HOW TO: BUILD A VERNAL POND

SIMPLE PROJECTS FOR CONSERVATION

A vernal pond is a pretty sight, but it's even more delightful to hear. A chorus of song emerges from this type of wetland, thanks to the frogs and other creatures that it attracts. Because a vernal pond is ephemeral (seasonal or temporary), it holds water mostly in the spring and summer, then dries up or freezes in the fall and winter. This pattern prevents fish from surviving, but allows a wide variety of amphibians, insects, and invertebrates to thrive. Vernal pools have multiple benefits: They provide wildlife habitat and feeding grounds, attract mosquito-eating critters, reduce runoff, serve as teaching tools, and can even increase property values by enhancing the scenery.

The main methods of building a wetland by reshaping clay soils or by digging deep enough to tap into groundwater are not always feasible. A more manageable approach in some areas is to create a basin using a liner that holds rainwater, according to Tom Biebighauser, a U.S. Forest Service wildlife biologist and wetland expert. He recommends the following technique for making a smaller-scale pond that could fit into your home landscape, schoolyard, or chapter grounds.

You can also refer to Biebighauser's "A Guide to Creating Vernal Ponds" at http://www.fs.fed.us/r8/boone/documents/resources/vernal.pdf, or his recently published book, *Wetland Drainage, Restoration, and Repair* (University Press of Kentucky) for more details about restoring wetlands.

Materials

- Digging equipment—Excavator on tracks
- Rakes, shovels, 3-lb sledge hammer
- Construction level and rod
- Synthetic liner— PVC, 32-ML or thicker. Use the non-toxic "aquatic safe" kind, found in pond stores or by mail order. Avoid tarps, drop cloths, or liners from home supply stores that are typically treated with fungicide or algaecide and are too thin.
- "Geo-textile" pads (2)—at least 8-oz weight. These fabric blankets protect the liner and can be purchased from the same places as liners.
- Wire flags (30)
- Landscape spikes (90, 12-inch spiral type, with washers)
- Utility knife
- 100-foot measuring tape
- Chalk
- Native grass and wildflower seed mix (3 lbs)
- Winter wheat (50-lb bag)
- Straw for mulch (15 bales)
- Native potted aquatic and terrestrial plants (24 recommended)

Scope out your site

Before starting, find out if you need a permit to construct a wetland on your location. Different federal, state, and local requirements may apply. Also, identify any possible utility lines buried on your site and be sure you will not be disturbing anything.

You also need to check that there isn't already a seasonally dry wetland on the site; there would be no point in replacing a natural wetland. Look for signs of aquatic insects or snails, dark stained leaves, or bright green sedges.

Find level ground for your vernal pond. The elevation should not change by more than 2 feet from the upper to the lower edge. If trees are present, locate your wetland between them. A combination of sunshine and shade provides habitat for woodland frogs and salamanders, and for flowering plants.

Size your pond

These instructions are for a 30-foot diameter pond, but you can make one as small as 5 feet across. The synthetic liner should be 40-by-40 feet—larger than the pond size to allow for gradual slopes and soil to be placed over the liner.

The depth of the pond will influence how well it achieves the balance of both holding water and drying up when it should. A maximum depth of 14 inches in the shade and 20 inches in sunlight is optimal.

Dig out the site

Mark a 40-foot-diameter circle using wire flags. Hire an experienced excavator operator to dig out the circle starting with the deepest hole (about 2 feet) in the center. The bottom of the depression should slope gradually (10 percent or less) upward to the flags, like a large satellite dish.

Use the construction level and wire flags to mark the top rim of the wetland, which should be 2 feet up from the center. Use the measuring tape across the bottom of the depression to see if the distance between opposite flags is nearly the same size as the liner.

Remove any sharp rocks, sticks, or other objects from the soil. Even out any holes by filling with soil. Rake the surface sideways and uphill, not downhill, to smooth it out without filling in the depression.

ILLUSTRATION BY **MARIA RABINKY**

Line the bottom

Place one of the geo-textile pads in the depression. Then lay the synthetic liner over the pad. Add another geo-textile pad over the liner (see insert).

Use chalk to mark the top edge of the liner, which should be 2 feet above the bottom of the depression. Anchor the top edge of the liner by driving landscape spikes along the marked line every 18 inches. Trim excess liner with a utility knife, 2 inches or less from the anchored edge.

Cover the liner and pads with at least 6 inches of previously removed soil. Do not allow heavy equipment on the liner or it will leak. Be sure to maintain the same gradual slopes that you created in the depression. This soil layer gives a place for plants to grow and for amphibians to burrow over winter. It also protects the liner from getting torn. Spread excess soil out from the downhill edge to help blend the wetland in with its surroundings.

Fill your wetland

Plant a mix of native seeds in the exposed soil above the water level, and sow wheat for erosion control. Mulch all seeded areas above the water line with straw.

Add branches and logs for better habitat. Plant a variety of native aquatic and terrestrial plants in and around the wetland. Then, either wait for rainfall or use a garden hose or other source to water the plants.

Watch the vernal pond come to life. It doesn't take long for the dragonflies, salamanders, and even ducks to arrive if you've made a welcoming habitat for them.

And don't forget: The pond is supposed to dry up for part of the year—so let it be!

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