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VIRGINIA FOREST LANDOWNER UPDATE

Events, news, and information promoting the stewardship of Virginia's forest resources.

VIRGINIA FOREST LANDOWNER EDUCATION PROGRAM

Jennifer L. Gagnon, Editor

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- You Ain't From Around Here: Exotic Invasive of the Quarter will return in the spring 2008 Edition.



Editor's Note: The idea of receiving payments for ecosystem services is still very new; we are all learning about this process.

Ecosystem Services: New Markets for Forest Landowners

by: **Buck Kline, Virginia Department of Forestry**

This article was reprinted, with permission, from the Fall 2007 edition of *Virginia Forests* magazine.

Global warming and carbon sequestration, nutrient credit trading, wetlands banking, conservation banking, and ecosystem services are all issues we are increasingly hearing more about. What's all the buzz about? How will it benefit forest landowners? What are ecosystem services?

Ecosystem services are the goods and benefits provided by forest land. They include such services as water quality, carbon sequestration, air quality, biodiversity, wildlife habitat, recreation, aesthetics and timber products. In the May 15, 1997 issue of *Nature* magazine, Robert Costanza and others estimated the current value of 17 ecosystem services for the entire biosphere in the range of \$16-\$54 trillion per year, with an average of \$33 trillion per year. As a comparison, global gross national product total is around \$18 trillion per year.

With the exception of timber products, the economic value of these benefits and services are not adequately captured in our market economy. Therefore, they are often services and benefits provided by forest landowners free-of-charge to society. They are considered public goods. Because of the lack of landowner compensation for these ecosystem services, the loss of these services is not always considered in land use conversions or the sale of forest land. This fact is partially responsible for Virginia's current trend of losing 26,000 acres of forest land annually.

Landowner compensation for ecosystem services in our market-based economy offers hope and opportunity for forest landowners, as these services offer an opportunity to increase the cash flow from forest land. Though it will not be an easy undertaking, efforts are underway to bring ecosystem services into the market.

Ecosystem Service Types

Some existing efforts currently in place include wetlands mitigation and threatened and endangered species mitigation. Mitigation efforts involve a landowner entering into an agreement with a regulatory authority and/or an environmental firm that engineers and develops the mitigation work on their property. The project creates a bank of credits that can be marketed to groups such as land use developers or constructors of transportation projects. These mitigation bank credits are purchased by developers to offset the environmental services destroyed by their projects. This kind of environmental mitigation project often requires a landowner to enter into a permanent easement.

One important ecosystem service that forests provide is carbon sequestration. Trees do an exceptionally good job of removing carbon dioxide from the air and converting it into wood fiber. Once the carbon is converted to wood fiber, it is considered sequestered. Hence, the term carbon sequestration is derived. One acre of a 20-year old loblolly pine plantation in the southeast may sequester 6 six metric tons of carbon dioxide annually. At the current rate on the Chicago Climate Exchange, a ton of sequestered carbon dioxide is worth about \$3.50 per metric ton. This equates to a potential landowner payment of \$21 per acre per year.

When dealing with ecosystem services transactions, the term credit is usually heard. A credit is basically a unit of measurement for a particular ecosystem service. For example, a carbon credit is a ton of sequestered carbon dioxide. If a landowner's 40-acre reforestation project sequesters five tons of carbon dioxide per year, then they have 200 carbon credits (five tons per acre x 40 acres) they can market.

Carbon Credit Eligibility

So how does a landowner get into this market? Currently, the carbon market in the United States is voluntary. This means that it is not driven by any regulatory mechanism such as the cap and trade program for sulphur dioxide emissions.

