

18. Creating Woodland Pools for Amphibians and Other Wildlife

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Much of our forestland today exists on lands that have been intensively managed in the past, either as working forests or agricultural land. The result is that these lands often are somewhat uniform and may lack elements of habitat complexity – large, fallen dead trees, pit and mound topography, and pools or ponds of water that form naturally when the forest floor rises and falls – that add diversity to wildlife habitat. By following the steps outlined ahead you can create woodland pools, enhance habitat complexity and provide a haven for wildlife.

Woodland Pools and Wildlife

Woodland pools are valuable to most species of wildlife and essential to some. With an increasing concern about amphibian health and population declines, the role of these valuable forest refuges is becoming more evident. Amphibian such as the spotted salamander, Jefferson salamander, wood frog, and others, breed and lay eggs in these ponds. Though these species do not live in water year-round, they are dependent upon water to complete their life cycles. Many other species of wildlife may benefit from the presence of woodland pools. Insects like dragonflies, damselflies and water boatman find refuge in the water. Aquatic reptiles such as the painted turtle or northern water snake may inhabit woodland pools, especially those in sunny forest openings. Many snakes, and

mammals such as shrews, voles, mice, skunks and raccoons, may feed on the insects, amphibian larvae (tadpoles) and eggs, frogs, or salamanders found in or near the water. Turkeys as well as songbirds may stop at woodland pools to feed on insects or nest in lush vegetation nearby. Other species, such as deer, may feed on succulent plants growing near the water's edge or stop by for a drink.

The creation of woodland pools is an easy way to provide habitat for a broad array of wildlife species. These pools, or ponds, can replace some of the valuable habitat that has been lost as a result of past land-use practices and add diversity to wildlife habitat in your area.

Ten Steps to Creating Woodland Pools

There are many factors to consider when creating woodland pools. Do you have a workable location? How will you construct your woodland pools? What features can you add to make your pools attractive to wildlife? Below are ten steps to guide you in making your decisions.

1. Determine if you have an adequate water source

There are three main sources that may provide water for your woodland pools – surface run-off, groundwater and precipitation. Your pond may be fed by one or more sources and their inputs may vary seasonally.

Groundwater is water that is found underground in cracks and spaces in soil, sand and rocks. The

Woodland pools provide habitat for a wide variety of wildlife.



top of the area that is saturated with water is called the water table and may be deep or shallow. Rain or snowmelt can raise the water table, whereas the water table may recede during dry periods. Groundwater flows through spaces in the soil and may come to the surface as springs or seeps. If the water table at your site is consistently higher than the maximum depth that you expect your pond to be then groundwater may provide a good source.



Many small amphibians, like this wood frog, require habitat that will be constantly moist and cool throughout the year.

Surface water run-off is water that flows down slope following a rain event or as a result of snowmelt. Surface water can often provide a reliable water supply, particularly when the soils on-site are impermeable clay. When selecting a location take precautions to choose an area that will not receive polluted agricultural or suburban surface water run-off. A woodland pool that is polluted is a hazard to the animals that are attracted to it.

When considering a placement site, it is a good idea to monitor the site for a full year before beginning construction. Take notes on the wetness of the site during different seasons and record any areas where surface flow is evident and could be intercepted. By digging several small test pits that are at the maximum depth that you expect your pond to be, you can monitor the groundwater level in the pit throughout the year.

2. Consider the topography

When choosing a location for your woodland pool, topography should be considered. A steep hillside slope, for

instance, will probably not hold water. A flat area on the crest of a mountain ridge may hold water provided that the soils are impermeable and precipitation is adequate to fill the pool during some period during the year. However, by strategically locating your pool at the base of a slope, you have the opportunity to intercept the maximum amount of surface run-off.

3. Consider the landscape

The success of your ponds as amphibian habitat and habitat for other wildlife will be determined largely by the surrounding landscape and availability of source habitats nearby. Because of their limited size and need for moist, cool habitat conditions, many frogs, toads and salamanders have limited dispersal abilities and are unable to move great distances over dry, hostile terrain. In addition, although most amphibians depend on water to complete some part of their life cycle, many also spend a considerable amount of time in the forest. A woodland pond that is isolated from other areas of forest by roads, development or other disturbances will not attract as many species as a similar pond located in a forested landscape with limited disturbance. By locating new ponds close to other ponds, wetlands, or streams, plants and animals will be able to colonize more rapidly. Consider developing a cluster or complex of ponds instead of just a single pond.

