What is Permaculture?

Permaculture is a philosophy that outlines a holistic approach to land use and land design in order to create sustainable human habitat and provisions while also maintaining, healing, and improving ecological health. This holistic approach reaches beyond concepts of sustainability, as it aims to not only provide for and maintain the basic needs of a system, but to replenish and regenerate life, to produce energy, and to be increasingly productive.

"Permaculture is a philosophy of working with, rather than against nature; of protracted and thoughtful observation rather than protracted and thoughtless labor; and of looking at plants and animals in all their functions, rather than treating any area as a single product system."
-Bill Mollison

Permaculture design aims to mimic the diversity, resiliency, and stability of natural systems. By paying attention to the ecological relationships and processes existent within natural systems, permaculture designers are then able to work to re-create and enhance natural and productive processes in order to further encourage biodiversity, habitat, and outputs to provide for human needs.

Sustainability in Permaculture

Sustainability is…

- To keep in existence, maintain, or prolong the process of life
- The ability to provide for the needs of the world's current population without damaging the ability of future generations to provide for themselves.
- When a process is sustainable, it can be carried out over and over without negative environmental impacts or impossibly high cost to those involved www.sustainabletable.org/intro/dictionary/

Permaculture is an ethical system…

Mollison's Ethical Basis of Permaculture:

1. Care of the Earth: Provision for all life systems to continue and multiply.
2. Care of the People: Provision for people to access those resources necessary to their existences.
3. Setting limits to population and consumption: By governing our own needs, we can set resources aside to further the above principles.

