

2008 Progress Report: Vernal Pool Creation/Enhancement and Wood Frog Repatriation Project

Cleveland Metroparks Technical Report 2008/NR-06



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That land is a community is the basic concept of ecology, but that land is to be loved and respected is an extension of ethics.

Aldo Leopold

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1.0 Introduction

Vernal pools or ponds typically develop in the spring, when rain and melting snow fill in depressions in the ground. They often dry up as the weather gets warmer. Vernal pools are full of life and are important breeding grounds for amphibians, yet they are also sensitive and very threatened. Ohio has lost over 90% of its original wetlands over the past 200 years (second only to California) as these habitats have been cleared and filled in for housing developments, shopping areas, and agricultural fields.

In conjunction with 2008 Year of the Frog activities, Cleveland Metroparks and Cleveland Metroparks Zoo began a project to restore and create vernal pools within Cleveland Metroparks. Pools identified as having characteristics conducive to long term survival of wood frogs (*Rana sylvatica*) will be repatriated using eggs from large, viable populations within the Park District. Wood frogs are an important indicator species or healthy vernal pool habitat.

Cleveland Metroparks staff from the divisions of Natural Resources, Outdoor Education, and Parks along with the Ohio EPA, Cleveland Metroparks Zoo, and volunteers will create or enhance vernal pool sites within the historical wood frog range on Cleveland Metroparks lands. Where necessary, egg masses will be transferred from healthy populations to repatriate the new or restored vernal pools. Wood frog populations and vernal pool hydrologic characteristics will be monitored periodically for 10 years after construction using staff gauges, funnel traps, and simple ground water wells.

Besides the obvious benefits of creating new and improved vernal pool habitat for wood frogs and other amphibians, the project will increase awareness of the importance of vernal pools through active citizen participation in the project and publicizing the project at all Year of the Frog Leap into Action events throughout 2008. Natural resource managers will also benefit through increased knowledge with respect to the science of vernal pool creation/restoration through the design of the placement of new vernal pools and the extensive monitoring program that will take place throughout the duration of the project.

The objectives of the project include:

1. Restoring and creating (e.g., structure, hydrology, and vegetation) vernal pools primarily in candidate areas for wood frog repatriation.
2. Relocating wood frog eggs to selected vernal pool habitat.
3. Monitoring vernal pools for quality characteristics (e.g., metrics, water fluctuations, water quality, and structure) and wood frog development and survival annually for a period of three years after creation, then in the fifth and tenth year, subsequently.

Project success will be indicated if self sustaining breeding populations of wood frogs and other amphibians exist at the restored and created vernal pool sites. In addition,

public participation in fund raising and restoration activities will be used to verify outreach goals.

2.0 Progress and preliminary results

Considerable progress was made since mid-year when sites were identified in Bedford, Brookside, and North Chagrin reservations. First, a project was initiated at Bedford Reservation to elevate the Buckeye Trail to allow water to pond in nearby oxbow-vernal pools. Previous trail usage combined with water erosion created lower outlet areas, which allowed the pools to drain prematurely in the spring. Through efforts of the Buckeye Trail Association and Cleveland Metroparks staff, a volunteer work party of 18 constructed small retaining walls and placed fill over water control pipes at two locations along the trail (Figure 1). The retaining wall was constructed from recycled plastic lumber. After the base layer settles, additional fill will be placed next spring to raise the trail to its target height.



Figure 1. PVC pipe to control water levels was placed on degraded portion of trail and held in place with concrete prior to trail rehabilitation (left). Volunteer packing trail fill over water control pipe and adjacent to retaining wall (right).

Additionally, volunteers re-routed a section of trail around a recent slide and in the process eliminated trail impact to several wet seeps in the area. Equestrian traffic has been moved around these wetlands to help protect them from further degradation.

Second, 50 native trees were planted at Brookside Reservation to increase canopy cover near an area designated for new pool construction. Trees planted were mostly bur and swamp white oak but also included red oak and tupelo. The trees will eventually provide more continuous forest cover for the existing, created wetland and the yet to be created vernal pools. Cleveland Metroparks personnel used a tractor-mounted auger to dig the holes, and twelve volunteers planted the trees and placed plastic sleeves over the stems to protect them from deer browsing (Figure 2).

Third, all potential restoration sites were evaluated with Cleveland Metroparks site construction staff that will be responsible for the excavation work related to the

restoration and creation projects. Excavation work was delayed this year because we determined that either Corps of Engineer or Ohio EPA permits are needed to modify the existing vernal pools (wetlands) we identified for restoration.



Figure 2. Potted oak tree are planted by volunteers (left). Protective sleeves were then placed on the trees to protect them from deer browsing (right).

