

SOIL SURVEY RESULTS

Table 3. 2023 Soil Survey Results. Soil samples were processed by Waypoint Analytical, using the Mehlich-3 test. Ratings of very low, low, medium, high, or very high provide a general guideline for the adequacy of nutrient levels for field crops. Parts per million (ppm) can be converted to pounds per acre (lbs/ac) by multiplying by two.

Point	Organic Matter			pH	CEC	P		K			Mg			Ca			H
	Percent	Rating	ENR		meq/100g	ppm	Rating	ppm	Rating	% Sat	ppm	Rating	% Sat	ppm	Rating	% Sat	% Sat
A	4.8	M	130	5.5	11.3	7	VL	202	VH	4.6	160	M	11.8	1305	M	57.7	25.7
B	6.4	O	150	5.8	10	12	VL	290	VH	7.4	141	M	11.8	1227	M	61.4	19
C	6	O	150	5.7	11	23	L	283	VH	6.6	128	L	9.7	1378	M	62.6	20.9

Organic Matter (OM): Amount (percent) of decaying plant and animal material in the soil. The Estimated Nitrogen Release (ENR) is the amount of nitrogen (lbs/ac) that can be released from OM via bacterial activity or other means. The percent OM and ENR may be influenced by seasonal variation in weather or by soil physical conditions.

pH: A measure of soil acidity or alkalinity. A pH of 7.0 is neutral, lower pH is acidic, and higher is alkaline. Rule of thumb suggests a desirable pH for mineral soils is 6-7, and 5-5.5 for organic soils.

Cation Exchange Capacity (CEC): A measure of the soil's ability to hold nutrients (such as Ca, Mg, K, or H) in terms of milliequivalents per 100 grams of soil. Clay minerals and organic matter present in the soil affect CEC; it can range from <5 to 35 meq/100g for agricultural soils; $CEC = \% OM * (Soil\ pH - 4.5)$

Phosphorous (P): Amount of P available to the plant, measured in parts per million (ppm). Levels between 15-31 ppm are adequate for most crops. Excessively high levels can decrease the availability of other nutrients to plants.

Potassium (K): Plant-available potassium (parts per million). Generally higher levels of potassium are needed on soils high in clay and organic matter. On finer textured soils, potassium loss can occur through fixation.

Magnesium (Mg): Plant-available magnesium (parts per million). Soil type, drainage, liming and cropping practices affect Mg levels. Mg saturations >20% can adversely affect soil structure, infiltration, and aeration.

Calcium (Ca): Plant-available calcium (parts per million). In addition to the factors mentioned for Mg, soil pH can also affect Ca levels. Ca saturations >85% may indicate calcareous or gypsiferous soil.

Percent Cation Saturation (% Sat): Proportion (percent) of the CEC occupied by a given cation (i.e., an ion with a positive charge, such as calcium, magnesium or potassium).

WHY DOES THIS MATTER? Traditionally, "ideal" soil was defined as having CEC of 10 meq/100g; pH of 6.5; and CEC occupied by 20% H, 65% Ca, 10% Mg, and 5% K. In reality, as long as the cations ratios are typical of soils in your region, there is nothing to be gained by making them conform to a narrow, idealized range. Incorporating native plants into your landscape helps build back productive soils and reduces the need to supplement with fertilizers.

(Information about soil parameters from: Waypoint Analytical at <http://www.waypointanalytical.com/docs/technicalarticles/howtointerpreasoiltestreport.pdf>; *information about soil suitability from:* Magdoff, F, & Van Es, H. 2010. "Building soils for better crops". 3rd Ed. Sustainable Agriculture Network; *information about soil balancing from:* Chaganti, VN., Culman, SW. 2017. Historical perspective of soil balancing theory and identifying knowledge gaps: A review. Crops and Soils.)

Deer Exclosure Survey Methods

METHODS

In 2023, forest surveys were conducted on September 28th and October 3rd. Fifteen plots were sampled inside the deer exclosure and ten were sampled outside. Plots were marked with fencepost markers. Within each 4x4 meter plot, data were recorded for seedlings, saplings, and herbaceous invasive species.

