



VIRGINIA WORKING LANDSCAPES

White House Farm

Survey Report 2013

Introduction

The plants, pollinators, and birds that depend on grasslands of the eastern United States are declining in part as a result of the loss of native warm season grasses. These native grasslands have been lost to historic conversion to cool season grass species, intensive land management practices, and more recently, invasion by non-native plant species. Virginia Working Landscapes (VWL) is a network of partners convened by the Smithsonian Conservation Biology Institute (SCBI) to promote the conservation of native biodiversity and encourage the sustainable use of working landscapes through research, education and outreach. To meet this need, partners in the VWL network began a long-term study of the relationship among grassland plant species and associated wildlife, in a predominantly agricultural landscape. Grasslands were selected first at the program's inception in 2009 because they were the least well known among the agricultural landscape types (e.g. forests, wetlands, streams and riparian zones) in need of conservation research. These studies were designed to inform the development of adaptive best practices for sustainable land management. Smithsonian scientists and interns, George Mason University graduate students, and a network of trained citizen scientists, have just completed the fourth year of the VWL grassland biodiversity study. This report is an individual summary of the 2013 VWL grassland biodiversity survey methods and findings for White House Farm.

Methods

Overview

In 2013, the VWL grassland biodiversity survey was conducted at 21 locations within the northern Shenandoah Valley and northern Piedmont, from Wheatlands Farm in Swoope to Banshee Reeks Nature Preserve near Leesburg, with most located on private property (Figure 1). Surveys were conducted on properties either with fields of predominantly warm season (WSG) grasses or cool season grasses (CSG), or both. This year's field sites incorporated a variety of land uses including hay production, pasturing of livestock, recreational use (i.e. hiking, horseback riding and hunting) or have been managed specifically for wildlife habitat.

VWL surveyors inventory sampled (i.e. occurrence and relative abundance) for birds, pollinators, plants and soil, typically at one site per property; however some properties had multiple study sites (Figure 1). Three survey poles (labeled A, B and C) served as starting points for each survey sample. Pole locations were at least 100m from forest edge and approximately 200m from each other. Birds were sampled during the spring nesting season, while pollinators

and plants were sampled in both spring and late summer to account for seasonal differences in species composition. Twenty-four soil samples were taken from each site in the late summer or fall for laboratory analyses. Survey pole locations for White House Farm are indicated on Figure 2. Due to the nature of sampling methods, the species lists do not necessarily reflect all species that may potentially occur on a particular property.

