

# A Primer on Permaculture

By Cynthia Rabinowitz

Growing up with a gardening mother, I learned early about compost and manure, about roses and tomatoes, aphids and slugs. I learned these things as discrete facts but not how they connected to a bigger picture.

Compost and manure contained mysterious food that nourished the plants. What that food is and how plants get it from the recycled “waste” is something I never thought about as a child. I learned little, if anything, about how waste is decomposed into essential elements and organic matter.

I played in the woods, collected frog spawn and raised tadpoles in a galvanized tin bathtub in the garden, feeding the fast-growing immature frogs bits of meat from the kitchen. I didn't learn how, in nature, frogs eat insects, and other critters and are, themselves, eaten by other larger predators.

Of course, I now know everything living is part of the food chain – an essential cycle of life that includes plants, animals (including humans), insects and soil microbes. Everything eats!

I played in the woods with my friends and learned how to start a fire to cook food in billy cans using strips of birch bark as tinder. I didn't learn how to tap birch trees for sap to make syrup, nor gather acorns to make a nutritious food. I knew that dock leaves could be used to soothe rashes from stinging nettles, but not that nettles are an excellent green food brimming with nutrition.

## ‘Something Wasn't Right’

As an adult, I studied agriculture and soil science and became a consultant in those fields, quickly recognizing something wasn't right about our food system.

In the 1970s, anguished about the increasing use of toxic chemicals and fertilizers in ornamental horticulture, agriculture and home gardens, I dove into the organic farming and gardening

movement and moved on to permaculture, a design approach to farming and sustainability from Australian ecologist, Bill Mollison.

Mollison studied forests, particularly observing the synergy that permits ecological cycles to carry on indefinitely, with no human input and no wasteful products that cause damage.

He compared these natural systems to human activities that create pollution, soil erosion and contamination, are wasteful, use up finite resources, and contribute to climate change.

## An Alternative

From these observations, permaculture emerged as an alternative. Permaculture is a design system for humans to produce our essential needs in ways that mimic nature without destroying the planet in the process.

To understand permaculture, we first need to observe nature deeply in order to be informed by it. This takes practice as most modern humans are simply not accustomed to really looking at nature in any way other than to appreciate a beautiful scene.

Additionally, permaculture includes a set of principles and ethics to be incorporated into everything we want to do. These principles and ethics ensure that human activities consider the rights of others and the protection of the environment. (*See sidebars*)

I had to delve into history to learn how we arrived at our contemporary point in civilization, in order to understand how we can change for the better.

### PERMACULTURE ETHICS

Care of the earth: Includes care for all living and non-living things, and care of people – basic needs;

Contribution of surpluses, e.g. money, time and personal energy; sharing;

Life ethic – intrinsic worth of every living thing – e.g., trees are valuable in themselves – not only for what they can do for us;

Cooperation, not competition, among people, communities, countries.

“Permaculture: An agricultural system or method that seeks to integrate human activity with natural surroundings so as to create highly efficient self-sustaining ecosystems.”

– Merriam-Webster

Before the industrial era of fossil fuels and big agriculture, all life was sustained by natural laws and self-regulation of our planet. I'll refer to our planet as Gaia (*The Gaia Hypothesis*, James Lovelock and Lynn Margulis).

The gaseous atmosphere; the aqueous systems of the oceans and fresh water; the land, with its regenerating soil, all work together in a balanced, self-perpetuating system.

