (with centimeter markings)

What To Do:

1. Prepare a habitat for your mealworm. Put the tin foil over the top of your container, and keep it in place with a rubber band. Poke a few air holes for your insect into the foil using a toothpick (have an adult help you with this). You could also have an adult use a hammer and nail to poke holes into the lid for you instead of using foil.
2. Take the foil lid off and put a few handfuls of bran into the bottom of the container.
3. Your mealworm has food - now it needs water! Have an adult cut a small piece of carrot or put a spoonful of oatmeal into the container. Both oatmeal and carrots have enough moisture in them for the mealworm to get water from.
4. Put one mealworm into the jar and observe it for several weeks. How many legs does it have? How many body segments does it seem to have? Where is its face?

5. Take notes about your mealworm. Write the date for each entry, and talk about what you observe your mealworm doing.
6. Measure your mealworm each day to see if it grows! Use a centimeter ruler to measure the length of your mealworm.

What Happened?

Within a few weeks from when you got it, the mealworm changed forms. It started out looking a lot like a worm. A mealworm is actually a **larva** of the darkling beetle. The larva has six legs and three body parts - just like the adult beetle. After some time, the larva will change into a **pupa**. The pupa stage of a butterfly is when a caterpillar becomes a chrysalis. The pupa stage for the darkling beetle looks similar to the larva, but the body gets wider, and the whole insect turns white. The white casing is actually what protects the larva while it turns into a beetle. If you wait long enough, you will see a young beetle hatch out of the larva casing. The young beetle eats a lot (bran flakes and carrots) and will eventually become an adult beetle. To learn more about the beetle life cycle we highly recommend the [Beetle Life Cycle Kit](#).

Fun Facts

- While growing from a tadpole to an adult, a frog doesn't need to eat. It uses up what's stored in its tail to get all the energy it needs.
- Butterflies don't have noses. Instead, they smell and taste with the feelers on their feet!
- Elephant mothers carry their babies for nearly two years before giving birth! This is the longest time of any mammal.
- Ladybugs flap their wings about 85 times in one second when they fly.

Silly Science

- Where do frogs keep their money?
 - In a river bank!
- What do bugs have that no other animals have?
 - Baby buggies!
- What's the difference between a bird and a fly?
 - A bird can fly, but a fly can't bird!
- What do frogs like to drink?
 - Croaka-cola.

Way Cool Websites

- Print out worksheets and coloring pages of many different [animal life cycles](#)! This site has worksheets for insects, amphibians, birds, fish, mammals, and reptiles.
- See pictures and videos of [baby animals](#) that are born in zoos around the world. Animals vary from aardvarks to wombats and just about everything in between!
- Learn about the [life cycle of a plant](#) by taking apart a flower in this online activity.
- Fill in the missing parts of the [frog's life cycle](#) in this fun game.

Animal Life Cycles

There are lots of different kinds of animals living on earth. There are many different types of animal life cycles! Mammals (including humans) have babies that look similar to adults. Their babies grow bigger and bigger until they are full-grown. Other animals (including beetles, frogs, and butterflies) go through a process called **metamorphosis**. Metamorphosis is a big word that means changing from one form into another.

Each stage of life looks different for animals who go through metamorphosis. For example, a butterfly starts out as a tiny egg, then turns into a caterpillar (also called a **larva**). The caterpillar changes into a **pupa** by spinning a chrysalis around itself and comes out later as a beautiful winged creature - an adult butterfly! Keep reading to learn about some different kinds of animal life cycles.

Mammals are animals that have hair or fur, are warm-blooded, and feed their babies with milk. Mammals give live birth, meaning that their babies are born from the mother's body instead of hatching from an egg.

Reptiles are cold-blooded, have backbones, have skin covered with scales, have claws on their feet, and baby reptiles hatch from eggs. A few kinds of snakes and lizards give live birth to their babies, but most lay eggs. Reptiles are born looking like smaller versions of their parents.

Amphibians are similar to reptiles, but they live in water for part of their lives and on land for part of their lives. They have moist, slimy skin instead of scales. All amphibians lay eggs and babies look very different from their parents when they first hatch. They go through different stages of life in metamorphosis. Amphibians include newts, salamanders, toads, and frogs.