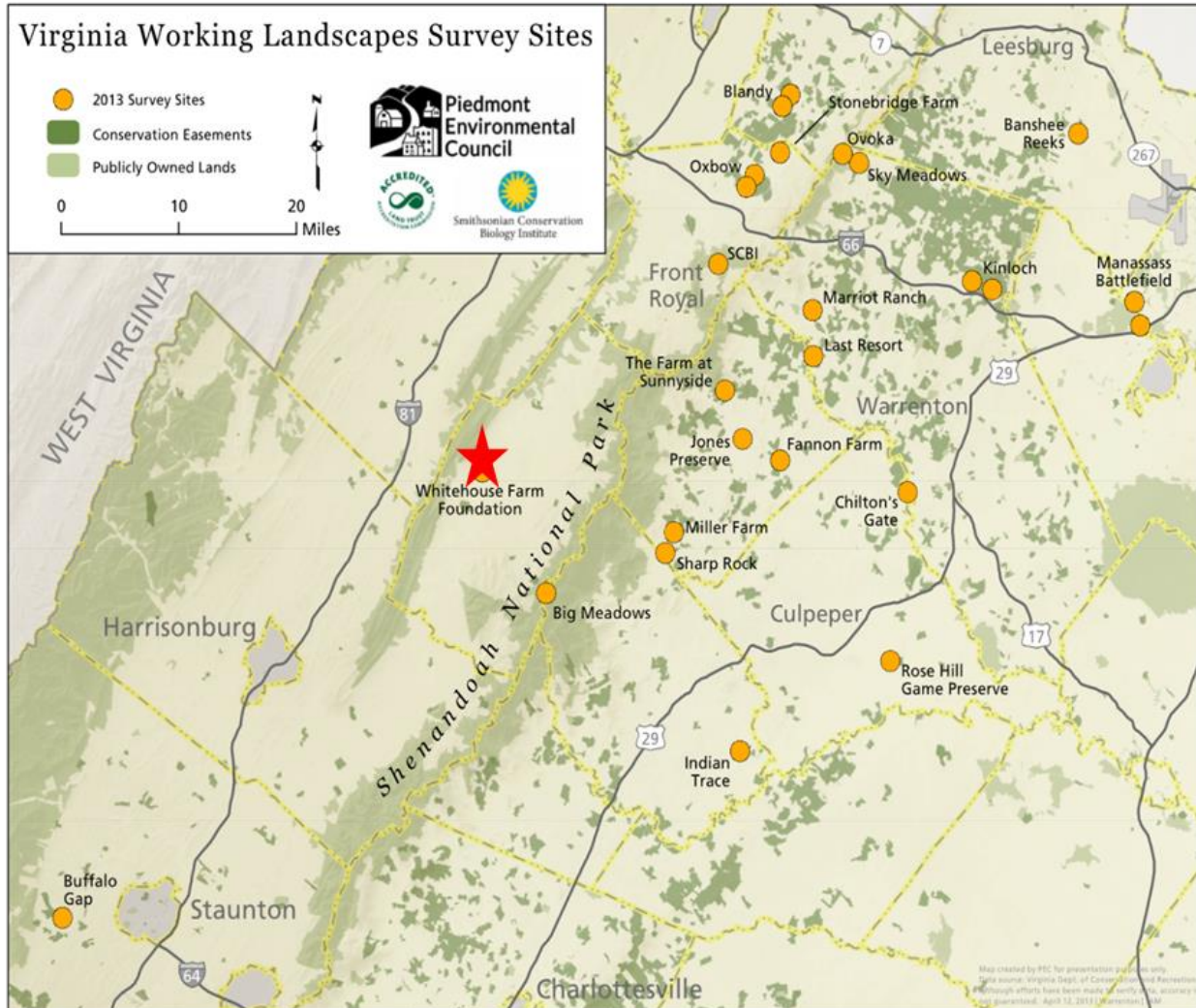


Figure 1. Map of VWL survey sites with White House Farm indicated by a star.



Figure 2. White House Farm with survey poles A, B and C indicated in the figure.

Bird Survey

Birds were sampled by point count method for 10 minute intervals; VWL researchers identified each bird seen and heard within 100m of predetermined points relative to survey poles. Each site was visited four times between May 15th and June 30th with surveyors conducting three point counts during each visit (totaling 12 point counts for the season).

Values are reported in Table 1 as occurrence in rank order, which represents the number of times that a species was observed (i.e. point counts) during the sampling season (maximize of 12 observations for a species). Species of regional or continental concern are noted, as are VWL target species.

Information on species of regional and continental conservation concern was obtained from Partners in Flight (<http://www.pwrc.usgs.gov/pif/>). VWL Target Species are those SCBI researchers have identified as dependent on grassland/shrubland habitats and therefore are important components of the grassland communities. Incidentals are species observed either before or after survey periods, outside the survey boundaries or observed as flyovers. Birds recorded as incidentals are not included in the final dataset for scientific analysis by SCBI researchers.

Pollinator Survey

Pollinator surveys focused on the important and conspicuous, bees and butterflies. Butterflies were sampled as counts of individuals identified to species along four independent transects walked for 20 minutes each (Table 2). Bee species were sampled by placing twenty small colored plastic bowls filled with soapy water (known as bee bowls) along 100 meter transects starting at each survey pole. Bowls were left in the field for 24 hours. Each site was surveyed once in spring and once in late summer. Specimens were collected for later identification by VWL pollinator experts. Specimens were identified to genus; common names are provided as applicable (Table 3). The occurrence of pollinators is presented in Tables 2 and 3 as the number of individuals seen or collected during the survey season. Butterfly species and bee genera are rank ordered by occurrence in both survey seasons.

