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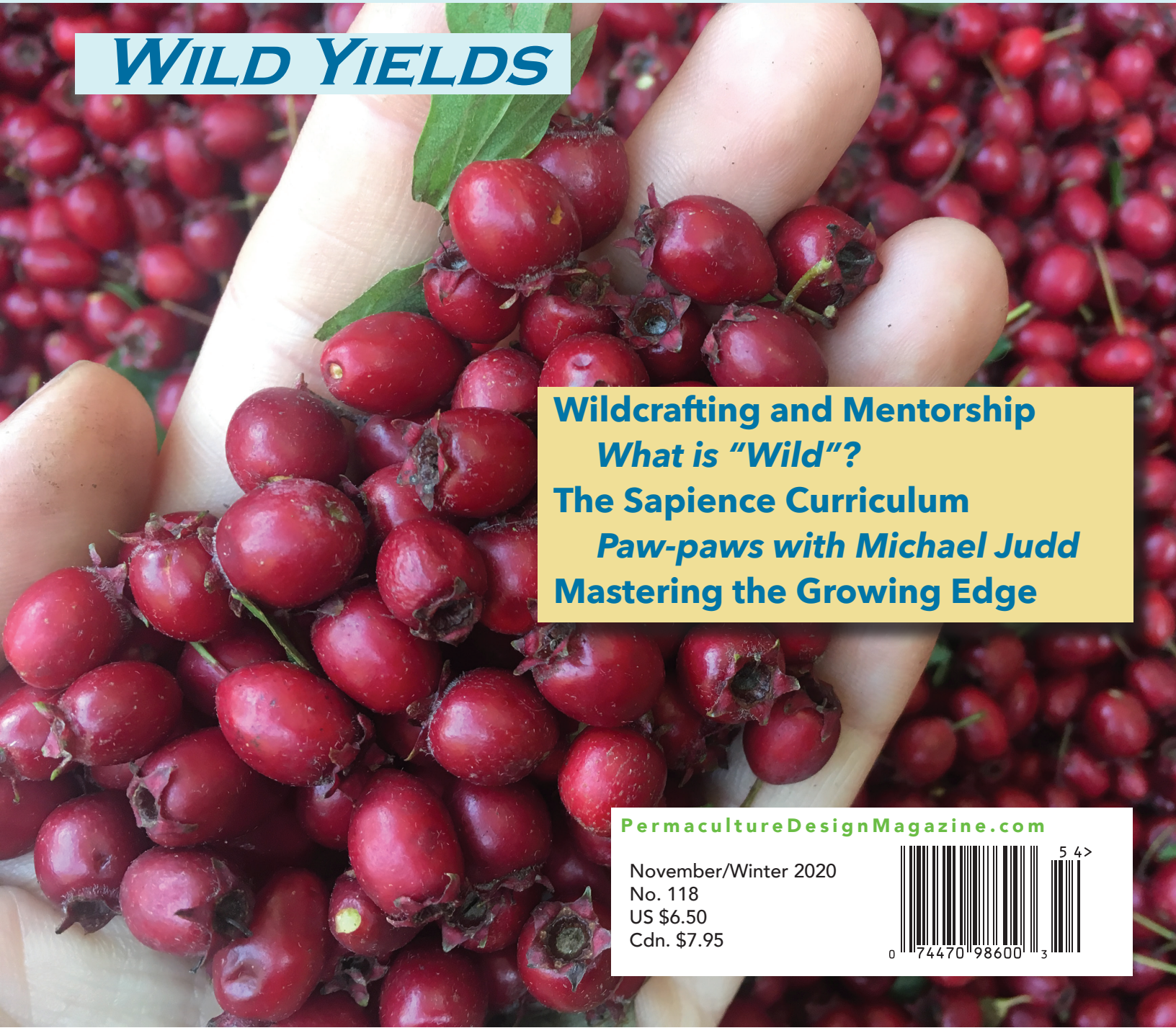
Regenerating Life Together



Wild Yields

Wildcrafting and Mentorship

What is "Wild"?

