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Master's Project: Community Engagement at UVM's Horticulture Research and Education Center

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Community Engagement at UVM's Horticulture Research and Education Center

Master's Project
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Section I: Background

Introduction

The University of Vermont's Horticulture Research and Education Center is a 97-acre property on Green Mountain Drive in South Burlington. It is owned by the University of Vermont for agricultural research. The Friends of the Horticulture Farm is a non-profit organization that serves as the public face of the Farm.

The History of the Horticulture Research and Education Center

Dr. Norman Pellett produced a comprehensive history of the Horticulture Research and Education Center (Hort Farm) in 1998. It is from there that much of this information comes (Pellett 1998).

The University of Vermont College of Agriculture and Life Sciences (UVM, CALS) formerly held horticultural research plots on the site of what is now University Heights. Development began to infringe on the sites and theft of fruit and vegetables was becoming a major problem. UVM decided to relocate to a site that would better allow for its purpose of research, teaching, and demonstration.

UVM purchased 66.12 acres in South Burlington on January 30, 1952. The land was previously a dairy farm owned by Fortis and Sadie Abbott. This was the first piece of land that was to become what was originally called the Horticultural Research Center. This parcel is known as the Abbott Section.

The next parcel was added in 1965 and is known as the National Life Section. This parcel was 26.4 acres to the east and was bought from National Life Insurance Company.

Next, 2.2 acres were added as the Nowland Section.

The next major development was the addition of a chain-link fence around the entire perimeter. This fence was intended to keep out human intruders and deer who had been damaging crops. The fence was purchased with proceeds from apple sales.

The first crops to be planted at the Horticultural Research Center in the 1950s were vegetables, dwarf apples, semi-dwarf apples, regular apples, raspberries, peaches, cherries, plums, blueberries, grapes, strawberries, ornamentals, crabapples, melons, squash, nut trees, roses, and lilacs. Some of the initial plantings are still alive today.

The soil of the Hort Farm is well-drained loamy sand, which requires irrigation. A trickle irrigation system was established in the 1970s and is still used today.

The current pond was expanded in size by an excavator. In 1991, UVM signed an arrangement with the city of South Burlington to allow drainage onto the Hort Farm from surrounding properties. A 30 foot wide, 437 food long ditch was dug to drain storm water from Yandow Drive and Sebring Road. As residential development around the Hort Farm has increased, siltation has become an increasing problem in the drainage pond. Developers have been responsible for occasional dredging of the pond and sloping of the edges.

In 1994, students formed the Common Ground Organic Farm. In the 1995 season, they began farming vegetables on the Hort Farm property and donating their harvest. In 1996, The Friends of the Horticulture Farm helped to fund their planting and the students began selling harvests in a community supported agriculture (CSA) shares. The Common Ground Farm relocated to the UVM campus in 2014, and the Catamount Farm is now located in its place. The Catamount Farm runs an annual farmer training program through UVM's Continuing Education program, and harvests are sold as CSA shares. The Catamount Farm is financially autonomous from the Hort Farm.

Current Status of the Hort Farm

The Hort Farm is currently directed by Terence Bradshaw. The Friends of the Horticulture Farm organize and run one or more educational workshops per month throughout most of the year. The workshops are run by volunteers and local experts in topics ranging from garden design to homesteading skills. Table 1 displays the classes and events offered by The Friends of the Horticulture Farm in 2014, characterizes them by type, and indicates whether they are eligible for Master Gardener hours. It has been compiled as a summary of the 2014 brochure produced by The Friends of the Horticulture Farm. Vermont Master Gardener certification requires a set number of volunteer and education hours annually. Some events at the Hort Farm are eligible to provide these hours, as indicated in Table 1.

Table 1. Annual Activities offered by FHF in 2014

Activity Name	Activity Type	Master Gardener Hours Eligibility
Bloomtime Festival	PR/Fundraising	No (Not eligible)
Creating a Winter Centerpiece	Workshop	No
Annual Plant Sale	PR/Fundraising	No
Reading the Landscape	Class	No
Annual Members Meeting	Meeting	No
Tour UVM Greenhouse	Tour	No
Create a Nest Box for Kestrels	Workshop	No
New England Wildflower Symposium	Meeting	No
Starting and Managing a Beehive	Workshop	No
Perennial and Woodland Walk Workday	Public Workday	Volunteer (Meets MG requirement)
Perennial and Lilac Workday	Public Workday	Volunteer
Perennial Garden Workday	Public Workday	Volunteer
Crabapple Pruning Workday	Public Workday	Volunteer
Apple Tour and Tasting	Tour/Class	Educational (Meets MG requirement)
How to Create and Care for a Fruit Tree Ecosystem	Workshop	Educational
Planting Vegetables for Higher Yields	Workshop	Educational
Creating a Winter Garden	Workshop	Educational
Lilac Care and Maintenance	Workshop	Educational
Pruners' Workshop	Workshop	Educational
Evergreen Hedge Growth and Maintenance	Workshop	Educational
Native Plants for Your Garden	Workshop	Educational
Homestead Tour	Tour/Workshop	Educational
Foraging and Use of Edible and Medicinal Plants	Workshop	Educational

Many ornamental collections grow at the Hort Farm. Some of them were planted decades ago and species information has been lost with changes in staff and UVM faculty. There is no comprehensive list detailing what grows at the Hort Farm. Such a list, with a map, would provide a valuable resource to users of the Hort Farm.

Current research projects, with their funding totals, are detailed in a document written by Terence Bradshaw, found in Appendix 1.

Locator Map

Figure 1. Aerial photograph map of the Hort Farm (created by Maddy Morgan from NAD83 orthophoto, obtained from VCGI)

The Friends of the Horticulture Farm

The Friends of the Horticulture Farm (FHF) is a non-profit organization founded in 1994. In the mid-1990s, UVM was considering consolidating all of its agricultural research on one site away from the urban area. The Friends was a group of Hort Farm admirers who worked to convince UVM to keep the property.

Today the Hort Farm has a secure mandate from UVM and FHF is working instead on expanding the role it plays in the Burlington area.

The Friends of the Horticulture Farm currently has a 9-person board and a membership of over 200 dues-paying members. It reaches hundreds more through an email listserv.

FHF organizes educational workshops and classes for both members and non-members. It holds an annual fund-raising plant sale supported by donations from plant vendors throughout the state. It also holds a Bloomtime Festival each spring, which is a day-long family event open to the public.

The Friends also holds several workdays at the Hort Farm each year. These days are approved as volunteer hours for master gardeners, and are open to the public. They are generally intended to work on a particular feature of the Hort Farm, such as the perennial garden.

The mission of The Friends of the Horticulture Farm is to "protect, enhance, and promote the significant plant collections and natural areas of the UVM Horticultural Research Center in South Burlington, Vermont for education, research, and public enrichment" (http://www.friendsofthehortfarm.org/)

The Purpose of this Document

This document was prepared as a resource for The Friends of the Horticulture Farm. FHF is seeking to expand the role of the Hort Farm and make it a more central part of the South Burlington and Burlington communities. It hopes to increase the level of community engagement in the Hort Farm, and its educational role.

In response to this, I have worked to evaluate community educational and recreational needs and wants, and the ways in which the Hort Farm can fill them. This document compiles these into recommendations and guides for The Friends as they move forward in expanding their role.

I have summarized these recommendations into four categories of community engagement: service learning, community service, workshops and classes, and self-guided adventures.

Section II: Methods

My methods comprised three main steps: a needs assessment, analysis of programming options, and research on implementation.

Needs Assessment

My first action was to conduct a needs assessment to determine what community members want and need with regard to environmental education and engagement. I had informal conversations by phone, email, and in person, with parents, teachers, and facilitators on environmental education programs. We discussed the Hort Farm as well as The Friends of the Horticulture Farm: what it does and how it might expand. From these conversations I got an idea of what programming exists in the area, what programming people want more of, and areas that are not of much interest to community members.

I discovered that programming for young children is very popular in the Burlington area, and there is not currently enough to fill the demand. Preschool programs are particularly in demand. Shelburne Farms also has a long waiting list for their themed field trips, indicating a high level of demand for this type of programming and a good potential area for another facility to develop.

I also conducted a short survey of members of The Friends of the Horticulture Farm at the Annual Member's Meeting on October 4, 2014, held at the Hort Farm. Results are compiled in Table 2.

Table 2. Results of Member Survey from Annual Member's Meeting, October 4, 2014

What Audiences Should FHF Try to Attract?	What New Types of Programming should FHF Offer?
School groups*	More self-guided options*
Garden clubs*	Demonstration gardens
Garden tour goers*	How-to videos
New citizens who need help gardening	Workshops coordinated with related outside groups eg rain gardens
Home gardeners	Garden tours at the Hort Farm*
Share gardeners	Afternoon tea in the garden
Common Roots leaders	Farm meal in the perennial garden
Farmer's market customers	More homesteading classes
Master gardeners and interns	More permaculture classes
Watershed associations	Earth Day events
Conservation associations	Riparian buffers
Front Porch Forum users	More hands-on workshops
Neighborhood associations	Field study courses with VT Audubon Society
Urban Forestry Council	Service learning with nearby schools
Tree Stewards Association	Partner with VT Community Garden Network for community events
Audubon Society	Container gardening

Sierra Club	Composting in an urban setting
Northwoods Association	Garden tours of other gardens/supply stores
Shelburne Farms	Growing vegetables in an urban setting
Recreation Associations	Ongoing project with Master Gardeners
Prison gardens	Learning about faculty research projects
Other clubs and groups	Regular guided walks
Young families	Member garden plots
High school science classes	Growing your own vegetables to save money
New farming and gardening professionals	How to grow your own plants to sell
UVM/College students	How to participate in your local farmer's market
Preschools/Young kids	Ready-made video presentation for outreach opportunities
Retirees	

Responses received from multiple respondents are indicated with an asterisk (*). I have noticed significant interest among The Friends of the Horticulture Farm board members in children's programming at the Hort Farm, through this survey and multiple conversations.

During the needs assessment, I spoke with teachers from Vermont Commons School and discovered that they were very interested in establishing a relationship with the Hort Farm.

Analysis of Programming Options

In order to analyze the feasibility of various environmental programming options, I took the following steps: I visited other botanical institutions, I spoke to facilitators of environmental programs, and I researched the programming at other institutions. I completed case studies of Cornell Plantations, Desert Botanical Garden, Shelburne Farms, the University of North Carolina Botanical Garden, and Jericho Research Forest. I assessed the resources required for each type of programming being instituted in order to determine if it was feasible for The Friends of the Horticulture Farm. The results of these case studies are described in the below sections.

Implementation Study

The case studies were also a major part of learning how to implement environmental programming. I examined what is done elsewhere in order to determine what is required to implement different types of programming. Talking to program facilitators from other institutions helped me to obtain important implementation information that is not publicly available. I also spoke with teachers in order to determine how they create curriculum. I examined Vermont's Common Core Standards for curriculum in science, environmental studies, human systems, and other relevant subjects. I looked at sample curricula available online for environmental education programs in order to assess how they are created and what resources they require.

Case Studies

These case studies seek to elaborate upon the educational opportunities at the Hort Farm by summarizing exemplary educational programs at the following facilities: Cornell Plantations, Desert Botanical Garden, Shelburne Farms, North Carolina Botanical Garden, and Jericho Research Forest. This information should serve as an aspirational guide or model for FHF in producing educational programming. The goals and scale of some of these institutions may differ greatly from the Hort Farm, but they represent excellence in botanical educational programming and may therefore serve as an example of what can be done.

A. Cornell Plantations

Cornell Plantations is a holding of Cornell University in Ithaca, New York. It comprises an arboretum, botanical garden, and a series of nature preserves as part of the university's campus. The mission of Cornell Plantations is "to preserve and enhance diverse horticultural collections and natural areas for the enrichment and education of academic and public audiences, and in support of scientific research" (Cornell Plantations Website).

The educational branch of Cornell Plantations is divided into community education, exhibits, lecture series, youth programs, teen education, an internship program, a graduate program, group tours, and the Natural Areas Academy.

Community education is the most extensive component of Cornell Plantations' educational programming. Community education programming consists of events, classes, and programs held at the Plantation. These programs fall into one of seven categories: botanical arts and crafts, food and flavor, gallery exhibitions and events, guided tours and walks, home and garden, outdoor photography, and special events. Prices for these events range from $5 for a guided tour to $220 for a multi-session art class. A snapshot of class offerings is available in Appendix 6.

Exhibits are artistic exhibitions in the gallery, and their associated events or receptions. Current examples include botanical cyanotypes and gourd art, both of which are free to visitors.

Cornell Plantations also hosts a lecture series at Cornell University. The fall 2014 lecture series comprised 6 lectures with botanical or horticultural themes. Videos of past lectures are available on the Cornell Plantations websites. The lecture series is open to the public or may be taken by Cornell students as a 1-credit course.