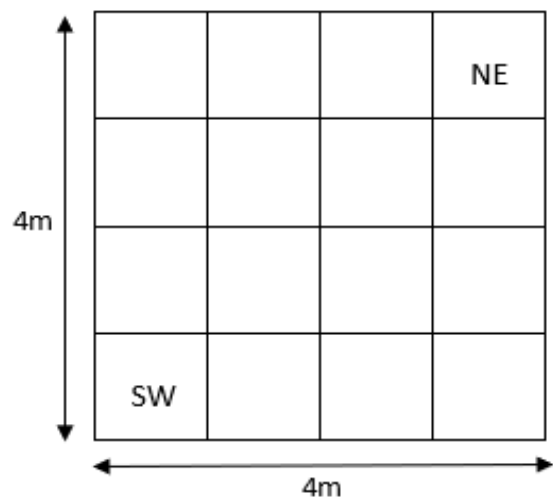
Seedlings: Any woody species <1 meter in height was considered a seedling. Seedlings were sampled within a square-meter area at the northeast (NE) and southwest (SW) corners of each 4x4 meter plot. Seedlings were identified and counted.

Saplings: Any woody vegetative growth >1 m in height was considered a sapling. Species were measured, identified, and counted within the entire 4x4 meter plot.

Herbaceous Invasive Species: Herbaceous invasive species (“invasives”) were noted within the square-meter area sampled at the NE and SW corners of each 4x4 m plot. Coverage was estimated using a coverages class scale of 0-4.

Coverage classes:

0: not present 1: present 2: ≤ 25%
3: 26 to 75% 4: ≥ 75%



SURVEY RESULTS

The following tables contain the data collected on saplings (Tables 4 and 5), seedlings (Tables 6 and 7), and invasives (Tables 8 and 9). Species are listed in order of occurrence, or the number of plots in which the species were found. The maximum possible occurrence for the interior plots is 15 and the maximum possible occurrence for exterior plots is 10.



Saplings Survey Results: Interior Plots

Table 4. 2023 Plant Survey Results. Species are listed in rank order of occurrence out of a maximum occurrence of 15. Plants are identified to species, unless otherwise noted.

Common Name	Scientific Name	Habit	Native Status*	Occurrence
Green Ash	<i>Fraxinus pennsylvanica</i>	Tree	Native	12
Northern Spicebush	<i>Lindera benzoin</i>	Shrub/Tree	Native	10
American Hornbeam	<i>Carpinus caroliniana</i>	Shrub/Tree	Native	7
Black Cherry	<i>Prunus serotina</i>	Shrub/Tree	Native	6
Plum	<i>Prunus sp.</i>	Shrub/Tree	Uncertain	4
Privet	<i>Ligustrum sp.</i>	Shrub/Tree	Native	4
Bitternut Hickory	<i>Carya cordiformis</i>	Tree	Native	3
Blackgum	<i>Nyssa sylvatica</i>	Tree	Native	3
Tuplip Poplar	<i>Liriodendron tulipifera</i>	Tree	Native	3
American Elm	<i>Ulmus americana</i>	Tree	Native	2
Black Haw	<i>Viburnum prunifolium</i>	Shrub/Tree	Native	2
Common Hackberry	<i>Celtis occidentalis</i>	Shrub/Tree	Native	2
Eastern Redbud	<i>Cercis canadensis</i>	Shrub/Tree	Native	2
Red Maple	<i>Acer rubrum</i>	Tree	Native	2
Sweet Cherry	<i>Prunus avium</i>	Tree	Introduced	2
American Basswood	<i>Tilia americana</i>	Tree	Native	1
Apple	<i>Malus sp.</i>	Tree	Uncertain	1
Autumn Olive	<i>Elaeagnus umbellata</i>	Shrub	Invasive	1
Black Oak	<i>Quercus velutina</i>	Tree	Native	1
Blueberry	<i>Vaccinium</i>	Shrub	Native	1
Boxelder	<i>Acer negundo</i>	Tree	Native	1
Chinese Privet	<i>Ligustrum sinense</i>	Shrub/Tree	Invasive	1
Eastern Redcedar	<i>Juniperus virginiana</i>	Tree	Native	1
Flowering Dogwood	<i>Cornus florida</i>	Shrub/Tree	Native	1
Hophornbeam	<i>Ostrya virginiana</i>	Shrub/Tree	Native	1
Mulberry	<i>Morus sp.</i>	Tree	Uncertain	1
Smooth Sumac	<i>Rhus glabra</i>	Shrub	Native	1

