



The Conservation Strip

CONSERVING NATURAL RESOURCES FOR A BETTER ENVIRONMENT

98 ALEXANDRIA PIKE, SUITE 31 ► WARRENTON, VA 20186

Fish Friendly Practices

Most people have never heard of Mossy Creek, Beaver Creek, or the North River. But, serious fly fishermen and women will instantly recognize them as some of the top trout streams in Virginia. Most people would probably assume these are remote bodies of water tucked away in the far off corners of Shenandoah National Park or the George Washington National Forest. However, that would be a wrong assumption, as these streams and several other top trout streams flow through some of the most intensive agricultural lands in the State.

These streams are living proof that agriculture and good water quality can co-exist. Through the efforts of concerned landowners, the Virginia Department of Game and Inland Fisheries, and conservation groups like Trout Unlimited, numerous streams in Virginia have been restored and developed into top notch fisheries. Many of these streams flow almost completely through private land. Some are open for public fishing, some require a special permit, and others are open as fee fishing waters with a limited number of fishermen allowed per day.

While Fauquier does not have trout streams, our waters are home to many species of fish and wildlife that benefit from clean water. One notable fish species found locally is the smallmouth bass. Although not as famous as its coldwater cousins, this fish represents a sturdy, hard fighting fish that will bring a smile to many angling faces.

In order to protect the smallmouth bass and other wildlife that inhabit our local streams, measures are needed that reduce the amount of sediment entering surface waters. There are many aspects of sedimenta-

tion that complicate life for aquatic species. First and foremost, it reduces the ability of many gilled species to breath. Imagine trying to breath with lungs full of smoke. The ability to bring oxygen to the lungs is impaired. This is basically the same problem many gilled freshwater fish and aquatic insects have, especially if they reside in a stream with an unnaturally high sediment load.



A herd of angus cattle watched as a lucky angler landed this rainbow trout in the Shenandoah Valley.

Secondly, in most stream ecosystems, aquatic insects are a major link in the food chain. Many of these insects use the rocky bottom of the stream to hide from predation during some stage of their life cycle. When this camping area is covered with sediment from a crop field, construction site, or denuded stream bank, aquatic insects become overly vulnerable to predation. If the population of prey is compromised, it will not be

(Continued on page 3)

Permanent Vegetative Cover on Cropland

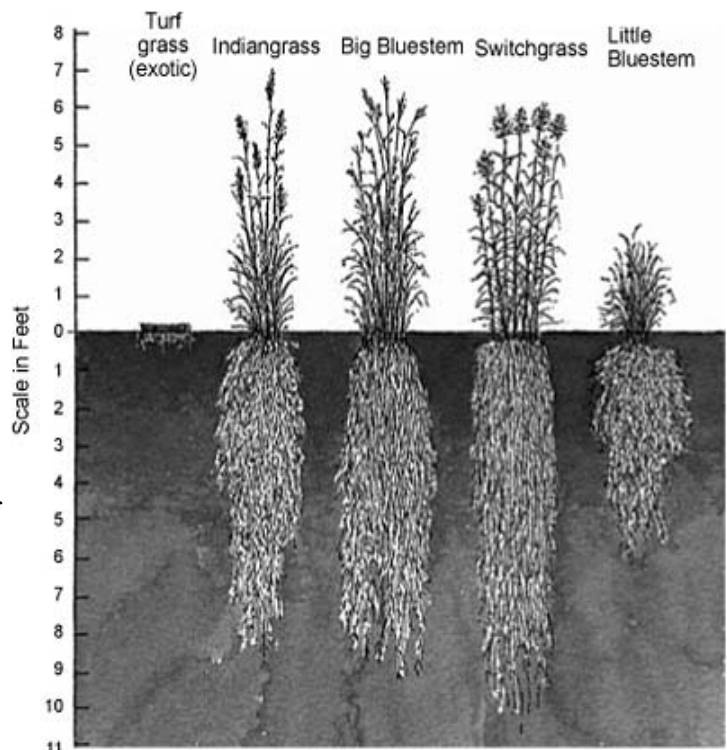
By Brent Barriteau, BMP Specialist

A healthy stand of warm season grass, cool season grass, and legumes provide multiple benefits to the landowner, wildlife, and the environment. The District can help establish grass and/or legumes on cropland or fallow land with existing cover of less than 60%. The newly established pasture or hay land must be maintained for a minimum of 10 years and is intended to bring long term benefits to the landowner, wildlife and the environment. The state cost-share rate is \$50 per acre and 75% of the eligible component cost. Eligible components include; seed, fertilizer, lime, herbicides, pesticides, and labor. Pastures and hay lands that are established with help from the District can be grazed or harvested and must be maintained for the life of the contract.