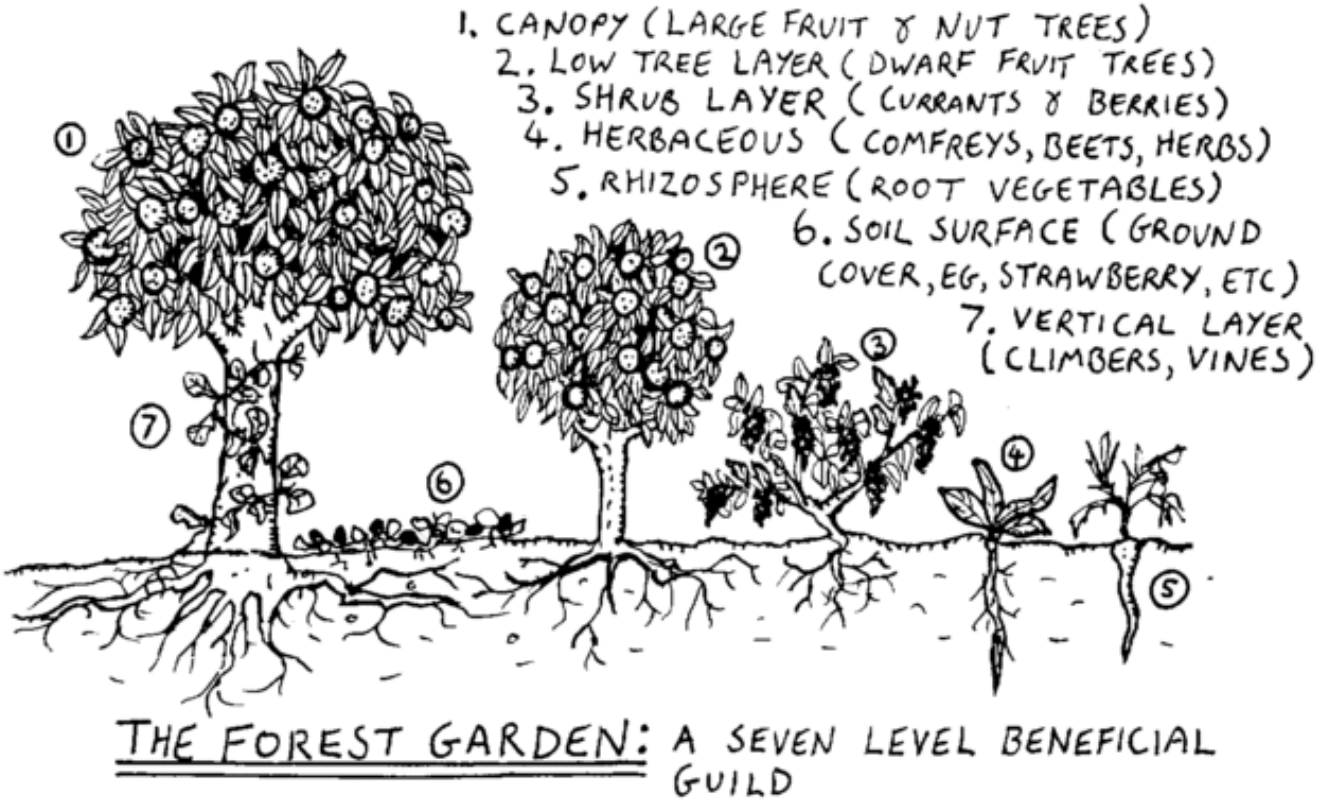
Permaculture and Food Forests

Food Forests:

Forest gardening is one of the world's oldest forms of land use. Origins of known forest gardening dates back to prehistoric times in the tropics along the river banks of jungle landscapes and on the wet foothills of monsoon regions, where useful, edible tree and vine species were identified and protected while undesirable species were removed from the area.

The origins of forest gardening meant cultivating desirable, productive plant species within their natural forested environment. Today, forest gardens are planned and created to form self-maintaining, "designed ecologies" that look and function like a natural forest ecosystem. **Nut trees, fruit trees, shrubs, and perennial vegetables are planted in a way that mimics nature.**

These forested or semi-forested systems include seven layers:



https://www.researchgate.net/figure/The-seven-layers-of-the-forest-garden-Credit-Graham-Burnett_fig6_235884102

What is a guild and how do we build them?
When we think the world guild, its meaning can be defined as an association of people working together toward a common goal. All of the components of a natural ecosystem work together to serve a function that support each other. This means that when we are working to mimic natural systems in creating a food forest, we must be aware of, and work to mimic, the necessary natural processes and functions that create strong and healthy ecosystems in nature. By identifying and working with the various **functions** of plants, we are able to create "guilds", or groups of plants that work together and function to create a healthy, productive, and diverse ecosystem.

In creating guilds, we must consider the seven layers of forest gardens, the uses and functions of those plants, as well as the incorporation of **plants of indirect use.**

Plants of indirect use:
-nitrogen fixers
-nutrient accumulators
-plants that attract beneficial insects

When all of these elements exist together in a system, the system will continue to strengthen itself.

The Edible Forest Garden at Spring Valley Student Farm

Mission:

The Edible Forest Garden at SVSF will provide a hands-on, educational space where community members and students can learn about and implement concepts of permaculture when considering food sustainability and the future of food in our current global climate. The space seeks to demonstrate how permaculture and edible forest gardening can be implemented into our lives to create productive, ecologically and socially sustainable food systems that can work to heal ecosystems, provide ecological habitat and diversity, and provide provisions for humans. Through the engagement of UConn students and members from the surrounding community, during volunteer hours and special events, individuals will have the opportunity to learn about the goals of food forests and permaculture and how they can be a part of this alternative system of food production.

Goals throughout implementation and upkeep:
- Sustainable (perennial edible plants, long-term/ repeated harvests)
- Native plants
- Wildlife food and habitat provisions
- Local sources of plant material
- Low cost
- Erosion control
- Low maintenance once plants are established/ minimize necessary inputs

Background:

The Edible Forest Garden site at Spring Valley Student Farm in Mansfield, CT was started in 2012 by Brett Lehner and a group of student farmers. The area was initially forested with a few edibles including apple trees, raspberries, and elderberry. Upon the start of this project, student farmers identified and marked important plant species already present in the space such as the large shagbark hickory (*Carya ovata*), and numerous elderberry (*Sambucus canadensis*). They then worked to remove invasive species including multiflora rose (*Rosa japonica*), Norway maple (*Acer platanoides*), and Japanese honeysuckle (*Lonicera japonica*). Small pathways through the space were cleared and mulched in order to begin to develop access for areas of new plantings. The first implementation of new plants occurred in 2012.