* Plants are characterized native, introduced, or invasive via the USDA plant database

Saplings Survey Results: Exterior Plots

Table 5. 2023 Plant Survey Results. Species are listed in rank order of occurrence out of a maximum occurrence of 10. Plants are identified to species, unless otherwise noted.

Common Name	Scientific Name	Habit	Native Status*	Occurrence
American Hornbeam	<i>Carpinus caroliniana</i>	Shrub/Tree	Native	4
Privet	<i>Ligustrum sp.</i>	Shrub/Tree	Native	4
Green Ash	<i>Fraxinus pennsylvanica</i>	Tree	Native	2
Northern Spicebush	<i>Lindera benzoin</i>	Shrub/Tree	Native	1
Plum	<i>Prunus sp.</i>	Shrub/Tree	Uncertain	1

Seedlings Survey Results: Interior Plots

Table 6. 2023 Plant Survey Results. Species are listed in rank order of occurrence out of a maximum occurrence of 15. Plants are identified to species, unless otherwise noted.

Common Name	Scientific Name	Habit	Native Status*	Occurrence
Green Ash	<i>Fraxinus pennsylvanica</i>	Tree	Native	7
Northern Spicebush	<i>Lindera benzoin</i>	Shrub/Tree	Native	7
Black Cherry	<i>Prunus serotina</i>	Shrub/Tree	Native	6
Common Hackberry	<i>Celtis occidentalis</i>	Shrub/Tree	Native	6
American Hornbeam	<i>Carpinus caroliniana</i>	Shrub/Tree	Native	5
Red Maple	<i>Acer rubrum</i>	Tree	Native	5
Blackgum	<i>Nyssa sylvatica</i>	Tree	Native	2
American Elm	<i>Ulmus americana</i>	Tree	Native	1
Bitternut Hickory	<i>Carya cordiformis</i>	Tree	Native	1
Boxelder	<i>Acer negundo</i>	Tree	Native	1
Eastern Redbud	<i>Cercis canadensis</i>	Shrub/Tree	Native	1

* Plants are characterized native, introduced, or invasive via the USDA plant database

Seedlings Survey Results: Exterior Plots

Table 7. 2023 Plant Survey Results. Species are listed in rank order of occurrence out of a maximum occurrence of 10. Plants are identified to species, unless otherwise noted.

Common Name	Scientific Name	Habit	Native Status*	Occurrence
Green Ash	<i>Fraxinus pennsylvanica</i>	Tree	Native	10
Black Cherry	<i>Prunus serotina</i>	Shrub/Tree	Native	5
Common Hackberry	<i>Celtis occidentalis</i>	Shrub/Tree	Native	5
American Hornbeam	<i>Carpinus caroliniana</i>	Shrub/Tree	Native	4
Northern Spicebush	<i>Lindera benzoin</i>	Shrub/Tree	Native	4
Red Maple	<i>Acer rubrum</i>	Tree	Native	3
Oak	<i>Quercus sp.</i>	Tree	Uncertain	2
American Beech	<i>Fagus grandifolia</i>	Tree	Native	1
Black Haw	<i>Viburnum prunifolium</i>	Shrub/Tree	Native	1
Black Oak	<i>Quercus velutina</i>	Tree	Native	1
Blackgum	<i>Nyssa sylvatica</i>	Tree	Native	1
Boxelder	<i>Acer negundo</i>	Tree	Native	1
Flowering Dogwood	<i>Cornus florida</i>	Shrub/Tree	Native	1
Pignut Hickory	<i>Carya glabra</i>	Tree	Native	1

* Plants are characterized native, introduced, or invasive via the USDA plant database

Invasives Survey Results: Interior Plots

Table 8. 2023 Plant Survey Results. Species are listed in rank order of occurrence out of a maximum occurrence of 15. Plants are identified to species, unless otherwise noted.

