

Schoharie Basin Stream Management Project

Deming Road Riparian Project

Landowner Guide to Vegetation Management

Project Goals and Objectives

The NYC Department of Environmental Protection (DEP) is working in conjunction with Greene County Soil and Water Conservation District (GCSWCD) to improve water quality throughout NYC's watershed. Through the protection and enhancement of the riparian corridor we are protecting water quality through natural biological means, protecting and increasing habitat diversity and offering some level of stabilization for streambanks. The Deming Road Riparian Project will stabilize a section of the Schoharie Creek which lacked an adequate riparian buffer.



Left bank downstream of Deming Road Bridge – site for bank stabilization and buffer planting with shrubs and trees.

In the summer of 2006, an evaluation of stream channel stability and streamside vegetation was conducted as part of development of the Schoharie Creek Management Plan. This field evaluation determined that a ~ 2,400' section of the left stream bank up and downstream of Deming Road presented an excellent opportunity to improve the streamside buffer (Figure 1). Keeping a buffer zone of trees and shrubs, especially in the first 50 to 100 feet, along streambanks helps prevent erosion and protects property, increases habitat value and filters pollutants. Plantings can include a great variety of flowering trees, shrubs, and sedges native to the Catskills. Native species are adapted to our regional climate and soil conditions and typically require less maintenance than exotic species following planting and establishment.

In fall 2008, participating streamside landowners worked with GCSWCD to develop planting designs for their property. This program will pay for conservation plantings such as

stabilizing sedges and shrubs along the streambanks as well as trees and shrubs in the floodplain. Planting and maintaining a healthy buffer of trees and shrubs along the streambanks and floodplains is one of the most cost effective and self-sustaining methods for landowners to protect streamside property. Following the 2009 planting, GCSWCD will work with the landowner to maintain a healthy riparian buffer.



Figure 1. Deming Road riparian restoration project area (2006 aerial).

Bioengineering

Vegetation plays a crucial role in stream stabilization. Roots of grass, trees, and shrubs protrude into the ground, creating the intricate framework that holds together soil and provides resistance against runoff and flowing water. A mature vegetation community lasts much longer than rock structures. In restoration projects where rock structures are needed to address erosion, rock structures have been strategically placed to guide the stream in a direction which will

sustain itself and allow the vegetation to grow. Even after these structures shift and change over time, the vegetation will continue to help the stream remain stable.

Bioengineering is the use of live vegetation, either alone or in combination with harder materials such as rock or (dead) wood, to stabilize soils associated with stream banks or hillslopes. Two frequently used bioengineering techniques are stakes and fascines, which



Willows being harvested at the PMC to be used for willow fascines.

use dormant materials such as willows to quickly establish vegetation on the banks. Willow stakes are cut from living willow trees & shrubs when the tree is dormant (usually during the fall). The stakes, ranging from one to several feet long, are hammered or pushed into the stream bank. Willow fascines can also be planted along the stream bank. Willow fascines are made from long branches of willows and are also cut when the tree is dormant. The branches are bundled together and laid in trenches adjacent to the stream, then buried leaving the top of the fascine partially exposed. In the spring they will sprout from these ends and will throw new shoots up through the ground along the mid sections. Willow fascine and willow stake locations are typically close to the stream, because they grow quickly and provide necessary bank stabilization where it is most needed.

Grass and Container Trees

Establishing grass on disturbed areas is essential to a restoration project. Grass roots form quickly and provide crucial immediate erosion control. When grass establishment is necessary, hydro-seeding is typically used to spread grass seed immediately following project completion. This method uses a large tank which mixes water, seed, and mulch and sprays it through a hose. This provides for fast and even spreading, while the mulch



Hydroseeder in action.

protects and binds the grass seed to the soil until it can germinate. On smaller sites, where access may be difficult, seed may be broadcast manually and can be mulched with straw shaken over

the disturbed soil. Native warm and cold season grasses are typically used to provide the best erosion protection for this environment.

Many different species of container trees and shrubs will be planted throughout the project site. These saplings have grown from bare-root stock in containers and were maintained at GCSWCD's plant material center where they are allowed to grow until the time of planting. More mature containerized plants have a much greater chance of survival when compared to planting bare-root stock directly in the field. The diverse selection of trees provides for vegetation that has a multitude of favorable conditions and beneficial factors, ensuring the vegetation project's overall success. Native species are selected to reduce the amount of maintenance required. See appendix 1 for a list of the container tree species, including the common name, scientific name, and growing conditions.



Volunteers helping with container trees at the PMC.