Youth Programs take place both in the garden or in schools. Programs in the garden are designed as field trips for elementary-school children. Each trip has a theme, from Wildflower Explorations to International Grocery Bag, and varies in duration. Each trip has a recommended grade range, and costs $5 per child per hour. One staff member and two

volunteer facilitators would facilitate a field trip of 21 children, along with 3 adult chaperones from the school. Cornell Plantations also holds an annual event, Judy's Day Family Learning Festival, which is a one-day weekend festival with an educational theme.

Teen Education has two different avenues. Guided tours, gardening workshops, and other on-site education can be tailored to specific groups. These events are developed and led by Cornell students. Cornell Plantations also holds Plantations Environmental Education Program for Sustainability (PEEPS) each year for children ages 14 to 18. PEEPS begins after school in March, has a full-time 6-week summer program, and ends with 6 fall weekend sessions. Students are paid a small stipend at the end of the program. Teenagers in this program work with Plantations facilitators on one sustainability project for the year. For example, students may build a sustainable demonstration garden and do community outreach to teach what they have learned.

Cornell Plantations' Internship Program is exclusively for Cornell students. They work at the Plantations from the end of May until mid-August, 39 hours per week. They work Monday-Friday and get paid $9.75 per hour.

The Graduate Program is in association with Cornell University. The Plantations design and facilitate this program, a 2-year Masters of Professional Studies in Public Garden Leadership.

Group Tours are available for any group with at least 5 people. These guided tours of the grounds last 1 hour, are held May-October, and cost $10 per person.

Natural Areas Academy is a certification program available to the public. It is held twice a year, and after 2 sessions graduates are certified Natural Areas Mentors. Each session is focused on a specific project and costs $90 per student.

I had a brief interview with Raylene Ludgate, Youth Education Coordinator at Cornell Plantations. From her I learned the details about pricing and chaperone policy for field trips. Ms. Ludgate revealed to me that youth education curriculum was designed by staff members. There are 9 full-time staff members in the education department, 3 of whom work on programming. Educational programming returns a net loss for Cornell Plantations, and helps to fulfill the institution's mission.

B. Desert Botanical Garden

The Desert Botanical Garden (DBG) is located in Phoenix, Arizona. It comprises 140 acres, 55 of which are cultivated. DBG has 104 employees and 1,140 volunteers. Over 640,000 people visit each year, and 45,000 children on field trips (Desert Botanical Garden Website). The DBG's mission is "to advance excellence in education, research, exhibition and conservation of desert plants of the world with emphasis on the Southwestern United States," and its core values are stewardship, interdependence, authenticity, and accountability. DBG opened in 1939 and since its opening has relied heavily on volunteers.

Educational programming at DBG consists of adult classes and trips and children's camps and programs.

Adult programming ranges from yoga classes at DBG ($18) to wine tasting trips in other parts of Arizona ($211). There are horticulture classes ($40), tea ceremonies ($70), and photography classes ($60). February 2015 hosts over 50 classes and trips. These programs are taught by featured experts, volunteers, or DBG staff. Members of DBG receive a 20% discount on all programming. Adult educational programming at DBG returns a profit for the institution. DBG has a partnership with a nearby health resort, which leads health-related programs at the garden.

Children's programming is made up of camps and programs, Desert Discovery for Girl Scouts, field trips and self-guided tours, and digital learning. DBG holds Seedlings Preschool for one session per season. Sessions are 5 weeks long and cost $125. Preschool-age children and a caregiver attend once a week for 5 weeks. Each week has a new theme, and educators integrate music, stories, arts and crafts, nature, observation, and touch into learning about the week's theme.

Learning Labs Homeschool program is for homeschooled children ages 4-13. Children attend 3 sessions of 2 hours each (1 session per week), for $15 per child. Sessions are taught by DBG staff members.

The garden also holds summer camps for children. Camps vary in duration and themes, with prices from $130-$310.

Desert Discovery for Girl Scouts teaches Girl Scouts about native plants and animals and their adaptations. This program costs between $9 and $10 per girl.

Self-led garden exploration for children is a major component of DBG's educational programming. Children and their parents can visit the garden and fill out activity sheets or desert detectives bingo cards (see Appendix 6).

Field trips are also themed, mainly emphasizing desert ecosystems. They are designed for children from pre-K to 8th grade and complement Common Core standards. Field trips are

designed to be interactive, inquiry-based, stimulate interest in science, curiosity, and desert stewardship. Field trips cost $6.50 per person, including adult chaperones. A maximum of 1 chaperone for every 5 children is allowed, and trips are facilitated by 1 or 2 DBG staff members (for a group of 12-15 children). Some examples of DBG field trip titles are: Nature as a Problem Solver, Solutions Inspired by Nature, Basic Plant Parts, Butterfly Characteristics, and Plant Adaptations.

Self-guided group tours are also available for school groups. These tours must be booked ahead of time and cost $8 per person. Independent study projects can also be coordinated between schoolteachers and DBG educators. Students are assigned a particular topic to investigate at the garden, and their attendance is recorded for the teacher. Independent study also costs $8 per person.

Digital learning programs are available online, and are designed to complement the onsite field trips. This is a free resource for teachers and their students in grades K through 8.

DBG also presents annual educational scholarships for graduate students or exceptional undergraduate students to work on a project dealing with the arid landscape. These awards are $4,000 to each student.

I completed an email interview with Tina Wilson, DBG's Director of Education. She informed me that all educational curricula were designed by staff. There are 8 full-time, 5 part-time, and 25-35 part-time temporary educational staff members. Adult programming does return a net profit, though children's programs are revenue neutral.

C. Shelburne Farms

Shelburne Farms is a community educational facility on 1400 acres in Shelburne, Vermont. Its property includes pastures, woodlands, gardens, and historical buildings. It is a working farm that uses its agricultural facilities as educational resources for people of all ages. Shelburne Farms' mission is to "educate for a sustainable future" (Shelburne Farms Website). Its educational programs are all designed with an emphasis on agricultural, environmental, and cultural topics. Programs are aimed toward adults, schools, and youth and families.

Adult programming includes classes and workshops of various lengths and a range of topics. Classes range from crafting and art to wildlife tracking, cooking, and horticulture. Some workshops are a few hours on a weeknight, while others are weeklong. Prices range from $0 to $300.

Programming for schools is divided into professional development for educators, school programs and farmyard visits, the Sustainable Schools Project, VT FEED, and A Forest for Every Classroom.

Shelburne Farms offers professional development workshops for teachers interested in improving their skills at teaching for sustainability. These workshops have several topics, including ABCs of Farm-Based Education (weekend-long, $250), and Education for Sustainability Immersion (2 days, $325).

School programs, or field trips, are designed for children from preschool to 8th grade. Because there is such high demand for these trips, interested teachers must apply by lottery the year before they wish to attend. Each visit has a theme. Theme titles include forest ecology, Super Soil, and Active in Winter. Field trips cost $5 per child.

The Sustainable Schools Project is a "model for school improvement and civic engagement" (Shelburne Farms Website). Through this project, Shelburne Farms makes available a set of tools and resources for its school partners. Such resources include curricular examples, a starter kit for sustainability, and informative presentations. Current partners include Champlain Elementary School and the Sustainability Academy at Lawrence Barnes.

VT FEED, or Food Education Every Day, is a program in partnership with the Northeast Organic Farming Association of Vermont (NOFA-VT). Through VT FEED these two organizations work with schools to increase awareness of the connections between health, food and nutrition, and Vermont farms.

A Forest for Every Classroom is program for K-12 teachers who would like to learn how to teach in the Vermont landscape while working within Common Core Standards.

Family and youth programs include preschool adventures, family programs, summer camps, vacation days, Shelburne Explorers 4H, and the Aspiring Teen Naturalist Program.

The Preschool Adventures program takes place in 6-week sessions during the winter and spring. Children attend one day a week to learn about a particular farm or nature topic and spend time learning outside. Prices range from $150-$180 per child.

Family programs are those programs in which a child (ages 3-8) attends with an adult chaperone. Topics include dairy day, maple open house, and spring on the farm. Prices are $3-$5.

Summer camps are for children aged 4-17. They have different topics, from outdoor adventures to Taste of the Fields. Some camps are residential, although most are day camps. Prices range from $150-$525. Applications are chosen by lottery.

Vacation days are 3-day long programs held during the April vacation of local schools for children ages 5-12. These are educational programs with seasonal themes.

Shelburne Explorers 4H is organized by 4H coordinator Susie Marchand. Shelburne Farms donates the location and staff time for local children involved in 4H clubs to hold weekly meetings. Currently, clubs for horses, sewing, insects, and calves are taking advantage of this opportunity.

The Aspiring Teen Naturalist Program is a long-term mentoring program for children ages 13-18. It teaches the importance of curiosity and questioning while teaching children outdoor skills. Teens meet once a month from September-May after school, with 2 additional overnight stays and 1 Saturday. The program costs $15 per after-school day, $75 per overnight, and $35 for the Saturday. Shelburne Farms provides scholarships to needy aspiring naturalists.

I held a phone interview with Christie Nold, School Program Coordinator for Shelburne Farms. Ms. Nold shared with me that staff educators develop curricula for school trips in close association with local teachers. Curricula are designed to reinforce Common Core Standards and meet the needs of area teachers and students. Curricula are constantly being adapted and improved based upon the needs expressed by local schools. Summer camps are a good opportunity for Shelburne Farms' educators to develop curricula without worrying about school standards and curriculum.

There are 3 full-time year-round educators who work with school programs. The Sustainable Schools Project has 2 full-time staff members.

Shelburne Farms has 2 full-time year-round educators who work on the public farm, and additional seasonal educators. These educators hold an activity every half-hour on the farm for visiting families.

Ms. Nold shared her opinions on what works well for Shelburne Farms' educational programming, and what its challenges are. She believes that a major strength is in having trained educators working at the farm to develop school programming. As trained educators, they are better able to communicate with schoolteachers and develop appropriate curricula. Ms. Nold also believes that creating adaptable programs is an important part of Shelburne Farms' success. This enables curricula to be reused from year to year, even as school standards or curricula may shift.

Challenges faced by Shelburne Farms are mainly beyond their control: the cost of busing. School buses are becoming increasingly expensive, and schools want to save money by filling each bus with children. This means about 60 children or more may be arriving at the farm for a field trip, requiring 6 educators.

Ms. Nold has also learned through talking to Shelburne Farms visitors that there is a large demand for outdoor preschool programs in the area. Shelburne Farms holds Preschool Adventures, which must turn away children due to high demand. She sees this as a challenge for Shelburne Farms and an opportunity for other institutions to fill a niche.

D. North Carolina Botanical Garden

The North Carolina Botanical Garden (NCBG) is a conservation garden associated with the University of North Carolina at Chapel Hill. It is located in Chapel Hill, NC, and comprises over 800 acres. It houses 14 collections and plant displays and 30 endangered plant species. It sees 90,000 visitors a year and 200 volunteers spend their time there. NCBG's mission is "to inspire understanding, appreciation, and conservation of plants in gardens and natural areas and to advance a sustainable relationship between people and nature" (NCBG website). Education is a major part of this mission. Educational programming at NCBG is made up of adult programs, youth and family programs, programs for schools, horticultural therapy, and Healing and Hope through Science.

Adult programs are divided into workshops, lectures, nature hikes and tours, and professional certification programs.

Workshops range from practical gardening topics to medicinal plants, to fine arts and botany. Prices are $20-$125 per workshop.

Lectures are on topics that will be of interest to visitors to the garden, such as "The Wild Life of our Bodies," and are generally free, with an open reception.

Nature hikes and tours are available for groups of adults, and are guided by a member of the garden staff. Guided tours cost $40 per group.

Professional certification programs offered at NCBG are certification in Native Plant Studies or certification in Botanical Art and Illustration.

Youth and family programming consists of a summer nature camp and family workshops and gardening series. The summer camp has 7 sessions per year, with a different theme for each session. Sessions last 2-3 days at 3 hours per day, and cost between $135 and $270.

Family workshops and gardening series are family-friendly classes that cost between $5 and $10 per person.

Programs for schools are all designed to meet Common Core curriculum standards. Different types of programs for schools include field trips, Earth Partnerships of Schools Summer Institute, and the Visiting Naturalist Outreach Program.

Field trips last an hour and can accommodate up to 60 children. They require 1 chaperone per 5 children and cost $30 for a group of up to 30 children, and $2 for each additional child. Fee waivers are available for Title 1 schools, which have less money. Field trips all provide pre-trip and post-trip lesson plans to teachers. Themes include Herbal Adventures and the Monarch's Journey.

The Earth Partnership for Schools Summer Institute is a program for teachers. It lasts 5 days in the summer and costs $115. The Institute trains teachers about native flora and teaches them to create native plant gardens and rain gardens on their school grounds. It also provides them with over 100 lesson plans to teach their students about native plants.

The Visiting Naturalist Outreach Program sends a naturalist to schools to work with children in their classrooms. For $40, a naturalist will spend 1 hour teaching children in grades 4-8 about one of 2 topics: From Ferns to Fossils (which meets Earth Science curriculum requirements) or What's for Dinner (which meets Life Science curriculum requirements).