The Sapience Curriculum

Paw-paws with Michael Judd

Mastering the Growing Edge

PermacultureDesignMagazine.com

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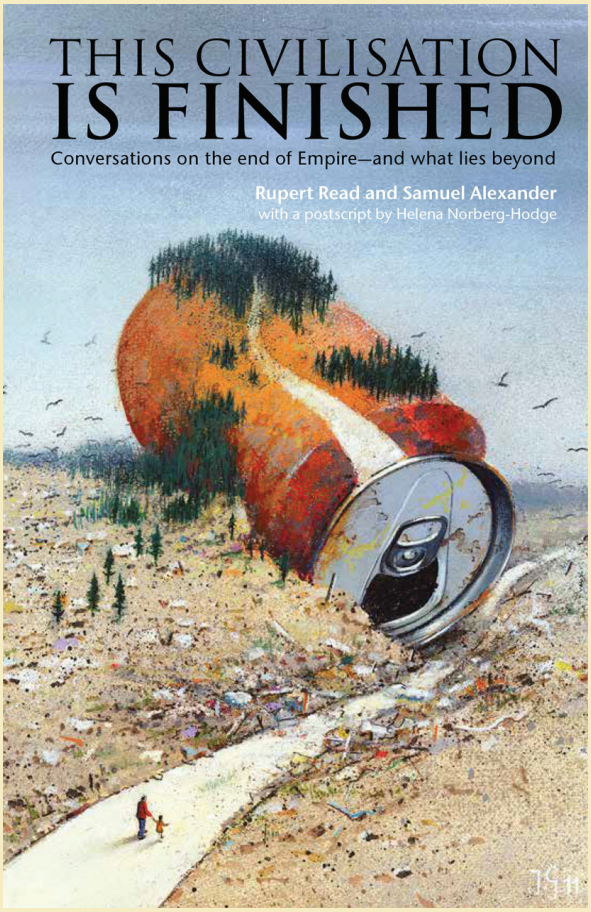

Samuel Alexander

...broadens his extensive collection of works with this book co-authored with philosopher/activist and XR spokesperson Rupert Read. While addressing some challenging themes, this series of thought provoking conversations explore how we can negotiate what lies beyond the industrial growth civilization that we know today.

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Wild Yields

Rhonda Baird

Greetings and salutations—and the very best of wishes to you all as 2020 is nearing its end. In this time of gathering dark in the Northern Hemisphere and summer bounty in the Southern Hemisphere, we hope that you will find time for review of what worked for you, and what you would like to change in the coming year to become even more resilient.

This issue surprised me. It shouldn't surprise me how it all happens, but this one did. Since the onset of the pandemic, authors have had a hard time focusing on writing; they're just like everyone else. What surprised me is the new depth of feeling, good will, and tenderness I see from the authors in this issue. The meat-tenderizer which is our world these days seems to have stretched and kneaded us into something more responsive. People are coming from a deeper place within themselves. Other authors couldn't make our deadlines and contribute because of crises in their lives. Our hearts go out to them, and so does our desire to maintain the connections which weave together this community of amazing people.

Self-care has become the focus. We're all really stressed out, and we can't be resilient if we're stressed. I would invite you to identify what is stressing you, and then gently ask what you can do within your sphere of influence to change this. Take action on it and build on that pattern.

In this issue we took up the idea of "Wild Yields." For many of us that means wildcrafting, and our authors were wonderful in sharing their projects, knowledge about specific plants, how wildcrafting can be a guiding force in healing and protecting the Earth, and how mentoring is a wonderful way to practice wildcrafting and permaculture. Many thanks to Michael Pilarski and Anna Pallotta for sharing their work and mentoring relationship. Sam Thayer shared some insights into milkweed as a vegetable. Mary Vance gave us an introduction to walnut—the tree that seems to scare many gardeners. I found myself questioning the underlying assumptions about the ideas of "wild yields" and how we might alter our approach to permaculture in a way that could speed up Earth repair. Michael Judd shared with us the bounty in working with paw paws. Frank Forencich shared from his new book, *The Sapience Curriculum,* two chapters—one on the value of claiming your innate wildness; and one valuable to systems thinkers on tensions and systems. Dan Palmer brought us more considerations on the permaculture community from his blog, *Making Permaculture Stronger.* Albert Bates writes movingly about earth repair and the storms affecting us all. This issue is full of inspiration, practical advice, and the growing edges of permaculture. We hope you will enjoy it.

