

THE FORKED TONGUE

THE MONTHLY NEWSLETTER OF THE GREATER CINCINNATI HERPETOLOGICAL SOCIETY

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The Editor's Den

Thanks to Patricia Keller for sending in several articles for us.

Calendar of Events

December 5, 2007 – Holiday Meeting Golden Corral

Holiday Meeting

Our annual holiday meeting will be held at **6:30 pm** at the Golden Corral on 488 Orphanage Rd, Ft Wright, KY. This is located right off of I-275 at the KY17 exit (Exit #80)

The prices are as follows:

Adult 13 and up - \$9.89 + \$1.79 for a drink

8-12 4.99 drink is included

4-7 3.99 drink is included

3 and under free

Pay your own at the door. Tip is not included.

Vernal Pools: An Overlooked Wetland

by Patricia Keller

While strolling through the woods in the early spring, one may notice bodies of standing water that are only present in the winter and in the spring. Although these bodies of standing water appear to be devoid of any aquatic life, their appearances can be deceiving. These wet areas may actually be rich in both numbers and diversities of aquatic life. These temporary (ephemeral) bodies of standing water are commonly called vernal pools. (Vernal is from the Latin terms, *vernalis* or *vemus*, which means "spring".)

Vernal Pools are usually filled with water during the wet months of both winter and spring, or at least for about 2-3 months. These wet periods are also called hydro-periods. Later on in the season, these same pools will lose their water when it evaporates in the warmer temperatures. By summer these pools may be completely dry.

Vernal pools are usually found in wooded areas or in

areas that are surrounded by trees and other vegetation. Their location is usually a contained depression in the ground, which frequently overlies impermeable soils, sub-soils, and bedrocks. These ground depressions can either be natural or artificial. These depressions are filled with water during the winter and spring as a result of rising water tables, rain, and melting snow. There should not be any permanent inlets or outlets to these pools. These vernal pools should also contain leaves, twigs, and other organic debris for use as both food and cover for the aquatic fauna.

A vernal pool can be almost any size or shape. They can range from just a few square feet to several acres. Although most vernal pools are shallow, a few may be up to three feet in depth. Pools that stay filled longer in the season usually have more diversity of aquatic fauna.

Vernal Pools are also unique in that there are no permanent breeding fish present. Fish could not survive in ephemeral pools. Not only are these pools dry in the summer, they are too shallow during their hydro-period, they have low concentrations of oxygen, and they freeze up in the winter. If fish were present in these pools, they would eat the eggs and the larvae of the vernal aquatic fauna.

Although there are no fish in these pools, there still are other predatory species within or near these pools. Some of these predators are large amphibian species, such as the Green Frog and the Bullfrog, both of which are True Frogs. Other predators may be turtles, such as the Wood Turtle, the Spotted Turtle, the Blanding's Turtle, the Midland Painted Turtle, the Mud Turtle, and the Common Snapping Turtle. Even birds, such as the Great Blue Heron, or mammals, such as the Raccoon, will prey upon the eggs or the larva.

The aquatic fauna that breed within these vernal pools have evolved the ability to adapt to the seasonal water levels of those pools. These species must complete their entire life cycle during those few months of that pool's existence. As the season progresses and the water temperature increases, water evaporation increases, and the water's oxygen content decreases. If

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a pool freezes late in the season or dries up early in the season, those inhabiting fauna may perish. Most of the aquatic fauna of vernal pools consist of amphibians and crustaceans. There are two main groups of faunal species that inhabit the vernal pools: the obligate species and the facultative species

Obligate Species

The obligate vernal pool species are species that only inhabit the vernal pools. The presence of these species would be a direct indicator of a vernal pool. Examples of these faunal species are amphibians, such as the Mole Salamanders, the Wood Frog, and the Eastern Spade foot Toad. Some of the Mole Salamander species that are found in Ohio's vernal pools are the Small-Mouthed Salamander, the Jefferson Salamander, the Tiger Salamander, and the Spotted Salamander. On rainy spring nights, when the temperatures are above freezing, the obligate species venture out to the vernal pools to eat, to mate, and to lay their eggs. They are usually stimulated to migrate by higher temperatures, higher humidity, lower atmospheric pressure, and the smell of food. If the rain stops, some of these species may stop to take cover until the rain returns. Some species migrate to these pools by traveling in straight lines and by following the same routes every year. Some species may only visit the very same pools where they were born and may travel as far as one mile to reach their pool. When the amphibians arrive at the pools, they usually congregate in large numbers.