NCBG is also home to a horticultural therapy program. Horticultural therapy uses plants and gardens to promote individual health and well-being. Recipients include seniors, children in hospitals or after-school programs, disabled people, at-risk youth, prison inmates, and hospice clients. These people work with certified horticultural therapists in group or individual sessions.

Healing and Hope through Science is used to "promote healing and hope through positive connections with nature" (NCBG website). Hospitalized children aged 5-18 from Duke and University of North Carolina hospitals spend time at NCBG taking part in this program.

E. Jericho Research Forest

Jericho Research Forest (JRF) is a 478-acre parcel in Jericho, Vermont, owned by the University of Vermont. It is former agricultural land that was purchased by UVM in 1941 and restored to forest. It is now managed by the Rubenstein School of Environment and Natural Resources (RSENR) and Ralph Tursini, Coordinator of the Green Forestry Education Initiative.

JRF is used extensively by UVM's Forestry Department for research and education. It is home to the Forrest E. Orr Conservation Center, a working classroom built in the original pole barn. It is a common site for both faculty research projects and student projects, including RSENR senior capstone projects.

JRF is also home to public education and recreation. It is partnered with Vermont Family Forests, an organization that promotes sustainable management of Vermont's forests. Vermont Family Forests helps to run classes at JRF, such as woodturning, wildlife tracking,

and sustainable conservation and tracking. JRF has also reached out to volunteers for help monitoring invasive species on the property, since it is a popular public hiking area.

Section III: Discussion

The Horticulture Research and Education Center has many opportunities for increasing community engagement. As The Friends of the Horticulture Farm seeks to implement programming to increase community engagement, it is important to continue to assess the feasibility of each type of programming. The Hort Farm is home to many natural resources, but it is a much smaller facility than most of the case studies. Resources are limited, which in turn limits the kind of programming that can succeed there. The Hort Farm is also home to UVM faculty research projects. This is both an opportunity and an obstacle. Learning about agricultural research might appeal to a new demographic in the community, which could increase the range of people engaged in the Hort Farm. But it is also in some ways a competing interest for educational programming. Research projects may be fragile or dangerous, and need to be kept off-limits to the public. This is an added challenge to developing programming with the intent of engaging the public.

Many people in the community expressed an interest in environmental programming for children. This interest was echoed by FHF board members. Children's programming is also a core part of the programming in most of the case studies. But there are a number of challenges inherent to children's programming that limit its feasibility at the Hort Farm. Children's programming does not pay for itself. The cost of hiring full-time staff to develop curriculum, correspond with teachers, and run programming makes it more expensive than schools can afford to cover. Christie Nold at Shelburne Farms believes that schools in the Burlington area could not pay more than $5/child. Increasing costs of busing children also mean that schools try to fill up a bus for each field trip. This means 60-70 children arrive at a time for a field trip. The staff and organization required to handle so many children would be extensive.

Many of the same challenges exist for summer camps. Summer camps are another popular type of programming both in the Burlington area and in the case studies. But the number of staff to develop and implement curriculum and to run programming make it an expensive undertaking. Both school trips and summer camps also pose a risk to the Hort Farm's research projects. It is important to consider the threat of children entering off-limits research areas and endangering themselves or the research.

Guided tours may be considered as a less intensive form of children's programming. Guided tours for children do require experienced educators to lead the tours and pique children's curiosity in the garden and what it holds. However, a theme or set curriculum is not necessary for guided tours, so there is less planning required.

Adult programming seems to be of less interest to some of the FHF board members. However, there was interest in it expressed through the member survey (Table 2), and it is a major part of the programming in the case studies. The costs associated with adult programming are lower,

since supervision is not a concern like it is with groups of children. Curriculum still needs to be developed, but it can be much simpler and more open to interpretation than curriculum for children.

Table 3 is a compilation of ideas that were either developed by me or shared with me by people I spoke with about the Hort Farm. I developed a system of rating the feasibility of these ideas by assigning them a score of 1-5 in the following criteria: cost, time commitment required, relevance to FHF mission, convenience, and level of service provided to the Hort Farm. "Summary Rating" is a sum of the ratings that have been assigned for all 6 criteria for each idea. The higher the summary rating, the more worthwhile pursuit of the idea has been deemed to be.

Some projects may be inexpensive and convenient, but if they do not fulfill the mission of FHF or provide a service to the Hort Farm, they will have a relatively low summary rating. I have also included notes about my progress in implementing the ideas.

Table 3 indicates that service learning projects are the most feasible. These include partnerships with Vermont Commons School, UVM's LANDS program, and UVM's NR206 class. Other promising opportunities include an Eagle Scout project on the property (such as creating signage and interpretive material) and creating a trail through the horticultural collections as a self-guided tour, with information about each of the collections on signage or in a brochure.

Table 3: List of Ideas for Hort Farm Projects

Service Learning	Cost	Time Commitment	Relevance to FHF Mission	Convenience	Ease of Planning	Level of Service Provided	Notes	Summary Rating
NR 206 Service Project	1	2	5	5	5	5	Not interested this year. Great potential in the future	21
UVM School of Ed-led workshops/classes	1	2	5	5	4	3	Have not contacted. Could be a good opportunity	18
VT Commons-invasives removal with Bradley Materick	1	2	5	5	5	4	Established	20
VT Commons-trail work/maintenance	1	2	5	5	5	4	Established	20
VT Commons-mapping project	1	2	5	5	5	4	Established	20
VT Commons-ongoing research	1	1	5	5	5	3	Established	18
CTE at Essex Partnership	1		5	5	3		Contacted: No response. Good potential partnership	12
Catamount Farm students create and lead workshops on topic of their choice	1	2	4	5	5	3	Discussed with Susie Walsh Daloz. She was happy to help set up this arrangement as long as it worked for the students	18
Sustainability Academy Partnership	1	1	5	4	4	3	Not interested. They have partnerships already established with greater proximity	16
LANDS	1	2	5	5	5	5	Not interested this year. Great potential in the future	21
South Burlington High School AP Biology Field Work	1	2	5	4	4	4	Have not contacted. Potential partnership	18
Orchard School Partnership	1	2	5	5	2	3	Contacted: No response	14
Community Service								
Community service days for local businesses	1	2	3	5	5	3	Contacted Dealer.com. Requires follow-up, but they were	17

							interested	
Workshop/work days with local nursing home	1	3	3	5	4	3	Have not contacted	17
VYCC project	4	4	4	4	4	5	Need to obtain funding. Some grants available	17
Americorps member	5	4	5	5	3	5	Need to obtain funding. May be prohibitively expensive	17
Eagle Scout Project	1	2	5	5	5	5	Have not contacted. Great potential project	21
Workshops and Classes								
Catamount Farm students create and lead workshops on topic of their choice	1	2	4	5	5	3	Discussed with Susie Walsh Daloz	18
Mushroom Inoculation Workshops	3	3	5	5	5	2	Require planning and instructor. Could be of high interest	17
Foraging Workshops	3	3	5	5	5	2	Require planning and instructor. Could be of high interest	17
Self-Guided Adventures								
Create trail through collections-label collections, create interpretive brochure, activity for kids	3	5	5	5	4	5	Require planning and volunteers. Substantial addition to self-guided offerings at the Hort Farm	21
Improve woodland walk, update map, update signage	4	5	5	5	4	5	Require planning and volunteers. Substantial addition to self-guided offerings at the Hort Farm	15
Develop Field Guide	3	5	5	5	2	5	Require planning and volunteers	14
Interactive Materials for Kids	2	3	5	5	5	5	Maddy has made mock-up	18
Other								
Summer Camp	5	5	4	5	1	1	May or may not be financially feasible. Would require at least	6

							one full-time employee	
UVM Fine Arts Class Involvement (ie photography, en plein air painting, etc)	1	1	4	5	5	2	Have not contacted	16

As The Friends of the Horticulture Farm continues to evolve in its role at the Hort Farm, it is important for it to weigh growth options against the obstacles of the Hort Farm. It must be realistic about the kinds of programming that are feasible with current funding and resources, and the possibility of conflict with the research component of the Hort Farm.

It is also important to consider the interests of core FHF members and prevent mission creep. Education and public enrichment are an important part of the FHF mission, so community engagement and educational programming fall well within the current mission.

Section IV: Recommendations

Based upon my findings and the considerations described above, I recommend that The Friends of the Horticulture Farm pursue growth in the following areas: workshops and classes, self-guided adventures, community service, and service learning. These are the four areas that are most feasible based upon the resources available. All have the potential to maintain or increase interest in the Hort Farm and increase the attachment of community members to the property.

Workshops and Classes

The Friends of the Horticulture Farm hold regular workshops and classes at the Hort Farm, using the Hort Farm's resources to educate members and non-members. These classes are well-attended. It is important for The Friends of the Horticulture Farm to continue to assess the needs and interests of the community in order to offer popular classes and maintain successful levels of attendance. If attendance levels remain stable, The Friends of the Horticulture Farm may benefit from holding more frequent classes, and expanding the topics covered. Doing so could help to strengthen the community bonds of FHF and increase membership.

What is it?

The workshops and classes are typically two or three hours long and are held either on Wednesday evenings or Saturday mornings. Prices range from $10-$40, with discounted admission prices for FHF members. Workshops are led by FHF board members or local experts who are paid for their work. Some classes are approved as educational hours for master gardeners (of which a certain number are required each year). These classes are summarized in Table 1.

How can it benefit the Hort Farm?

Classes and workshops bring people to the Hort Farm. They may introduce people to the Farm for the first time, or pique their interest in a particular feature. They raise money and awareness for The Friends of the Horticulture Farm, and have the potential to broaden its membership base.

These activities are also an important way to address the mission of FHF. They educate the public and FHF members about horticultural or agricultural issues, while providing an income source for FHF.

Workshops and Classes Plan

Maintaining Interest in FHF Offerings

Background:

By conducting annual polling of the members of its listserv, The Friends can ensure that they are meeting the needs of the community and continuing to offer classes of interest to members and non-members alike. This poll can be sent by email early in the planning process for the following year's classes.

Template:

What topics are you interested in learning about?

How much would you be willing to pay for a 2-hour workshop on these topics?

Are there any professionals or experts from whom you would be particularly interested in taking a class?

Do you have personal connections to any professionals or experts who might be interested in teaching a workshop through The Friends of the Horticulture Farm?

Do you take horticulture/agriculture workshops or classes at any other institutions? If so, in what topics?

How many classes or workshops do you typically attend each year? How many are at the Hort Farm?

What topics in horticulture/agriculture do you think are relevant to those living in the Burlington area today?

Funding:

By continuing to offer topics of interest to listserv members, FHF can ensure that this source of membership and revenue will remain stable. Classes with desirable experts can probably cost slightly more than classes taught by volunteers.

Potential Benefit:

It is important for The Friends of the Horticulture Farm to continually assess the interest level for the topics it explores in workshops and classes. By doing so, it can maintain its relevance and membership growth.

How To:

Step 1: Send the above poll to members of the email listserv each year before planning the following year's workshop list.

Step 2: Explore options for topics commonly cited as being of interest to listserv members. If knowledgeable people are available to lead classes on these topics, add them to the schedule of classes.

Self-Guided Adventures

What is it?

Self-guided adventures are activities that Hort Farm visitors can do independently to interact with the land. The hours that the farm is open to the public (typically Monday, Wednesday, Thursday, and Friday from 8am to 4pm) represent opportunities for visitors to engage in self-guided adventures. The Hort Farm currently offers the Woodland Walk trail and a birding guide to the Hort Farm that was compiled by interested (and expert) neighbors. This guide is attached.

Opportunities for self-guided adventures at the Hort Farm abound. Other interactive materials can be created to follow the design of the birding guide. Activities for kids can bring in more parents with young children. A field guide to the Hort Farm can help to attract naturalists to the property. Plant and animal ID charts can help FHF meet its mission by educating and enriching public understanding of nature. Geocaching can lead people to explore the offerings of the property. Vernal pools can serve as outdoor classrooms for children and their parents.

How can it benefit the Hort Farm?

Self-guided adventures are an easy way for people to visit the farm. They are free and open to the public, and visitors can invest as much or as little time as they choose into the activity. Those who work nearby can visit during lunch breaks or parents can bring their children. These visits will help to establish the Hort Farm as part of the community, as well as broadening the membership base. Providing these activities is also an important part of the mission of The Friends of the Horticulture Farm. They are free, publicly available educational activities that require little commitment from Hort Farm visitors.

Self-Guided Adventures Plan

Background:

Interactive materials for children may increase the likelihood of parents visiting the Hort Farm with their children. These activities should provide an educational and fun chance for kids to get outside and enjoy the offerings of the Hort Farm. Children's interactive materials can be very simple. Examples of such materials from other institutions can be found in Appendix 6.