Event Calendar		For the most complete listing of natural resource education events, visit the on-line events calendar at www.cnr.vt.edu/forestupdate			
Contact	Date	Location	Event	Time	Fee
DCR	Feb., Mar., April	Virginia State Parks	A variety of events and activities. For a complete listing visit: www.dcr.virginia.gov/parks	Varies	Varies
JG	March 10-May 31	Statewide	On-Line Woodland Options for Landowners Learn about forest management from the comfort of your own home! Registration begins Jan. 21 at www.cnr.vt.edu/forestupdate	self-paced	\$70 *includes materials
MP	Feb., Mar., April	Statewide	Virginia Master Naturalist Training Courses These courses focus on ecology, natural resource management, basic natural history of the animals and plants of Virginia, and skills for teaching and field research. Contact your nearest chapter - see contact list pg. 6.	Varies by chapter	Varies by chapter
SVCE	Feb. 5	Toms Brook Fire Hall, Shenandoah Co.	Carbon Trading for Farm Income and Environmental Sustainability Learn about carbon sequestration and how to participate in carbon trading.	9:00 a.m. - 3:00 p.m.	Free*please pre-register
BW	Feb. 8	Zehmer Hall, UVA Campus, Charlottesville	Business Opportunities with Small Acreage and Suburban Woodlands The purpose of this workshop is to identify potential natural resource service providers and initiate educational training to meet management demands on small woodlot and suburban woodlands where traditional services are inefficient or nonexistent.	8:00 a.m. - 4:30 p.m.	\$30 - includes lunch
HH	Feb. 9; Snow date Feb. 23	Smurfit-Stone Container; West Point	Woodland Options for Landowners Short Course Learn the basics of forest management planning, decision making, and silviculture. Learn to use soil surveys, topographic maps and aerial photos to aid with your management planning.	8:30 a.m. - 5:00 p.m.	\$45/person; \$55/couple refreshments & materials*
AD	Feb. 16	Zehmer Hall, UVA Campus, Charlottesville	6th Annual Woods & Wildlife Conference A day-long conference devoted to teaching non-industrial private landowners about forest and wildlife management. This year's topics include bird id, thinning, conservation tools, ecosystem services, and more!	8:30 a.m. - 5:00 p.m.	\$40/person; \$70/couple
VABF	Feb. 15-16	Sheraton Richmond West Hotel, Richmond	VABF Conference: Opportunities in Organic Farming Opportunities in organic horticulture, organic field crops, organic livestock and marketing. Experienced farmers and scientists will discuss production systems which have proven to be successful.	1:00 p.m. - 9:00 p.m.; 8:30 a.m. - 3:00 p.m.	\$70 VABF members; \$95 non-members
MY	Feb. 23	Virginia Western Community College, Roanoke	1st Annual Woods & Wildlife Conference A day-long conference devoted to teaching non-industrial private landowners about forest and wildlife management. Topics include invasive species, conservation tools, Christmas tree pests, tree id and much more!.	8:15 a.m. - 4:30 p.m.	\$30/person
MP	Feb. 25 application deadline	Statewide	The Virginia Master Naturalist Program Coordinator and Steering Committee are accepting applications for new chapters to develop in 2008. If you are interested in developing a Master Naturalist chapter in your community, please see the contact list on pg. 6.	NA	NA
USDA FS	Feb. 26	Blacksburg	Southern Forest Futures Project The USDA Forest Service will be conducting a series of public meetings to gather input on (1) the forces of change likely to influence forest conditions, and (2) values at risk from these changes.	1:00 p.m. - 5:00 p.m.	Free
TS	March 18	Mt. Crawford/Greenville	Farmland Conservation Seminars A morning seminar will be held at Mrs. Rowes in Mt. Crawford; an evening seminar will be held at the McPherson Dairy in Greenville	TBA	TBA
MY	March 28	Highland Center, Monterey	Wildlife Habitat: Enhancement and Design Learn about creating and improving wildlife food plots, specific needs for specific wildlife species, and pond management.	10:00 a.m. - 4:00 p.m.	TBA
GP	April 18-20	Hotel Roanoke, Roanoke	The Virginia Forestry Association's Annual Convention Join fellow forest landowners and forestry professionals at this yearly event. The 2008 theme is Forest Certification.	Varies	TBA
VDOF	Nomination deadline April 15; Camp - June 16-21	Holiday Lake, Appomattox	62nd Annual Virginia Department of Forestry Holiday Lake Forestry Camp Camp is open to boys and girls aged 13-16 who have an interest in natural resources and who have not attended before. Campers experience hands-on classes in forestry, wildlife and other natural resource topics.	NA	\$60

Wood-to-Energy in Virginia: Boon or Bane?

By: John Munsell, *Virginia Tech Dept. of Forestry*

It's likely most of you have heard about using wood to generate large-scale, domestic energy. Advances in converting wood to energy, estimates of lower energy returns from other renewable sources, questions about the consistency of solar and wind, and unease about the future of fossil fuel and changes in our climate have catapulted wood into the renewable energy discussion. It is also likely that many of you have wondered what this may mean for the sustainability of Virginia's forests. To be frank, the answer is less than clear. What we do know is that in large part it depends upon the state's forest owners and their ability to balance wood-to-energy and other forest uses.