Fish are cold-blooded, have backbones, and lay eggs, just like reptiles and amphibians. Fish's bodies are covered in scales. They do not have any arms or legs, so they use fins to swim.

Birds are warm-blooded and have skeletons and backbones, like mammals. Birds are covered in feathers instead of fur or hair and hatch from eggs. Mother birds build nests to lay their eggs in, then they carefully sit on their eggs to keep them warm while the baby birds inside grow.

Insects hatch from eggs. Some baby insects look like smaller versions of their parents and will shed their skin as they grow bigger. Others go through metamorphosis and look and act very different from their adult parents when they first hatch. Many insects, including bees, flies, and beetles, go through metamorphosis. Other insects, like grasshoppers, and arachnids (spiders) molt or shed the outer layer of their skin to grow bigger.

The Life Cycle of a Frog

Frogs are amphibians, which means that they can live in water or on land. They go through several stages of life before they become frogs and during those stages, they live only in water. After reading about each stage of a frog's life cycle with your children, have them complete the [Life Cycle of a Frog Worksheet](#).

Stage 1: Egg

A frog begins life as a fertilized *egg*. A female frog lays a lot of eggs at one time in a pond. The eggs are in a string or mass that sticks to plants in the water. The outer layer of a fertilized egg is a jelly-like material that forms a protective coating for the egg. The egg starts out as just one small cell, but it divides again and again very quickly to make more cells that become the organs of a baby frog (called an *embryo*). Within 2 to 25 days, depending on the temperature of the water and the type of frog, the egg hatches into a tadpole!

Stage 2: Tadpole

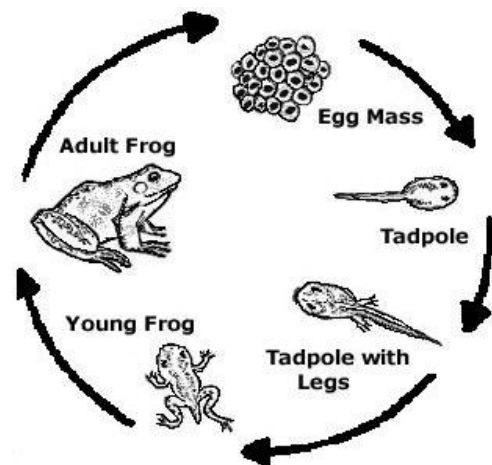
When the tadpole hatches, it looks more like a fish than a frog. It doesn't have any legs! It has *gills* that allow it to breathe underwater. Its tail grows longer and a fin forms to help it swim. The tadpole swims, eats plants and algae from the water, and grows for several weeks. During this time, the tadpole starts to develop lungs so it will be able to breathe out of the water when it becomes a frog. The tadpole also starts to grow two hind legs. Now it can leap around instead of only swimming. Now the tadpole is starting to look a little more like a frog, but it still has a very long tail!

Stage 3: Young Frog

The tadpole starts to grow two front legs and its long tail becomes shorter and shorter. The tadpole uses the nutrients stored in its tail as food, so until its tail is completely gone, it doesn't need anything else to eat! Then just a little stub of its tail is left, and the tadpole is a young frog. It hops right out of the water and onto dry land for the first time! The frog is still very small.

Stage 4: Adult Frog

The frog's tail will eventually disappear completely and it will start to eat insects instead of plants from the water. The young frog will grow for about 2-4 years to become an adult. The adult frogs then lay their eggs and more tadpoles hatch and begin the cycle again!



Science Words

(Note: plural means more than one.)

Metamorphosis - a transformation that many insects and animals go through before getting to the adult stage. The changes that take place are very dramatic.

Larva (plural = larvae) - a middle stage of an insect's life cycle. In a butterfly, the larva is a caterpillar.

Pupa (plural = pupae) - a later stage of an insect's life cycle. The complex changes that happen before the insect becomes an adult happen in this stage. In a butterfly, the pupa is a chrysalis.

Life Cycle of a Frog

Cut out the pictures below, and match them to the four different stages of the life cycle at the bottom of the page. Glue the pictures down, then color the life cycle chart you made!