Activities like scavenger hunts, simple plant or animal identification charts, or tracking brochures can engage children while teaching them about the Hort Farm's resources. Simple activities that can be completed in a single visit (or under one hour) will appeal to the widest audience. By limiting the commitment required to enjoy the Hort Farm independently, FHF can maximize the number of potential visitors.

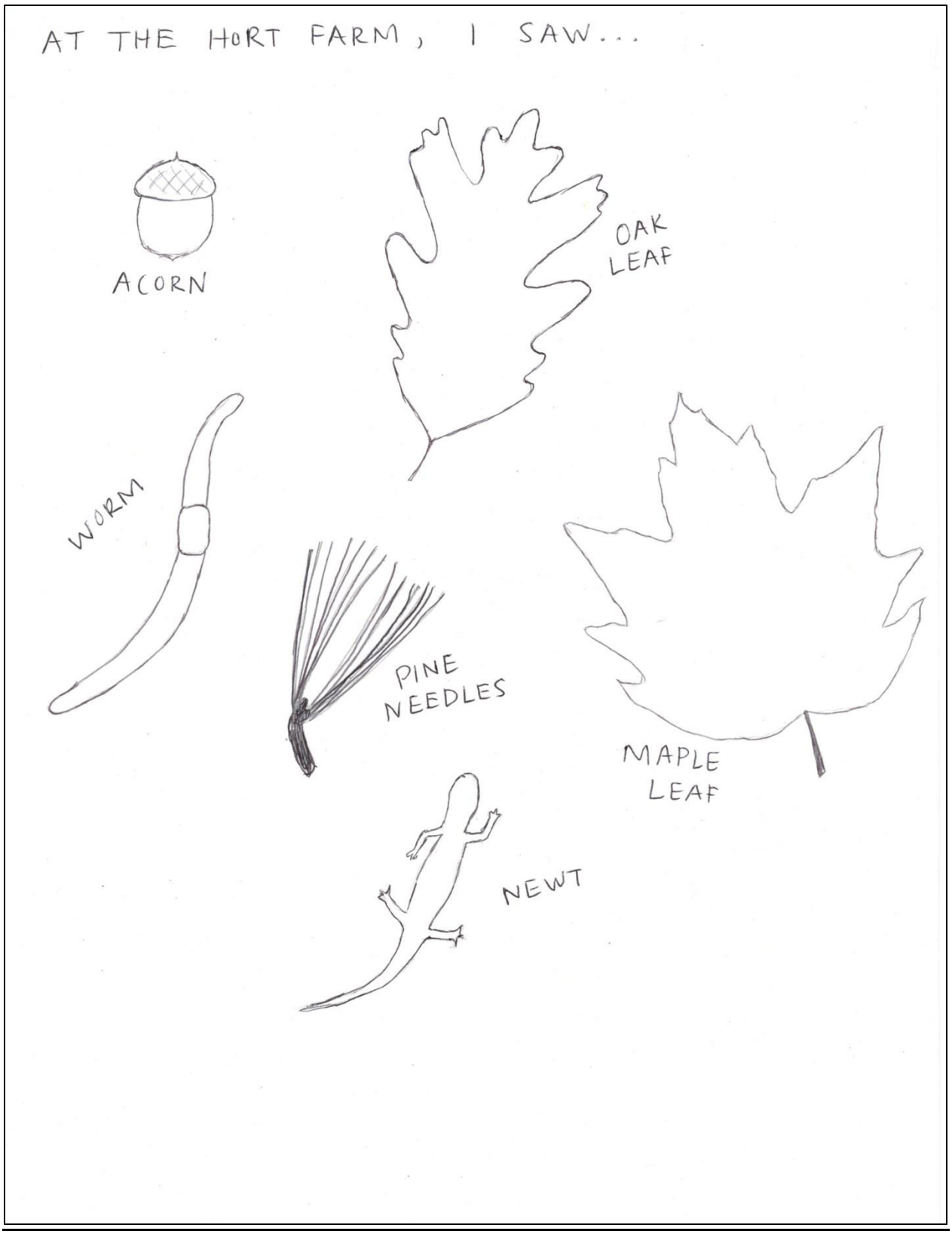
It is recommended that future planning of self-guided adventures focus primarily on the following areas:

- Short self-guided walking tours or trails
- Interactive activities for children (see template below)
- Field guides or checklists (see Appendix 2: Birds of the Hort Farm Brochure)
- Clear, interesting signs and plant ID labels

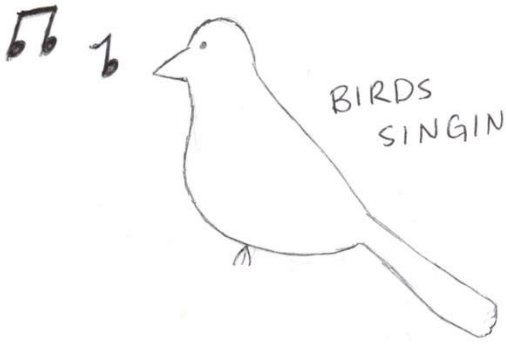
Funding: Some funding will be necessary to create signage or print interpretive materials. This could come from increased FHF income or from grants.

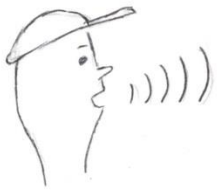
Potential Benefit: Increasing interpretive material and other self-guided activities will allow visitors to spend more time at the farm on their own time. Rather than signing up for classes and paying money, visitors will be able to stop by during the day for whatever duration works best for them. This will encourage visits from parents with young children, who may be less likely to commit to an organized activity, but who wish to spend time outside with their children. This can increase awareness of The Friends of the Horticulture Farm and what they do, and potentially increase membership.

Template


AT THE HORT FARM, I SAW...
ACORN
OAK LEAF
WORM
PINE NEEDLES
MAPLE LEAF
NEWT

I HEARD...





Community Service

What is it?

Community service provides an opportunity to complete some of the manual labor that the Hort Farm requires, without hiring additional employees. Those without garden space at their homes may enjoy the opportunity to spend time working with the land, and many people volunteer labor simply to help out in their community. Some workplaces and schools host volunteer days where employees/students spend a day working in groups to help a community organization.

How can it benefit the Hort Farm?

Community service will provide free assistance with some of the work to be done at the Hort Farm. Tasks that require a lot of manpower but little expertise will be ideal for community service partnerships, such as weeding or trail clearing.

Community service/volunteer work currently takes place at the Hort Farm. Public workdays are held several times per year, where volunteer labor is focused on one or two specific aspects of Hort Farm maintenance for a day. Expanding community service programming and sharpening the focus of volunteer work can help to maintain collections, control weeds and invasive species, clear trails, create signage, and maintain/improve facilities. It can also foster love for the Hort Farm in those who spend time working there.

Community Service Plan

A. Nursing Home Volunteer Hours

Background:

The Burlington area houses several retirement communities and nursing homes. Many of these facilities emphasize activity for their residents, some of whom enjoyed working in their own gardens before entering the retirement community. If transportation and leadership can be arranged, this partnership could prove to be mutually beneficial to residents of the retirement community and the Hort Farm.

Contacts:

Deborah Lemly, Administrator, Pillsbury Senior Community, South Burlington. (802)861-3627.

Armistead Caregiver Services, Main phone (802)489-5682.

Home Instead Senior Care, Main phone (802)860-4663.

Funding:

There should be no cost to this partnership. Someone from the Hort Farm will need to work with the residents to facilitate and lead the work that they are doing. The nursing home should cover the costs of transportation to and from the Hort Farm.

Potential Benefit:

Along with any help that might be gained from the work of the residents, this partnership represents an opportunity for the Hort Farm to benefit from the engagement of a new group of people. It is possible that some residents will grow to love the Hort Farm or become interested in membership in FHF. It also helps The Friends of the Horticulture Farm fulfill their mission.

How To

Step 1: Brainstorm projects that the residents could help with. Likely options could include weeding, transplanting, light pruning, or other tasks that require a low level of expertise and are not overly physically demanding.

Step 2: Determine times when point person could be available to work with residents and lead their activities.

Step 3: Contact nursing home administrators to schedule work visits.

Step 4: Introduce residents to the farm, instruct them on work to be done, and work with them.

Step 5: Maintain contact with nursing home administrators to give/receive feedback and continue to schedule visits.

B. Dealer.com Workplace Volunteer Days

Background:

Dealer.com is an 800-person company with a branch on Howard Street in Burlington. According to its website, Dealer.com is committed to "giving back and actively participating in the communities we call home." One of the ways in which it does this is through "People Power" volunteer days, where employees, in groups or individually, volunteer their time to a local organization.

Contacts:

Corporate Responsibility Website, with People Power application form:
http://www.dealer.com/company/corporate-responsibility/

Kayla Bittner, Dealer.com Communications Coordinator: kayla.bittner@dealer.com

Funding:

There will be no costs for People Power volunteer days, though someone from the Hort Farm will need to facilitate and lead volunteer work.

Potential Benefit:

Groups of employee volunteers can provide assistance with projects requiring a lot of manpower and little expertise. Some volunteers may want more information about the work they're doing, but many will be happy simply to be working outside. This partnership will also introduce a new group of people to the Hort Farm, possibly leading some to be interested in an ongoing connection or FHF membership.

How To

Step 1: Establish answers to the following questions (from Kayla Bittner):

- How many volunteers are you looking for: is there a minimum or maximum?
- What day(s) of the week?
- What would this volunteer opportunity entail?
- Is this opportunity inside or outside? Is it seasonal?
- How can Dealer.com help?

Step 2: Brainstorm work that can be done by the volunteers. Likely options include weeding, pruning, transplanting, mulching, or other jobs that require little expertise.

Step 3: Determine a point person to coordinate volunteer activities.

Step 4: Contact Kayla Bittner, respond to her questions, and schedule workday/s.

Step 5: Introduce employees to Hort Farm, lead volunteer work.

Step 6: Communicate with Kayla Bittner about the success of the workday and continue to schedule workdays.

Service Learning

What is it?

Service learning is a pedagogical technique that serves to benefit students and community members by bringing students out of the classroom. Students engage in work for community organizations that furthers their education while providing a service to the community. According to UVM, service learning courses "create meaningful partnerships between students, community partners, and faculty to provide students with hands-on learning in real-world situations". UVM offers around 80 service learning courses each year, in subjects ranging from Wildlife Biology to Sociology. Service learning is a growing trend nationwide. According to Campus Compact, an organization that aims to support and increase community engagement in education, institutional support for service learning (at the college and university level) increased significantly between 2010 and 2012. Partnerships with community organizations can strengthen a school's reputation in the community, increase the engagement of students in their education, "improve community life and…educate students for civic and social responsibility" (Campus Compact).

How can it benefit the Hort Farm?

Service learning will provide a free service to the Hort Farm, while achieving FHF's goal of increasing educational engagement at the Hort Farm. Service learning precludes FHF from having to do the work of developing a curriculum or supervising or teaching students, but still brings children to the Hort Farm and gets them involved in hands-on learning there. Allowing teachers to create their own service learning curricula, in coordination with Hort Farm management, ensures that both parties will get what they want out of the partnership.

There are a number of possibilities for tasks that could be accomplished through service learning partnerships. These tasks range from simple projects like trail clearing to more involved, longer-term projects like creating a field guide. A summary of project ideas can be found in Appendix 4.

Two service learning partnerships have been established with teachers at Vermont Commons School. One involves invasive species removal and management, and the other, creating a publicly available map layer of the Hort Farm.

Current Projects

Two teachers at Vermont Commons School, which neighbors the Hort Farm, began service learning projects at the Hort Farm in the fall of 2014. Peter Goff and Bradley Materick were eager to take advantage of the resources that the Hort Farm offers in the backyard of Vermont Commons School.

Peter Goff, head of the school's science department, takes his students to the Hort Farm to identify trees and other plants, to take photographs, and to create a publicly available map layer on Google Maps.

Bradley Materick, who leads a sustainability class at Vermont Commons School, is using the Hort Farm to teach his students about invasive species management.

I am hopeful that these partnerships will continue to grow and evolve over time.

Service Learning Plan

UVM's NR206: Environmental Problem-Solving Class

Background:

The University of Vermont's undergraduate class Environmental Problem-Solving and Impact Assessment (NR206) is a capstone course for those students pursuing a degree in the Rubenstein School of the Environment and Natural Resources (RSENR). It is designed as a project-based service learning course, where students spend a full semester working in groups on a project with a community partner. Students are expected to work hard to further their academic interests in the natural resources realm, while providing a service to their community partner.

At the beginning of the semester, a matchmaking event is organized by the graduate student coordinator. At this event, each would-be community partner makes a 1-minute presentation to the students, outlining the work they desire. The students then choose a community partner and contact them.

A point person will be necessary to meet with the students at least once during the semester to discuss their project work. At the end of the semester the final product is delivered to the community partner.

Contact:

The course is traditionally taught by a faculty member who is assisted by a graduate student working as Coordinator of Community-Based Learning. The current instructors for the class are Matt Kolan and Zac Ispa-Landa. Matt Kolan's UVM email address is matthew.kolan@uvm.edu and his phone number is (802)656-4333. Zac Ispa-Landa's UVM email address is zispalan@uvm.edu.

