Student Resource:

◆ Why Did the Salamander Cross the Road?

Every spring as temperatures start to rise, on wet, rainy nights, salamanders make the journey from the forests where they live as adults to the vernal pools where they breed, lay their eggs, and the hatched larvae begin their lives living in the water. When these baby salamanders become juveniles, they will make the journey back to the forest until it's time to return to the water as adults to breed and lay their own eggs.

In order to reach these breeding sites, salamanders often have to cross over roads, meaning that many adult salamanders risk being run over by cars. It is estimated that mortality rates for adult salamanders crossing roads can often be as high as 50 to 100%, meaning that local salamander populations can quickly be wiped out. Chemical run-off from cars can also pollute roadside waterways, which can damage eggs and embryo development, meaning fewer salamander eggs are able to successfully hatch baby salamanders.

Conservationists have tried many methods to help salamanders and other amphibians on these migration nights. Some have started Salamander Crossing Brigades made up of volunteers who scan the roads, picking up any amphibians they find and carrying them safely to the other side of the road. During these nights, volunteers also help to collect data that has helped to change policies and save more amphibians. Some conservationists have successfully lobbied to have roads known for busy amphibian crossings closed for the busiest month. Data collected about amphibian migrations has helped to protect land scheduled for development. And in some places, special crossings have been built to provide salamanders with alternative ways to safely access their breeding pools. The first amphibian underpass was built at a busy migration site in Amherst, Massachusetts in 1987.

Other Wildlife Crossings

In addition to salamanders and other amphibians, wildlife of all sorts can come into harm's way when a roadway crosses through its habitat. And that harm reaches humans too. When large animals like moose and bears try to cross roads and highways, they become a danger to drivers as well.

In Banff National Park in Canada, authorities began creating a series of underpasses and overpasses in known wildlife crossing areas. There had been more than 100 elk-vehicle collisions a year. Now there are less than 6. The crossings are planted with native vegetation, and fences along the highway are used to guide animals toward the crossings. You can view these bridges here: https://mymodernmet.com/wildlife-crossings/

In Florida, underpasses have been designed for black bears and alligators. In Santa Monica, California wildlife corridors have been proposed for animals such as mountain lions, bobcats, and coyotes, which are often hit by cars while trying to cross highways into the Santa Monica Mountains. In Eastern Canada, moose can be a dangerous road hazard. Tall moose fences, which allow moose to exit the highway, but not to return, have been built along large stretches of the Trans-Canada Highway.

In Vermont, the Fish and Wildlife Department and the Agency of Transportation are working with the Nature Conservancy, using game cameras to track if and how animals are navigating developed areas that interrupt blocks of forest. In areas where they have spotted wildlife traffic, they are creating dirt paths over large rocks, adding trees, and making other changes so these pathways are easier to cross.

In Warwick, England people were so concerned about amphibians getting trapped in drains that they installed mesh-covered ladders in drains near known breeding pools. These allow any amphibians that may get washed into drains while crossing the road to climb back out before being trapped for good.

The picture to the right shows an overpass in Thailand that allows animals to walk on the grass and safely cross the road.

The risks to wildlife extend beyond roads, too. Dams can block eel migrations to important upstream habitats where they will feed and mature. To help solve the problem, some dams have installed eel ladders—ramps that eels can push against while slithering upstream, safely moving over the hydroelectric dams.

With climate change, it's expected that animal migration patterns will change and that wildlife will need to migrate further than before in order to survive. This could mean even more issues when it comes to roads and animal movement.

Many people are thinking about animals and how roads can be safer for both humans and wildlife. Wildlife crossings work—protecting animal populations and keeping drivers safe. So why aren't there more wildlife crossings? The main obstacle is cost. But in some places planners and engineers are beginning to include wildlife habitats and migration in their plans from the beginning, making them more cost effective, safer for drivers, and better for animals.

Student Worksheet:

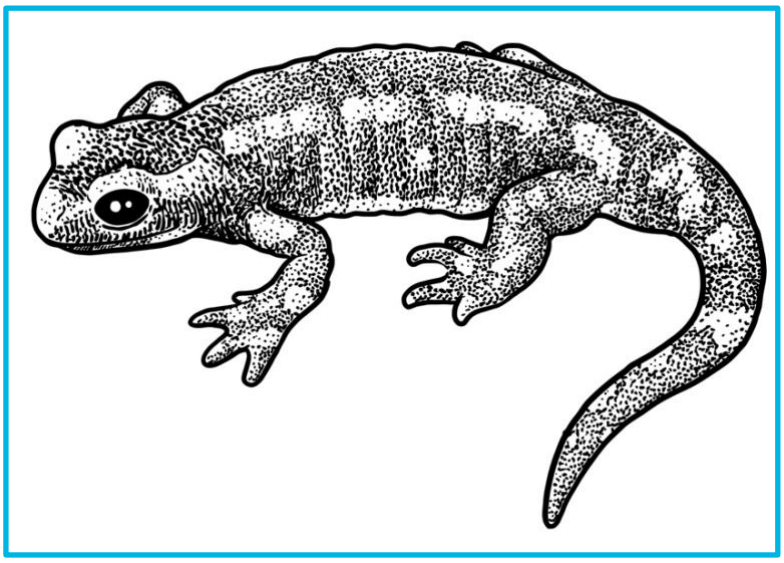
In the springtime, adult salamanders leave their forest homes and return to vernal pools where they breed and lay eggs. If a roadway exists between these two habitats, they have to cross the road to reach this very important destination. In this activity, you will be challenged to create a way to get these salamanders safely from one side of the road to the other.

Making Your Salamander
Cut out the salamander below and tape it to a paperclip. Next, tie the piece of string to the paper clip. This will be the salamander you need to help get from the woods to the vernal pool.

Building Your Habitat
Using playdough, construct a model of a salamander crossing zone. The model should include a wooded area on one side, a vernal pool on the other side, and a road running in between.

The Challenge
Your goal is to change the model into a salamander-friendly habitat by constructing a way for the salamander to get from the woods to the vernal pool without having to cross the road. You can use any of the materials provided to create your salamander crossing. Remember that you may need to build something to help guide salamanders to your crossing as well. Salamanders also have to remain damp in order to survive. Think about how your crossing will allow for this.

The Test
Once you have constructed your salamander crossing, place your salamander in the woods and pull your salamander through the crossing using the string (it can be threaded through tunnels, etc., if necessary). Evaluate how your crossing worked and how it could be improved. If time allows, revise your design and retest it.



Student Worksheet:

◆ Reflection

1. What method did you choose for your salamander crossing? Why? How will your design make sure salamanders can stay damp?

2. How did your crossing work when you tested it? Were there any problems?

3. How do you think you could improve upon your design? What changes would you make to it?

4. What ideas did your classmates come up with that you liked? Are there any ideas you would want to incorporate into your design?