Loudoun Wildlife Conservancy

People and Wildlife Living in Harmony

Amphibians of Loudoun

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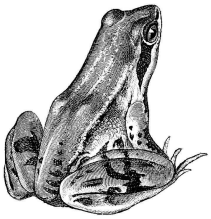

Frogs, toads and salamanders are our local amphibians. Most amphibians live a dual life. Beginning in the water where eggs are laid, they soon develop as tadpoles with a swimming tail and gills, living and breathing under water. Then, over days or months of transformation, they develop legs and lungs and soon begin their lives on land. Here they establish home territories with food, sheltered spaces and areas for hibernation.

Frogs and toads typically live four to nine years, but some salamanders can live thirty to forty years, or more. During their adult lives, frogs, toads and salamanders can be found in woods, by streams, in gardens, and in and around ponds. As tadpoles, they are found in streams, ponds, and temporary or vernal pools.

While many of our amphibians breed in permanent ponds, in and along streams, and in forests, many others depend on vernal pools. Vernal pools are interesting habitats. Found in fields and woods, these pools are temporary in that they dry out by summer. Yet, they fill with water in late fall and early spring, providing a place for tadpoles to develop without the risk of being eaten by fish. Amphibians that breed in vernal pools are imprinted by the specific conditions and elements of the pools where they are born. They remember the mineral contents and composition of the water and specific algae they tasted as tadpoles. After amphibians mature and it is their time to breed, they will receive cues in the environment triggering them to leave their normal dwelling areas and migrate a half a mile or more to return to their maternal wetland areas. This often huge but mostly unseen migration event is called "Big Night," and it is a big night indeed! During a heavy spring rain, the forest floor comes alive with migrants following their inner calling as they emerge from their burrows or winter dwellings and make their trek over leaves, across roads, and through a multitude of obstacles to return to the vernal pools where they were born. Some towns close entire strips of roads during these "Big Night" migrations. This allows the salamanders and frogs to cross safely from their forested areas to reach their breeding pools. In making this journey, they are continuing a ritual that has gone on for the last 330 million years — returning to the pools of their ancestors.

Unfortunately, more and more frequently, the salamanders and other amphibians that depend on temporary wetlands and vernal pools will emerge in spring during the "Big Night," and if they are not killed by cars as they cross roads and are not eaten by predators as they make this journey, they will arrive at what was their pond or pool only to find a parking lot in its place. Because the specific elements of these pools have been imprinted on these animals when they were born, they often will not relocate to another pond or pool but instead will return to the forest and try again the following year, hoping in vain that their pool will return. Entire local populations of amphibians are eliminated in this way due to our not taking care to protect and preserve both their forested homes and their wetland breeding areas.

Loudoun Species

Here in Loudoun, we have eight species of frogs, three species of toads, and thirteen species of salamanders. They can be found in your neighborhoods, around your homes, and in your local parks and open spaces.

Frogs: *Cricket, Spring Peeper, Upland Chorus, American Bullfrog, Southern Green, Pickerel, Wood and Grey Tree Frog*

Most of the frogs in our area like to live in grassy areas along streams and ponds. The Pickerel Frog stays close to water and, if startled, dives in to escape predators. Green Frogs prefer to stay at the waters edge, although young may venture off into moist fields. When intruders enter their territory, they issue a warning call and leap into the pool. Green Frogs eat a variety of invertebrates such as beetles, caterpillars and worms but will also eat small frogs, fish and small mice. They in turn are eaten by larger frogs, like the Bullfrog, as well as by wading birds and turtles**.**

Some, like the Chorus Frog, are rarely seen but can be identified by their short rasping trill that has been compared to the sound made by running a fingernail over the teeth of a comb. Similarly, our Spring Peeper is rarely seen except during the breeding season in late March and early April when they can be seen crossing roads trying to get to their breeding areas. Their collective "peeps" are some of the earliest sounds of spring. After laying their eggs, Spring Peepers will return to thickets and moist woods to forage for insects.