The RSENR course catalogue can be found here: http://catalogue.uvm.edu/undergraduate/rubensteinschool/naturalresources/#courseinventory

The RSENR homepage can be found here for more information: http://www.uvm.edu/rsenr/

The RSENR Office of Experiential Learning Website:
http://www.uvm.edu/rsenr/?Page=experiential/partners.php&SM=servicessubmenu.html

The RSENR Office of Experiential Learning Contact is Margaret Burke, Community Based Learning Coordinator. Her email address is Margaret.burke@uvm.edu and her phone number is (802)656-1326.

Funding:

There will not be any expenses for FHF. Any transportation expenses will be covered by RSENR or the students.

Potential Benefit:

As the capstone class for all students in RSENR, expectations of the students are very high. Students are expected to work independently, to be reliable and diligent, and to work with their community partners to ensure satisfaction.

The skill and interest base of students in this class would be very well suited to either creating a map of plants on the property (ie cultivated vs native plants) or to creating a field guide. Either of these projects would meet the needs of the students while providing an extremely valuable resource to The Friends of the Horticulture Farm. Such materials can be made available to visitors to the property to improve their experience at the Hort Farm.

How To

Likely Planners: Board Subcommittee, Allie Brody

Step 1: Brainstorm what project is most desired from the students.

Step 2: Determine who will serve as point person for the students. This person will need to present at the matchmaking event in the fall and stay in touch with the students occasionally throughout the fall semester to answer questions or touch base on progress.

Step 3: Contact Matt Kolan/Zac Ispa-Landa for information on matchmaking event.

Step 4: In August, plan a 60-second presentation for the students' matchmaking event.

Step 5: Present at matchmaking event and wait one to two weeks to see if students are interested in the project.

Step 6: If selected, introduce students to the farm, show them around, give them any required safety training.

Step 7: Be available to help students with direction or questions throughout the semester, via email or occasional meetings.

Step 8: Attend final meeting with the students to view final result.

Step 9: Attend final meeting with course instructors to give feedback on the process, the students, and the product.

There are many more opportunities for service learning. UVM lists 80 classes as being based around service learning, and many more incorporate service learning into a traditional class model. UVM's Plant and Soil Science department has many classes with a hands-on component that could provide opportunities for service learning. These may be easier to coordinate than others since most of the faculty members doing research at the Hort Farm are from Plant and Soil Science. The Friends of the Horticulture Farm should also consider establishing a partnership with UVM's School of Education. Education students could help to develop curricula or further develop some of the ideas from this report.

FHF could also hire an additional intern, or set aside some of the current interns' time, to work on establishing connections within UVM and increase awareness of the Hort Farm among faculty members.

Section V: Summary

By conducting a feasibility study, a needs assessment, extensive case studies of community and educational programming at other institutions, and careful consideration of opportunities and obstacles, I have made a set of recommendations to The Friends of the Horticulture Farm. The Hort Farm presents opportunities for growth in certain areas, while obstacles will hinder growth in others.

The diversity of land uses at the Hort Farm presents many opportunities for community engagement. The horticultural collections and research projects housed at the Hort Farm are unique in the area and will be of interest to different groups of people. The Woodland Walk can draw people into the Hort Farm for self-guided activities and exploration, and the Catamount Farm or perennial garden will appeal to additional groups of people. The diversity of attractions means that a wide range of people will be interested in learning about what the Hort Farm has to offer.

There are also challenges to community engagement at the Hort Farm. The Hort Farm is 97 acres, which is much smaller than many of the exemplary educational institutions. Financial resources are also lower and may prove to be a limiting factor. Infrastructure is limited and will need to be improved before instituting any large increases in programming. Working with the different uses of the Hort Farm also presents challenges. UVM faculty members use the property for research, which was originally its only purpose. Working with these faculty members to protect their research from intrusion from the public is important, and may preclude some programming options.

The educational programming at the institutions examined in the case studies is certainly exemplary. However, this programming may not be feasible at a facility like the Hort Farm. For example, children's programming requires a large financial and time investment in the planning, implementation, and facilitation phases. It also presents a possible risk to research projects at the Farm. Therefore, despite the high level of interest, it is probably not feasible with the current state of the Hort Farm and FHF.

With these considerations in mind, I recommend that FHF focus their community engagement growth in the following areas: workshops and classes, self-guided adventures, community service, and service learning.

Since workshops and classes are already a successful program for FHF, maintaining their success is simply a matter of staying abreast of new areas of interest, and deciding to expand if the interest is sufficient.

Self-guided adventures are a promising opportunity to increase the numbers of people interacting with the Hort Farm, since it is free to visitors and requires less commitment than an organized

activity. I recommend increasing the opportunities for self-guided adventures by creating interactive materials for children and adults, improving trails and signage on the Woodland Walk, and creating a trail through the horticultural collections with interpretive material.

Community service will allow more people to visit the Hort Farm and form a relationship with the property. Community service days with local businesses like Dealer.com will bring new groups of people to the Hort Farm while providing free labor to complete maintenance or improvements to the property. Community service with residents of local nursing homes will help to fulfill FHF's mission and increase membership opportunities.

Service learning is a wonderful opportunity to fulfill FHF's mission while providing a service to the Hort Farm. It allows The Friends of the Horticulture Farm to engage students in the Hort Farm without investing large amounts of resources. UVM students can provide a real service to FHF, and younger students can become involved in the property. Partnerships with Vermont Commons School are ongoing and I am hopeful that they will prove useful to The Friends of the Horticulture Farm. Future partnerships with UVM's LANDS program or UVM classes like NR206 are very promising and should prove to be beneficial to FHF.

The Friends of the Horticulture Farm can also consider taking other steps to increase public engagement at the Hort Farm. Improving signage, visibility, and social media presence can increase public use of the Hort Farm without making any changes to programming available.

It is important to consider the unique opportunities and obstacles of the Hort Farm when assessing future possibilities for community engagement programming. The Friends of the Horticulture Farm must weigh their mission against the other interests at the Hort Farm, like the Catamount Farm and faculty research projects. The Friends of the Horticulture Farm's mission states that it seeks "to protect, enhance, and promote the significant plant collections and natural areas of the UVM Horticultural Research Center in South Burlington, Vermont for education, research, and public enrichment" (http://www.friendsofthehortfarm.org/). By thoughtfully examining options for community engagement and education, FHF can fulfill its mission, grow as an organization, and increase its membership base while working within the bounds of the Hort Farm.

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Appendices

Appendix 1: Document Detailing Current Activity at the Hort Farm, Courtesy of Terence Bradshaw

University of Vermont Horticulture Research and Education Center
Director: Terence Bradshaw Farm Maintenance: Andrew Bessette

Outline of Activities

The UVM Horticulture Research and Education Center (HREC), purchased in 1952, is the primary field laboratory site for applied teaching, research, and extension activities on horticultural and some agronomic crops conducted by CALS and Extension faculty. In addition, the HREC hosts collections of ornamental plants of significance to the green industry, including legacy plantings of crabapples, rhododendrons and azaleas, flowering shrubs, shade trees, lilacs, and ferns. Users of the HREC and their associated activities include:

<u>*Immediate and Future Needs*</u>

The HREC hosts multiple research, teaching, and outreach programs, yet its core facilities have not been significantly upgraded since the 1970s. As summer instructional programs have increased in recent years, conflicts over space have developed at the same time that enrollment has been difficult in some classes because of institutional barriers that make summer instruction less appealing to undergraduates. Immediate and mid-term needs to support present and future growth in programs include:

- Investment in classroom, food processing, and laboratory facilities as approved in the HREC redevelopment plan.
- Removal of institutional burdens on undergraduates who wish to enroll in summer classes by enhancing scholarships and developing an optional summer semester which students can finance similar to academic year semesters.
- Site redevelopment in coordination with the city of South Burlington to address community stormwater runoff issues and provide a new supply of irrigation foir the eastern portion of the property.

<u>*Catamount Educational Farm*</u>

'Cat Farm' Manager: Laura Williams

The Catamount Farm initiative was launched in 2014 to facilitate improved teaching, research, and outreach activities in Specialty Crops through establishment of a model educational farm. All edible produce on the farm is produced under Catamount Educational Farm direction to provide for long-term soil fertility, crop planning, and integration with teaching and research activities. Produce grown on the farm is sold to the UVM community to fund the program, through: summer and fall community-supported agriculture (CSA) shares delivered to campus and picked up on-farm; weekly farmstands on campus (Tuesdays) and at the farm (Fridays); and institutional sales to UVM's Sodexo food service. Students in associated programs provide the majority of farm labor in an experiential learning setting.

Educational Programs

CDE Farmer Training Program Director: Susie Walsh-Daloz

The Farmer Training Program is a 6-month, full-time intensive program for aspiring farmers and food systems advocates that provides a hands-on, skill-based education in sustainable agriculture. Established in 2011, this full-time program offers participants the unique opportunity to manage their own growing site, take classes from professors and expert farmers, and rotate as workers and learners on successful, diverse farms in the Burlington area. 24 enrollees in 2014

Catamount Farm Summer Experience
Instructors: Terence Bradshaw, Lynn Fang, Kate Finley-Woodruff, Josef Gorres, and Susie Walsh-Daloz

This suite of integrated undergraduate PSS and CDAE courses includes study on: sustainable, diversified vegetable production; orchard and vineyard management; sustainable food systems marketing; and compost ecology and management. 33 enrollees in 2014.

Community Service

Friends of the Horticulture Farm President: Kristina Bielenberg

Formed in 1994, FHF is a grassroots organization dedicated to protecting, enhancing and promoting the significant plant collections and natural areas of the UVM HREC for education,

research, and public enrichment. The group, composed of interested citizens, local garden club members, professional horticulturists, and landscape architects, is working in partnership with the University of Vermont to develop both short-term and long-term plans to provide for the stewardship of this wonderful and important resource. The Friends also sponsors public programs, and engages in fundraising and collections preservation. http://www.friendsofthehortfarm.org/

Branch Out Burlington

UVM Faculty Sponsor: Dr. Margaret Skinner

The Burlington Community Tree Nursery is a community-based partnership linking the UVM community, the City of Burlington Department of Parks and Recreation and the local citizenry. It generates considerable positive press for UVM, and demonstrates UVM's commitment as a "Green University" to the environment and the community in which it exists. The UVM HREC hosts the BOB nursery where trees are grown from saplings into plantable specimens that are installed throughout the city of Burlington.

Recent Funded Research and Outreach Projects based at HREC

Fruit Team Leaders: T. Bradshaw & A. Hazelrigg
Total funding since 2009: $2.4 million

- Creating InterDisciplinary Extension and Research (CIDER) Programs to Redevelop the North American Hard Cider Industry. USDA Specialty Crops Research Initiative Planning Grant 2014-07549. Sep 2014-Sep 2015. $50,000. PDs: Peck, G.M, Miles, C. PIs: Bradshaw, T. (UVM), Conner, D. (UVM), Ferreira, G., Neilson, A., Stewart, A., Galinato, S., Tozer, P., Rothwell, N.
- Orchard Economic Assessment to Support Vermont Hard Cider Production. USDA Federal-State Marketing Improvement Program (FSMIP), Sep 2014 - Sep 2016. $75,830. D. Conner, Co-PI.
- NE-1020 Multi-State Evaluation of Winegrape Cultivars and Clones. Vermont Agriculture Experiment Station Hatch Grants Program, Oct 2014-Sep 2017. PI T. Bradshaw. $75,000.
- Comparison of Three Organic Apple Orchard Management Systems on Disease and Arthropod Pests. PI A. Hazelrigg. Vermont Agriculture Experiment Station Hatch Grants Program. October 2013 - September 2016. $70,000
- The Transdisciplinary Vermont Extension IPM Program Addressing Stakeholder Priorities and Needs for 2013-2016. USDA NIFA EIPM Program. Sep 2013 – Aug 2016. PD A. Hazelrigg. $312,500 ($83,776 for Specialty Crops Emphasis Areas Apple and Grape).
- Biological Management of Apple Replant Disease. Northeast SARE Partnerships Grant Program. May 2014 – April 2016. PI T. Bradshaw. $14,314.
- Apple Market Optimization and Expansion through Value-Added Hard Cider Production. Vermont Working Lands Enterprise Initiative, June 2014 - Sep 2015. PIs T. Bradshaw and D. Conner. $40,000 ($10,000 matching funds grant from Vermont Hard Cider Co.)