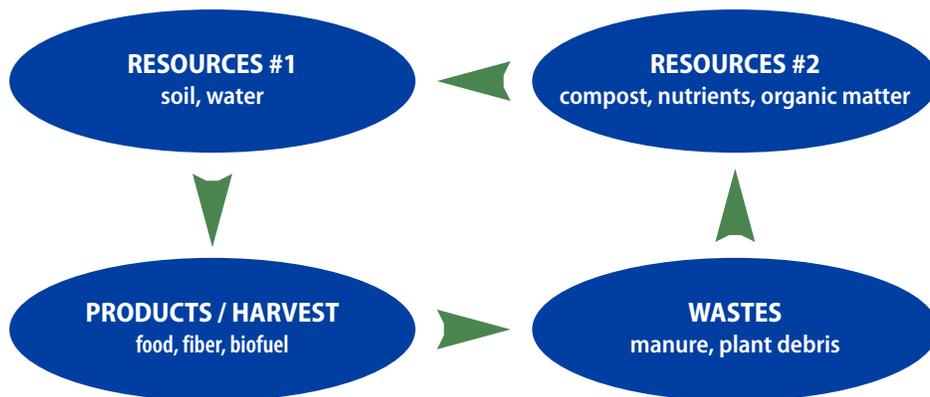
Conversely, most of what we do in the modern era is not self-perpetuating because almost everything relies on finite resources, in particular fossil fuels.

Also, our actions are actually interrupting and destroying the self-regulating abilities of Gaia to keep the elemental balance of the atmosphere, the pH of the oceans and other essential

### PERMACULTURE PRINCIPLES

- Observe and interact
- Catch and store energy
- Obtain a yield
- Apply self-regulation and apply feedback
- Use and value renewable resources and services
- Produce no waste
- Design from patterns to details
- Integrate rather than segregate
- Use small and slow solutions
- Use and value diversity
- Use edges and value the marginal
- Creatively use and respond to change

For more on the Principles, see *Principles and Pathways Beyond Permaculture* by David Holmgren.

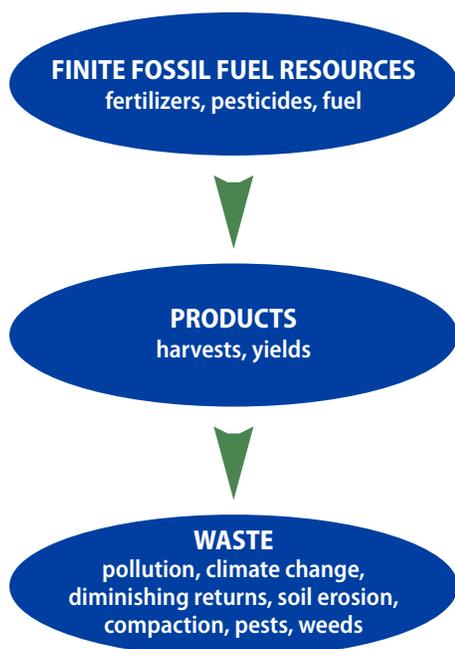


parts of the balancing act we call Gaia, or Earth.

According to many scientists, we are now living in the century when we will have to accept life without fossil fuels. (Richard Heinberg, Post Carbon Institute). Since fossil fuel has become almost irreversibly connected with everything humans do in our era, including food production, this is a potentially frightening concept.

### The Most Important Human Endeavor?

Conceivably, agriculture could be considered the most important human endeavor, since we must have food to live. As agriculture took hold, replacing hunting/gathering, humans generally worked on a small scale, without the use of machines and not impacting the self-regulating systems in ways that destroyed them. This agriculture was permanent agriculture. Permanent



meaning replicable over and over again.

This is what is meant by sustainability – a system where there is no waste, because what we consider to be “waste” is actually a resource in a sustainable system.

Unfortunately, modern agriculture has become industrial big business and is conducted in a non-sustainable way, using up fossil fuel, and creating damage to soil, water and living systems, and the atmosphere.

Permaculture shows us how to return to sustainable agriculture by strengthening key components of regenerative ecosystem management:

- Increasing biomass
- Increasing biological activity
- Intentional re-mineralizing of the soil
- Increasing biodiversity

Modern agriculture is impermanent and, therefore, not sustainable. Mollison, the founder of permaculture, saw the closed-loop ecologies of forests and grasslands where the trees, shrubs, forbs, birds, insects, microorganisms and other components of the system survive and thrive in a balanced way. All species are interconnected and essential to the successful running of the whole. The end products are useful within the system and there is no such thing as harmful waste.