The Cricket Frog is a non-climbing member of the tree frog family. Because they lack the enlarged toe pads to climb, they move in yard-long leaps. As their name indicates, their call is similar to a cricket and can be heard April through July.

Most everyone will recognize the sound of a Bullfrog with its deep "jug-o-rum" call. While the Bullfrog is our largest frog, able to eat young snakes and small birds, it takes the longest to develop. The tadpoles take almost two years to transform and two to three more years to reach maturity. Bullfrogs are also territorial, such that if a male enters the territory of another, a wrestling match may ensue. Unfortunately, Bullfrogs have been introduced to many areas through pond and garden shops, and, because they are so large, they easily eat other frogs, sometimes eliminating local populations of other native species.

The Wood Frog, unlike the other frogs of our area, typically lives a distance away from open waters. It prefers the moist, forested woods for its home but returns to ponds and vernal pools for just a few nights each year in the cold of winter to mate and lay its eggs. Arriving at the pool early provides its young with the time to grow before the aquatic predators that eat young tadpoles arrive at the pool in spring. By the time these predators arrive, the Wood Frogs have almost fully developed and are "getting their legs" for dry land.

Toads: *American, Fowlers and the recently reconfirmed Spadefoot*

Many of us have encountered American Toads in our gardens — keeping cool under the vegetation or perhaps even taking up residence in a "toad house" made just for them. You can tell a toad from a frog by its skin. Toads primarily have bumpy skin while frogs, for the most part, have smooth skin. Toads also tend to have shorter legs than frogs and walk or make small hops rather than taking the long leaps of a frog. Unlike frogs, toads are adapted to drier habitats. Rather than finding them streamside, you are more likely to find toads burrowed into moist soil under vegetation when the air is dry or sitting in a shaded puddle of water.

In the vegetable and flower garden, toads will eat thousands of insects and are an excellent alternative to insecticides. Toads eat ants, beetles, earwigs, snails, mosquitoes, slugs, caterpillars, moths, earthworms, wasps, and more.

During their mating period, the male will send out a trill lasting 30 seconds or more to call prospective females. If other males are around, they will vary their pitch to differentiate themselves. The eggs are laid in pools and

marshes, and the tadpoles feed on algae. After four weeks, the toadlets emerge and disperse into woodlands and garden vegetation. If you happen to live near a breeding pool, you may notice tiny toadlets in your lawn on a mid-summer day. Give your lawn mower a break for a couple of days while this new generation makes its way to the woods or denser vegetation of your garden or yard.

Salamanders: *Jefferson, Spotted, Marbled, Northern Dusky, Seal, Northern Two-Lined, Three-lined, Long-tailed, Northern Spring, Four-toed, Red-backed, White-spotted Slimy and Northern Red*

Salamanders are a quiet, reclusive bunch, primarily active at night hunting for slugs, earthworms, and various insects. They require healthy forests and good water quality to live and breed. Because of this, having salamanders is an indication of a healthy ecosystem. However, forest clearing, draining of wetlands, filling in wet soils, and impaired water quality in streams and ponds threaten their survival. Many salamanders live under objects just at the waters edge of a stream or pond, but many others live in rotting logs and leaf litter or in burrows within the forest.

With salamanders, there are water breeders and land breeders. The Spotted Salamander is a water breeder that lives in secret underground burrows for the majority of the year. Heavy rains in February through March trigger its internal cues to migrate to the breeding ponds to join in courtship rituals. With this species, the male deposits spermatophore in shallow, woodland waters or vernal pools. Then the female picks up the mass and fertilizes the eggs which she leaves in an egg-cluster mass attached under water to plants and twigs.

Marbled Salamanders are another fascinating species. This salamander breeds in the fall, migrating to dried out vernal pools where the male and female mate. The female selects a micro-depression under the organic debris in this dried vernal pool and waits with her eggs, guarding them, waiting until the late fall rains come and the pool fills with water, which causes the eggs to hatch. The young tadpoles then live under the ice through the winter, eating zooplankton. By spring, they are large enough to feed on newly developing tadpoles of Spotted Salamanders.