- Improved Technical Support Programming for Vermont Apple Growers. USDA/Vermont Agency of Agriculture Specialty Crops Block Grants Program. Oct 2013 – Oct 2014. PI T. Bradshaw. $10,000.
- NE-1020 Multi-State Evaluation of Winegrape Cultivars and Clones. Vermont Agriculture Experiment Station Hatch Grants Program. Oct 2011-Sep 2014. PI L.P. Berkett. $60,000.
- Using 'New' Alternatives to Enhance Adoption of Organic Apple Production through Integrated Research and Extension. USDA Organic Research & Extension Initiative. Aug 2006 - July 2014. PI L.P. Berkett. $1.6 million.
- Upgrading Vermont Weather Stations to Improve Crop Pest Management. USDA Rural Business Enterprise Grant, administered through USDA to Vermont Tree Fruit Growers Association. T. Bradshaw, President and Grantee. July 2011 – July 2013. $11,000.
- A Comprehensive, Interdisciplinary IPM Extension Program Addressing Stakeholder Needs and Priorities. USDA NIFA EIPM Program. PD L.P. Berkett. 2009-2013. $692,212 ($178,190 for Apple and Grape Emphasis areas).
- Establishment of On-Farm Weather Stations and IPM Modeling Systems for Vermont Orchards. USDA/Vermont Agency of Agriculture Specialty Crops Block Grants Program to Vermont Tree Fruit Growers Association. T. Bradshaw, President and Grantee. Dec 2009 – Oct 2012. $10,000.
- Northern Grapes: Integrating Viticulture, Winemaking, and Marketing of New Cold-Hardy Cultivars Supporting New and Growing Rural Wineries. USDA Specialty Crops Research Initiative. 2011-2012. PI T.E. Martinson (Cornell), UVM Co-PI L.P. Berkett. $2.5 million total, $75,953 to UVM.
- Vermont Apple and Grape Support Program. USDA/Vermont Agency of Agriculture Specialty Crops Block Grants Program. PI L.P. Berkett. 2009-2012. $32,000.
- Coordinated Winegrape Variety Evaluations in the Eastern USA. Viticulture Consortium-East. 2011-2012. PI L.P. Berkett. $1,072.
- Enhancing the Competitiveness and Sustainability of Organic Apple Production in Vermont. USDA/Vermont Agency of Agriculture Specialty Crops Block Grants Program. Oct 2011-Sep 2012. PI L.P. Berkett $20,000.
- Specialty Crops- Apple and Grape. USDA/Vermont Agency of Agriculture Specialty Crops Block Grants Program. Dec 2009-Oct 2012. PI L.P. Berkett $20,000.
- Modernization of Research Orchards at the UVM Horticultural Research Center. USDA/Vermont Agency of Agriculture Specialty Crops Block Grants Program to Vermont Tree Fruit Growers Association. T. Bradshaw, President and Grantee. Dec 2009 – Oct 2012. $19,950.

Agronomic: Team Leader: Sid Bosworth

Total funding since 2009: $1.5 million

- Biomass Feedstock Analysis and Production Techniques – Perennial Grass Crops (two grants). PI S. Bosworth. VT Sustainable Jobs Fund Grant (U.S. DOE). 2011 –2015, $94,644. One long term field study site at UVM Hort farm.
- Enhancing Honey Production with Clover- Innovative Methods of Using White and Alsike Clover. Northeast SARE Partnership Grant Program. PI S. Bosworth 2013-2015. $14,848. One two-year field study site at UVM Hort farm.

- Assisting organic dairy producers to meet the demands of new and emerging milk markets. A multistate grant (UNH lead). USDA-Organic Research and Education Initiative grant. 2011 – 2015. Vermont's PIs H. Darby, S. Bosworth, R. Parsons. $627,087 (VT's portion). Two annual field studies at UVM Hort farm and one three-year study at UVM Miller farm.
- Improving the Viability of Dairy Farms through Advanced Forage Selection. UVM CALS Dairy Center for Excellence (DCE) program. PI H. Darby and S. Bosworth. 2011 – 2014. $144,590. One three-year field study at UVM Hort farm.
- Enhancing farmers' capacity to produce high quality organic bread wheat. A multistate grant (UMaine lead). USDA-Organic Research and Education Initiative grant. 2009 – 2014. Vermont's PIs H. Darby and S. Bosworth. $627,087 (VT's portion). Two annual field studies at UVM farm (2010/11).

Appendix 2: Birds of the Hort Farm Brochure

09/02//14

	Sp	Su	F	W
Wrens				
__ House Wren *	c	c	c	-
__ Carolina Wren *	u	u	u	u
Gnatcatchers				
__ Blue-gray Gnatcatcher	r	-	r	-
Kinglets				
__ Golden-crowned Kinglet	c	-	c	-
__ Ruby-crowned Kinglet	c	-	c	-
Thrushes				
__ Eastern Bluebird *	u	u	u	-
__ Veery	u	-	u	-
__ Gray-cheeked Thrush	r	-	r	-
__ Bicknell's Thrush	r	-	r	-
__ Swainson's Thrush	r	-	u	-
__ Hermit Thrush	r	-	u	-
__ Wood Thrush	u	-	u	-
__ American Robin *	c	c	c	c
Catbirds and Thrashers				
__ Gray Catbird *	c	c	c	-
__ Brown Thrasher *	u	u	u	-
Starlings				
__ European Starling *	c	c	c	c
Waxwings				
__ Bohemian Waxwing	u	-	-	u
__ Cedar Waxwing *	u	u	u	u
Snow Buntings				
__ Snow Bunting	-	-	-	r
Warblers				
__ Black-and-white Warbler	u	-	u	-
__ Tennessee Warbler	r	-	r	-
__ Nashville Warbler	u	-	u	-
__ Common Yellowthroat *	c	c	c	-
__ American Redstart *	c	u	c	-
__ Cape May Warbler	r	-	r	-
__ Northern Parula	u	-	u	-
__ Magnolia Warbler	c	-	c	-
__ Bay-breasted Warbler	r	-	r	-
__ Blackburnian Warbler	u	-	u	-
__ Yellow Warbler *	c	c	c	-
__ Chestnut-sided Warbler	u	-	u	-
__ Blackpoll Warbler	u	-	u	-
__ Black-throated Blue Warbler	r	-	r	-
__ Pine Warbler *	c	c	c	-
__ Yellow-rumped Warbler	c	-	c	-
__ Black-throated Green Warbler	c	-	c	-
__ Canada Warbler	r	-	r	-
__ Wilson's Warbler	r	-	r	-
Towhees and Sparrows				
__ Eastern Towhee	r	-	r	-
__ American Tree Sparrow	r	-	r	r
__ Chipping Sparrow *	c	c	c	-
__ Field Sparrow	u	-	r	-
__ Fox Sparrow	r	-	-	-
__ Song Sparrow *	c	c	c	-
__ White-throated Sparrow	c	-	c	r
__ White-crowned Sparrow	c	-	c	-
__ Dark-eyed Junco	c	-	c	c
Cardinals and Allies				
__ Scarlet Tanager	r	r	u	-
__ Northern Cardinal *	c	c	c	c
__ Rose-breasted Grosbeak	u	-	u	-
__ Indigo Bunting*	r	r	r	-
Blackbirds and Orioles				
__ Bobolink ^	r	-	u	-
__ Red-winged Blackbird *	c	c	c	-
__ Common Grackle *	c	c	c	-
__ Brown-headed Cowbird *	c	c	c	-
__ Baltimore Oriole *	u	r	u	-
Finches				
__ Pine Grosbeak	-	-	-	r
__ Purple Finch	r	r	r	r
__ House Finch *	c	c	c	c
__ Common Redpoll	r	-	-	r
__ Pine Siskin *	r	r	r	r
__ American Goldfinch *	c	c	c	u
__ Evening Grosbeak ^	r	r	r	r
Old World Sparrows				
__ House Sparrow *	r	r	r	r

Birds of the Hort Farm

The University of Vermont Horticulture Research Center, also known as the "Hort Farm," offers a variety of habitat for many species of nesting and migrating birds. The following checklist is based upon casual observations by Hort Farm neighbors Allan Strong, Peter Jones and Ted Murin during the years 2000 to 2014. Species' presence can be expected to fluctuate more at this smaller scale than would be expected at a landscape perspective. This list is also free from the burdens of scientific rigor. However, it should provide visitors with a reasonably faithful guide to the many species encountered and enjoyed at the Hort Farm throughout the seasons.

Happy birding!

Friends of the Horticulture Farm

65 Green Mountain Drive
South Burlington, VT 05403

www.**friendsofthehortfarm**.org

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Seasons

Sp = Spring: March – May
Su = Summer: June – July
F = Fall: August – October
W = Winter: November – February

Peak abundance

c = common: likely to be seen or heard in appropriate habitat
u = uncommon: often encountered though not always present
r = rare: rarely but periodically encountered

* species known or presumed to nest on the farm

^ species only seen flying over

Species only encountered a few times

American Black Duck^, Common Merganser^, Wild Turkey, Common Loon^, American Bittern^, Bald Eagle^, Northern Harrier^, Northern Goshawk^, Red-shouldered Hawk^, Rough-legged Hawk^, Black-bellied Plover^, Semipalmated Plover^, Solitary Sandpiper^, Greater Yellowlegs^, Lesser Yellowlegs^, Upland Sandpiper^, Least Sandpiper^, Bonaparte's Gull^, Herring Gull^, Great Black-backed Gull^, Caspian Tern^, Black-billed Cuckoo, Long-eared Owl, Northern Saw-whet Owl, Eastern Whip-poor-will, Red-bellied Woodpecker, Olive-sided Flycatcher, Alder Flycatcher, Yellow-throated Vireo, Horned Lark^, Purple Martin^, Northern Rough-winged Swallow^, Bank Swallow^, Winter Wren, Northern Mockingbird, American Pipit^, Ovenbird, Northern Waterthrush, Mourning Warbler, Palm Warbler, Prairie Warbler, Savannah Sparrow, Lincoln's Sparrow, Swamp Sparrow, Eastern Meadowlark, Rusty Blackbird, Orchard Oriole, Red Crossbill, White-winged Crossbill.

Species names and taxonomic order comply with the American Ornithologists' Union Checklist of North American Birds Seventh Edition, 54th supplement. Checklist prepared by Ted Murin 7/19/14.

	Sp	Su	F	W
Geese and Ducks				
__ Snow Goose ^	r	-	u	-
__ Canada Goose *	c	c	c	u
__ Wood Duck ^	u	u	-	-
__ Mallard *	c	c	c	-
Cormorants				
__ Double-crested Cormorant ^	r	r	r	-
Herons, Bitterns and Allies				
__ Great Blue Heron	u	u	u	-
__ Great Egret ^	u	u	u	-
__ Green Heron	u	u	u	-
__ Black-crowned Night-Heron	u	u	u	-
Vultures				
__ Turkey Vulture ^	c	c	c	-
Osprey				
__ Osprey ^	r	-	r	-
Hawks				
__ Sharp-shinned Hawk	r	r	r	r
__ Cooper's Hawk *	u	u	u	u
__ Broad-winged Hawk ^	r	-	u	-
__ Red-tailed Hawk *	u	u	u	u
Plovers				
__ Killdeer *	u	u	u	-
Sandpipers and Allies				
__ Spotted Sandpiper	r	r	-	-
__ Wilson's Snipe	r	-	-	-
__ American Woodcock	r	-	-	-
Gulls				
__ Ring-billed Gull	c	c	c	u
Pigeons and Doves				
__ Rock Pigeon	r	r	r	r
__ Mourning Dove *	c	c	c	c
Owls				
__ Eastern Screech-Owl	-	-	r	-
__ Great Horned Owl *	r	r	r	r
__ Barred Owl *	u	u	r	u
Nightjars				
__ Common Nighthawk ^	r	-	u	-
Swifts				
__ Chimney Swift ^	u	u	u	-

	Sp	Su	F	W
Hummingbirds				
__ Ruby-throated Hummingbird	r	r	u	-
Kingfishers				
__ Belted Kingfisher	r	r	r	-
Woodpeckers				
__ Yellow-bellied Sapsucker	r	-	r	-
__ Downy Woodpecker *	c	c	c	c
__ Hairy Woodpecker *	c	c	c	c
__ Northern Flicker *	u	u	u	-
__ Pileated Woodpecker *	c	c	c	c
Falcons				
__ American Kestrel ^	r	-	r	-
__ Merlin *	u	u	r	-
__ Peregrine Falcon ^	r	-	r	-
Flycatchers				
__ Eastern Wood-Pewee	r	r	r	-
__ Least Flycatcher	u	-	-	-
__ Eastern Phoebe *	c	c	c	-
__ Great Crested Flycatcher *	c	c	c	-
__ Eastern Kingbird *	c	c	c	-
Vireos				
__ Blue-headed Vireo	r	-	r	-
__ Warbling Vireo	r	-	r	-
__ Red-eyed Vireo *	c	c	c	-
Jays and Crows				
__ Blue Jay *	c	c	c	c
__ American Crow *	c	c	c	c
__ Fish Crow	u	u	u	
__ Common Raven	u	u	u	u
Swallows				
__ Tree Swallow *	c	c	c	-
__ Barn Swallow *	c	c	c	-
Chickadees and Titmice				
__ Black-capped Chickadee *	c	c	c	c
__ Tufted Titmouse *	c	c	c	c
Nuthatches				
__ Red-breasted Nuthatch *	u	u	u	u
__ White-breasted Nuthatch *	c	c	c	c
Creepers				
__ Brown Creeper *	r	-	r	-