Plant Survey

Plants were sampled as counts of identified species per square meter (m²) at 21 plots along three transects at each survey site during each of the two survey seasons. At the time of data collection, other features such as weather, percent cover, tallest plant, etc. were recorded. Plants are presented identified to species (as possible, some specimens lacked the characteristics necessary for correct identification) with common names provided, and occurrence is reported as the number of times the species was recorded in 21 plots in each season. Species are rank ordered by occurrence in both survey seasons. Each species is also reported as native or introduced and categorized by its growth form (woody, grass, or forb [non-woody, non-grass plant species]) (Table 4).

Soil Sampling

Eight soil samples were taken at each survey pole (A, B and C) at each site for a total of twenty-four samples. Results represent the soil community within 100 meters of the survey poles

(Table 5). Samples were analyzed by A&L Eastern Laboratories (www.aleastern.com) for several aspects of soil fertility (i.e. organic matter, phosphorus, potassium, calcium, magnesium, pH, acidity and cation exchange capacity (CEC)). Values for organic matter and minerals indicate the abundance in the soil sample. Parts per million (ppm) can be converted to pounds per acre by multiplying by two. For more information on how to interpret soil analyses, visit <http://www.aleastern.com/showpdf2.aspx?spdf=31>.

Results and Discussion

Surveys at White House Farm recorded 50 bird species, 11 butterfly species, representatives of nine bee genera, and 51 plant species (Tables 1-4). Eight birds observed were of regional conservation concern and one was of continental concern and 12 were VWL target grassland or shrubland species (Table 1). Among the butterflies observed, the Cabbage White (*Pieris rapae*) and Pearl Crescent (*Polyommatus icarus*) were the most numerous (Table 2). The Sweat Bees (*Lasioglossum*, *Halictus*) were the most common bees (Table 3). Of the 51 plant species recorded, 21 (41%) are non-native, including one woody, four grasses and 16 forbs (Table 4). The soil sampling results presented in Table 5 will be used to examine the relationship of soil fertility with plant, insect, and bird species community composition.

Overall project results and interpretations will be presented with more detail at the annual VWL survey meeting in February 2014. This includes a comparison between survey locations. In the meantime, please feel free to contact us with any questions regarding your survey.

VWL would like to thank all of the citizen scientists (named in Appendix 1) who's hard work made this year's surveys possible; particularly Allegra Churchill, Diane Holsinger, Francie Schroeder and Penny Warren for surveying White House Farm. VWL would also like to thank all landowners and managers (named in Appendix 2) for participating in this year's survey; particularly the owners and staff at White House Farm for their continued support. Their support helps further efforts to promote the conservation of native biodiversity and encourage the sustainable use of working landscapes through research, education and outreach.