Peace to you and may you all find joy in your gardens and homes. Δ

A Note from the Publisher

Almost six years ago, in an icy January 2015, I traveled to Bloomington to meet with Peter Bane and Keith Johnson as part of the transition in ownership of the *Permaculture Activist.* We launched a Kickstarter to finance the transition-related costs, such as shipping all the back issues to the West Coast, where I was living at the time, and renting a storage unit to hold everything (our apartment was only about 220 sf), and to revise the website. All those goals we accomplished, but our final goal is only now nearing completion.

Digitization of the back issues proved more difficult than I'd expected. The first 42 issues were available in hard copy only. A few of the earliest had survived only as photocopies. The others were printed on newsprint, which yellows with age, the point being that getting quality scans was nearly impossible. We did the best we could. Some issues aren't pretty, but all text is searchable. The next 30 issues were laid out in Adobe Pagemaker, and we naively assumed that Adobe InDesign could open these. Alas, only certain versions of InDesign, no longer available or supported by Adobe, can do so. So, just buy Pagemaker, right? Well, it won't run on my Macbook. One obstacle led to another. Find someone with a working Pagemaker or who can otherwise convert the files. OK, I found someone, who generously converted an issue, but then had no time to do any more, even for compensation. That experience repeated once. Finally, I gave up, and carried the entire set into a local copy shop to see if they could work some magic. They spent some time optimizing scan settings and delivered some pretty good scans. The remaining issues were already in InDesign, and pdf files were archived. It was a weekend project to finish everything off. We're now in the final review process, where we're checking everything and re-scanning/correcting the odd page.

At this point, as *Permaculture Design #118* goes to print, our archiving project is almost complete. Our original plan was to offer this for sale. And, as I went through each issue, I was repeatedly amazed at the quality of many of the articles. So many great ideas. I have no doubt of its worth. But, we have decided to make it available at no cost to subscribers. Soon, everything will be available as a download, assuming we don't run into unforeseen problems with the Wix platform we use for the website. We have decided to make this freely available to all current subscribers. Needless to say, this increases the value of a subscription by quite a lot. Although we have no immediate plans to raise subscription rates, we have not done so since pre-2015, and clearly we'll need to do so before too much longer. The archives will also be available for purchase on a USB drive for anyone who prefers that.

One caveat regards the indices. Indexing stops with #90, and we plan to release v1.0 of the archives without waiting for completion of the next round of indexing. We do want to update the index with a v2.0. If anyone is interested in working on that project, let me know.

Thanks again to our Kickstarter supporters from 2015 and to all those who have supported us and offered words of encouragement along the way. Thanks to our writers, and to all the other members of our team: Rhonda, Keith, and Peter. We couldn't have done it without you. Δ

John Wages, Publisher

Considering the Wild

Milton Dixon

WHAT IS WILD? From Old English *wilde,* it means "in the natural state, uncultivated, untamed, undomesticated, uncontrolled."(1) Dominant culture has the opinion that the wild is dangerous and wants to control it. Our culture is not totally wrong in its assessment, but it's solution for the danger is worse than the danger itself. When we try to control our environment, our actions and all the resulting reactions can be dangerous to both ourselves and the world around us. This is especially true because humans shape the world—not on the basis of reality—but on our perception of it.

We live in the world's garden; not the other way around. Even on a seemingly blank slate of raw land, there is always something going on already. We are never starting from scratch—to do so is to destroy life. Do we choose to engage with the other that already exists, or do we annihilate them? There are wild minds out there. Can we truly encounter them? Wild systems clearly respond to our actions: through "invasive" species, herbicide resistance, and eventually succession, the world constantly works to undo what we create. Our way of being attempts to completely obliterate and sterilize the wild before we reshape spaces to our liking.

Revising and reinterpreting my idea of environmentalism translated to the redesign of my homesite.

However, we don't have to do things the way we've always done them. Inherited ways are not the only option. If nature can respond to our actions in negative ways, it is also capable of responding in positive ways. What happens when we stop pushing the river and instead flow along with it? What happens when we invite the wild into our systems to co-create the future with us?