Appendix 3: Relevant Contacts

Name	Organization	Field	Phone	Email
Alyse Festenstein	Bon Appetit Management Company	Manages campus farmers network	650-814-2566	alyse.festenstein@cafebonappetit.com
Ann Hazelrigg	UVM	Extension Plant Pathologist	802-656-0493	ann.hazelrigg@uvm.edu
Ann Milovsoroff	Board Member FHF	Landscape architect at Royal Botanical Gardens in Ontario	802-985-2451	1milovsoroff@gmail.com
Brian Williams	Sustainability Academy	Principal		bewillia@bsdvt.org
Carol McQuillen	Common Roots	Board Chair	802-999-4270	carol@commonroots.org
Charlotte Albers	Board Member FHF	Developed curriculum		charlotte@paintboxgarden.com
Christie Nold	Shelburne Farms	School Program Coordinator	802-985-0319	chnold@shelburnefarms.org
Curtis Comfort	Center for Technology, Essex	Natural Resources and Agriscience Teacher		ccomfort@ccsuvt.org
Dave Hardy	GMC	Director of Trail Programs	802-241-8320	dhardy@greenmountainclub.org
Dave Heleba	UVM	HRC greenhouse manager		daheleba@uvm.edu
Emily Brodsky	UVM	LANDS lecturer	484-560-5608	ejbrodsk@uvm.edu
Erin Randall-Mullins	South Burlington High School Rebel Roots	Head		erandall@sbschools.net
George Salembier	UVM Dept of Education	Dept Chair	802-656-1350	george.salembier@uvm.edu
Helen Carr	Chittenden County	District Stormwater Specialist	802-490-6167	helen.carr@state.vt.us
J. Bradley Materick	VT Commons School	Sustainability Coordinator	(802) 865-8084 x11	bmaterick@vermontcommons.org
Jen Guimaraes	Community Sailing Center	Associate Director		
Jim Pease	Agency of Natural Resources	Stormwater workshops @ Hort Farm	802-490-6116	jim.pease@state.vt.us
Josie Davis	UVM	Associate Dean of CALS	802-656-0137	josie.davis@uvm.edu
Leonard Perry	UVM	Extension Horticulturalist	802-656-0479	leonard.perry@uvm.edu
Margaret Skinner	UVM	Branch Out Burlington, Entomology Professor	802-656-5440	margaret.skinner@uvm.edu
Mark Cline Lucey	Vermont Commons School	Research and Service Program Director		mark@vermontcommons.org
Mark Starrett	UVM	Associate Professor, Horticulture and Plant Pathology	802-656-0467	mark.starrett@uvm.edu
Michaela Stickney	State	Lake Champlain Basin Coord/ed programs	802-490-6117	michaela.stickney@state.vt.us

Nicole Tocco	Bon Appetit Management Company	company established Duke Campus Farm	781-640-1645	nicole.tocco@gmail.com
Peter Goff	VT Commons School	Science Department Chair		pgoff@vermontcommons.org
Rachael Cadwallader-Staub	Shelburne Farms	Education Coordinator		rcstaub@shelburnefarms.org
Rick Paradis	UVM	Professor and Natural Areas Director		rparadis@uvm.edu
Ryan Morra	South Burlington School District	Teacher, former FN		ryanmorra@gmail.com
Ryan Robinson	Community Sailing Center	Education Director		ryan@communitysailingcenter.org
Sid Bosworth	UVM	Extension Professor	802-656-0478	Sid.bosworth@uvm.edu
Stephanie Hurley	UVM	Professor, Plant Biology	802-656-9501	stephanie.e.hurley@uvm.edu
Stephanie Miner	Former Board Member FHF	Works on continuing education for seniors		butternut6@comcast.net
Steve Sinclair	VT Dept of Forests, Parks, and Rec	Director of Forests	802-233-7541	steve.sinclair@state.vt.us
Susie Walsh Daloz	Hort Farm	Farmer Training Program Coordinator		swalshda@uvm.edu
Suzanne Weishaar	Sustainability Academy			sweishaa@bsdvt.org
Terry Boyle	Former Board Member FHF	Landscape architect		
Terry Bradshaw	Hort Farm	Manager	802-922-2591	terence.bradshaw@uvm.edu
Terry Cecchini		Fern Curator		terrcecc@gmail.com
Tom Hudspeth	UVM	Professor, NR		thudspet@uvm.edu
Tom Vogelmann	UVM	Dean of CALS	802-656-0422	thomas.vogelmann@uvm.edu

Appendix 4: Application to UVM Land Stewardship Program (LANDS), prepared by Maddy Morgan in July 2014

This year the Land Stewardship Program (LANDS) is inviting proposals from organizations in Vermont that steward land (e.g., land trusts, town Conservation Commissions, Dept. Parks and Recreation, land management agencies) for multiple small-scale resource inventory projects to occur in late July. Examples of past projects have included:

- Natural and cultural resource inventory
- Rapid assessment for acquisition
- Management recommendations
- Invasive species inventory
- GIS mapping and analysis
- Educational outreach materials (brochures, web content, etc.)
- Conservation easement monitoring

We ask that each project meet the following 4 criteria:

1) Project addresses an authentic need/problem
2) Project focuses on inventory/assessment/stewardship related needs
3) Project is mutually beneficial to the community partner and the LANDS crew
4) Project deliverables are attainable within a short time period (4 field/office days, July 29th finish) for a 2-3 person team

Please Answer the Following Questions

1. **Contact Person**: Maddy Morgan, (603)715-6840, mharvmorgan@gmail.com
2. **Availability between July 24-29**: Available by phone or email
3. **Property/study area**: UVM Horticultural Research and Educational Farm
4. **Property Size**: 97 acres
5. **Property Ownership**: UVM College of Agriculture and Life Sciences
6. **A few sentences describing the project**: UVM's Hort Farm represents a wonderful resource as a natural area in the midst of developed South Burlington. The Farm comprises 97 acres of horticultural collections, woodlands, food farm areas, wetlands, and stormwater drainage areas. The Friends of the Horticulture Farm hopes to increase the Farm's educational and outreach role, but to do so they need an up-to-date ecological inventory including invasive species inventory, species of interest, existing or potential wildlife resources, and management recommendations.
7. **Goals for the project**: Determine what ecological resources and issues exist on the property and how they can be managed for educational programming.
8. **Has any related work on this property already been completed?** An ecological survey of the forest communities was completed in 1997 by Brett Engstrom and Joe Nelson

Appendix 5: Script for NR205 Matchmaking Event

The Hort Farm is a 97-acre parcel of land 5 miles away from campus. It houses the Catamount Farm, the farmer training program, horticultural collections, a stormwater retention pond, Bartlett Brook, acres of woodlands, and 3 goats.

Over the years a lot of different people have worked on or at the Hort Farm, and record-keeping has been weak. As the Hort Farm moves into its new phase of community outreach, it needs help with identifying its many resources.

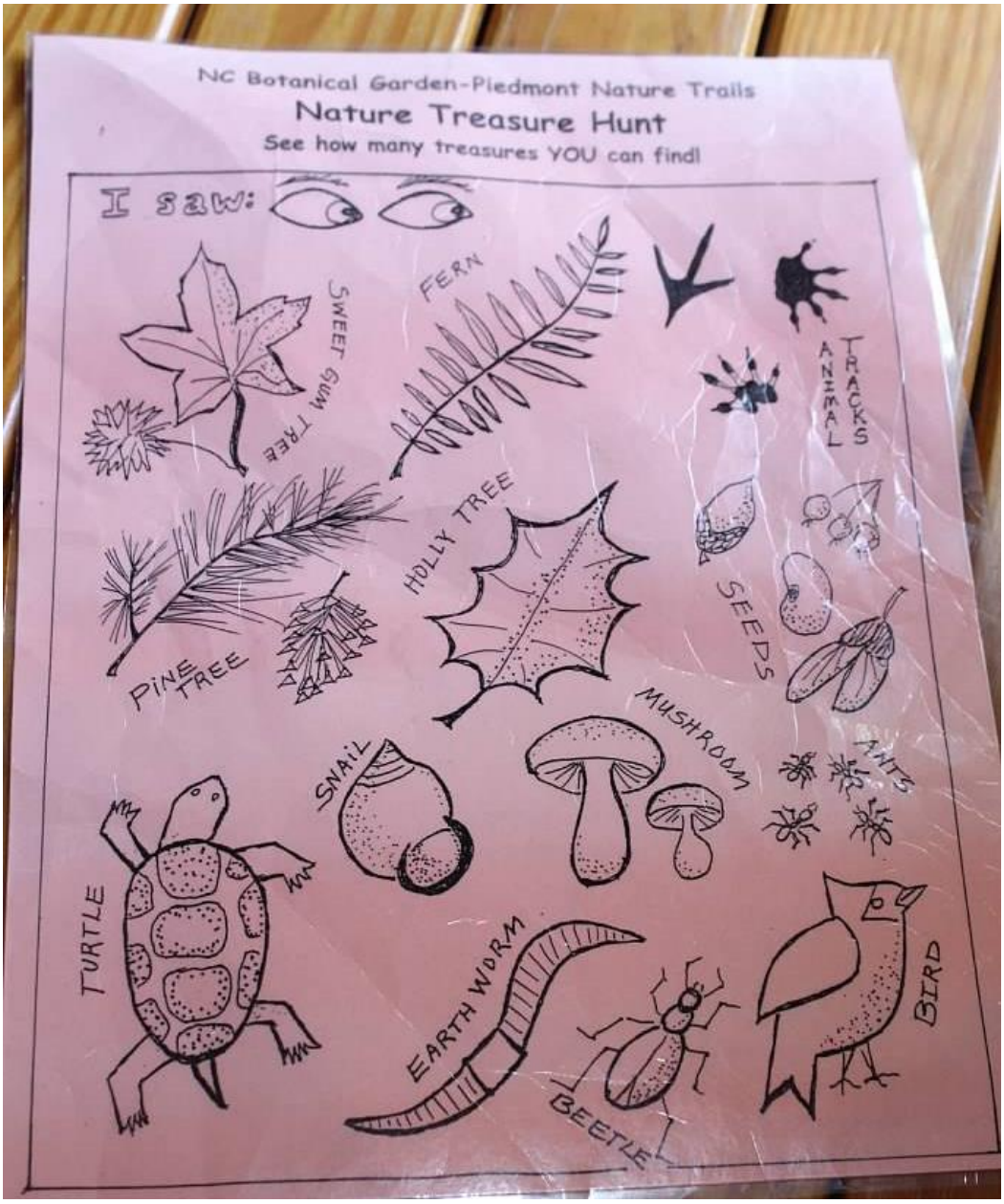
We hope that a few NR206 students will help us by completing an ecological inventory and/or field guide for the property. Our needs are flexible if you'd like to take this project in a particular direction.

We're happy to work with NR206 students to give you whatever support you need in return for your work.