Common Name	Scientific Name	Habit	Native Status*	Occurrence
Japanese Honeysuckle	<i>Lonicera japonica</i>	Vine	Invasive	13
Japanese Barberry	<i>Berberis thunbergii</i>	Shrub	Invasive	8
Oriental Bittersweet	<i>Celastrus orbiculatus</i>	Vine	Invasive	8
Wineberry	<i>Rubus phoenicolasius</i>	Shrub	Invasive	6
English Ivy	<i>Hedera helix</i>	Vine	Invasive	3
Winter Creeper	<i>Euonymus fortunei</i>	Shrub/Vine	Invasive	3
Multiflora Rose	<i>Rosa multiflora</i>	Shrub/Vine	Invasive	2
Privet	<i>Ligustrum sp.</i>	Shrub/Tree	Native	1

Invasives Survey Results: Exterior Plots

Table 9. 2023 Plant Survey Results. Species are listed in rank order of occurrence out of a maximum occurrence of 10. Plants are identified to species, unless otherwise noted.

Common Name	Scientific Name	Habit	Native Status*	Occurrence
Japanese Honeysuckle	<i>Lonicera japonica</i>	Vine	Invasive	10
Wineberry	<i>Rubus phoenicolasius</i>	Shrub	Invasive	10
Oriental Bittersweet	<i>Celastrus orbiculatus</i>	Vine	Invasive	7
Japanese Barberry	<i>Berberis thunbergii</i>	Shrub	Invasive	6
Japanese Stiltgrass	<i>Microstegium vimineum</i>	Graminoid	Invasive	4
Multiflora Rose	<i>Rosa multiflora</i>	Shrub/Vine	Invasive	3
Coralberry	<i>Symphoricarpos orbiculatus</i>	Shrub	Uncertain	1
English Ivy	<i>Hedera helix</i>	Vine	Invasive	1
Garlic Mustard	<i>Alliaria petiolata</i>	Forb	Invasive	1
Privet	<i>Ligustrum sp.</i>	Shrub/Tree	Native	1
Winter Creeper	<i>Euonymus fortunei</i>	Shrub/Vine	Invasive	1

* Plants are characterized native, introduced, or invasive via the USDA plant database

Discussion

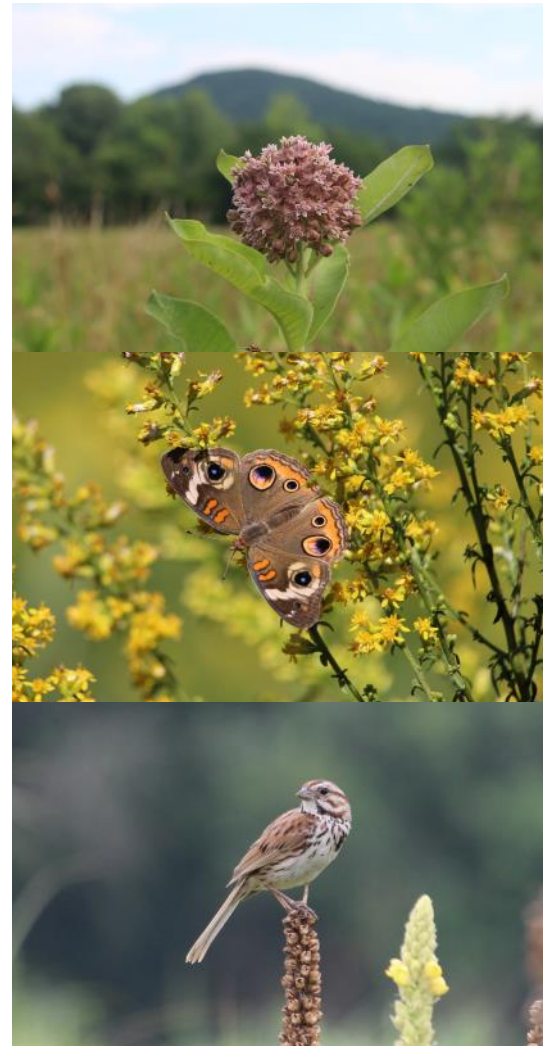
While we hope these reports provide valuable insights to landowners, there are a few considerations to keep in mind. Our reports present a snapshot of species observed at each property during the survey period. As such, you may note that some species regularly observed on your property are absent from these lists. This discrepancy arises because our surveys focus exclusively on grassland habitats, reflecting species occurrence with that specific environment rather than providing an exhaustive list for the entire property.