Table 1. Bird Species List and Occurrence for White House Farm

Common Name	Genus	Species	Occurrence	Species of Concern	VWL Target Species
Field Sparrow	<i>Spizella</i>	<i>pusilla</i>	12	Regional	Shrubland
Indigo Bunting	<i>Passerina</i>	<i>cyanea</i>	9	NA	Shrubland
Song Sparrow	<i>Melospiza</i>	<i>melodia</i>	9	NA	NA
Tree Swallow	<i>Tachycineta</i>	<i>bicolor</i>	9	NA	NA
American Goldfinch	<i>Spinus</i>	<i>tristis</i>	8	NA	NA
Eastern Bluebird	<i>Sialia</i>	<i>sialis</i>	8	NA	Shrubland
Carolina Wren	<i>Thryothorus</i>	<i>ludovicianus</i>	7	NA	NA
Northern Cardinal	<i>Cardinalis</i>	<i>cardinalis</i>	7	NA	NA
Tufted Titmouse	<i>Baeolophus</i>	<i>bicolor</i>	7	NA	NA
American Crow	<i>Corvus</i>	<i>brachyrhynchus</i>	6	NA	NA
Red-bellied Woodpecker	<i>Melanerpes</i>	<i>carolinus</i>	6	NA	NA
Mourning Dove	<i>Zenaida</i>	<i>macroura</i>	5	NA	NA
Willow Flycatcher	<i>Empidonax</i>	<i>traillii</i>	5	Both	NA
Common Grackle	<i>Quiscalus</i>	<i>quiscula</i>	4	NA	NA
Red-eyed Vireo	<i>Vireo</i>	<i>olivaceus</i>	4	NA	NA
Scarlet Tanager	<i>Piranga</i>	<i>olivacea</i>	4	NA	NA
Baltimore Oriole	<i>Icterus</i>	<i>galbula</i>	3	Regional	NA
Blue Grosbeak	<i>Passerina</i>	<i>caerulea</i>	3	NA	Shrubland
Blue Jay	<i>Cyanocitta</i>	<i>cristata</i>	3	NA	NA
Brown-headed Cowbird	<i>Molothrus</i>	<i>ater</i>	3	NA	NA
Great Crested Flycatcher	<i>Myiarchus</i>	<i>crinitus</i>	3	NA	NA
Red-winged Blackbird	<i>Agelaius</i>	<i>phoeniceus</i>	3	NA	Shrubland
Yellow-billed Cuckoo	<i>Coccyzus</i>	<i>americanus</i>	3	Regional	Shrubland
American Robin	<i>Turdus</i>	<i>migratorius</i>	2	NA	NA
Blue-gray Gnatcatcher	<i>Polioptila</i>	<i>caerulea</i>	2	NA	NA
Cedar Waxwing	<i>Bombycilla</i>	<i>cedrorum</i>	2	NA	NA
Common Yellowthroat	<i>Geothlypis</i>	<i>trichas</i>	2	NA	Shrubland
Orchard Oriole	<i>Icterus</i>	<i>spurius</i>	2	NA	NA
Warbling Vireo	<i>Vireo</i>	<i>gilvus</i>	2	NA	NA
American Kestrel	<i>Falco</i>	<i>sparverius</i>	1	NA	Grassland
Bobolink	<i>Dolichonyx</i>	<i>oryzivorus</i>	1	NA	Grassland
Carolina Chickadee	<i>Poecile</i>	<i>carolinensis</i>	1	NA	NA
Eastern Towhee	<i>Pipilo</i>	<i>erythrophthalmus</i>	1	Regional	Shrubland
Northern Flicker	<i>Colaptes</i>	<i>auratus</i>	1	Regional	NA
Northern Mockingbird	<i>Mimus</i>	<i>polyglottos</i>	1	NA	NA
Pileated Woodpecker	<i>Dryocopus</i>	<i>pileatus</i>	1	NA	NA
Rock Pigeon	<i>Lagopus</i>	<i>muta</i>	1	NA	NA
White-breasted Nuthatch	<i>Sitta</i>	<i>carolinensis</i>	1	NA	NA
Barn Swallow	<i>Hirundo</i>	<i>rustica</i>	Incidental	NA	NA
Canada Goose	<i>Branta</i>	<i>canadensis</i>	Incidental	NA	NA

Common Name	Genus	Species	Occurrence	Species of Concern	VWL Target Species
Common Raven	<i>Corvus</i>	<i>corax</i>	Incidental	NA	NA
Double-crested Cormorant	<i>Phalacrocorax</i>	<i>auritus</i>	Incidental	NA	NA
Downy Woodpecker	<i>Picoides</i>	<i>pubescens</i>	Incidental	NA	NA
Eastern Kingbird	<i>Tyrannus</i>	<i>tyrannus</i>	Incidental	Regional	Grassland
Eastern Meadowlark	<i>Sturnella</i>	<i>magna</i>	Incidental	Regional	Grassland
Eastern Phoebe	<i>Sayornis</i>	<i>pheobe</i>	Incidental	NA	NA
House Finch	<i>Carpodacus</i>	<i>mexicanus</i>	Incidental	NA	NA
Red-tailed Hawk	<i>Buteo</i>	<i>jamaicensis</i>	Incidental	NA	NA
Wood Duck	<i>Aix</i>	<i>sponsa</i>	Incidental	NA	NA
Yellow-throated Vireo	<i>Vireo</i>	<i>flavifrons</i>	Incidental	NA	NA