A healthy stand of grasses and legumes has the ability to improve air quality, water quality, and reduce greenhouse gases. Photosynthesis is the single most important chemical reaction on earth. Through photosynthesis green plants take in carbon dioxide and release oxygen. This serves two major principals; improved air quality and reduction of green house gases. Carbon dioxide occurs naturally in the atmosphere but has been significantly increased by human activities such as the burning of fossil fuels and deforestation. Carbon dioxide is the most inefficient green house gas but it is the most prevalent in the atmosphere. For this reason it is believed to be a significant contributor to global warming. Atmospheric carbon dioxide is a good indicator of potential future climate warming because of the growing level of its emission and its long persistence in the atmosphere. A healthy stand of grasses and legumes will sequester carbon in soil and reduce carbon dioxide in the atmosphere.

Precipitation in the form of rain impacts soil with enough force to detach soil particles and transport the soil down slope, often depositing soil in streams and rivers. Sheet and rill erosion are most common on fallow ground but it may not be obvious that this erosive process is taking place. Five tons of soil spread evenly over an acre of land will constitute a soil depth

of 1/32 of an inch, or the thickness of a dime. If rills begin forming than the soil is eroding at the rate of 15 tons per acre per year. Vegetative cover intercepts precipitation and plant roots hold soil in place. A healthy stand of grasses and legumes will significantly increase soil organic matter. Increased organic matter in soil improves the soil's ability to absorb and retain precipitation. Water will be available for plant uptake for longer intervals with a high percentage soil organic matter. Many grasses have deep root systems that break up soil and provide a conduit for organisms to penetrate deep into the soil. This will improve soil texture and drainage. Multiple benefits are realized from a healthy stand of grasses and/or legumes. If you are interested in converting crop land or fallow land to pasture land or hay land contact Brent Barriteau. The District can help with technical and financial assistance.



Root length comparison of native warm season grasses and non-native turf grass. Illustration by Dede Christopher for the Tennessee Valley Authority, 2008.

(Continued from page 1)

long before the population of predators is compromised as well.

The conservation practices used to improve and restore trout streams in western Virginia are the same practices used by many farmers in Fauquier County to protect the water quality within our local streams. To prevent soil erosion, the farmer should be thinking of ways to keep year round residue or vegetative cover on all his or her working lands. In cropping systems, reducing tillage and increasing post harvest crop residues are some of the most significant ways to reduce runoff of topsoil. Planting winter cover crops would be another very significant way to protect local streams. It doesn't take long to lose a lot of topsoil when fields are left with little cover (see Brent Barrieteau's article on permanent cover on cropland on page 2)

To protect water quality on pasture land there is no substitution for stream protection fencing. This conservation practice restricts livestock access to the surface water and in the process creates vegetated buffers between the grazing area and the stream. The purpose of a buffer is to trap sediment and manure washing off the fields during precipitation events before it reaches the stream. If the area inside the fence is then planted to trees or left to grow up naturally, the trees will eventually grow tall enough to shade the stream. Shade is essential to keeping water temperatures moderated. On the other hand, direct sunlight spikes the water temperature upward during the day and reduces the available oxygen levels within the water. This is not a desirable environment for most aquatic species. Therefore, shade trees along the stream banks are an essential component of a healthy fishery.

The John Marshall Soil and water Conservation District wants to assist landowners in their effort to protect local fisheries. We want to help them protect these resources for the naturalists, the hunters, the birders, and anglers. We also want to help them protect these streams for their children. If you're a kid, you don't have to be in Montana to go fishing. If you're a kid it doesn't have to be a 20 inch rainbow trout to be memorable. But, for a kid, the exploration of the environment does need to happen, and what better place to make it happen than near your home

where it can happen over and over again. That is of course if we do our part, as adults, to protect water quality and the land the rivers run through.