Small woody materials being harvested for bioenergy. Photo by Ben Jackson, University of Georgia.

As interest in using wood for energy grows, so do questions about the affects that large-scale wood-to-energy markets will have on the sustainability of existing forest amenities and products. For instance, would a viable wood-to-energy market diminish or enhance timber productivity on working Commonwealth forests? And how might it impact wildlife habitat and visual quality? To find a telling parallel, one need only look to the challenges Iowan's face when balancing corn-to-energy with other objectives such as food.

Advocates argue that wood-to-energy will improve forest sustainability by providing much needed markets for low-grade and small-diameter trees. Detractors counter that wood-to-energy markets will only extract another commodity from our overtaxed forests and therefore increase the use of unsustainable practices. Both arguments have merit, but the truth is that forest owners in Virginia will ultimately decide whether wood-to-energy is a boon or bane.

Oddly enough, by improving the revenue opportunities associated with low-grade and small-diameter trees, wood-to-energy markets could actually encourage unsustainable practices. Such a result would be something akin to the Jevons Paradox which argues that threats to the sustainability of a natural resource are often heightened when improvements are

made in the efficiency with which it can be used. Forest owners in Virginia may be tempted to squeeze more goods from their forests in the short-term at the expense of long-term forest sustainability.

A more constructive outlook suggests large-scale wood-to-energy markets will improve forest sustainability by providing much needed small-diameter and low-grade markets. Recent harvesting simulations on working forests in Mississippi and New York demonstrate that an operable and sustainable balance is possible between the trees removed for energy purposes and those dedicated for sale in the timber market. If wood-to-energy is to enhance forest sustainability in Virginia rather than threaten it, forest owners must commit to balancing existing amenities and products and cutting for energy purposes.

If and when large-scale wood-to-energy markets become viable in Virginia, the ability for its forest owners to balance wood-to-energy demands and other amenities and products will be tested. If this balance is overlooked in favor of the short-term gains associated with wood-to-energy markets, then forest sustainability in the Commonwealth will certainly be jeopardized. The hope is that the state's forest owners will use forthcoming wood-to-energy markets as an opportunity to improve the possibilities.



Wood chips, raw material of the wood-to-energy market. Photo by Shawn Baker, University of Georgia.

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Wetlands cont. from pg. 5

Mitigation Banking Do's and Dont's, Federal Guidance on Wetland Banks, and Joint DEQ/Corps Recommendations for the Design and Performance of Compensatory Mitigation. A database of existing and proposed mitigation banks in Virginia, called RIBITS, can also be found on the Corps' website.

For more information on mitigation banking in Virginia, contact: David L. Davis, Director of DEQ's Office of Wetlands & Water Protection at 804-698-4105 or dldavis@deq.virginia.gov.

An Introduction to Carbon Trading

By: John Ignosh and Matthew Yancey, *Virginia Cooperative Extension*

By now, you've probably heard about concerns over increasing concentrations of greenhouse gases (GHG) such as carbon dioxide in the earth's atmosphere. Currently, there are no federal laws in the United States governing GHG emissions. However, many states, companies, and even individuals are agreeing to voluntarily limit their GHG emissions through carbon offsets or some other means.

A carbon offset is created by voluntarily removing carbon dioxide from the atmosphere or by working to prevent the emission of a GHG in the first place. Once a carbon offset is created, measured, and verified, the carbon offset can then gain value as a tradable commodity in the carbon market. In the US, the primary market is the Chicago Climate Exchange (CCX). This exchange represents North America's only voluntary, but legally binding, GHG trading market. When we go to the market to pick up a carton of eggs we know that we're getting exactly 12 eggs. Just like eggs are sold by the dozen, a CFI is the unit that carbon is sold in on the CCX. Technically, a CFI is equal to one hundred metric tons of carbon dioxide, or about 220,460 pounds.

New carbon markets are emerging as people move forward with projects to supply the growing demand for GHG gas reductions. Forest management is one possible carbon offset source. As forests grow they naturally sequester, or trap, carbon through photosynthesis. Different types of forest management activities can enhance the rate a forest will sequester, carbon. This makes sense when we remember that carbon sequestration is directly related to tree growth. So, when trees are planted they begin to grow very fast, rapidly sequestering carbon. Forestry offset projects mainly consist of establishing trees on non-forested land or allowing established trees to grow larger.