In general, our surveys are focused on identifying flora and fauna at specific times and in specific places. Bird surveys aim to inventory birds during a 6-week period of active breeding. Species present in the area during other times of year — such as winter or migration — may not be documented by our breeding season surveys. Surveyors are instructed to abide by time and space limits in their searches; they count birds within a strict 10-minute time window and a 100 meter search radius, and document plants within 1 x 1 meter plots. Species detected outside a search area or a time window are not counted.

Although it limits total numbers of species on an annual list, this study design standardizes search effort and enables meaningful comparisons among properties. Finally, surveyors have the option to spend additional time collecting “incidental” observations to enrich their experience and to provide landowners with fuller species lists. While some surveyors spend considerable time on this, others spend less time or no time at all. Thus, the extensiveness of incidental lists can vary from property to property.

We encourage you to examine your survey results and consider how your current land management practices impact the biodiversity found on your landscape. In the following pages, we’ve provided some best management practices that our team and partners have developed over years of conducting grassland research.

For information on available tools to help facilitate these best management practices, please reach out to us at
VirginiaWorkingLandscapes@si.edu.



The Plight of Grassland Birds

Grassland and shrubland birds are declining more than any other group of birds. These declines have been attributed to agricultural intensification, habitat loss/ fragmentation, pesticide use, and climate change. Farmlands and associated grasslands (i.e., cropland, livestock pasture) are home to some of our nation's most threatened species of birds throughout the year. With over 80% of Virginia's grasslands currently held in private hands, the survival and well-being of these vulnerable species depends entirely on the decisions made by private landowners.

The good news is that private landowners and farmers can — and are — helping bring these birds back! There is a suite of best management practices, many linked to financial cost-share opportunities, that can be implemented to simultaneously allow grassland birds to thrive and farm production goals to be met.

What can you do?

- The peak nesting period for ground-nesting grassland birds falls between May 1st and July 1st. If possible, **delay spring field maintenance until early July**, giving nesting grassland birds the chance to successfully fledge at least one clutch of young.
- For fallow fields managed annually, **bush-hog once between mid-February and early April**. Doing so minimizes disturbance to wildlife while providing cover and food resources throughout the year.
- When clipping livestock pastures or bush-hogging to maintain grasslands, raise your cutting blades as high as possible — to 8" if your machinery allows for it — to reduce mortality of grassland birds and box turtles.
- Follow **low intensity or rotational grazing practices**, which improve herd health, soil quality, and forage re-growth. These grazing practices build a more resilient landscape and are compatible with nesting grassland birds.
- Rather than managing an entire field uniformly, **manage fields in patches** (i.e. burn or cut 1/3 of field each year), allowing habitat for wildlife and floral resources for pollinators to be continuously available on the landscape.
- **Incorporate native plants and control non-native vegetation** in your fields to provide foraging opportunities and protective cover while increasing biodiversity.
- **Promote connectivity of grasslands** between neighboring farms. Large expanses of connected grasslands are important for many of our grassland obligate species.
- **Keep cats indoors** to protect vulnerable ground nesting birds. It's estimated that outdoor cats kill over 2 billion birds annually in the U.S.
- **Hang nest boxes** for cavity nesting species like American Kestrel, Barn Owl, Eastern Bluebird and more!



