

THE UPPER SUSQUEHANNA COALITION EPHEMERAL WETLAND PROGRAM

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Most wetland scientists will acknowledge the fact that isolated wetlands are overlooked in the majority of wetland regulations as well as in protection strategies. One group of isolated wetlands particularly easy to overlook are ephemeral wetlands. Whether on account of their size (being that they are generally less than an acre) or due to the fact that they are isolated, ephemeral wetlands are often excluded from the consideration of conservation and preservation programs. The Upper Susquehanna Coalition (USC) is attempting to remedy this oversight through the incorporation of ephemeral wetland protection, enhancement, and development into its well-established wetlands program. To promote the protection of ephemeral wetlands the USC will initiate public education programs, develop local support, create a database of existing vernal pools, develop protocols for ephemeral wetland identification and development, and create and monitor several ephemeral wetlands. All of these projects will focus on furthering the recognition of ephemeral wetlands as important components of the landscape. The USC believes that some of the best public outreach opportunities are through the enhancement or the development of ephemeral wetlands and then through bringing the public to see how ecologically important this wetland type can be. By way of partnering with several universities including Cornell and Binghamton and organizations such as the Susquehanna River Basin Commission and the Izaak Walton League of America, the USC plans complete this project by utilizing as much existing expertise as possible.

The Upper Susquehanna Coalition

A Brief Overview

Who We Are :

- WQCC coalition
- Located in NY and PA
- 14 Counties
- Represents the entire basin that drains through NY
- MOU's between counties to facilitate work
- Tioga SWCD is the administrator

What We Are Made of :

- 94 sub-watersheds
- Made up of 7500 sq. mi.
- 13,800 miles of streams
- 17,000 miles of roads
- Basic Landuse figures are as follows-
Forest — 69%
Agriculture — 28%
Residential — 1%
Open Water — 1%
Commercial/Industrial — 0.5%
Wetlands — 0.5%

What We Do :

- Support local community efforts for strategic planning
- Facilitate watershed-wide programs including environmental assessments and farm inventories
- Support Sustainable Agricultural - database development
- Development of GIS based data layers to aid in planning and data collection
- Utilize the Multiple Barrier Approach for watershed restoration and planning



Using a network of local water quality professional to develop, support and deliver watershed programs

The Current USC Wetland Program

The Upper Susquehanna Coalition (USC) has developed a "Multiple Barrier Approach" for planning and implementing restoration projects on a watershed basis. The MBA addresses the issue (such as flooding, streambank erosion, excessive sediment/gravel deposition or degraded fish habitat) at the **source** (e.g., headwaters), **across the landscape**, and in the **stream corridor**, as well as **programmatically** (e.g., regulations, training). By developing multiple projects to address problems, progress can continue and tangible results can be achieved even with smaller funding levels. This approach *suggests* planning, education, implementation and regulatory solutions to local stakeholders for their consideration. Multiple barriers can increase the probability of success and help capture stakeholder interest by demonstrating progress through implementation.

A successful Multiple Barrier Approach relies on a firm understanding of how each watershed functions in relation to its hydrological characteristics, drainage patterns, topography, land cover, land uses and misuses, precipitation events and other parameters. Flooding, streambank erosion, gravel deposition and nutrient loading are common problems in the USC Basin and priority USC issues. One key component of the MBA that begins to address these issues is wetlands because of their flood attenuation capacity. **Why Wetlands?** A first consideration in watershed restoration planning efforts where flooding and streambank erosion are major issues should be an investigation of the potential for wetland construction and enhancement. Wetlands, especially in tributaries, tend to desynchronize flood peaks through their water holding capabilities as well as their vegetation that retards surface flow (Carter et al. 1978). Placement of wetlands in the upper reaches of a watershed will impede surface runoff and can reduce downstream erosion (Baker 1993). Novitzki (1985) found that watershed with four to five percent wetlands can have a 50 percent reduction in peak flood flows compared to a watershed that had none. Indeed, if wetlands and natural stream design are considered in a watershed plan, development should be an early priority in case the wetlands affect stream-flow characteristics.

The overall goal of the USC Wetland Program is to develop a wide array of wetlands that meet the specific criteria of the funding programs, while attempting to shift the designs toward those that maximize local benefits. Wetlands can be relatively quickly built compared to projects that require more data or funding and thus are an ideal "first project" to jumpstart interest in a larger watershed restoration program.

Grant Requirements

This project was made possible by a grant from the Environmental Protection Agency making it necessary to investigate and accomplish the various requirements outlined by the proposal. These requirements include:

- Development of a reference library of pertinent literature on ephemeral wetlands
- Development of a set of protocols and criteria in the form of a user-friendly guide that can be used to facilitate ephemeral wetland protection and development on a watershed basis. Topics to be covered should include:
 - Site parameters for ephemeral wetland construction
 - Ephemeral wetlands and groundwater recharge
 - Special considerations needed to successfully complete a project
 - The development of an outreach method that stimulates local interest
- Consulting experts in the field who may have information pertinent to protocol development and ephemeral wetland construction
- Construction of demonstration wetlands to use as a learning facility
- Monitoring of existing as well as constructed ephemeral wetlands

his project began in October of 2002, and has made much progress in such a short amount of time. The library of information on ephemeral wetlands has been established and is constantly growing, many wetlands experts have been consulted, but there are still many to speak with and learn from. The protocols development has begun, and many sites have been selected for development.