4. Decide how you will construct your pools

There are several options for constructing pools and ponds. For larger ponds, you may want to hire a contractor with experience in pond construction. Constructing a pond for wildlife, however, requires elements that typical fishing or swimming ponds do not include. Therefore, it is

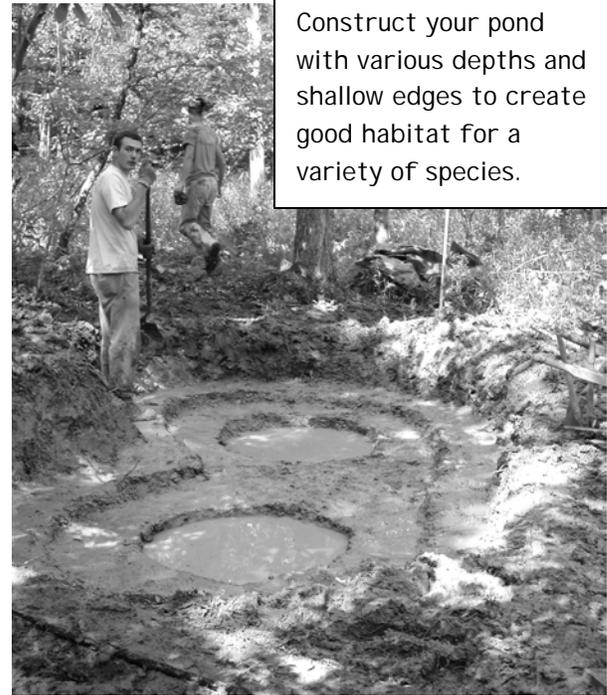
important to discuss the details of your goals with the contractor to ensure the success of the project.

At times it may be possible to install a pool or pond as part of an ongoing timber harvest or other activity. Skid trails that will be abandoned can provide the opportunity to create a woodland pool. By dropping the blade on the bulldozer, a logger can excavate a shallow 1-2 ft depression that can develop into a shallow pool.

Another way to construct small woodland ponds while minimizing disturbance to the surrounding area is to dig your ponds by hand. Although labor intensive, this method can be very successful. To follow a specific design that you are planning you can use a large plastic tarp and draw your pond design with a permanent marker. Cut small holes along the lines and insert small flags to mark the perimeter of the pond and areas of similar depth. Then lift the tarp off of the area and use the flags as your guide. By beginning with the deeper areas first you can prevent water from filling in your shallow areas while you are still digging.

5. Plan to create variable depths and hydro-periods

Pond depth, size and hydro-period (length of time water is present during the year) can all influence the plant and animal community. Some animals, such as wood frogs, only require standing water for a few months in the spring and early summer to allow their eggs to hatch and tadpoles to metamorph to young froglets. Other species, like the green frog, require permanent water to complete their 2-year cycle as tadpoles. By providing a mixture of different sizes and depths within a single pond, or among a group of ponds, you can create a mosaic of



Construct your pond with various depths and shallow edges to create good habitat for a variety of species.

permanent, semi-permanent and seasonal pools. This approach mimics natural habitats, providing habitats for a greater variety of plants, invertebrates, amphibians, reptiles, birds and mammals than a single pond of uniform depth.

6. Include shallow, sinuous edges

Pond edges should be sinuous and shallow when possible to support abundant semi-aquatic vegetation and allow wildlife to easily access the water. Low, flat islands can be incorporated into your design to add basking sites for frogs and turtles and nesting sites for birds.

7. Beware of fish

If you wish to provide the best habitat possible for frogs, toads and salamanders then fish should be excluded from your woodland pools. Fish are voracious consumers of frog and salamander eggs and larvae and will exclude many species. Animals like the wood frog and spotted salamander need to be on the move searching for food regularly in order to complete their transformation to land in just one season. These species are highly visible to foraging fish.



The addition or accidental introduction of fish into your pond will likely exclude many species like the spotted salamander that are prone to predation.

10. Enjoy!

Our woodland pools at the Arnot Forest attracted green frogs before they were even completed! Within the first year, the spotted salamanders, wood frogs, and green frogs colonized and laid eggs in the ponds. The result is that we have hundreds of wood froglets hopping around the ponds. Eastern newts have also moved into the ponds, and pickerel frogs, garter snakes, and a wood turtle have been spotted along the perimeter. You too can create a wildlife oasis and enjoy interacting with the animals you attract!

8. Add organic matter

When woodland pools are constructed, retain the organic topsoil layer and reapply it over the finished product. Leaf litter, sticks and logs can also be added to provide hiding places and food for invertebrates, as well as attachment sites for frog and salamander eggs. Rocks, roots, stumps and logs can also be added or retained around the pond perimeter or nearby to provide hiding places for amphibians, reptiles and small mammals.

9. Add plants

You can also add plants to newly constructed ponds to stabilize the soil, attract insect food and provide cover and an additional source of organic material. As vegetation diversity is increased, the numbers of wildlife attracted to the area may increase as well. Native, local species should be used because they are adapted to the local climate, soils and surrounding plant and animal communities, and are more likely to do well. Avoid planting invasive species such as purple loosestrife that can take over a site and minimize benefits to wildlife.