For example, the overstory trees of a recently afforested ten year old loblolly-shortleaf pine stand under minimal management sequester 9.15 tons of carbon per acre. This value was determined using the Carbon Calculator found at the Carbon Trading: A Primer for Forest Landowners website, www.carbon.sref.info.

This article was adapted from the upcoming Virginia Cooperative Extension (VCE) publication, "Virginia Landowner's Guide to the Carbon Market". VCE will be holding a workshop on carbon trading in Shenandoah County on February 5, 2008. Check the calendar of events for details.

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Matthew Yancey is a Forestry & Natural Resource Extension Agent; yancey@vt.edu 540/564-3080

Ecosystem cont. from pg. 1

Under a cap and trade program, large emitters of pollution such as power utilities are limited, or capped, at a certain level. They need to either invest in technology to reduce emissions or purchase offset credits for the amount they pollute above their allowances. Therefore, if a cap and trade program for carbon dioxide occurs, the regulatory driver will be in place to enhance the carbon market more than the current voluntary market.

Some voluntary transactions do occur. The reasons can be for companies to demonstrate good environmental stewardship, public relations purposes, or to reduce a company's environmental "footprint".

To be eligible for the carbon market, a landowner may need to be enrolled in a registry. A registry is simply a listing of projects that meet the registry's criteria and the carbon credits enrolled are eligible to be sold on the market. Being enrolled in a registry is only a first step; it is not a guarantee of payment and no money changes hands. Currently, several registries are being developed across the county for landowners to enroll their forestry projects into. In Virginia, Governor Kaine recently signed into The Climate Registry. Currently, this carbon registry encompasses 32 states. The protocol for enrolling in this registry is still being developed. For landowners to enroll in any registry, they need to learn about acceptable projects and necessary criteria and obligations.

Many of the carbon transactions that occur are through the Chicago Climate Exchange. This exchange offers a mechanism where willing buyers of carbon offsets can purchase from willing sellers. More information about the Chicago Climate Exchange can be learned from their website www.chicagoclimateexchange.com/.

Market-Based Approach to Water Quality

Other opportunities for forest landowners may include market-based approaches to ecosystem services related to water quality. Forests provide clean drinking water, mitigate against storm events, help ameliorate issues related to nutrient and sediment laden runoff, and help resolve some water impairment issues. Hopefully, these services can also be incorporated into a market-based approach.

Developing the methodology for bringing ecosystem services into a market will take time. Registries for enrolling forestry projects, developing the metrics to calculate a quality credit, and developing the policy and regulations associated with these markets need to be carefully planned. Some ecosystem services such as carbon sequestration may be easier since it has recently achieved high visibility because of global warming and may one day be driven by regulation.

The loss of these ecosystem services represents our social costs of converting forest land to other uses. Currently, these social costs are considered external costs in our market-based economy. We need to begin the process of internalizing these costs into our markets so that we may truly value our forest lands and place dollars into the hands of our landowners for the services their forest lands provide.

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buck.kline@dof.virginia.gov

Mitigation Banking in Virginia

By: Dave Davis, *Department of Environmental Quality*

Large forest landowners take note – there is a way to conserve land, enhance the environment, and make a profit: through Mitigation Banking. Through Wetland Mitigation Banking forested wetland areas can be restored, enhanced and preserved by a landowner and “credited” as a commodity available for sale to third parties. While Mitigation Banking has been common in Virginia for over ten years, many landowners are unaware of how they can participate.

The Virginia Department of Environmental Quality (DEQ) administers the Virginia Water Protection (VWP) Program, which is the state program tasked with protecting and managing wetlands and streams to protect their beneficial uses. State law requires that a VWP permit be obtained before disturbing a wetland or stream by filling, excavating, draining, or ditching. Many of these permits require compensation for the wetland and stream acreage and functions lost. This compensatory mitigation can be accomplished through a combination of restoration, creation, enhancement, and preservation.

In coordination with the U.S. Army Corps of Engineers (the Corps) and other state and federal natural resource agencies, DEQ actively participates in Mitigation Banking Review Teams (MBRTs). These teams review all proposals for mitigation banks, determine how and when banks can be used, and oversee the monitoring for the bank’s ecological success. Mitigation banks have several advantages over other forms of compensation. Generally, banks are larger sites that are able to provide greater ecological functions and values, are often connected to other valuable natural resources, and provide advance compensation before permitted impacts are taken.