The Importance of Native Plants

In a healthy grassland, native wildflowers (or forbs) emerge through a matrix of native warm season grasses (NWSGs). These native forbs support declining pollinator communities, which are essential to our agricultural systems, by providing food and shelter for beneficial insects throughout the year. NWSGs are well-acclimated to Virginia by having deep roots that are superior at carbon sequestration, tapping into the water table during droughts, and depositing more organic material into soils. NWSGs can also be a great option for later maturing hay (allowing grassland birds sufficient time to nest) and as forage for livestock during the summer when cool-season grasses go dormant.

What can you do?

- **Start identifying plants on your property.** Conserving native biodiversity on your property begins with understanding which species are already present, and whether they're native or invasive. Apps like [Seek by iNaturalist](#) and [Flora of Virginia](#) are a great way to begin identifying the world around you!
 - **Plant grasses and forbs native to Virginia.** Native plants have evolved to sustain insects and wildlife in our local ecosystems. For more information on native plants, visit our [VWL Resources Page](#).
 - **Remove invasive plants** from your property. Invasive plants are non-native species which have been introduced to the landscape and cause environmental harm.
-
- **Integrate wildflowers into fescue-dominated open spaces.** Cool-season grasses, like Tall Fescue, cover 31 million acres across the Mid-Atlantic region and offer an opportunity to balance the conservation of native biodiversity with production goals.
 - **Let plants self-seed.** By leaving the stalks of native forbs standing, you're allowing them to self-seed and increase their abundance.
 - Determine your property's planting conditions (soil, light, ecoregion) and start with multiple individuals from only a few species. Pollinators prefer to forage on **dense plantings of the same species** to save energy while searching for resources.
 - Wildlife depend on native plants year-round, so providing **floral resource availability in all seasons**, composed of variable structure and height, enhances ecosystem services.



Understanding Soil Health

Though often overlooked, understanding soil health on working landscapes is one of the most important factors to consider when striving to successfully sustain and increase biodiversity. Across Virginia Working Landscapes' 16-county survey region, soil composition often varies due to geological variation across the ecoregions. The Blue Ridge Mountains ecoregion acts as a divider between the western ecoregions (Ridge & Valley, Central Appalachians) and the eastern ecoregions (Piedmont, Northern Piedmont). Successfully managing Virginia's native grasslands depends on understanding the underlying soil health and composition. Healthy soil is vital for ecosystem success by regulating water, cycling nutrients, filtering pollutants, and sustaining animal and plant life.

What can you do?

- **Limit disturbance.** When managing fields, try reduced tillage farming to limit soil erosion and increase water infiltration.
- **Increase biodiversity.** Create habitat and return nutrients to your soil by planting diverse cover crops, wildflowers, and leaving plants standing through the winter months.
- If you can, try implementing **rotational livestock grazing** in your pastures. In doing so, fields are allowed a period of rest which allows soil health to improve.
- **Conduct more in-depth soil tests.** Get to know your soil better by testing it through the [Cornell Soil Health Laboratory](#) which offers tests on active carbon, soil respiration, and predicted available water capacity.

For more information: [VCE](#)

Indicators of Healthy Soil

- Greater water infiltration, less runoff, little evidence of erosion, and no standing water in the field.
- Greater soil-water storage that can be realized with additional growing days to avert plant wilting during drought conditions.
- Visible evidence of earthworms rising to the soil's surface after heavy rainfall events.
- Surface soil that breaks apart in the hand into crumbles rather than forming clods.
- Darkened soil near the surface in response to organic matter accumulation.
- Vigorous crop growth following precipitation and little evidence of nutrient deficiency, particularly nitrogen (N).