### Application

How do we actually apply all this to our daily lives? Mollison, with his student (later partner) David Holmgren, developed an educational protocol known as the Permaculture Design Certification course (PDC). The minimum 72-hour PDC is taught worldwide by trained instructors and practitioners of the design system drawing

on science and design knowledge.

Skills are taught to enable people from any culture, or educational level, to apply the ethics and principles to large scale or small scale permaculture projects.

Permaculture is practiced in North America, South and Central America, Europe, Africa, Asia and Australasia – all over the world. Adaptable in each region and climatic zone, permaculture guides us to the wise understanding of our resources and limitations, and how to sustainably manage our small or large properties, neighborhoods and towns to develop resilient communities with thriving local economies.

Training starts with site assessment. Sites are apartment balconies, large farms, urban or suburban neighborhoods, or towns. Site assessment is deep observation and information gathering.

We look at soil, hydrology, climate and weather patterns, sun exposure, topography, vegetation, human resources, and the built environment.

Positive and negative characteristics of the site and the area beyond the site are considered. Negatives include contamination, noise, unattractive views etc., affecting the subject site.

### Design

Next is a design phase where we imagine the systems we want to organize and how to position them for the most convenience and best use of energy, including human energy, and other resources.

The site analysis data and the design phase are organized on diagrams, or maps, of the site where each element is easily seen and manipulated until the best design emerges. The PDC course culminates in each student presenting a Site Assessment and Design Project.

The design is developed using the Permaculture Principles as much as possible for each element. It is useful to think of each element that you want in your design, let’s say a garden, and make sure its design fulfills at least one, preferably more, of the Permaculture Principles.

The principle of obtaining a yield is straightforward. In the design for our

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# Kathleen Nelson Receives Mehrhoff Award

**K**athleen Nelson of New Milford was awarded the Leslie J. Mehrhoff Award at the 2014 Invasive Plant Symposium at UConn in October.

The award is given biennially by the Connecticut Invasive Plant Working Group (CIPWG) in honor of the late Les Mehrhoff, a botanist, naturalist and co-founder of the group. Les' widow, Olga, made the presentation.

It recognizes a deserving individual, group or organization that has made significant or commendable contributions toward awareness, prevention, control, or management of invasive plants in Connecticut.

These contributions are broadly defined and could include (but are not limited to):

- Innovative approaches or noteworthy efforts for invasive plant control
- Data collection or citizen science involvement with invasive plants
- Awareness of and advocacy for invasive plant issues

- Efforts to further early detection of new invasives in Connecticut

- Efforts on behalf of invasive plant alternatives and natural biological diversity

- Demonstrated an enthusiasm for biological diversity, the natural world, and/or Connecticut's natural heritage.

Nelson, a former nursery owner, has a long history of taking action on invasive plants. As one of the leaders of Mad Gardeners and chair of the group's Invasive Species Advisory Committee, she has done much to raise awareness of invasive plants.

Nelson has received grants to work on the control of Mile-A-Minute Vine (*Persicaria perfoliata*, formerly *Polygonum perfoliatum*) and has involved homeowners and young people in the endeavor. She even designed and printed the first Mile-A-Minute (MAM) identification cards.

Nelson has been instrumental in alerting people to the importance of early detection to prevent the spread of

MAM and, more recently, Japanese Hop (*Humulus japonicus*).

More information about CIPWG can be found at <http://cipwg.uconn.edu>



Photo / Nicole Gabelman

Kathleen Nelson accepting the Leslie J. Mehrhoff Award at the 2014 Invasive Plant Symposium at UConn.

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property, my husband and I have tried to incorporate the principle of catching and storing energy and water, valuing diversity, using edges and margins, and producing no waste, as the very minimum we are trying to achieve.

The principles of observing and interacting, and using small and slow solutions, have been helpful. Each design element should fulfill multiple functions.

### Tweaking the Details

When the overall design pattern is established, the details come next.

