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VIRGINIA FOREST LANDOWNER UPDATE

Events, News, and Information Promoting the Stewardship of Virginia's Forest Resources

INSIDE

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Current Research on Forest Carbon Programs in Virginia

by: Stella Zucchetti Schons Do Valle, Virginia Tech

This summer, a group of Virginia Tech researchers will be reaching out to woodland owners across Virginia asking for volunteers to participate in a research project about forest carbon programs in the state. Entitled Forest Carbon Contracts: Landowner Preferences and Spillover Effects, our project is funded by the National Institute of Food and Agriculture (United States Department of Agriculture). The objectives of the project are (1) to further understand what types of forest carbon programs and contracts are preferred by Virginia woodland owners and how these preferences change for underserved woodland owners, and (2) to determine the implications of these programs on Virginia carbon sequestration and water production in the state.

Background

Several forest carbon programs have recently become available to woodland owners in Virginia and across the United States. By enrolling in one of these programs, a woodland owner receives payments in exchange for the carbon dioxide (CO_2) stored and sequestered in their forests when they change their forest management practices; for example, by delaying harvest or by planting trees in previously cleared (e.g., agricultural) land. Offered by private companies or non-governmental organizations generally referred to as carbon developers, these programs make carbon markets more accessible to woodland owners, especially those owning less than 5,000 acres. Through third party-verified and scientifically-sound methodologies, carbon developers turn the additional carbon in the forest into carbon credits that may be traded in carbon markets (some of them voluntary and others government-regulated). The sale of these carbon credits is where the money for the payments for the woodland owners come from.

Forest carbon programs have different ways of operating and the contract that a woodland owner signs with the carbon developer will reflect that. What exactly the woodland owner can and cannot do, the size and frequency of payments, and the length of commitment are some examples of how contracts may differ.

But beyond the contract itself, the woodland owner must pay attention to potential sources of risk when enrolling in such programs. In particular, the landowner must pay attention to contract exit clauses, carbon credit price change expectations (especially if the contract is designed so that the price risk is shared between the landowner and the carbon developer; for example, when the negotiated price depends on the current market price at the time of payment versus a set price beforehand), and the ability of the carbon developer to honor their side of the contract. This is usually linked to the methodology adopted by the carbon developer for the generation of carbon credits and whether that methodology is recognized or not in the marketplace.

It is also important to keep in mind that the carbon developer sector is still changing, with organizations joining and leaving. For example, Finite Carbon has partnered with LandYield and is an option for Virginia woodland owners as a carbon developer as of August 2023 (Dezember, 2023). Another example is that NCX has changed its line of business and is currently not offering one-year harvest deferral contracts anymore (Parisa, 2023).

–Carbon, continued on page 3.

Events Calendar

For a complete listing of natural resource education events, visit the online events calendar at https://forestupdate.frec.vt.edu. Online registration is available at https://forestupdate.frec.vt.edu/onlineregistration.html