We all have the opportunity to encourage the wild in our personal systems. The wild already exists all around us. Can we change our perspective from "how do we keep the wild out" to "how do we let it in"? Can we allow nature to assert itself within our designs? Can we hear the message that is being communicated to us? Whether systems yield or not is a direct function of how much we interact with them. If we are completely absent from those spaces; they will remain dark and mysterious. When we interact with the wild, our connections to it grow. At some point if we are not careful, our interactions can cross the line into control. But it will never be complete. Time always passes, and our interventions fade into a regrowth of the wild.

The food forest on a misty morning. Photo Milton Dixon.

Many permaculturists know about Mark Shepard and New Forest Farm.(2) He has articulated the S.T.U.N. (Sheer/Strategic, Total, Utter, Neglect) method. Thousands of trees were planted along water harvesting earthworks. Essentially, plants are just left to fend for themselves. Since each tree was genetically different, "adaptive mass-selection breeding" was the result. Additionally, the wild is allowed to infiltrate the design. What sort of mindset do we need in order to take advantage of wild yields when they come in this form? What if our cultivated foods were a little more wild, a little more rugged? What if they could take the drought, or deluge, and keep on producing, be easy to harvest and process, and be a more nutritious food?

The cooperative I'm a member of planted an eight-acre food forest with the same methodology. One-thousand five-hundred edible or useful trees or shrubs were planted on keyline, contour rows with 30' alleys between the rows. Later, we seeded those alleys with pasture mix and are currently rotationally grazing them. We are just beginning to see some of the yields: currants, hazelnuts, beach plums, and bush cherries. Other yields we eagerly await: apples, pears, cherries, elderberries, sea buckthorn, chestnut, black locust, bamboo, and honey locust. We don't spend a lot of time on

what is currently growing in the rows. They are quickly becoming a mix of wild and cultivated species. We'll continue to interact with the space, adding new species to see if they can grow well in those conditions.

Foraging was my foundational practice for investigating the wild. Living in urban Chicago, I found the city had planted crabapples nearly everywhere. There I learned the characteristics of the different kinds of crabapples commonly planted around the city. Some were best after a frost—often turning into little sweet/tart balls of applesauce or juice bombs. Others started falling from the tree in late August, so I harvested when they dropped. One tree was completely consumed by birds midwinter, another hung onto its fruit until it started growing again in spring.

It wasn't until coming to Michigan that I really learned what crabapples are capable of when allowed to express their variety. One day a friend and I harvested 15 different types of apples from along a highway exit ramp—800' of space left completely to the wild. The largest tasted like candy! The variety of nature is truly wonderful to produce so many options in that one neglected space.

Another one of the yields I take from the wild is autumn olive. I see it everywhere where I live now in southeast Michigan. I can spot it from a distance by noting its silvery appearance, peppered with yellowing leaves. There is a particular bush that I noticed while driving by. So far I've been harvesting its abundant and tasty fruit for a couple years in a row.

Fifteen different crabapples. Photo Grace Yoder - polliwog.farm

From my own experience, when I see these plants, I don't think them invasive. Commonly, I find them only in disturbed places, on the edges between shopping centers or in spaces undergoing succession. From what I've seen, they do not take over to the point of complete dominance. They let other things grow in between and eventually get shaded out. Also, because I have a relationship with the plants, I look at them a little more kindly.

Buckthorn

A plant that I often observe, but have a different relationship with, is buckthorn. Many of the spaces I find with buckthorn tend to be disturbed sites. There is so much buckthorn growing in my neighborhood, it has almost completely taken over the banks of both of the nearby creeks. It rings my son's school playground. It grows to envelop the fence between me and my next door neighbor. It comes up in my lawn when I don't mow it, surviving as little stumps from the previous owner's lawn mowing.

That's what conservation is, after all: it is keeping something going.

I'd like to see how it behaves in Old World environments and compare that with what it's doing here now. There is the possibility of harvesting it for raw materials and firewood. I think there is enough there to actually change that relationship and change how I see it in the world.

Who's in control?

Some see the existence of species in our environment as reason for control. If it's there and doesn't belong, then I'm going to do something about it. I prefer to characterize our spaces as environments healing from systematic and brutal devastation by humans. In order to control our spaces, humans have burned, bulldozed, chopped, plowed, and poisoned the world into compliance. So often people with very little personal knowledge of the spaces and beings involved act based on the opinions of biased experts. People scream and moan over the existence of "invasives" without ever thinking about what is actually happening. Despite all our interventions, the wild persists in adapting to whatever we throw at it. The wild is expert at filling in cracks in the

sidewalk, reclaiming abandoned spaces, and constantly pushing the boundaries of our control.