These large groupings of amphibians are called congresses. The males usually arrive before the females. If the spring is dry, the females may not arrive at all. For several consecutive nights, these amphibians may return to visit their vernal pools. Depending upon the species, a single female may lay hundreds or even thousands of single eggs in one egg mass. Only about 10% of those eggs will ever make it to adulthood. When they are finished, many of the adults return to their subterranean dens.

Non-amphibian obligate species that frequently inhabit vernal pools are the invertebrates, such as the Fairy Shrimp (*Eubranchipus* spp.). The Fairy Shrimp are tiny ½ inch freshwater crustaceans. They have stalked compound eyes, two sets of antennae, eleven pairs of legs, and swim upside down. While swimming, their legs create small currents that allow algae, bacteria, detritus, protozoa, rotifers, and smaller invertebrates to reach their mouths. This kicking motion by their legs also brings much needed dissolved oxygen into the

water. Fairy Shrimp may only live for a few weeks and live out their entire lives in waters of the vernal pools. Unlike the amphibians, the Fairy Shrimp have very few predators. The adult amphibians do not eat them and the adult aquatic insects have not yet arrived. However, some aquatic insect larva species will eat the Fairy Shrimp.

The eggs of the Fairy Shrimp will stay dormant for a year or more. Some eggs may stay dormant for over 20 years. These dormant eggs must be able to endure periods of cold and warm and wet and dry before hatching. During the summer's dry spell the eggs remain at the bottom of the dry pools, usually in the leaf litter. These eggs will probably hatch during the next spring's wet spells. Because the Fairy Shrimp cannot leave the water, they must move from one pool to another by other means. During the wet season, the eggs may be carried from one pool to another by attaching to a traveling animal species, such as a predatory animal. During the dry season, the eggs may some times be carried on the wind from one dry depression to another.

Facultative Species

The facultative vernal pool species are able to inhabit both vernal pools and other types of wetlands, even those with fish. The presence of these species is usually an indirect indicator of a vernal pool. Examples of these faunal species include two species of non-Mole Salamanders: the Eastern Red-spotted Newt and the Four-toed Salamander. Other amphibians may include the Spring Peeper, The Western Chorus Frog, the Mountain Chorus Frog, the Gray Tree frog, the Northern Leopard Frog, the Pickerel Frog, the Eastern American Toad, and the Fowler's Toad.

Threats to the Vernal Pools and their Inhabitants

Because most vernal pools are both small and dry during part of the year, they are frequently overlooked by most people. Some people may consider them to be nuisances and will try to get rid of them.

Some people may try to drain these vernal pools during the wet months. During the dry months, some people may try to fill the depressions with soil or other fill materials. Even filling in the depression with logs, branches, twigs, leaves, grass clippings, or other yard wastes can be damaging to the vernal pool.

Removing any vegetation or other debris, such as leaves, fallen logs, or rocks from the pool can be damaging to both the pool and the aquatic fauna.

Removing any adjacent trees for logging or for other

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deforestation operations would decrease shading of the pool, raise the pool's water temperature, increase the evaporation rate, decrease the oxygen content of the water, and increase silt runoff into the pool. There would also be less organic debris in the pool for food, cover, and places to attach the egg masses. Removing trees from the surrounding areas would also deprive the amphibians of shade, which they would need to prevent desiccation. Removing the leaves, fallen logs, and rocks of the adjacent surrounding area would remove the dens sites of many of the amphibian species.

Altering the surrounding habitats, such as for agricultural use, can be damaging to the pool and to the aquatic fauna. Putting in sod or crops usually includes adding fertilizer and pesticides. These chemicals could leach into the vernal pool and adversely affect its water quality.

Making ruts or other forms of scarification in the forest floor can affect amphibian migrations. They may create barriers to their migration. They may also fill with water, encourage the amphibians to breed there, and then dry up before the juvenile amphibians can mature.