For its part the John Marshall Soil and Water Conservation District will contribute 75% of the cost to protect the rivers and streams of Fauquier County. Additionally a landowner can receive a state tax credit worth 25% of their contribution of the protective measures. For more information, contact the JMSWCD and ask for help protecting the streams that flow through your land.

Funding for Water Quality

Despite funding shortfalls, budget cuts, and hiring freezes, the Virginia General Assembly has stepped up to the plate to fund water quality initiatives. This year the General Assembly created the Virginia Natural Resources Commitment Fund to secure a more reliable source of funding on which the conservation districts and their constituent farmers could depend. For Fiscal Year 2009, this fund has committed \$20 million to implement the Virginia Agricultural Cost Share Program (VACS Program) throughout our rural agricultural environment.

As part of the VACS Program, the John Marshall Soil and Water Conservation District has received a commitment of \$402,466.00 to implement this program in Fauquier County. This funding will be used as financial incentives to offset the cost to farmers and landowners implementing Best Management Practices (BMPs) that improve and protect water quality. The majority of this (\$321,973) will be directed at "priority "best management practices. These practices include cover crops, continuous no-till, livestock exclusion fencing, and the planting of riparian buffers, as well as a host of others.

The JMSWCD has also signed an agreement with the VA Department of Conservation and Recreation to continue to implement the TMDL program in Fauquier County. This is part of the Commonwealths effort to address specific health related water quality issues. Currently this program is well funded and is addressing specific bacteria sources in the Carter's Run, Thumb Run, Great Run and Deep Run watersheds.

For more information on these and other programs funded to improve water quality contact the JMSWCD at (540) 347-3120 extension #3.

Acid Sulfate Soils

By Heather Ambrose, E&S Specialist

As more land is being developed in Virginia, problem soils seem to be making headlines on a regular basis. As subdivisions and shopping malls are encroaching further and further on land that has been historically undisturbed and not really suitable for development, acid sulfate soils are affecting a larger percentage of the population. Acid-sulfate soils are nothing new at all. In fact, they are naturally occurring and are harmless if they remain undisturbed below the water table. But when they are exposed to air, the sulfides will react with oxygen to produce sulfuric acid and other compounds, which are potential threats to the environment.

How are Acid Sulfate Soils Formed?

Acid sulfate soils contain iron sulfides, predominantly in the form of pyrite. The acid sulfate soils of major concern were formed after the last major sea level rise, within the last 10,000 years. When sulfates in sea water mix with land sediments containing iron sulfides and organic matter in the absence of oxygen, acid-sulfate soils are created. They are typically formed in waterlogged conditions and therefore commonly occur in the coastal wetlands of Virginia. Certain bacteria present in these anaerobic (oxygen-free) conditions, along with warmer temperatures, help form iron sulfides such as pyrite. Acid-sulfate soils do not create a problem until they are exposed to oxygen, often through the draining of wetlands and other types of disturbance. Once iron sulfides such as pyrite are exposed to air, the pyrite reacts with oxygen and water to form large amounts of sulfuric acid and other toxic metals such as iron and aluminum.

What are the Potential Threats of Acid Sulfate Soils?

The impacts of acid sulfate soils are incredibly widespread. They can seriously harm aquatic systems and cause fish kills and disease outbreaks. They are harmful to riparian buffers and can kill vegetation. These soils can contaminate the groundwater with heavy metals and make the soil unsuitable for agricultural production. Roadside management efforts often expose acid-sulfate soils, which destroy concrete and

steel structures. Roadside vegetation can no longer be supported which leads to increased erosion. Reclamation efforts are difficult and usually involve adding large amounts of lime to the soil.

Acid Sulfate Soils in Virginia

There are several geologic formations throughout Virginia that contain acid-sulfate soils. These formations can be found in the Coastal Plain, Piedmont, Blue Ridge, Valley and Ridge and Appalachian Plateau. Scientists at Virginia Tech have created a State Sulfide Hazard Risk Map which can be found at <http://www.cses.vt.edu/revegetation/remediation.html>. Information on remediation efforts can also be found at this website.