Specific species are selected for locations where they would most likely succeed. American Elderberry, American Sycamore, Silky Dogwood, and Speckled Alder are among those planted in wet areas and close to the stream. Once they mature they will provide shade and shelter for local wildlife. Species such as White Pine, White Spruce, and Hemlock are planted in upland areas because these species prefer the dry soil conditions which occur a bit further from the stream. Care is also taken to spread different species throughout the project. A diverse placement of species helps to further ensure the project's overall success.

In a riparian planting project one goal is to create healthy habitats for all types of wildlife. As one of the first creatures to respond to a new habitat, birds are often an important indicator of a restoration projects success. They play an important role in the natural processes which foster life. Plants like Black Cherry and Pin Cherry provide fruit which attracts birds to these areas. Species such as White Spruce grow into large, broad specimens, providing unique habitats for certain types of birds. Each tree species is selected for characteristics such as these. For more information on each individual species, see Appendix 1.

Field Crews

In coming years you may notice GCSWCD and DEP vegetation monitoring crews entering the project site. This is part of an ongoing process to study and document the progress of the project.



Vegetation monitoring crews will be collecting data in order to follow the progress of the planted vegetation. Such factors as height, plant vigor, and survival will annually be documented in order to maintain the site and improve other future plantings. If the monitoring indicates high mortality or a need for different vegetation, field crews may revisit the site to install new vegetation. Monitoring of the invasive species Japanese Knotweed will also take place. This will include observations as well as removal at various locations. Crews may also enter the project site to replant in the future if it is deemed necessary.

You may see crews with GPS (Global Positioning System) units as well. A GPS is a device which uses satellites to determine and record the user's position on the ground. They are often used to collect the location of various features along with information on the condition of the particular feature. These crews collect a wide array of information about various attributes of the stream. The location and condition of such structures as culverts, bridges and utility lines are collected as GPS points. These points can then be placed on maps using GIS (Geographic Information System) software and displayed along with features like roads, soils, and vegetation. The maps and the information collected are used to assess existing or potential problems. The use of GPS data along with GIS software provides an intuitive, convenient way of comparing various data with respects to many different management concerns, such as minimizing threats to private and public property and protection of water quality and fish habitat.

Vegetation Maintenance

The landowner plays an extremely important role in the success of this project. It is crucial that certain measures are taken by you, the landowner, in order to assure the success of

the project. Below is a list of important guidelines to follow with regards to the project area. See the attached project map to view your property in relation to the project boundaries. To ensure the project's success, it is important that you observe the following guidelines unless otherwise instructed by the GCSWCD. If you have any questions, or see any problems you wish to report, please contact GCSWCD at the number listed on the bottom of page 8.

Important Rules to Follow:

- **Do not cut, remove, mow, or otherwise disturb the vegetation. This includes all trees, shrubs and any other vegetation, whether it has been planted or occurs naturally.**
- **Never remove, excavate, or grade the soil.**
- **Never construct roads, bridges, or permanent structures of any kind without appropriate permits.**
- **Always check with GCSWCD before conducting any work within the project area.**

Want to do More?

If you would like to do more to help the success of this project, here are a few suggestions of how to help:

1. **Mulch** can be placed around the trees that have been planted to help them grow. This helps keep weeds from suffocating the tree and helps hold moisture in the soil. Mulch should be spread around the tree, making sure to leave a space of an inch or two around the base of the trunk. If the mulch is piled against the trunk it could damage the tree. If the plants seem to be in drought conditions, you may also choose to water them.
2. The addition of **supplemental native vegetation** could help to keep invasive species away from areas where they might otherwise take over. If you see an area that lacks vegetation, you may wish to plant something. In the case that you should plant anything on or near the restoration site, it is important that you do not introduce any invasive species. What you plant should be healthy for and native to the habitat and free of any unknown materials. Appendix one shows a list of the sapling tree species that have been planted on the job site and can therefore be used as a general guide of what trees are best

to plant. In the case of grasses, a conservation or native reclamation mix would work well. Check with your local seed supplier and make sure what you are buying is native to and suited for local habitats.

3. GCSWCD holds an annual plant sale in the spring. Items for sale include bare-root trees and shrubs, wildflower seed mixes, ground cover seed mixes, fertilizer tablets, and bird boxes/feeders. More information as well as order forms can be found on their website, <http://www.gcswcd.com/conservation/>, or you can call the Cairo office at 518-622-3620 to have an order form mailed to you. Seedlings can also be purchased through the New York State Department of Environmental Conservation (DEC). DEC operates the State Tree Nursery in Saratoga Springs which produces tree and shrub seedlings for conservation on private and public lands. Orders for seedlings can be placed from January 2 through mid-May by calling 518-587-1120. For all other inquiries the nursery office can be reached Monday through Friday, 8 a.m to 4 p.m. at 518-581-1439. More information can also be obtained at the GCSWCD office in Cairo.
4. Taking **digital photos** of the project site during high waters, drought periods, or other times of year can assist GCSWCD with more fully understanding why vegetation is or is not doing well under various conditions.