Within each element of the design, say a chicken house, what will be the details? In ours we designed a water-collection gutter system filling a rain barrel inside for easy access to water during winter and summer.

Locally harvested mountain laurel boughs make an attractive and sturdy

roosting area for the chickens to cuddle-up on at night. The doors and exit hatches allow the chickens access to the adjacent gardens for foraging insects, weeds, or exercise, and also for us to easily clean the shed.

Designing the details may be an ongoing activity since, despite going slowly, it seems inevitable that new ideas and better ways to do things emerge in time.

### A Lifestyle Choice

Permaculture is a lifestyle: it helps us to understand the natural world around us and our place in it. Permaculture is a framework: within it we can produce everything we need for survival, leaving as small a footprint on the planet as we possibly can. Permaculture is a design process: through it we learn to visually organize our projects and plan future improvements. Permaculture is a move-

ment: people worldwide are practicing and engaging to build better lifestyles for themselves and their communities.

Permaculture is not a new way to garden. Rather, permaculture principles and ethics help us to rethink every aspect of human endeavor to create fairer, healthier and more sustainable communities. ❁

*Cynthia Rabinowitz is a soil scientist, horticulturist, ecological landscape designer and certified permaculture design consultant. She is the owner of The Hidden Garden & Connoil LLC in Bethlehem.*

([www.hgconnoil.com](http://www.hgconnoil.com))



Cynthia Rabinowitz

# Hosta of the Year

The American Hosta Growers Association's (AHGA) choice for 2015 Hosta of the Year is *Hosta 'Victory'*. According to AHGA, Victory has a shiny green center with a margin that changes from greenish-yellow to creamy-white by early summer. Its near-white, light lavender flowers are held on long arching scapes in early- to mid-summer.

A sport of *Hosta nigrescens* 'Elatior', it is characterized as an outstanding and vigorous specimen or background plant. It's a giant when mature at 4 feet or more in width and 28-32 inches in height. 'Victory' will take full or partial shade.

Hardy in all of Connecticut's climatic zones, it also attracts hummingbirds and is reported to produce a thick substance that makes it slug resistant.

"With the increasing number of hosta cultivars being introduced each year it is increasingly difficult for nursery owners and gardeners to choose just the right hostas for their sales areas and gardens. To this end the American Hosta Growers Association established the AHGA Hosta of the Year in 1996. It is selected by a vote of AHGA members. Award winners are hostas that are good garden plants in all a regions of the country, are widely available and in sufficient supply and retail for about \$15 in the year of selection."

For more information visit [www.hostagrowers.org](http://www.hostagrowers.org)