Gray reduced sulfidic materials are commonly encountered during active construction in the Fredericksburg/Stafford area. These materials will usually acidify over time to pH<3.5 unless large amounts of lime are added and incorporated

Although Fauquier County has not experienced any major problems resulting from exposed acid-sulfate soils, neighboring Stafford County has not been so lucky. The new airport in Stafford County is the largest acid-sulfate soil site found in Virginia. Solving the problem has been tricky and controversial. Lime-stabilized bio-solids were applied to the soil, which presented an initial water-quality problem which has since been controlled.

Rain Barrel Workshop

The John Marshall SWCD hosted a rain barrel workshop on June 14 at the Fauquier Extension Office. Twenty-five participants showed up to construct their barrels and get ready to collect water from the next



rainfall. Rain barrels have made a huge resurgence since last summer's drought. Homeowners collect rainwater that would otherwise be runoff and use it to water a variety of plants in and around the home and garden.

Due to the severity of last summer's drought, companies and businesses that

normally have containers suitable for making rain barrels have been inundated with requests for their used barrels, resulting in a short supply. The June 14 workshop filled up in two days after it was announced in the local newspaper. The District may hold additional workshops in the future if barrels become available. Any workshops will be announced in the local newspaper.

Kerry Wharton Promoted

Congratulations to Kerry Wharton. Starting July 1, Kerry will provide leadership in administering the Fauquier Erosion and Sediment (E&S) Control Program as the new E&S Control Program Manager. The John Marshall SWCD has been doing plan review and inspections for Fauquier county since 1994. Kerry Wharton joined the John Marshall SWCD five years ago as an Erosion and Sediment Control Specialist. We wish her well in her new position.



Kerry graduated from Radford University with a B.S. in Geography, with an emphasis in Environmental Studies. Previously, she worked for the Prince William SWCD as a Conservation Specialist. Kerry currently resides in Rappahannock County with her husband, Michael and daughter Allison. They are expecting their second child in November.

The Conservation Strip is a quarterly publication of the **JOHN MARSHALL SOIL AND WATER CONSERVATION DISTRICT**, 98 Alexandria Pike, Suite 31, Warrenton, VA 20186

District Directors

Mary Lou Trimble, Chair
Bob Tudor, Vice Chairman
William "Billy" Frazier, Sec/Tres
Tim Mize
A. Gray Coyner

Associate Directors

John Bauserman
Nicolaas Kortlandt
Mack Baer

District Volunteer

John Schied

JMSWCD Employees

Jennifer R. Krick, District Manager
Kerry Wharton, E&S Program Manager
Heather Ambrose, E&S Specialist
Vacant, E&S Specialist
Vacant, E&S Specialist
Tom Turner, Cons. Manager
Larry Dunn, Cons. Specialist
Melissa Hooper, TMDL Specialist
Brent Barribeau, BMP Specialist
Nancy Miller, Office Associate
Chuck Hoysa, Cons. Ed. Specialist & Newsletter Editor

NRCS Employees

Rex Rexrode, Dist. Conservationist
Vera Kopach, NOWCC Adm. Asst.

Honorary Directors

Henry Green
Edwin F. Gulick

Phone

(540) 347-3120, ext. 3

Email:

johnmarshall.swcd@vaswcd.org

Website

www.Johnmarshallswwcd.com

Volume 27, No. 1

Third Grade Farm Tours

Approximately 800 third grade students from nine elementary schools visited local farms on April 23rd and 24th. Students visited Inglewood Farm in Bealeton, Blue Ridge Farm in Upperville, and Soldier's Hill Angus Farm in Warrenton. Each farm was set up with stations for the students to rotate through. In addition to the host farmers, stations were staffed by Soil and Water personnel, Fauquier Extension Agents and Master Gardeners, Fauquier County Soil Scientists, and Joiner Micro Labs.



B.J. Valentine, Fauquier county Soil Scientist demonstrates soil texturing to third graders at Inglewood Farm in Bealeton.



Larry Dunn of the John Marshall SWCD shows third graders how to age a tree by counting the tree rings at Soldier's Hill Angus Farm in near Warrenton.

In this Issue...

- **Fish Friendly Practices**
- **Permanent Cover on Cropland**
- **Water Quality Funding**
- **Acid Sulfate Soils**
- **Rain Barrel Workshop**
- **Kerry Wharton Promoted**
- **Third Grade Farm Tours**