Source: [USDA](#)

Partners, Contacts, & Services

Biodiversity surveys, grassland bird conservation, biodiversity-friendly best management practices, nest boxes, site visits, ecological research, and Neighborhood Conservation Walks:

- Virginia Working Landscapes (vaworkinglandscapes.org)
- Contact: Erin Shibley (shibleye@si.edu); VWL Survey Coordinator
Contact: Justin Proctor (proctorcj@si.edu); Coordinator of the Virginia Grassland Bird Initiative (VGBI - vagrasslandbirds.org)

Financial incentives program for grassland bird habitat protection in hayfields and pastures:

- The Piedmont Environmental Council (pecva.org) and Virginia Grassland Bird Initiative (vagrasslandbirds.org)
Contact: October Greenfield (ogreenfield@pecva.org); Co-coordinator of VGBI

Quail and/or pollinator habitat, cost-share for habitat management:

- Quail Forever (quailforever.org)
Contact: Alison Menefee (amenefee@quailforever.org); Senior Farm Bill Biologist

Native meadow establishment and management:

- The Clifton Institute (cliftoninstitute.org)
Contact: Kадiera Ingram (kingram@cliftoninstitute.org); Landowner Outreach Associate

Regenerative grazing, soil health, and cover crops:

- American Farmland Trust (farmland.org)
Contact: Jacob Gilley (jgilley@farmland.org); Mid-Atlantic Sustainable Grazing Manager
- VA Cooperative Extension (ext.vt.edu)
Contact: Tim Mize (tmize@vt.edu); Unit Coordinator and Extension Agent

Watershed stewardship and riparian buffers:

- Friends of the Shenandoah River (fosr.org)
Contact: Karen Andersen (friendsofshenandoah@gmail.com); Laboratory and Program Director
- Goose Creek Association (goosecreek.org)
Contact: Leah Chaldares (info@goosecreek.org); Director & Executive Administrator
- Friends of the Rappahannock (riverfriends.org)
Contact: Bryan Hofmann (bryan.hofmann@riverfriends.org); Deputy Director



Partners, Contacts, & Services

Invasive species identification and management:

- Blue Ridge PRISM (blueridgeprism.org)
Contact: Natali Walker (natali@blueridgeprism.org); Invasive Management Specialist

Native plant education, research and conservation, local native plant nurseries:

- The Virginia Native Plant Society (vnps.org)
- Center for Urban Habitats (centerforurbanhabitats.com)

Beaver management:

- Human-Beaver Coexistence Fund (coexistwithbeavers.org)
Contact: Alison Zak (azak@coexistwithbeavers.org); Founder & Executive Director

Conservation easements:

- The Piedmont Environmental Council (pecva.org)
Contact: Find your local field representative [here](#)
- Land Trust of Virginia (landtrustva.org)
Contact: Ashton Cole (ashton@landtrustva.org); Executive Director
- Old Dominion Land Conservancy (odlc.us)
Contact: Henry Stribling (henry@odlc.us); Executive Director
- Virginia Department of Forestry (dof.virginia.gov)

Agricultural best management practices, land-use tax credits, cost-share programs, and loans:

- Virginia Natural Resources Conservation Services (NRCS)
Find your local service center [here](#)
- Farm Service Agency (FSA)
Find your local service center [here](#)

Soil health, water quality improvement, land-use tax, cost-share programs:

- Virginia Soil and Water Conservation Districts (SWCD)
Find your district [here](#)

Forest renewal, riparian management, timber resources, cost-share programs:

- Virginia Department of Forestry (dof.virginia.gov)
Find a forester [here](#)

Air quality, water quality, environmental enforcement, and loans:

- VA Department of Environmental Quality
Find a local service provider [here](#)



Illustrations by Nick Garnhart



Acknowledgements

First, we would like to extend a big *thank you* to you, the landowner, for providing access to your property for this research. We also gratefully acknowledge the following volunteer community scientists for donating their time and expertise.