SCHEDULED EVENTS - APRIL - JULY 2024

DATE	LOCATION / DETAILS	EVENT DESCRIPTION	CONTACT
April 8 - June 17	• Online • $95	**The Woods in Your Backyard Online Course** This course from the University of Maryland promotes stewardship of small parcels for the enjoyment of their owners and to improve environmental quality for society.	Andrew Kling akling1@umd.edu 301-432-2767 x 307
April 11	• Doswell • 1 - 4:30 • $50	**Lumber Drying for Small Operators** This course will cover lumber drying basics, types of kilns and their capabilities/limitations, avoiding defects, and the basics of controlling the drying process.	Brian Bond bbond@vt.edu 540-231-8752
April 23-25	• Charlottesville • Times and price vary	**Virginia Forestry Summit** Join landowners and natural resource professionals from across Virginia for this educational and networking event.	Virginia Forestry Association vfa@vaforestry.org 807-278-8733
April 14	• Charlottesville • 12 - 4:30 • $25*	**A Tour of Urban Wood in Hooville** Take a walk on the urban side and learn how trees and wood are used in an urban setting. Tour the tallest mass timber building on the east coast, the Apex Plaza, visit the most majestic trees on the University of Virginia's Grounds, and learn about the Forest Patches Program and UVA Sawmilling.	Jennifer Gagnon jgagnon@vt.edu 540-231-6391
May 3-4	• Abingdon • 5/3 7:15 - 6:00 • 5/4 7:15 - 1:00 • $60*/person • $120*/couple	**Southwest Virginia Beginning Woodland Owner Retreat** The Beginning Woodland Owner Retreats were developed for those new to active woodland management. A combination of classroom, field trip, and hands-on activities will be used to teach concepts of sustainable woodland management. On-site lodging is available for an additional $30/person/night.	Jennifer Gagnon jgagnon@vt.edu 540-231-6391
May 20-22	• Blacksburg • $800*	**Mapping with Drones: Drone Discovery** Learn to collect data and make maps with drones. This introductory workshop provides an overview of the workflows and duties associated with drone operations. Participants will gain experience with flight planning, quadcopter and fixed-wing flight operations, software options, data (image) acquisition, image processing, discussions on sensors and drones, and image analysis.	John McGee jmcg@vt.edu 540-231-2428 or Daniel Cross falkus@vt.edu
July 1 - Sept. 9	• Online • $55/family	**Online Woodland Options for Landowners** This 10-week, self-paced, not-for-credit course is for landowners of any acreage who want to gain an introductory level of understanding of basic woodland management and become better stewards of their land.	Jennifer Gagnon jgagnon@vt.edu 540-231-6391

***fee includes meal(s)**

ONGOING EDUCATIONAL PROGRAMS

Virginia Master Naturalist Volunteer Basic Training

Available statewide. Dates, times, and fees vary.

People who are curious about nature, enjoy the outdoors, and want to be a part of natural resource management and conservation in Virginia are perfect candidates to become Virginia Master Naturalists. Visit www.virginiamasternaturalist.org to find a chapter near you. Michelle Prysby, Statewide Coordinator, 434-872-4580.

Fifteen Minutes in the Forest

Online video series. Every other Friday at 12:15 pm.

Join Virginia Cooperative Extension's Forestry Team for videos about natural resource-related topics. Connect/find past videos:

- **YouTube:** https://www.youtube.com/c/VirginiaForestLandownerEducationProgram
- **Facebook:** www.facebook.com/VFLEP

Carbon, *continued from page 1.*

A new Virginia Cooperative Extension publication will be available in the next few weeks. This publication has more details about carbon forest programs that are or will soon be available to Virginia woodland owners.

The Research Project

Since the possibility of generating tradeable forest-based carbon credits arose in the early 2000s, several studies have looked at woodland owners' willingness to participate in carbon programs and projects. Many of these studies look at landowner preferences, which are the drivers and obstacles for participating in such programs and markets. For example, Dickinson et al. (2012) found that non-industrial private forest landowners in Massachusetts were less likely to participate in a program that requires a management plan, has an early withdrawal penalty, and has longer time commitments, with females being more concerned about longer contracts. In a survey in Wisconsin, Knoot et al. (2015) found that program requirements are key in their willingness to participate, with reliance on a forester in future decisions and higher forest-based income being significant factors in explaining higher willingness to participate. In a study of Vermont landowners, White et al. (2018) found revenue to be the most important factor in landowner willingness to participate in forest carbon programs and contract duration to be the least important factor. These authors also found a preference for nonprofit institutions as opposed to for-profit firms and the government as program developers. Recently, in a study that brings together results from several previous studies, Sharma and Kreye (2022) found the need for very diverse and flexible contracts to increase woodland owner participation in forest carbon programs.