The vision and work put forth by these founding students set up a site that would allow for continued creativity, work, growth, and education for those involved with the farm and the community for generations to come.

About Me and My Project:

My name is Jackie Degregorio (B.S. 2019) and I am among the first cohort of students to participate in and complete the Sustainable Community Food Systems minor in the Environmental Studies program now offered at the University of Connecticut. The focus of my studies for this program would be permaculture and food forests. Throughout my life, I have loved gardening, foraging wild edibles, and caring for the land in what were my own small ways. As I have developed throughout my time at UConn, different educational, volunteer, and employment experiences contributed to forming and deepening a passion for farming, an interest in restoration ecology, and a concern for food security. For these reasons, when I first started to learn more about permaculture, I was immediately interested in pursuing it further.

At the start of summer 2018 I began my work in the Edible Forest Garden. My first step was to clear enough of the overgrowth of invasive species in order to create a small path that would allow for continued work. Invasive species removal required careful approaches and protection for poison ivy and the vigorous root removal of bittersweet vine. Throughout this process, I applied cardboard and mulch over the path in order to prevent new growth of undesirable plant species. Throughout this process, I worked to locate and identify the existing desired plants in the space. The removal of overgrowth, cardboard and mulch application, and identification of pre-existing plants was a process that continued throughout the entire summer. These initial management actions would allow for a re-assessment of the space so that it could thrive, be expanded upon, and continue to serve as an educational community space as well as a healthy and productive ecological community.

Permaculture Design Certificate (PDC) Course

In July 2018, I completed a 10-day, 72-hour intensive Permaculture Design Certification course at Whole Systems Design LLC in Mad River Valley, Vermont under the instruction of Ben Falk. The course provided hands-on instruction of applied permaculture skills. I learned about site analysis, creating base maps, and design implementation. I learned skills such as

propagating and pruning fruit trees, mushroom log inoculation, forest management, medicinal plants and medicine making, and native edible plant selection. The completion of this course means that I am certified to practice permaculture design by name. I completed this course with many new understandings, skills, and ideas that I would plan to implement into the Edible Forest Garden at SVSF.

My Continued Work in the EFG:

Following the significant clearing of overgrowth and invasive species throughout the EFG and the establishment of clear, mulched trails safe from poison ivy, I was able to begin to better assess the site. My goals at this time were as follows:

- Identify existing plants
- Develop an updated base map
- Assess the health and vigor of existing plants
- Continue to manage for overgrowth and invasive species
- Continue to maintain and improve the walking trail to allow for accessibility
- Develop a list of new plant species to implement with the existing plants
- Consider creating "guilds"
- Work with available budget and Tripple Brook Farm to purchase plant material
- Organize volunteers on Farm Fridays
- Educate volunteers and the community about the goals and intentions of the space
- Create signage to identify any new or unmarked species of plants
- Develop a future plan for the space so that it can continue to be cared for and thrive

Over the course of summer-fall 2018, all existing plants were identified, separated out from overgrowth, and flagged. Areas around each plant were cleared and then covered with cardboard and mulch in order to inhibit undesirable or invasive plant growth. Once all of the existing plants were identified and located, I created an updated base map sketch. This allowed me to holistically consider the space with regards to species of plants that would be beneficial additions to what was already existing. I assembled a table of plant species already existing, as well as a table of desired additional species. These selections were then further considered and sorted through with SVSF Manager, Julia Cartabiano, and a finalized order was placed with Tripple Brook Farm in Southampton, MA. I traveled to Tripple Brook Farm where I met with Stephen Breyer. Here, I gained a great understanding of different native edible plants and had the opportunity to ask questions in regards to this project and my interests.