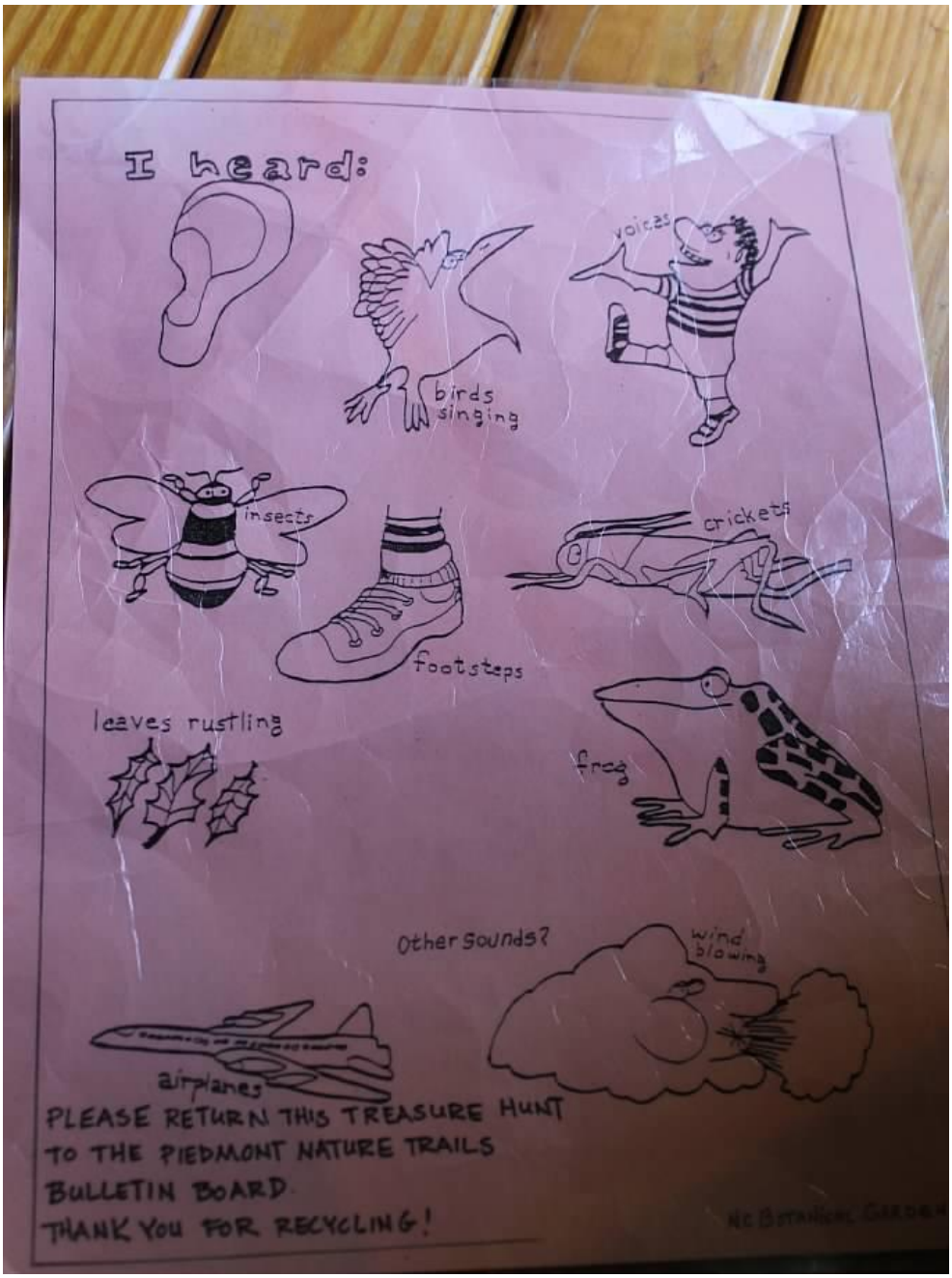
We're working from the ground up to help the Hort Farm become a community resource, and we need your help.

This script should be accompanied by pictures of the Hort Farm to increase the appeal to the students.

Appendix 6: Examples of Materials and Layout from other Institutions



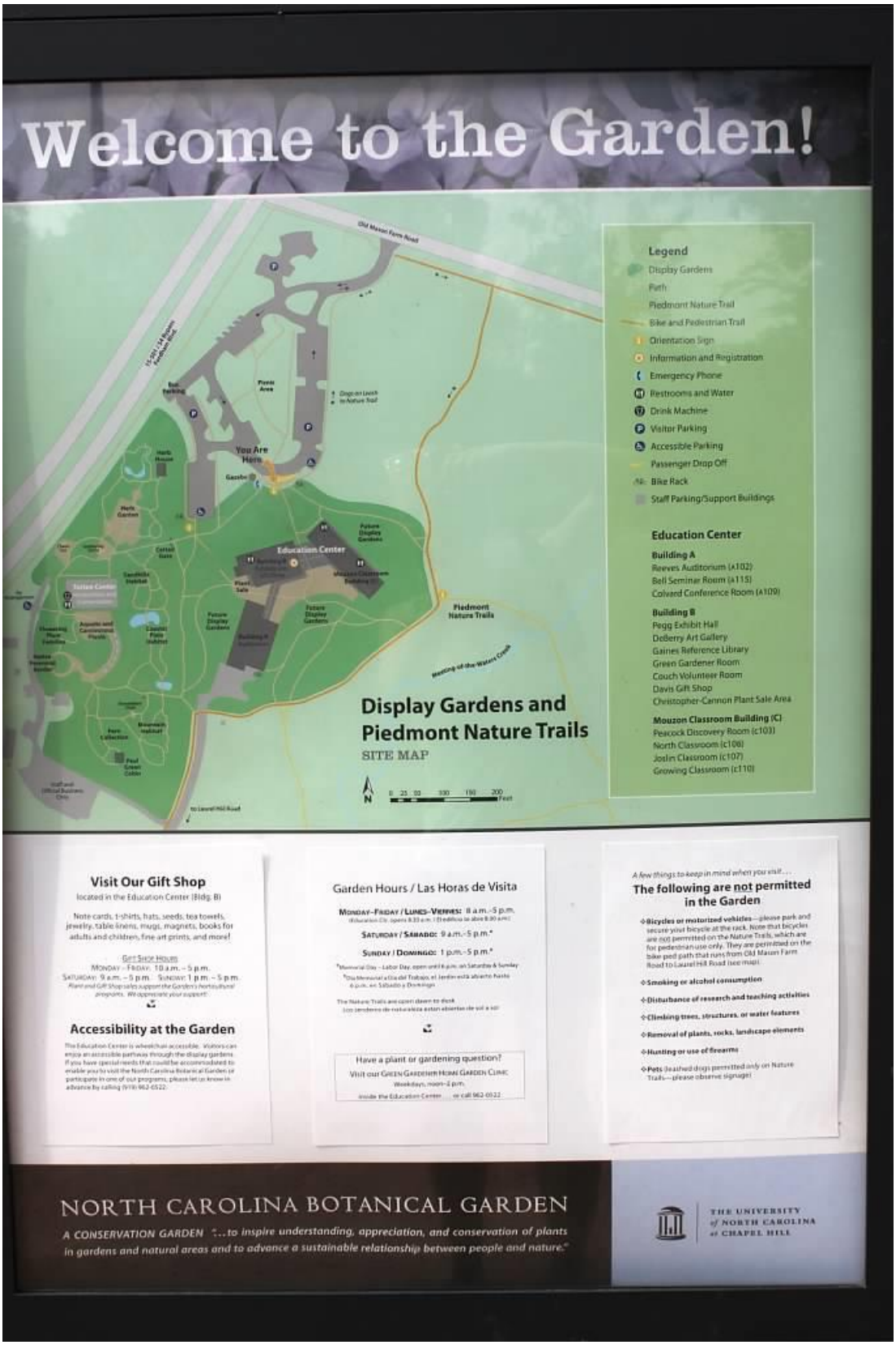
UNC Botanical Garden Children's Scavenger Hunt Page 1



UNC Botanical Garden Children's Scavenger Hunt Page 2

UNC Botanical Garden Interpretive Material

UNC Botanical Garden Interpretive Material



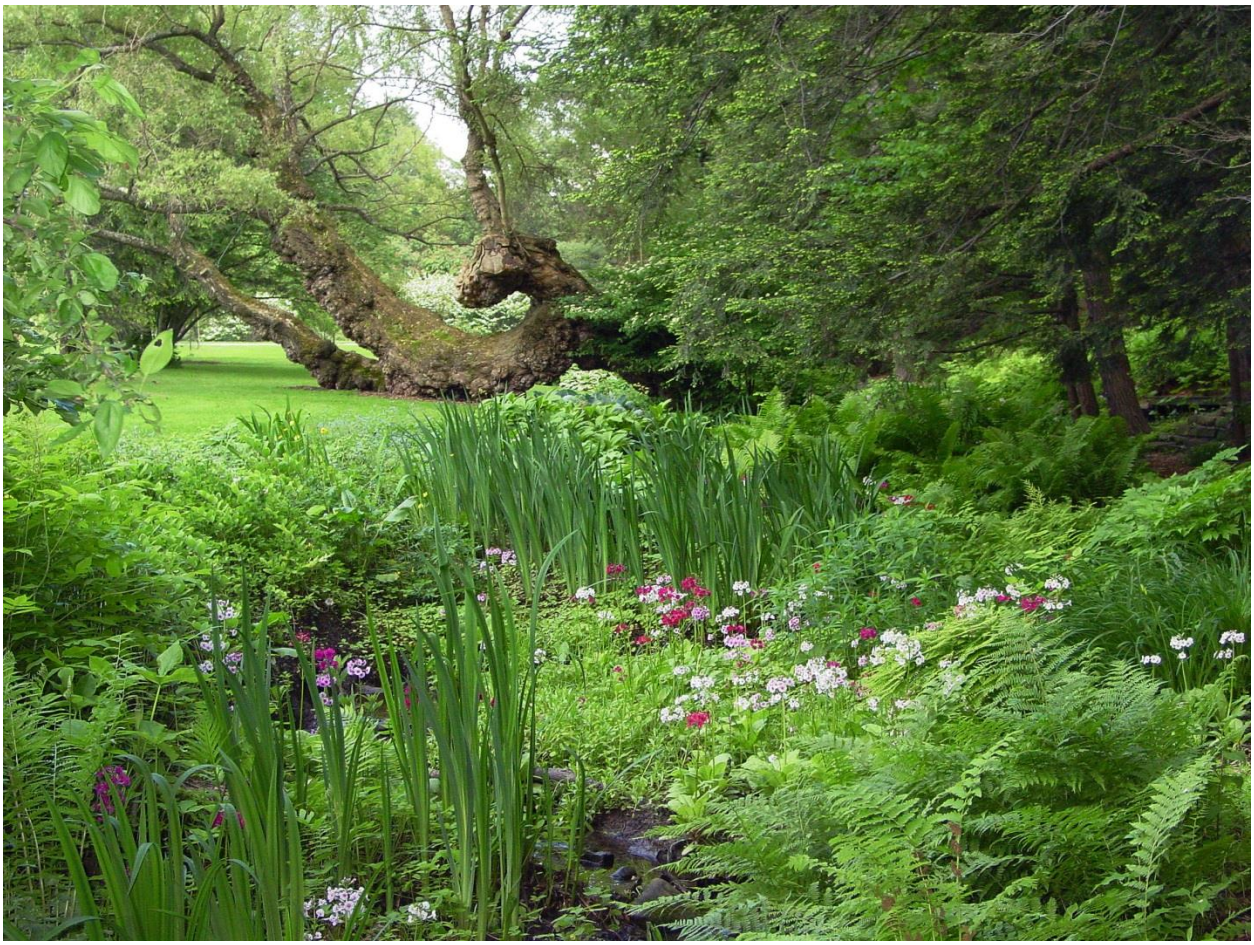
UNC Botanical Garden Welcome Sign

UNC Botanical Garden Sign

Cornell Plantations Class of '53 Container Gardens

CornellPlantations Dean's Garden

Cornell Plantations Peony and Perennial Garden



Cornell Plantations Treman Woodland Walk

Desert Botanical Garden Children's Scavenger Hunt

Desert Botanical Garden Children's Worksheet

Botanical Arts

Beautiful Botanicals

Class Code: BA-0909

6 Tuesdays: Sept 9, 16, 23, 30, Oct 7, 14; 6:00 to 9:00 PM

This hands-on class offers an introduction to painting the flora of the Plantations' botanical collections while guiding artists of all levels to greater breadth of skills. From plant observation and drawing, to plant perspective, composition and color mixing, we will explore black and white, color pencil, pen and ink, and go into greater depth with watercolor. A suggested materials list is available. ***Pre-registration is required***.

Instructor: Camille Doucet, artist, Ithaca, NY
Fee: $200 ($180 Plantations members & volunteers, and Cornell Students)
Location: Nevin Welcome Center

Food & Flavor

GARDEN TO TABLE: Seasonal Moosewood Favorites

Class code: FF-0914

Sunday, September 14; 1:00 to 4:00 p.m.

The beauty and serenity of the Plantations has always been a favorite place for Moosewood Restaurant chefs to find a respite from their hectic restaurant life – and harvest time in the Finger Lakes inspires them to create delicious, plant-based recipes for their cookbooks and world famous restaurant. After a tour of the Robison Herb Garden, Wynnie Stein, a co-owner and cookbook author at Moosewood, will offer a hands-on cooking demonstration showcasing autumnal greens, fresh herbs and squashes in a variety of recipes from their latest cookbook, *Moosewood Restaurant Favorites.* She will demonstrate making flavorful dips and spreads that can be served as appetizers or small plates for upcoming holiday gatherings and celebratory meals, as well as how to prepare a main-dish autumn salad which always gets rave reviews. Signed cookbooks will be available for purchase in the gift shop. This class is part of our annual Garden to Table series, a program emphasizing food plants and healthy, locally-sourced cuisine. ***Pre-registration is required***.

Fee: $50 ($45 for Plantations members & volunteers, and Cornell students)
Instructors: Wynnie Stein, cookbook author and co-owner, Moosewood Restaurant
Pamela Shade & Irene Lekstutis, Cornell Plantations
Location: Nevin Welcome Center

Food & Flavor

Booze and Botany: The Drunken Botanist's Cocktail Party

Class code: FF-0917

Wednesday, September 17; 4:30 to 6:30 p.m.

Join author Amy Stewart in the Herb Garden for a pre-lecture cocktail party featuring drinks from her book, "The Drunken Botanist: The Plants that Create the World's Great Drinks". Light hors d'oeuvres by Agava will also be served. ***Participants must be 21 or older and prepared to show proof of age. Pre-registration is required.***

Fee: $50 ($45 for Plantations members & volunteers, and Cornell students)

Cornell Plantations Snapshot of Class Offerings