Recognizing the need for a diversity of carbon contracts, in our project, we want to move a step further into understanding preferences to participate in forest carbon programs. We will examine the attitudes of woodland owners towards forest carbon programs by bundling the terms of contract (such as contract length, prices and interest rates, type of activity, and risk). Moreover, we intend to include landowners from a diversity of landscapes (from the mountains to the coastal plain) and groups across the state of Virginia in our analysis. We believe that preference and attitudes towards forest carbon programs change according to a landowner's history and background. For that reason we want to make sure that we include what the USDA refers to as historically underserved farmers or ranchers (in our project we use the term "historically underserved landowners"): Beginning (a landowner who "has not operated a farm or ranch, or who has operated a farm or ranch for not more than 10 consecutive years"); socially disadvantaged (a landowner who belongs to a group "whose members have been subject to racial or ethnic prejudice because of their identity as members of a group without regard to their individual qualities"); veterans; and landowners with limited resources (income below the national poverty level for a family of four). For further information and precision in the definition of a historically underserved farmer or rancher, see the USDA website: https://www.nrcs.usda.gov/getting-assistance/underserved-farmers-ranchers.

Because a forest carbon contract will dictate how the landowner will use their forest for 35 to 100 years into the future, we expect that this change in behavior means changes in the total forest carbon stock for the individual forests and for the state of Virginia – we expect that stock to grow. However, besides timber products and carbon, another service that forests provide to society is that of water regulation; that is, water quality and water quantity, which we focus on in our project and refer to as water production. Scientists have found that there may be a trade-off between carbon sequestered/storage and water production. An increase in forest carbon storage and forested areas can increase water use by the forest itself and decrease water quantity for human and environmental needs (McLaughlin et al., 2013; Cademus, 2014; Acharya et al., 2022). So, the second objective of our project is to link different contracts to the expected carbon sequestered and any implications that may exist for water quantity production by forests. We expect such trade-offs to change according to where land is located.

Our research team is multidisciplinary and includes Jennifer Gagnon, Daniel McLaughlin, Brian Strahm, Greg Amacher, and Stella Schons. The team also includes three graduate students: Kalani Perera, Caio Gomes, and Lindsay Finks. If successful, our research will provide important insights about the potential of forest carbon programs to benefit landowners and Virginia's society at large.

Call for Participants

Our success in this enterprise deeply rests on the participation of woodland owners throughout Virginia from a diversity of backgrounds. Woodland owners may participate in the project through meetings that we will carry out late in the spring to refine and test the survey that we plan to widely implement during the summer. Landowners will have an option to choose how they would like to participate in responding to the survey – whether they prefer it by mail, online, or in person. By participating, landowners will not only contribute to our research but will also learn more about forest carbon programs in Virginia.

–Carbon, continued on page 5.

The Appalachian Regional Reforestation Initiative (ARRI)

by Cliff Drouet, Office of Surface Mining

The surface coal mining industry in the United States has been around since the early 1850's. In the early 1900's, individual states in the Appalachian region started to pass legislation that required companies to restore mine sites back to their original topography and to establish vegetation to control soil erosion. These early measures stemmed from problems with soil erosion, landslides, sedimentation, and pollution of wells and streams. Over time, however, mining engineers, mine inspectors, and landowners realized that the nonnative grass species planted on the mine sites weren't doing a good job of preventing erosion gullies. This led to nationwide research to determine better restoration methods.

The results of this research culminated in the Surface Mining Control and Reclamation Act (SMCRA) being signed into law in 1977 by President Jimmy Carter. This law was important because it established a federal baseline for mine land reclamation. Prior to SMCRA, each state established its own baseline, causing difficulties for companies mining in multiple states. This federal law also created the Office of Surface Mining Reclamation and Enforcement (OSMRE), a regulatory agency.

By the early 2000's, it was apparent that the shallow-rooted grasses, still being planted on reclaimed sites, were not sufficient to prevent erosion. So, new research began with a partnership of leaders from forestry schools, state and federal mining regulators, and mining companies within the Appalachian region. In 2004, the Forestry Reclamation Approach (FRA) was introduced. The FRA researchers established five steps to ensure successful restoration of forests on reclaimed surface mines–which can also improve air and water quality, while creating new surface soil.

The five FRA steps are:

1. Create a suitable rooting medium (use the best soil and rock materials available at each site).
2. Loose grade the topsoil and avoid compaction.
3. Use native ground cover species and plant less grass.
4. Plant two types of native trees (early successional species for wildlife habitat and late successional species for commercial timber production).
5. Use proper tree planting techniques.