Invasive Species: Japanese Knotweed

Invasive, non-native species can threaten the ecology of a native plant community. This impact may extend to an alteration of landscape or reduction in bank stabilization. Japanese Knotweed is an invasive, non-native species that in recent years has become a serious issue in the Schoharie Basin. As the name implies it comes from Asia and was originally brought here as an ornamental plant. In an attempt to beautify their homes, residents unknowingly introduced a threatening element to the environment. Knotweed out-competes native plants by growing much faster than most native species, thereby towering over them and cutting off their light supply. Eventually, it can take over entire stretches of stream banks. This is especially dangerous, because knotweed does not hold stream banks together as well as native species. Furthermore, it is a very resilient plant. Simply cutting it down can potentially make the problem worse.

Identification

As a landowner you can help stop the spread of this invasive. The first step is identification. Japanese Knotweed is fairly easy to identify; it has bamboo stalks and large heart-shaped leaves. In late summer, the shrub sprouts long lacy white flowers. It annually grows from a tiny sprout up to over 10 ft tall. It is often seen in large



patches where the tall stalks droop outward around the edges. Identification can be difficult in early spring. Often, what gives it away at this time of year are the young sprouts amongst last years dead stalks, which appear as clusters of brown, jointed, hollow wooden poles. See pg 7-8 for more information on the control of Japanese Knotweed.

Japanese Knotweed Management

When dealing with knotweed the most important thing to understand is its diligent ability to spread vegetatively. This means that it spreads through its root system, as opposed to by seed (which it also does, but not as prominently). One of the best things a landowner can do is to monitor the spread of knotweed on his or her section of the project. Never alter the environment in any way that would destabilize the stream banks or disrupt the natural riparian vegetation and allow the spread of knotweed. Any fill material introduced to the area should be screened for the presence of knotweed. Knotweed has a history of spreading through contaminated fill material.

Mowing

Depending on the characteristics of your landscape, it may be beneficial to employ a regular lawn mowing schedule of knotweed infested areas at a *minimum* frequency of every other week. This would help to suppress knotweed colonies by continually oppressing them before they have the ability to grow. This is much more time efficient than manual removal. Keep in mind that mowing too close to the stream and removing native grasses can decrease bank stability and cause erosion problems. Also be careful to avoid mowing over planted trees as well as native trees that occur naturally.

It is important when removing knotweed from areas that will be naturally re-vegetated to make sure you collect all of the root and stalk pieces. The knotweed must then be disposed of in a manner where it will not have the potential to spread and root anywhere else. Even a small piece, if left behind or dumped somewhere, has the potential to root and start a new colony. Be especially careful not to allow debris to fall in the stream, as this will only spread the problem further downstream.



Japanese Knotweed sprouting from a tiny plant fragment.

Removal

The application of herbicide is governed by NYS Department of Environmental Conservation (DEC) and must be administered by a licensed professional. Therefore, cutting and removal may be the only means by which to eradicate Japanese Knotweed. In small patches it may even be beneficial to pull each plant up by the roots. It is important to note that no matter how you remove it, Japanese Knotweed will most likely return due to the fact that any part of the root left underground can re-sprout. Therefore, an effective removal strategy will most likely involve several cuttings per season, perhaps over the course of several years. One method that is suggested for small patches is to employ a combination of cutting and covering. This method involves cutting the knotweed as close to the ground as possible, then covering the area with a tarp or old rug; landscaping fabric can be used, but is costly. This way, when spring comes and the knotweed tries to sprout, it is covered and has no light supply.

The following website contains information about the removal of knotweed throughout the U.S.: http://www.skamaniacounty.org/Noxious_Weeds/TNCreport.htm. It has a wealth of information and links for those who wish to learn more about this troubling invasive species. Hudsonia, Inc., through a partnership with NYC DEP and GCSWCD, reviewed the state of the knowledge on Japanese Knotweed and conducted basic research into its growth habits as part of an effort to develop management recommendations for its future control. As mentioned, you may see knotweed monitoring crews entering the project site in the future to monitor this problem.

GCSWCD will be the main caretakers of this project for the years to come. As a landowner, you may have the unique ability to observe your particular stretch of the project on a regular basis. We appreciate and welcome calls to report potential problems seen on the project

site. Problems could include things like flood issues, deer browse damage or anything that seems threatening to the success of the project. If you have any questions regarding your own use of the land, what trees you should plant, to what extent you may mow lawn which borders the project, or anything else call GCSWCD at the number listed below.

Contact

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