

## FOCUS ON VERNAL POOLS

### Dr. Klemens on their Role in the Environment

By Janine Stankus

What is a vernal pool? That is the question circulating through the Town of Washington. Despite attempts by several parties to provide answers to this query, the definition has been deemed "nebulous" by various members of the public.

The United States Environmental Protection Agency (EPA) classifies vernal pools as a type of wetland, under the subcategory of "non-tidal marshes." They are defined as "seasonal depressive wetlands that are covered by shallow water for variable periods from winter to spring, but may be completely dry for most of the summer and fall," which "range in size from small puddles to shallow lakes."

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The term "vernal pool" once referred only to those found in the Mediterranean-type climates of the west coast. The label has now expanded to include those ephemeral wetlands nationwide. According to the EPA, vernal pools in the midwestern and eastern parts of the country are particularly important to amphibians.

"Vernal pools are wetlands, and they can be defined by a variety of methodologies, as wetlands, and also a specific type of wetland known as a vernal pool," wrote Dr. Michael Klemens in a letter addressed to the Town of Washington town board.

Klemens, research conservationist at the Cary Institute of Ecosystem Studies, is a voice of authority on the subject of vernal pools. He holds a doctorate in conservation biology and research from the University of Kent in the United Kingdom. In 1997 he founded the Metropolitan Conservation Alliance, a program that attempts to reconcile conservation science and land use planning. This concept is the basis of his publication "Best development practices for conserving vernal pool breeding amphibians in commercial and residential developments in the northeastern United States," co-authored by Dr. Aram J.K. Calhoun.

According to Klemens, the extent of scientific literature on the subjects of vernal pools and how to best develop near them refutes any claims that these are vaguely understood ecosystems. "Vernal pools continue to be a topic of widespread research interest and public concern as they have important functions known as ecological services," he wrote.

The services that these pools provide are twofold. Biologically, vernal pools provide critical breeding grounds for several different species. According to Erik Kiviat, executive director of Hudsonia, Ltd., the marbled salamander and the Jefferson salamander are two near-endangered species in Dutchess County that require vernal pools. The spotted salamander and wood frog also need these habitats to breed successfully. "By evolving to breed and lay eggs in vernal pools, these amphibians have been able to escape predation of fish," explained Kiviat.

Vernal pools also carry out important hydrological functions, including the recharge of rainwater into subsurface aquifers, the filtration and detention of floodwaters, and nutrient cycling. This not only maintains ecological balance but also protects water supply. "Aquifer recharge and detention and filtration of overland water flows directly affects the quantity and quality of drinking water," said Klemens.

The New York Department of Environmental Conservation only regulates freshwater wetlands that are 12.4 acres or larger. Vernal pools are generally smaller. According to Klemens, small wetlands in the Hudson Valley and Southern New York are disappearing at an "alarming rate," due to increased development. The New York State Freshwater Wetlands Act permits local governments to extend regulatory control to wetlands smaller than 12.4 acres in size and to adopt more stringent standards than those issued by the state.

"A growing number of towns in the Hudson Valley are adopting home rule regulatory authority over smaller wetlands," Klemens wrote in his letter to the board. A review of wetlands laws in Dutchess County compiled by the Hyde Park Conservation Advisory Commission reveals that Clinton, Fishkill, LaGrange, Pawling, Pleasant Valley, Poughkeepsie, and Wappingers have all adopted laws protecting wetlands as small as half an acre in size. Beekman, East Fishkill, Rhinebeck, and Washington are listed as towns considering such legislation.

The proposed Wetlands and Watercourses Law of the Town of Washington states that it intends to "protect the health, safety and welfare of the citizens of the Town of Washington by preventing despoliation and destruction of wetlands, vernal pools, water bodies and watercourses..." At the most recent public hearing, questions were raised as to the necessity of designating vernal pools separately if they are, by definition, wetlands.

"Often it is important to specify that the intent of the ordinance is to encompass all wetland types," Klemens said in response, "including seasonal wetlands."

If the majority of vernal pools in the Town of Washington were compromised or destroyed, the environmental repercussions would be numerous. According to Klemens, these may include flooding, diminished water supply, pollution of the water supply, erosion caused by streams carrying excess water due to the loss of retention sources, loss of wildlife habitat, and restriction of water-dependant activities such as agriculture.

Klemens has been a valuable resource for the town throughout the process of this legislation. "I think it's important to get some good information into the discussion," he said. "You really have to go through this to really get people to understand."

The town board, cognizant of the haze still surrounding the subject of vernal pools, has left the public hearing open. Board members will meet on Thursday, April 30 at 7 pm in Town Hall for a round table discussion on the proposed ordinance. This meeting will be open to the public. The hearing will continue at the board's next regular meeting on May 14.