Property	County	Surveyors
Black Dog Ridge	Fauquier	VWL Staff and Charles Price (Bird Surveys); VWL Staff, Paul Guay, and Jenny Meyer (Plant Surveys)
Blakely Grove	Loudoun	Art Drauglis and Bob Butterworth (Bird Surveys); Jennifer Holder and Christopher Siwy (Plant Surveys)
Chancellors Rock Farm	Rappahannock	VWL Staff and Don Arnold (Bird Surveys); Charlotte Lorick (Plant Surveys)
Clifton Farm LLC	Clarke	VWL Staff, Elizabeth Train, and Lori Dabinett (Bird Surveys); Sally Anderson, Elizabeth Train, and VWL Staff (Plant Surveys)
Elmwood Farm	Culpeper	VWL Staff, Alex Bueno, and Linda Bueno (Bird Surveys); Paul Guay, Dana Squire, and Charles Price (Plant Surveys)
Faire Meddow	Fauquier	VWL Staff (Bird Surveys); VWL Staff and Jennifer Holder (Plant Surveys)
Glendale Farm	Clarke	Kate Heneberry, Corey Hunsdon, and Robin Richards (Bird Surveys); Sally Anderson and Robin Richards (Plant Surveys)
Kinloch Farm	Fauquier	VWL Staff and Edmund LeGrand (Bird Surveys); VWL and Kinloch Staff (Plant Surveys)
Maclean and MacNelly Properties	Rappahannock	VWL Staff and Don Arnold (Bird Surveys); VWL Staff and Paul Guay (Plant Surveys)
Narrator Farm	Fauquier	Art Drauglis and Bob Butterworth (Bird Surveys); VWL Staff and Paul Guay (Plant Surveys)
Oakham Farm	Loudoun	VWL Staff and Jennifer Venable (Bird Surveys)
Panorama Farms	Albemarle	Eve Gaige and Janet Paisley (Bird Surveys); Dana Squire, Erin Gore, and Chris Bowlen (Plant Surveys)

Acknowledgements

Property	County	Surveyors
Pickett Mountain Farm	Fauquier	Kate Heneberry, Corey Hunsdon, and Hillary Davidson (Bird Surveys); Jennifer Holder and Jenny Meyer (Plant Surveys)
Raines Property	Rappahannock	VWL Staff (Bird and Plant Surveys)
Rapidan River Farm	Greene/Orange	Eve Gaige, Nancy Cohen, and Janet Paisley (Bird Surveys); Dana Squire, Erin Gore, and Chris Bowlen (Plant Surveys)
Smith Property	Madison	Alex Brubaker and Jeanne Mayo (Bird Surveys); Dana Squire, Paul Guay and VWL Staff (Plant Surveys)
Upland Farm	Rappahannock	VWL Staff and Don Arnold (Bird Surveys); Paul Guay and VWL Staff (Plant Surveys)
Zinnia Ridge Farm	Culpeper	VWL Staff and Charles Price (Bird Surveys); VWL Staff and Julie Pineiro (Plant Surveys)



Unless otherwise noted, all photos are credited to VWL Staff.

VWL Team

Thank you so much for your involvement in this project!

For more information, please contact us at VirginiaWorkingLandscapes@si.edu, (540)-635-0073, visit our website (www.vaworkinglandscapes.org), or find us on Facebook & Instagram.



VWL TEAM 2023

Amy Johnson	Program Director
Erin Shibley	Survey & Volunteer Coordinator
Justin Proctor	Virginia Grassland Bird Initiative Coordinator
Caitlyn Dittmeier	Communications and Development Assistant
Natalie Izlar	Botany Technician
Jordan Coscia	Research Fellow
Bernadette Rigley	Research Fellow
Christopher Rademacher	Intern
Nick Garnhart	Intern
Percy Ulsamer	Intern
Martín Colombo	Intern
Sophie Gilbert	Intern

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Attention: Amy Johnson

Virginia Working Landscapes
Smithsonian Conservation Biology Institute,
1500 Remount Rd, MRC 5537, Front Royal, VA 22630

- ♦ To donate over the phone, please call our Advancement Team at 202-633-3027.

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