The Jefferson Salamander is one you can encounter at the Audubon Naturalist Society's Rust Nature Sanctuary in Leesburg. They live underground in forests up to a half-mile from their breeding pool. Thus, they are not often seen except during their migration to and from the breeding spot. They are the first of the salamanders to migrate in the winter and can be seen traversing the snow and leaf litter in the rains of March, with the ground only partially thawed and ice often still on the pond or pool. They do not reach sexual maturity until their third year but live to be as old as forty.

In the garden, you may have encountered the Red-Backed Salamander. It is one of our more common species. This salamander fills an important role in the food chain for forest dwellers, especially turkeys who scratch them up from the leaf litter as the turkeys forage for food in spring. Unlike our water breeding salamanders, the Red-Back Salamander lays its eggs on land, often in the cavity of a rotting log. The female stays with the eggs as they develop to guard them from predators. She keeps them moist by coiling around them. With this salamander, the larvae develop directly into their adult stage. Another interesting point is that land breeding salamanders do not have lungs. They breathe entirely through their skin, which makes moisture a critical element in their ability to survive. This salamander can often be found in leaf litter and under logs, but they also live in burrows under

ground. They prefer mature forests with deep soil and leaf litter, rocks and logs.

Amphibians in the Garden

Frogs, toads and salamanders are extremely beneficial to the backyard gardener. In springtime their choruses are a pleasure to hear, and when we are lucky enough to catch a glimpse, they are wonderful to watch as well. Many will even sit still for a bit for you to take their picture. In the garden, they eat numerous insects often seen as pests. Just one Cricket Frog can eat 4,800 insects in a season. If you had ten in your garden, they would consume 48,000 insects.

Living the Dual Life

The word amphibian comes from the Greek, "amphi" and "bios," meaning two lives. It is this duality that makes them both so unique and a "sentinel species" as an indicator of environmental quality and health. Why are they an indicator of environmental health? The first reason is that many of our amphibians are both aquatic and terrestrial animals and, therefore, can show evidence of the broader environmental impacts of our actions. When wetlands and streams where amphibians breed are filled in or compromised by pollutants, or when forests where they live and hibernate are torn down, it impacts their ability both to reproduce and survive. Whole populations are affected, in addition to other species up and down the food chain.

A second reason that amphibians are an indicator of environmental health is that their skin is permeable. While this helps them regulate their body temperature by enabling them to absorb and release water, it also makes them vulnerable to absorbing pollutants. Even as adults, frogs, toads and salamanders absorb water through their skin rather than drink it. You will often see a frog or toad sitting in a puddle in summer, warming itself with the sun, yet also absorbing water through the skin on its belly and legs to stay hydrated. When they absorb polluted or impaired water or come in contact with soils and lawns treated with fertilizers, herbicides and pesticides, they also absorb these chemicals. Air pollution affects them, too. On the many bad air days we experience through the summer, pollution is dense in our air. When it rains, the pollution falls to the ground as acid rain, and the frogs, toads and salamanders absorb this pollution as well.

Next Steps

Amphibians have been on this earth for over 330 million years. Able to adjust and adapt, they even made it through the last two mass extinctions. Yet, starting around 1989, a serious decline in amphibians across the world was being noticed and reported by scientists on every continent. Deformities and extinctions rose at an exponential rate, and the reasons seemed unclear. Today, at least 32% of amphibians around the world are threatened with extinction, and 43% are having population declines. Here in Loudoun we are building at an incredible pace, replacing forests, fields and wetlands with malls, parking lots, lawns and roads. There is no way that the frogs, toads and salamanders can keep pace with this development. However, it would be a shame to let their disappearance go without notice and without our trying to establish a protocol to protect their habitat.

Over the coming year, LWC will establish an Amphibian Monitoring program here in Loudoun. The goal of this program will be to track our local populations of amphibians and gather data so that we can influence local decision makers and establish conservation requirements before it is too late. If you are interested in being a part of this citizen-science effort and learning more about these interesting creatures and their habitats, please contact Nicole Hamilton at nhamilton@loudounwildlife.org or 540-882-4839.