



Pennsburg Nature Preserve

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During early 2001, members of the Pennsburg Shade Tree Committee decided that the Borough's one and only "natural" park, inherited from a local golf course, needed some serious work in order to meet its namesake: the Pennsburg Nature Preserve.

The Committee requested the expertise of Munro Ecological Services, Inc. (MES) to provide inventory and concept planning with the intent that the Committee would search for grant funding to do the planned work. Some of the concerns of the Committee were that the stream in the park was badly eroded, there was too much grass to mow, the park wasn't "natural" and it lacked decent riparian vegetation and floodplain forest. The Committee agreed with the consultant that ecological restoration was needed.



Macoby Creek, which runs through the park, suffered from steep eroding banks

The consultant drew up a **concept plan** that includes:

- 1.3 acres of conversion from mowed lawn to native tallgrass meadow

- 490 feet of streambank stabilization using MES structural fascines and timber crib face bio-structural design (*these are structures with specifications designed by MES staff*)
- Series of 4 stream sills, to begin elevating the incised channel back to its pre-disturbance level
- Planting of two acres of floodplain forest where golf course mowing had recently ceased
- Planting a series of 15 native shrub and tree patches in the existing mowed lawn to: provide visual variety in the stark lawn setting; include habitat for native birds and small animals; cluster examples of native riparian shrub species; and reduce mowing requirements
- A walking trail around the meadow and along the stream

The Borough accepted the concept plan and the Committee wrote a grant application for the Pa. Department of Environment Protection's (DEP) Growing Greener grant program, while its consultant prepared detailed plans and got the permit for the work stream work from DEP. Both the grant (with slightly less funding than requested) and the permit (with requirement for proof that bog turtles were not present) were approved and work got underway.

During 2005 most of the restoration work was performed. The work formula was for the ecological consultant to provide direction, assistance and oversight of the installation team: the "volunteers." Even with a novice crew the work still had to be done properly and according to design and permit, or it would not succeed.



The volunteer groups used on various days throughout the season included Pennsburg Borough staff and elected officials including some family and friends, biology and science classes from local middle and high schools, a group of driving or drug offenders doing community service time, a group of graduate students from the University of Pennsylvania working on a “team” project, members of a local Quaker Meeting, and a very willing crew of workers from the local county prison working for time off from their sentences (who regarded their trips to this suburban small town as “going to Mayberry”).



These middle school student volunteers from the Upper Perkiomen School District carried structural fascines to Macoby Creek in order to help stabilize the banks

The volunteers, under the supervision of the consultant, were involved in a variety of park improvement projects, including:

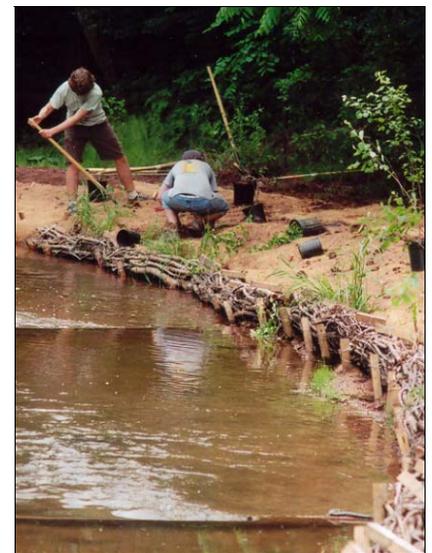
The streambanks – The series of seven different bio-structural formulae were used and worked as expected, and the previously excessive rate of bank erosion was stopped. It was noted that in one section of 200 foot length, a stream bank of 2 feet in height eroded between one and three horizontal feet in a two year period just prior to the restoration work (many tons of soil, if you do the math).

The plantings in most of the bio-structures grew rapidly and have begun to perform their long-term rooting and erosion control function. The few places where initial plantings in the interstices of the log structures did not grow, are gradually being replanted during yearly Earth Day events. The Macoby Creek is now stable through the Nature Preserve. Only a few areas are in need of small structure repairs.



A stream sill and planted structural fascines

The stream sills- The sills began to work immediately upon installation and have performed the intended function of re-accumulating gravel beds in the stream bed. The previous stream scouring and incision (down cutting) were the result of increased flood flows resultant from development of the headwaters.



Volunteers planting native trees and shrubs in the riparian buffer. Structural fascines line the creek edge



It is estimated that the stream incision in the park was at least 12 inches and as much as 24 inches in various stream segments in the park. The stream water level has now been raised by 8 to 12 inches and the areas behind the sills have filled in with gravel sufficiently to provide spawning and macro-invertebrate habitat that had been lost (in some areas the scouring had cut to bedrock).

The meadow - The tallgrass meadow installation was finally finished in 2009, after the first seeding was followed the next day by a very heavy rain and flooding of most of the meadow with consequent loss of most of the new seed. After the first year, and as a result of an underperforming meadow and uninformed borough mowing staff, large sections of the designated meadow area were mowed to one inch height, killing off some of the struggling native plants. This discovery provided the opportunity to firmly mark the edges of the meadow and provide explicit instruction to mowing personnel that has prevented excessive mowing since that time.

The first growing season was mostly in drought condition, but during several Earth Day events in following years, in which local volunteers planted Borough-purchased seed and grass plugs, the meadow finally grew thickly and tall.



Warm season grass meadow and native flower plantings

The variety of native species planted include 10 sedge and rush species, 15 species of meadow grasses and flowering forbs, 11 species of riparian shrubs as cuttings and tubelings, 14 riparian shrub species and 9 tree species.

Exotic invasive plants - Associated removals of exotic invasive plants such as multiflora rose (*Rosa multiflora*) have had a significant positive effect on user access to the streams and viewing of the stream and wetland area. The elimination of aggressive strains of the native invasive reed canary grass has not been done yet but may be considered in the future. The issue of neighbor practices of dumping lawn clippings and yard waste in the stream or floodplain area has been reduced but not eliminated. The local presence of Joint Head (*Arthraxon hispidus*), an extremely aggressive and invasive exotic grass, is in many of the floodplains, including the Nature Preserve, has not been addressed. Some year when it becomes appropriate to do a controlled burn of the tallgrass meadow, it will be interesting to find out how cooperative the local fire department and residents will be.

The process of transforming parts of a small local park into wild “natural” areas is not arduous but takes some tenacity. It is not a once-and-done job, but rather takes corrections, tinkering and maintenance. It can be inspiring for the one-time volunteer, and is definitely able to instill a sense of “ownership” in the park and in “natural” areas. One thing that became repeatedly apparent was that many volunteers became aware for the first time that because of the pressures of exotic invasive plants, the increasing surges of floodwaters related to development, and lack of large areas of wild native vegetation, people have to do things to keep “nature” from being overrun. The idea that natural areas don’t or can’t just take care of themselves when surrounded by suburban development, just hadn’t occurred to them. It did occur to them during the volunteer work and was definitely something that they took home with them.