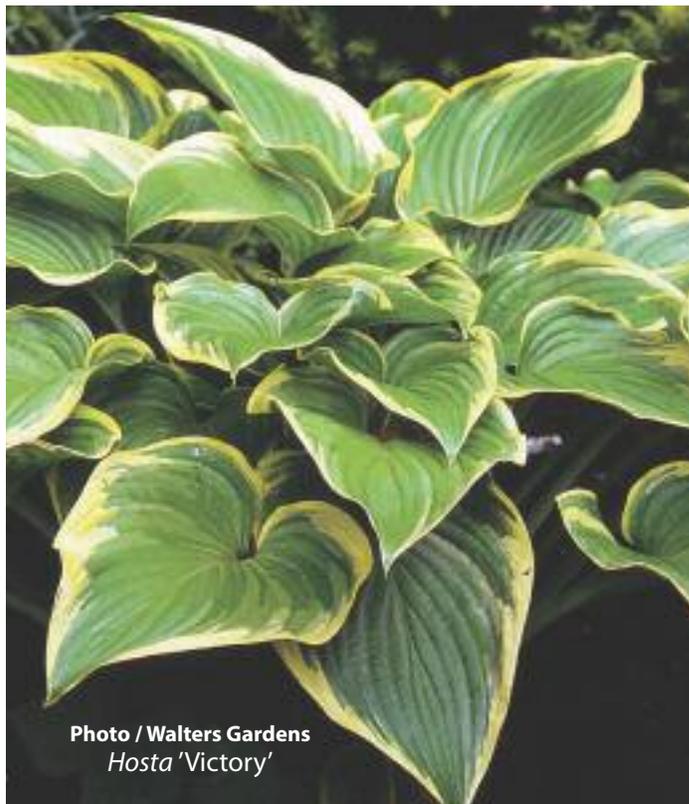


Photo / Walters Gardens  
*Hosta 'Victory'*

## Gabelman is New Invasive Plant Coordinator

The University of Connecticut (UConn) and the Department of Energy and Environmental Protection (DEEP) are pleased to introduce Nicole Gabelman as the new Invasive Plant Coordinator for the state of Connecticut.

Nicole graduated from UConn in 2012 with a Bachelor's degree in Biological Sciences and a minor in Ecology and Evolutionary Biology. During the summer she began working in the UConn Department of Plant Science and Landscape Architecture on the Mile-a-Minute weed (*Persicaria perfoliata*) biological control project.

Over the past few years, Nicole worked on several invasive plant projects at UConn under the supervision of Donna Ellis, UConn IPM Program Coordinator and Logan Senack, former Invasive Plant Coordinator. She also completed internships for the U.S. Fish & Wildlife Service Long Island National Wildlife Refuge Complex and The Connecticut Agricultural Experiment Station (CAES).

In Long Island, she was responsible for surveying, mapping and coordinating control efforts for invasive plant species

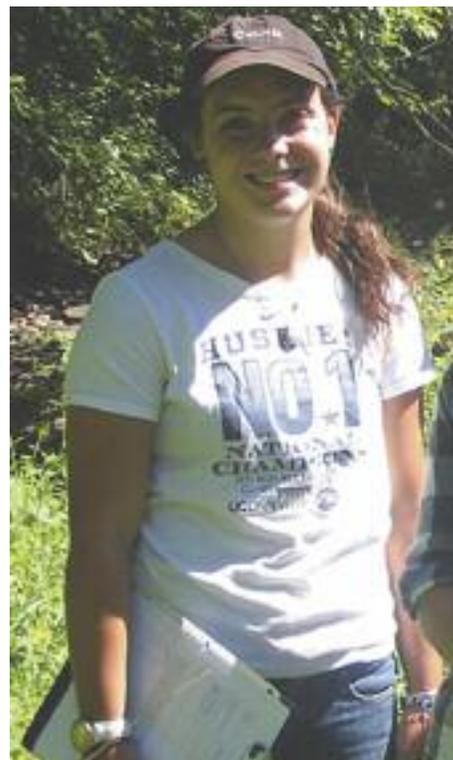
on seven of the nine National Wildlife Refuges. Nicole was also involved in grassland restoration, salt marsh monitoring, and surveys for bats, beach-nesting birds and endangered species.

At CAES, Nicole worked on USDA APHIS Cooperative Agricultural Pest Surveys (CAPS) and the Forest Pest Outreach and Survey program. These projects consisted of surveying for new exotic pest threats and providing outreach about the current exotic forest pests including the Emerald Ash Borer (*Agrilus planipennis*) and the Asian Longhorned Beetle (*Anoplophora glabripennis*).

In November, Nicole returned to UConn through a joint agreement with DEEP and we are excited to have her contribute her experience and expertise to the Invasive Plant Coordinator position. She works closely with the Connecticut Invasive Plants Council and is responsible for preparing agendas, taking and distributing minutes and responding to information requests/tasks from the Council.

Nicole looks forward to working with both professionals and citizens in the battle against invasive plants in

Connecticut and encourages anyone with invasive plant questions or concerns to contact her at (860) 486-0114 or [nicole.gabelman@uconn.edu](mailto:nicole.gabelman@uconn.edu)



Contributed photo

Nicole Gabelman, Connecticut's new Invasive Plant Coordinator.