12.13: Amphibian Reproduction and Development

What changes must occur for these tadpoles to move onto land?

These are tadpoles of the Yellow-Bellied Toad. Of course these tadpoles are born in the water. You can see the beginning of the formation of the hind limbs.

Amphibian Reproduction and Development

Amphibians reproduce sexually with either external or internal fertilization. They attract mates in a variety of ways. For example, the loud croaking of frogs is their mating call. Each frog species has its own distinctive call that other members of the species recognize as their own. Most salamanders use their sense of smell to find a mate. The males produce a chemical odor that attracts females of the species.
Amphibian Eggs

Unlike other tetrapod vertebrates (reptiles, birds, and mammals), amphibians do not produce amniotic eggs. Therefore, they must lay their eggs in water so they won’t dry out. Their eggs are usually covered in a jelly-like substance, like the frog eggs shown in Figure below. The “jelly” helps keep the eggs moist and offers some protection from predators.

Amphibians generally lay large numbers of eggs. Often, many adults lay eggs in the same place at the same time. This helps to ensure that eggs will be fertilized and at least some of the embryos will survive. Once eggs have been laid, most amphibians are done with their parenting.

Amphibian Larvae

The majority of amphibian species go through a larval stage that is very different from the adult form, as you can see from the frog in Figure below. The early larval, or tadpole, stage resembles a fish. It lacks legs and has a long tail, which it uses to swim. The tadpole also has gills to absorb oxygen from water. As the larva undergoes metamorphosis, it grows legs, loses its tail, and develops lungs. These changes prepare it for life on land as an adult frog.

Frog Development: From Tadpole to Adult. A frog larva (tadpole) goes through many changes by adulthood. Notice the
visible changes that occur at each stage. How do these changes prepare it for life as an adult frog?

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Summary

- Amphibians reproduce sexually with either external or internal fertilization.
- Amphibians may attract mates with calls or scents.
- Amphibians do not produce amniotic eggs, so they must reproduce in water.
- Amphibian larvae go through metamorphosis to change into the adult form.

Review

1. Describe the life cycle of frogs.
2. Describe the parental involvement of most amphibians.
3. Define metamorphosis.