Adjacent road construction will also have adverse effects for the vernal pond. Roads will divide and fragment the surrounding habitat. Amphibians crossing a road to reach their pools are most vulnerable to either automobile traffic or desiccation. Any salt, oil, antifreeze, heavy metals, or other chemicals that get on a paved road may wash into a vernal pool and adversely affect its water quality.

Another problem that affects vernal pools is acid rain, especially in the Northeast. The acid rain lowers the pH of these pools, which may inhibit the development of amphibian eggs.

Even light and sound can affect the amphibians. The lights may temporarily blind some of the amphibians, which would make them more vulnerable to predators. The lights may also attract some of the amphibians and lead them away from the vernal pools. Excessive noise can interfere with frogs' mating calls.

Saving the Vernal Pools and their Inhabitants

Once a vernal pool has been identified, measures can be taken to ensure its protection.

The vernal pool must never be drained or filled. Even digging the in the bottom of the depression during the dry season can breach the layers of impermeable soils, sub-soils, and bedrock.

If possible, the surrounding habitat should be protected for up to 1500 feet beyond the vernal pool's high water

mark. This would not only help protect the pool's water quality, it would also protect the habitats of the migrating amphibians. It would also be best if the area were closed to unauthorized persons and their pets during the breeding season.

If there is more than one vernal pool within an area of about 1/4 mile, then treat this cluster of pools as one pool and protect the access between these clustered pools. The juvenile amphibians from one pool may disperse to the other pools to help replenish any declining populations. These inter-pool migrations will also maintain the genetic diversity of that species' population.

If there is a road nearby, there are two ways to protect the migrating amphibians. One way is to place large square box culverts (about 2-3 feet on each side) under the road at 20-30 foot intervals and to use adjacent curbing to channel the amphibians into these culverts. The other way is to close the road to vehicular traffic at night during the breeding season. Unfortunately, the first way is costly and the second way is not practical for most roads, especially the roads with heavy traffic.

Conclusion

Amphibians and other aquatic species all over the world are declining in numbers and some species may even be in danger of becoming extinct. Amphibians are good bio-indicators of our environmental quality. If they are in trouble, then perhaps higher life forms, such as humans are also in trouble. Therefore, it is important that these species are not harmed.

Perhaps the greatest threat to amphibians is the loss of suitable habitat. As the habitats go, so do the amphibians. It is important that these vernal pools are protected to ensure that the amphibians are protected. Aside from providing habitat for various aquatic faunal species, vernal pools serve other purposes too. Vernal pools play a vital role in both erosion and flood control and in groundwater recharge.

References

Vernal Pools: Pond and Brook

By Michael J. Caduto

Best Development Practices: Conserving Pool Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States

By Aram J. K. Calhoun, Ph.D. and Michael W. Klemens, Ph. D.

Forestry Habitat Management Guidelines for

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Vernal Pool Wildlife

By Aram J. K. Calhoun, Ph. D. and Phillip de Maynadier, Ph. D.

Vernal Pools: Natural History and Conservation

By Elizabeth A. Colburn

Lakes, Ponds and Temporary Pools

By David Joseph

A Field Guide to Vernal Pools

By Leo R Kenney and Matthew R Burne

Eastern Forests

By John C. Kricher and Gordon Morrison

Discover Nature in Water and Wetlands

By Elizabeth Lawlor

Walking the Wetlands

By Janet Lyons and Sandra Jordan

Amphibians: National Audubon Society Field Guide to North American Reptiles and Amphibians

By John L. Behler and F. Wayne King

A Field Guide to Reptiles and Amphibians of Eastern/Central North America

By Roger Conant and Joseph T. Collins

The Frog Book

By Mary C. Dickerson

Amphibians and Reptiles of the Great Lakes Region

By James R Harding

Amphibians and Reptiles of Pennsylvania and the Northeast

By Arthur C. Hulse, C. J. McCoy, and Ellen J. Censky

Frogs: A Wildlife Handbook

By Kim Long

Salamanders of the United States and Canada

By James W. Petranka

Amphibians and Reptiles

By Thomas F. Tynning

WEBSITES:

www.vernalpool.org/

www.epa.gov/owow/wetlandsltvoes/vernal.html

www.lynchburgbiz.com/virginiasvemalpools/

www.nhaudubon.oqdconservation/vernal.htm

www.anr.state.vt.us/reflect/vemalpools.htm

www.umaine.edu/wetlands/vemal.htm

www.state.ni.us/dep/f~/VPOolart.htm

ctamp.homestead.com/Vemalpool.html

www.asri.org/vemal.htm

www.maine.gov/del.lblwq/wetlandslvemal.htm

www.uri.edu/cels/nrs/paton/

www.gigglemoose.com/artcl-vemalpools.htm

www.massaudubon.org/printwildlife.ohl?id=58

www.greenfuture.org/projects/vernal_pools.html

www.state.ri.us/demlprograms/benviron/water/wetlands/vernal.htm

www.ontariovernalools.org

national zoo.