Why Ephemeral Wetlands?

Our current wetland program looks primarily at flooding and other issues that are widely recognized by property owners (especially those experiencing flooding) but often the other benefits that are associated with wetlands, and other types of wetlands that do not necessarily provide those types of functions are overlooked.

Based on the definition provided by the EPA, "ephemeral wetlands are depressional wetlands that temporarily hold water in the spring and early summer or after heavy rains. Periodically, these wetlands dry up, often in mid to late summer. They are isolated without a permanent inlet or outlet, but may overflow in times of high water. Ephemeral Wetlands are free of fish, which allows for the successful breeding of certain amphibians and invertebrates".

Other terms that can be used to describe this group of wetlands, or even a genus within this group include: ephemeral pools, vernal pools, vernal ponds, temporary pools, seasonal forest ponds.

One of the most widely recognized genre of ephemeral wetlands is the Vernal Pool. The term originated in California where these pools would fill with water in spring (i.e. vernal) and then dry by late summer only to be filled again the following spring. Although ephemeral wetlands in the Northeast tend to fill with water in late autumn and remain wet until late summer the term "Vernal pool" still is often used. Although this type of wetland could provide

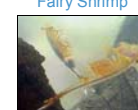
some flood attenuation benefits by simply detaining surface water, their most recognized benefits are related to providing breeding habitat to a specialized group of amphibians. The species that are considered to be "obligate" vernal pool species include the following -



Wood Frog



Spotted Salamander



Fairy Shrimp



Spadefoot Toad



Jefferson Salamander



Blue-Spotted Salamander

Developing Ephemeral Wetland Protocols to Enhance the USC Wetlands Program

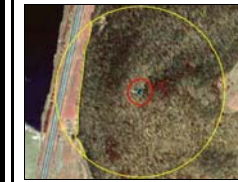
The requirement that we develop protocols for ephemeral wetland identification, development, and monitoring has led us to consult experts and existing information from throughout the United States. The protocol development process will be one of constant revision as new information is available. Initially our program will be based on the successful programs in Massachusetts and Maine but will eventually expand as we test out these protocols and adapt them to meet our specific needs. The development of these protocols will eventually provide a uniform reference throughout the Upper Susquehanna basin that includes definitions, identification criteria, directions for monitoring as well as information on how to set up a local ephemeral wetland program.

Creating a Database of Ephemeral Wetlands Throughout Our Watershed

The creation of an ephemeral wetland database will depend on the involvement of everyone throughout the Upper Susquehanna Coalition watershed.

We are using Geographic Information Systems (GIS) to catalogue and map all of our vernal pools. This system has been chosen because of our extensive background with GIS, as well as the vast array of possibilities for data manipulation that it provides.

Much of the USC program utilizes GIS for evaluating, cataloging, and modeling. The worksheet to the right represents one of the series of data collection dialogs that the USC uses to evaluate and catalogue potential sites for wetland restoration and creation. Using the same type of technology, the USC is in the process of developing a dialog based on the protocols for the initial delineation of the ephemeral wetland. We are finalizing a worksheet for monitoring these sites that utilizes a time series to catalogue data at the same point over a sequence of evaluations. For the evaluation of vernal pools specifically, GIS can be extremely helpful in documenting the surrounding landuse of existing and potential vernal pool sites. The map to the left shows a vernal pool in the center surrounded by the 100 foot vernal pool envelope (in red) as described in the MCA Technical Paper Series: No. 5 by A. Calhoun and M. Klerns. This envelope is undisturbed, a condition that is considered to be a requirement for a successful vernal pool. The yellow circle surrounding the envelope encloses the 750 foot "Critical Terrestrial Habitat" buffer which delineates the habitat for most amphibians breeding in this pool. This area should be minimally disturbed, with the minimum forest percentage being 75%. For the pool pictured here, the acreage of the forest in the Critical Terrestrial Habitat buffer is 50, or over 89%.



Our initial goal for the database is to map and classify 10 ephemeral wetlands in each of our 11-digit HUA watersheds. Considering the fact that there are 94 11-digit HUAs in our basin, this will be a substantial number of pools to locate. This goal can only be achieved through the participation of people all throughout the basin, including many private land owners.



Introducing the Public to Ephemeral Wetlands

Most of the members of the Upper Susquehanna Coalition have been introduced to our ephemeral wetlands project, and are aware of our search for existing sites to monitor and catalogue. We have distributed field guides for identifying these wetlands and for determining the amphibians that may exist there.

Informing the members of the USC is only the beginning. From here we will move to informing the local landowners of the many important features of ephemeral wetlands. The ultimate goal is to set up a program modeled after the Vernal Pool Association of Massachusetts that utilizes schools and teachers to teach students about ephemeral wetlands. This grant will give us the opportunity to achieve some of these goals through the purchasing of informative material, as well as through the construction of ephemeral wetlands in locations that can promote education the most.

We plan to begin our public outreach program with an ephemeral wetlands workshop in September of 2003 which will include an introduction to ephemeral wetlands, as well as a session on their construction.



To visit our Ephemeral Wetlands website go to: www.u-s-c.org/html/vernalpoolpage.htm