These new plants were implemented throughout the EFG with careful thought to the growing conditions that they would need and how they would interact with other existing species. This process represents what would be a first step in the consideration of building **guilds**. The base map was updated with these new plant species locations. Additionally, a comprehensive table of all existing plants that includes scientific and common names, light and water conditions, health status, edible components, uses, functions, and additional notes was completed. This list is important in considering and continuing to develop guilds, as it states which plants are medicinal, nitrogen fixers, dynamic accumulators, provide bird or invertebrate shelter, are nectary, provide ground cover, or have nuisance traits.

Throughout these ongoing processes, I organized volunteers to participate in this project and learn about the space. General maintenance of the trails and removal of overgrowth was a constant process that involved volunteers throughout the fall. I also led visitors through the space and discussed the project with the community during the "Future of Food" event held at SVSF in the fall 2018 semester.

Over the winter, I have created signage to identify new plants as well as any previously unmarked plants. Progress in the space will continue this spring and summer. It will be important that detail-oriented, dynamic care is provided during the ongoing growth and establishment of this system.

The Future of the Edible Forest Garden

Future of EFG:

As an Edible Forest Garden matures, it should improve and increase productivity. As trees reach fruit-bearing ages, habitats become established, and new species of plants continue to be implemented, ecological health, diversity, and relationships should improve. Guilds form through both human intention and healthy ecological development and interaction. In order for all of this to happen, initial and continued human observance, management, and care must often be provided, especially as plants become established in the space.

In this space, the presence of invasive species including bittersweet vine (*Celastrus orbiculatus),* Japanese honeysuckle (*Lonicera japonica),* multiflora rose (*Rosa japonica),* and native poison ivy vine (*Toxicodendron radicans)* began to take over the trails and the native edible plant species that were introduced to the space. The continued growth of these invasive and undesirable species was occasionally managed by student farmers and volunteers, however many of the trails were lost to overgrowth while the health and vigor of many of the native edible plants suffered. Since this 2018 renovation and improvements, continued care and attention to the space will be necessary in order to prevent previous problems and to encourage continued health, vigor, and productivity of the desired plants and the overall ecological community of the EFG.

Leadership & Involvement: Following my graduation in spring 2019 and moving forward, it will be important for there to continue to be a head person in charge of the EFG. This person would be responsible for frequently observing the space in order to check in on the health and needs of the establishing plants, manage against the overgrowth of undesirable vegetation and invasive species, maintain a working list of plants present in the space as well as any new implementations, update maps, organize volunteers, and delegate necessary tasks for the space on Farm Fridays.

Continued Tasks:

- Routine application of cardboard and mulch over trails in order to inhibit overgrowth of vegetation.
- Continuous removal of invasive vegetation to allow for the healthy establishment of desired plants.

- Implementation of new plants to continue to increase productivity, diversity, and to continue to develop guilds.
- Continue to update and maintain maps and lists of species and their locations.
- Organize and file records of purchase invoices and information from nurseries.
- Provide updated information for the SVSF website.
- Organizing and facilitating volunteers.
- Engaging community members in the space during work days and special events.
- Connecting the EFG with the Sustainable Community Food Systems minor and its involved students.

Resources:

Print:

Hemenway, Toby. *Gaia's Garden: A Guide to Home-Scale Permaculture*. White River Junction: Chelsea Green, 2009.

Holmgren, David. *Permaculture: Principles and Pathways Beyond Sustainability*. Holmgren Design Services, 2002.

Jacke, Dave and Eric Toensmeier. *Edible Forest Gardens Vol. I & II*. White River Junction: Chelsea Green, 2005.

Mollison, Bill. *Permaculture: A Designers Manual*. Tasmania: Tagari Publications, 1988.

Toensmeier, Eric. *Perennial Vegetables*. White River Junction: Chelsea Green, 2007.

Plant Sources & Nurseries:

Tripple Brook Farm, Southampton MA
http://tripplebrookfarm.com/

Oikos Tree Crops, Kalamazoo MI
http://oikostreecrops.com/

Fedco Seeds, Waterville ME
http://fedcoseeds.com/

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