si.edu/publications/zoogoer/199511/vemalaffairs.cfm

www.maineaudubon.org/conservation/citsci/vinsert.pdf

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Classified Advertising Policy

GCHS Members may run a free classified ad of 7 lines or less at no charge for an unlimited time; however, the ad will be canceled after one month unless the editor is informed to continue it. Please include scientific names for the animals with your ad as well as your phone number and area code.

Ads of up to 7 lines for non-member are \$2 per issue; ad charges for items more than 7 lines long are as follows:

Business card size	\$3 per issue
1/4 page	\$6 per issue
2 page	\$10 per issue
Full page	\$20 per issue

The GCHS is not liable for the quality of the merchandise advertised. The Society also reserves the right to refuse any ad considered inappropriate.

Requirements for Submitting Articles to the Forked Tongue

Articles can be submitted via CD or hard copy to Editor, GCHS 11470 Gatch Hill Road, Aurora, IN 47001.

Articles may be e-mailed to Grady Calhoun at gradycalhoun@embarqmail.com.

Black and white photographs can be included with articles. Photo submissions should include your name, phone number, and description of photo on the back. Photos can be returned.

All time dependent submissions must be in the editor's possession no later than the meeting previous to the publication.

Classifieds

Discount: A 10% discount is offered to all card-carrying members of the GCHS at *All Creatures Animal Hospital*. Dr. Dan Meakin, All Creatures, 1894 Ohio Pike, Amelia, OH 45102, 513-797-7387.

Discount: A 10% discount is offered to all card carrying members of the GCHS at Dr. Dahlhausen's Veterinary Clinic, 5989 Meijer Dr., Suite 2, Milford, Ohio 513-576-0131

(Number to left of decimal indicates males; number to right of decimal indicates females; number to right of second decimal indicates number of unknown sex. For example, 3.2.1=3 males, 2 females, and 1 unsexed specimen)

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Currently Held Positions

President	Grady Calhoun	(812) 926-1206	Vice President	Dean Alessandrini	(513) 347-0099
		(513) 564-6041	Editor	Grady Calhoun	(812) 926-1206
Treasurer	Peggy Fille	(513) 528-4452			(513) 564-6041
Sergeant-at-Arms	Bruce Fille	(513) 528-4452	Education Committee Chairman		
Advisor	Vacant		Peggy Fille		(513) 528-4452
Secretary	Kyle Becker	(513) 831-4898			

About the GCHS

The Greater Cincinnati Herpetological Society holds monthly meetings which typically consist of a short business section, a refreshment intermission, and a program related to herpetology. Both members and nonmembers are invited to attend. Membership is open to anyone with an interest in reptiles and amphibians. New members may sign up by mail or at the monthly meetings. Members receive monthly issues of *The Forked Tongue* and free classified advertising. Annual dues should be directed to the secretary at the society's mailing address, according to the rates below:

Student	\$10.00	Corresponding	
	\$10.00		
Individual	\$15.00	Sustaining	\$25.00
Family	\$20.00	Institutional	\$30.00
Contributing	\$50.00		

Why Be a Member?

Receive monthly issues of *The Forked Tongue*

- Meet individuals knowledgeable about herpetoculture
- Have access to captive-bred herps and feeder animals
- Participate in society-sponsored field trips, and outings.
- Receive a 10 percent discount on herp-related items and services when you show a valid membership card at the following establishments:

Delhi Pet Center	(513) 451-4015
Kentucky Reptile Zoo	(606) 663-9160
Harrison Pet Center	(513) 367-1115
All Creatures Animal Hospital	(513) 797-7387
Dr. Dahlhausen's	(513) 326-2368

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