There are three types of surface mine sites:

1. **Active mine sites**: These sites have an active mining permit that the state and federal mine inspectors and mine engineers follow, and they plant trees on those sites during the reclamation process.
2. **Abandoned Mine Lands (AML)**: These sites were typically mined after SMCRA was passed and have been properly reclaimed by the AML Department in each state using performance bond funding. Additional funding is provided from the federal coal tax program, which is managed by OSMRE.
3. **Legacy mine sites**: These surface sites were mined prior to SMCRA. Funding for restoration can come from state and federal agencies, nonprofits, for-profits, academia, endowments, foundations, etc.

The Appalachian Regional Reforestation Initiative (ARRI) helps landowners who have AML and legacy mine sites on their property to restore native tree species and wildlife habitat. The ARRI foresters meet with landowners and partners to create a proactive forest management plan (FMP) that best fits their site and coordinate the proper resources and silviculture techniques to ensure that the plan is successful.

After the FMP is prepared, an equipment contractor is hired to mechanically prepare the tract. This is accomplished with a bulldozer that rips or plows the hard-packed mine land using 36" ripper shanks. The project site is then cross-ripped to insure the hard packed soil has been fractured, allowing both surface water and tree roots to penetrate into the ground. The ARRI Foresters prepare a list of the best native species to plant. The trees are ordered from a nursery (state or private) and a tree planting contractor is hired for the spring planting season (approximately mid-February through mid-April, depending on weather conditions). The recommended spacing for seedling planting is 8'x8', which is approximately 700 seedlings per acre. Planting in spring ensures seedlings are still dormant when they go into the ground. As air and soil temperatures warm, the seedlings put down new roots and grow towards the sky with new limbs, shoots, buds, and leaves.

ARRI foresters visit each project site during the first summer after planting to assess seedling survival, measure seedling growth, and check for any vegetative competition that may be threatening the young seedlings. If unwanted vegetation is a problem, a post-planting herbicide release is recommended.

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ARRI, ***continued from page 4***

If recommended, herbicide is applied in July or August by a backpack spray crew (to keep vehicle traffic off the project site). After 4-5 years, the seedlings should be approximately head high; after 7-8 years some species will start dropping seeds, allowing natural regeneration to occur.

The ARRI program is a strong partner of the White Oak Initiative (https://www.whiteoakinitiative.org/), the Longleaf Pine Initiative (https://www.nrcs.usda.gov/programs-initiatives/longleaf-pine-initiative) and the Shortleaf Pine Initiative (https://shortleafpine.org/). These partnerships are a true win-win for landowners, the environment, and forestry in the Appalachian Region.

For more information on mineral rights, see An Introduction to Mineral Rights in Virginia, https://forestupdate.frec.vt.edu/content/dam/forestupdate_frec_vt_edu/newsletter/archives/2023/fall-2023/Fall2023.pdf.

Cliff Drouet is an OSMRE Forester with the ARRI program, cdrouet@osmre.gov, 303-549-7249. You can meet Cliff in person on April 25 at the Virginia Department of Energy Arbor Day event in Grundy, VA. Contact Tarah Kesterson, tarah.kesterson@energy.virginia.gov, for more information.

Extension Publications

Available at: https://www.pubs.ext.vt.edu/

- An Overview of Forest Carbon Credit Programs in Virginia **(NEW)**
- Emerald Ash Borer **(NEW)**
- Guide to Threatened and Endangered Species on Private Lands in Virginia **(Major revision)**
- Powell River Project - How to Restore Forests on Surface-mined Land
- Powell River Project - Growing Christmas Trees on Reclaimed Surface-mined Land
- Impact of Thinning Immature White Pine Stands on Growth and Timber Value in Grayson County Virginia
- Woodland Health Practices - A Field Guide
- Jumping Worms

Carbon, ***continued from page 3.***

Meetings and surveys will be carried out following federally required ethics standards and upon approval by Virginia Tech's Institutional Review Board (IRB) to guarantee the confidentially and security of all landowners who volunteer to participate in our research.

For more information and to volunteer to participate, please contact Stella Schons at szschons@vt.edu or Jennifer Gagnon at jgagnon@vt.edu.

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