The mitigation banking approval process involves an agreement between the MBRT and the bank sponsor; this is called the Mitigation Banking Instrument, or MBI. The MBI defines the geographic area where credits can be sold (called the Service Area), and gives details on how credits will be derived from the site, the monitoring and success criteria, and the long-term management of the site. The monitoring period for banks is generally ten years. The bank site must be preserved in perpetuity through a conservation easement or deed restriction.



Stream proposed for restoration. York River Mitigation Bank. Photo by DEQ.

Not every site or property is suitable for mitigation banking. Wetlands and streams are complex systems, and their restoration, creation, enhancement, or preservation often requires specialized ecological and engineering knowledge. Likewise, the mitigation banking process requires experience to efficiently navigate. Numerous environmental consultants are working on mitigation bank projects in Virginia, and have expertise with these types of

projects. Some aspects to keep in mind when considering mitigation banking: the landscape position of wetlands and streams, the connection of the bank to other natural resources or protected lands, the ability to preserve entire watersheds or systems, future and present land uses of surrounding lands, and the presence of protected plant and animal species. The MBRT will support sites that have the highest likelihood of ecological success.

Approval of a mitigation bank by the MBRT does not guarantee financial or economic success of the bank. The bank sponsor should consider the development potential within their service area and the market demand for compensatory mitigation credits before undertaking a mitigation bank project. Credit prices are determined by the bank sponsor after considering the project

costs: land purchase, design and construction, monitoring, long-term maintenance, and the economic climate of the area.

Mitigation banking is a voluntary, market-driven approach to conserve and protect Virginia’s wetland resources.

More information on wetlands, streams, the VWP program, and mitigation banking can be found on the DEQ website www.deq.virginia.gov/wetlands or the Corps’ Norfolk District website www.nao.usace.army.mil/Technical%20Services/Regulatory%20Branch/homepage.asp. Important documents can be found on these websites and should be reviewed before entering this process:



Wetland restoration. Potomac River Bank. Photo by DEQ.



Cypress growth at Year 1 monitoring interval. Great Dismal Swamp Mitigation Bank. Photo by DEQ.

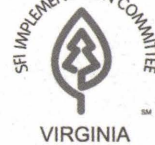
Useful Ecosystem Services Websites:

- * www.forestbioenergy.net
- * www.chicagoclimatexchange.com
- * www.carbon.sref.info
- * www.deq.virginia.gov/wetlands
- * www.nao.usace.army.mil/Technical%20Services/Regulatory%20Branch/homepage.asp
- * www.fs.fed.us/ecosystems-services
- * www.esa.org/education_diversity/pdfDocs/ecosystems-services.pdf



**View of
Catawba Valley
from the top of
Dragon's Tooth,
Roanoke County.
Photo by:
Jennifer Gagnon,
Virginia Tech.**

**CONTACT OUR SPONSORS AND STATE
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Quinn Johnson

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If you have a natural resource event you would like listed in the Events Calendar, please send the information to: forester@vt.edu or call 540/231-6391. Submission deadline for Spring 2008 V22 No 2 is April 6, 2008.

Contact	Name/Affiliation	Phone	e-mail/website
GP	Glenda Parrish	804/278-8733	gpartish@verizon.net
VDOF	Virginia Department of Forestry	434/977-6555	www.dof.virginia.gov
TS	Tom Stanley	540/245-5750	stanleyt@vt.edu
USDAPS	USDA Forest Service	---	www.srs.fs.usda.gov/futures
MY	Matt Yancey	540/564-3080	yancy@vt.edu
VABF	Virginia Biological Farming	540/291-4333	www.VABF.org
AD	Adam Downing	540/948-6881	adowning@vt.edu
HH	Helen Heck	804/443-1118	helen.heck@usda.va.gov
BW	Becky Woodson	434/220-9024	becky.woodson@dof.virginia.gov
SVCE	Shenandoah County VCE	540/459-6140	www.ext.vt.edu/offices
MP	Michelle Prysby	434/872-4580	www.virginiamasternaturalist.org/chapters.html ; mprysby@vt.edu
JG	Jennifer Gagnon	540/231-6391	jgagnon@vt.edu
DCR	Department of Conservation & Recreation	804/786-1712	www.dcr.virginia.gov/parks

Event Contacts

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