Table 2. Butterfly Species List and Count for White House Farm

Common Name	Genus	Species	Spring Occurrence	Summer Occurrence
Cabbage White	<i>Pieris</i>	<i>rapae</i>	143	5
Pearl Crescent	<i>Polyommatus</i>	<i>icarus</i>	28	66
Great Spangled Fritillary	<i>Speyeria</i>	<i>cybele</i>	54	1
Common Blue	<i>Everes</i>	<i>comyntas</i>	14	20
Clouded Sulphur	<i>Colias</i>	<i>philodice</i>	16	17
Orange Sulphur	<i>Eurytides</i>	<i>marcellus</i>	6	16
Eastern Tailed Blue	<i>Papilio</i>	<i>glaucus</i>	0	11
American Copper	<i>Lycaena</i>	<i>phlaeas</i>	10	0
Black Swallowtail	<i>Papilio</i>	<i>polyxenes</i>	4	3
Eastern Tiger Swallowtail	<i>Colias</i>	<i>eurytheme</i>	2	5
Skipper	<i>Hesperiidae</i>	<i>species</i>	0	2

Table 3. Bee Genus List and Count for White House Farm

Common Name	Genus	Spring Occurrence	Summer Occurrence
Sweat Bee	<i>Lasioglossum</i>	0	23
Sweat Bee	<i>Halictus</i>	0	18
Megachilid Bee	<i>Ashmeadiella</i>	7	0
Small Carpenter Bee	<i>Ceratina</i>	3	4
Green Bee	<i>Augochlorella</i>	1	5
Mason Bee	<i>Osmia</i>	5	0
Long Horned Bee	<i>Melissodes</i>	0	3
Green Bee	<i>Agapostemon</i>	0	1
Masked Bee	<i>Hylaeus</i>	0	1

Table 4. Plant Species Occurrence for White House Farm

Common Name	Genus	Species	Native or Introduced	Woody, Grass, Forb	Spring Occurrence	Summer Occurrence
Tree of Heaven	<i>Alanthus</i>	<i>altissima</i>	Introduced	Woody	0	1
Bluegrass sp.	<i>Poa</i>	<i>sp.</i>	NA	Grass	17	9
Tall Fescue	<i>Schedonorus</i>	<i>arundinaceus</i>	Introduced	Grass	9	0
Sideoats Grama	<i>Bouteloua</i>	<i>curtipendula</i>	Native	Grass	0	7
Fescue Sp.	<i>Festuca</i>	<i>sp.</i>	NA	Grass	1	4
Wire Grass	<i>Eleusine</i>	<i>indica</i>	Introduced	Grass	0	5
Yellow Foxtail	<i>Setaria</i>	<i>pumila</i>	Introduced	Grass	0	5
Big Bluestem	<i>Andropogon</i>	<i>gerardii</i>	Native	Grass	0	4
Purple Top Grass	<i>Tridens</i>	<i>flavus</i>	Native	Grass	0	2
Switchgrass	<i>Panicum</i>	<i>virgatum</i>	Native	Grass	1	1
Deer Tongue	<i>Dichanthelium</i>	<i>clandestinum</i>	Native	Grass	1	0
Indian Grass	<i>Sorghastrum</i>	<i>nutans</i>	Native	Grass	0	1
Johnsongrass	<i>Sorghum</i>	<i>halepense</i>	Introduced	Grass	0	1
Wingstem	<i>Verbesina</i>	<i>alternifolia</i>	Native	Forb	6	7
Crown Vetch	<i>Securigera</i>	<i>varia</i>	Introduced	Forb	8	4
Mare's Tail	<i>Conyza</i>	<i>canadensis</i>	Native	Forb	0	10
Scouring Rush	<i>Equisetum</i>	<i>hyemale</i>	Native	Forb	10	0
White Champion	<i>Silene</i>	<i>latifolia</i>	Introduced	Forb	4	6
Bull Thistle	<i>Cirsium</i>	<i>vulgare</i>	Introduced	Forb	9	0
Common Mullein	<i>Verbascum</i>	<i>thapsus</i>	Introduced	Forb	3	6
Sweet Annie	<i>Artemisia</i>	<i>annua</i>	Introduced	Forb	4	4
Japanese Hops	<i>Humulus</i>	<i>japonicus</i>	Introduced	Forb	1	6
Showy Tick Trefoil	<i>Desmodium</i>	<i>canadense</i>	Native	Forb	1	6
Common Ragweed	<i>Ambrosia</i>	<i>artemisiifolia</i>	Native	Forb	0	6
Sorrel sp.	<i>Oxalis</i>	<i>sp.</i>	NA	Forb	0	5
Spotted Knapweed	<i>Centaurea</i>	<i>maculosa</i>	Native	Forb	1	3
Vipers Bugloss	<i>Echium</i>	<i>vulgare</i>	Introduced	Forb	2	2
Canada Thistle	<i>Cirsium</i>	<i>arvense</i>	Introduced	Forb	0	3
Tomatillo	<i>Physalis</i>	<i>philadelphica</i>	Introduced	Forb	0	3
Wild Onion	<i>Allium</i>	<i>vineale</i>	Introduced	Forb	2	1
Bindweed	<i>Calystegia</i>	<i>sp.</i>	NA	Forb	0	2
Black-eyed Susan	<i>Rudbeckia</i>	<i>hirta</i>	Native	Forb	1	1
Bladder Champion	<i>Silene</i>	<i>vulgaris</i>	Introduced	Forb	1	1
Bugloss	<i>Echium</i>	<i>vulgare</i>	Introduced	Forb	0	2
Carpenter's Square	<i>Scrophularia</i>	<i>marilandica</i>	Native	Forb	1	1
Horsetail	<i>Equisetum</i>	<i>sp.</i>	Native	Forb	0	2
Prickly Lettuce	<i>Lactuca</i>	<i>serriola</i>	Introduced	Forb	1	1
Small-flowered Bitter Cress	<i>Cardamine</i>	<i>parviflora</i>	Native	Forb	2	0
Sweet Clover	<i>Melilotus</i>	<i>sp.</i>	NA	Forb	2	0
Virginia Pepperweed	<i>Lepidium</i>	<i>virginicum</i>	Native	Forb	2	0
Carpetweed	<i>Mollugo</i>	<i>verticillata</i>	Introduced	Forb	1	0