In mid-September, representatives from Ohio EPA Surface Water Division visited the sites to give us their perspective on permitting needs. Brookside and North Chagrin reservation sites need permits, and required information is being collected. In addition, we will not attempt restoration efforts at Bradley Woods Reservation. Water levels have changed in this reservation over time because of increased development around the reservation. Soils are thin, and we may do more damage than good by excavating at the site. This site will serve as a donor site for wood frog eggs for repatriation elsewhere.

The vernal pool project served as the keystone for several public awareness and fundraising events during the year. The awareness initiative associated with the Vernal Pool Habitat Project, "Leap into Action," challenged children and families to "LEARN" about amphibians and their habitats, "ACT" to help amphibians and their habitats, and "SHARE" their stories and enthusiasm.

More than 35 conservation and science-related organizations and groups in Northeast Ohio joined Cleveland Metroparks and the Zoo to "Leap into Action" (LIA) and highlight amphibian and wetland habitats through special events, activities, displays, and programs. With "Vern Al Pool" the wood frog as their mascot, LIA partners held more than 100 family-friendly amphibian and wetland events, activities, displays and programs, providing opportunities for people to learn, get involved and even actively participate in amphibian and wetland conservation.

As part of LIA, public education materials were designed and created including a "Vern" the wood frog mascot, a LIA website (<http://www.clemet zoo.com/forfrogs/>), various printed materials and a video highlighting the plight of amphibians worldwide and what people can do to help. In addition, "Leap into Action" events and activities were features in local radio and television programming and in regional and national news.

A presentation was made at the Urban Wetlands Symposium on September 24, 2008 at Cleveland Metroparks Zoo. The symposium was sponsored by the Friends of Big Creek, which is a group dedicated to the conservation and enhancement of the Big Creek Watershed: the Lower Cuyahoga River's third largest and most urbanized. The Brookside Park vernal pool project is within this watershed.

3.0 Plans for 2009

Permit applications will be submitted to the US Army Corps of Engineers and the Ohio EPA to allow restoration work to proceed at North Chagrin and Brookside reservations. The delay has worked to our benefit allowing us to evaluate amphibian populations and pool characteristics prior to restoration activities and also to identify additional sites for vernal pool creation.

A new faculty member at Case Western Reserve University will include project sites at North Chagrin Reservation as part of his research on amphibian population genetics and colonization dynamics of created vernal pools. His assistance and research will lend additional value to our monitoring efforts and provide an avenue for publishing results. Moreover, the Division of Natural Resources at Cleveland Metroparks is contributing additional water level recorders for use in an intensified monitoring program that will begin this spring. Because of this collaborative endeavor, sites are being identified at North Chagrin where new pools can be created next fall in addition to the existing pools targeted for enhancement efforts.

New pools will be excavated at Brookside Reservation as planned. Three to four pools approximately 10 meters in diameter will be placed under the canopy and also in the broken canopy area where more trees will be planted. New signs will be created to help interpret the activities and goals of the project. We will continue to control invasive species at this site including *Phragmites*, narrow-leaf cattail, and crown vetch.

As mentioned previously, an additional layer of soil will be placed at the Bedford Reservation trail restoration sites to bring the trail to final grade. Staff gauges or water level recorders will be placed to monitor water levels, volunteers or park staff will monitor amphibian response to the improvements. We hope to see natural colonization of these pools by known Wood Frog populations located approximately 500 meters north of the restoration sites.

4.0 Fundraising Activities

Over the past year, a total of \$17,050 was raised to pay for activities and supplies related to the vernal pool creation and restoration project. Grants were provided by the Cleveland Zoological Society, the Aquarium & Zoo Facilities Association's Clark Waldram Conservation Fund, the Association of Zoos & Aquariums Amphibian Taxon

Advisory Group, and the Cleveland Metroparks Zoo Cans for Conservation Fund. Generous contributions were also made by Bob Evans Restaurants of Northeast Ohio and Shearer's Foods.

Funds and awareness were also raised through the LIA Passport program. Kids were encouraged to participate in LIA by purchasing a special LIA Passport for \$1 from many of the LIA partners, with 100% of the proceeds supporting the Vernal Pool Habitat Project. Kids wore their passports to LIA events/activities and collected a special sticker on their passport at each one attended. The passport then provided admission and earned them special prizes at a free LIA party at the Zoo at the end of the year.

5.0 Expenditures

The Bedford Reservation trail restoration project used \$105 for PVC pipe, concrete, rebar, and a drill bit. Potted trees (50) for the Brookside Reservation project cost \$750, and the two water level recorders totaled \$1390. Total expenditures for 2008 were \$2245.00. Significant expenditures are planned in 2009 for excavation equipment rental, plant materials, herbicides, signage, and additional monitoring supplies.