Common Name	Genus	Species	Native or Introduced	Woody, Grass, Forb	Spring Occurrence	Summer Occurrence
Common Milkweed	<i>Asclepias</i>	<i>syriaca</i>	Native	Forb	1	0
Field Peppergrass	<i>Lepidium</i>	<i>campestre</i>	Introduced	Forb	1	0
Ground Cherry	<i>Physalis</i>	<i>sp.</i>	NA	Forb	0	1
Ground Ivy	<i>Glechoma</i>	<i>hederacea</i>	Introduced	Forb	0	1
Honey Vine	<i>Cynanchum</i>	<i>laeve</i>	Native	Forb	1	0
Lamb's Quarters	<i>Chenopodium</i>	<i>album</i>	Native	Forb	1	0
Lespedeza sp.	<i>Lespedeza</i>	<i>sp.</i>	NA	Forb	0	1
Poison Hemlock	<i>Conium</i>	<i>maculatum</i>	Native	Forb	1	0
Thyme-leaved Sandwort	<i>Arenaria</i>	<i>serpyllifolia</i>	Native	Forb	1	0
Prickly Pear	<i>Opuntia</i>	<i>humifusa</i>	Native	Forb	0	1
Horse Nettle	<i>Solanum</i>	<i>carolinense</i>	Native	Native	1	0

Table 5. Soil Sample Results for White House Farm

Sample ID	Organic matter			Phosphorus		Potassium		Calcium		Magnesium		pH	CEC
	%	Rate	ENR lbs/acre	ppm	Rate	ppm	Rate	ppm	Rate	ppm	Rate	Soil pH	meq/100g
Pole A	4.6	M	118	172	H	172	M	2628	H	185	Low	5.9	18.3
Pole B	3.1	M	99	95	H	95	M	1514	H	143	Medium	7	9
Pole C	3.2	M	102	150	L	150	H	1304	H	172	High	6.8	8.6

Appendix 1. VWL Grassland Biodiversity Survey Participants 2013

VWL Grassland Biodiversity Survey Participants		
John	Beardsley	Citizen Scientist
Eugenia	Bodnar	Citizen Scientist
Tricia	Booker	Citizen Scientist
Bob	Butterworth	Citizen Scientist
Amanda	Chester	Citizen Scientist
Allegera	Churchill	Citizen Scientist
Julie	Connelly	Citizen Scientist
Chris	Crowe	Citizen Scientist
Sally	Cunningham	Citizen Scientist
Hillary	Davidson	Citizen Scientist
Matt	Diniega	Citizen Scientist
Art	Drauglis	Citizen Scientist
Helen	DuBois	Citizen Scientist
Sharon	Dykhoff	Citizen Scientist
Sean	Forbes	Citizen Scientist
Fred	Fox	Citizen Scientist
Joyce	Harman	Citizen Scientist
Teri	Holland	Citizen Scientist
Diane	Holsinger	Citizen Scientist
Elizabeth	Johns	Citizen Scientist
Brenda	Keissling	Citizen Scientist
Philip	Kenny	Citizen Scientist
Mary Alice	Koeneke	Citizen Scientist
Lisa	LaCivita	Citizen Scientist
David	Larsen	Citizen Scientist
Cathy	Mayes	Citizen Scientist
Linda	Murphy	Citizen Scientist
Alex	Newhart	Citizen Scientist
Mark	O'Connor	Citizen Scientist
Matt	O'Donnell	Citizen Scientist
Hannah	Philips	Citizen Scientist
Dick	Raines	Citizen Scientist
Bill	Reid	Citizen Scientist
Anna	Reid	Citizen Scientist
Stephanie	Ridder	Citizen Scientist
Clint	Rose	Citizen Scientist
Francie	Schroeder	Citizen Scientist
Jocelyn	Sladen	Citizen Scientist

VWL Grassland Biodiversity Survey Participants (continued)

Nancy	Soule	Citizen Scientist
Dana	Squires	Citizen Scientist
Richard	Stromberg	Citizen Scientist
Russel	Taylor	Citizen Scientist
Ian	Topolsky	Citizen Scientist
Barbara	Wallace	Citizen Scientist
Penny	Warren	Citizen Scientist
Melissa	White	Citizen Scientist
Piedmont Environmental Council Staff		VWL Partner
Shenandoah National Park Staff		VWL Partner
Virginia Native Plant Society		VWL Partner
William	McShea	Research Scientist SCBI
Ruth	Stolk	Strategic Development SCBI
Maria	Van Dyke	Pollinator Researcher
Amy	Johnson	Bird Survey Coordinator
Norm	Bourg	Plant Survey Coordinator
Lorien	Lemmon	Pollinator Survey Coordinator
Sally	Anderson	Plant Survey Coordinator
Molly	Dodge	VWL Outreach
Lacey	Williamson	VWL Intern
Ryan	Mendenhall	VWL Intern
Greg	Chapman	VWL Intern
Tom	Akre	VWL Director
James	Barnes	PEC Sustainable Habitat Program Manager
Celia	Vuocolo	PEC Intern

Appendix 2. VWL Grassland Biodiversity Survey Locations 2013

VWL Grassland Biodiversity Survey Locations		
Oxbow Farm	Warren County	Beatrice von Gontard
Chilton's Gate	Culpeper County	Roland Word
Rose Hill	Culpeper County	John Covington
Indian Trace	Madison County	Bill Sanford
White House Farm	Page County	Chris Anderson
Marriot Ranch	Fauquier County	Lanier Cate
Stonebridge	Warren County	Dave Denton
Wheatlands Farm	Augusta County	Michael Godfrey
Jones Preserve	Rappahannock County	Bruce Jones
Manassas Battlefields	Prince William County	Bryan Gorsira
Last Resort	Rappahannock County	John Beardsley
Sky Meadows State Park	Fauquier County	Tim Skinner
Miller Farm	Rappahannock County	Bill Fletcher
Kinloch Farm	Fauquier County	Jonathan Duffy
Fannon Farm	Rappahannock County	Bill Fannon
Blandy Experimental Farm	Clarke County	David Carr
Banshee Reeks Nature Preserve	Loudoun County	Ron Circe
Sharp Rock	Rappahannock County	Barry Johnston
The Farm at Sunnyside	Rappahannock County	Sam Quinn