What does the fact that there are wild yields even tell us about the world and our place in it? The wild is out there, showing us new dimensions that we never even thought of. It brings to light the spaces we just don't think about when we're too busy worrying about the color of the interior trim to observe it.

What does the wild tell us about our cultivated foods? They seem to be over-bred, relying on our near extermination of a functional ecosystem in order to produce anything. Their lot has become intertwined with our own. They have become utterly dependent on our interventions. Why don't we make use of wild strategies? Over its lifetime how many acorns does an oak produce? How many genetic rolls of the dice is that, offering up their children to the fates. Will they be eaten? Will they germinate? Will there be the right conditions?

Why can't we use that variety to find plants that will keep growing with or without us, be more nutritious, be more easily harvestable, or provide more food. Foraging is a game of opportunity. Did I catch it at the right time? Do I have a container to take advantage of the yield? Did I even pay attention to the world around me as I go about my day? The same holds true with species selection. Is this the generation with an individual that radically differentiates itself? Will I even see it at the right time?

Things always happen for a reason. In a dry year, the shattering of a seed head or abnormal cold snap all can remove the weaker individuals leaving only the hardy. More seed and more diversity is clearly better because each seed is unique. Each seed is a different try at surviving and prospering in our world. If we stake our existence on the first thing that grows, we're at a disadvantage. By the same token, if we're breeding seed that has only a small range of gene variations, we're at a disadvantage. This is true in terms of their survival and also ours. Nature is "antifragile." It benefits from time. Everything changes. That change is an opportunity. If we go into it looking for change; if we leave room for it rather than trying to exclude it, then we are positioned to take advantage of that change.

Remember, *Homo sapien* is an animal—a part of this world just like any other being. We belong to the whole. When the world is whole, it can provide for us at an appropriate scale in relationship to itself. We need to understand that relationship is the challenge we are facing. Are we up for it?

I believe that the beings around us invite us to participate in an order beyond our own. They offer food, medicine, and materials, only hoping that they can propagate. They just want to continue on as the ecosystem. It is an act of being in a world that selects for the right fit for the conditions. If we can work with that understanding, then what we have is a gift. We just have to make sure that we don't squander it. Our continued existence on this planet is all about our choice in how to approach the world. Do we begin a relationship or dominate. Do we create things from scratch, or do we complement the existing order?

*Abundant autumn olive fruit. Photo Grace Yoder - polliwog.*farm

How do you interact with the wild? Do you take walks? Explore new places? Can you hear what the wild says around you? Even as we continue to brutalize the wild with the brunt of civilization, it's still there for us.

The invitation is there, will we take it? Δ

C. Milton Dixon is a permaculturist, forager, educator, and media wizard. He creates transformative experiences for people that allow them to see and think differently.
https://permaculturepro ductions.com

Resources

1. etymonline.com/word/wild
2. newforestfarm.us/

Wildcrafting and Mentorship

Succession through the Forest

Michael Pilarski, Friends of the Trees Botanicals

THERE ARE MANY WAYS TO VIEW wildcrafting through a permaculture lens.

Virtually all sites have wild plants in them, though in many cases, they are what we call "weeds." But oftentimes, the edible weeds in a garden are nutritionally superior to the crop plants. Over time, a permaculture site should increase the amount of self-reliant perennial plants (and volunteer annuals). That way, the gardener/land steward becomes more of a wildcrafter on their site, with lots of tough/resilient plants that can survive on their own and less molly-coddled plants.

So many humans have strayed far from nature. Our modern technologies have cut us off from nature, more and more. This separation isn't good for the individuals involved, nor for society. Civilization is large and complex, but it is frail, subject to interconnected disruption as one disaster can spread to the whole. Knowing the food, medicine, and natural resources that are found in nature makes you resilient in the face of scarcity.

While regenerative economics are integral in permaculture, perhaps even more important is the joy and peace that comes from connecting with nature.

Traditional Ag & Wild Plant Knowledge

Knowing the uses of the weeds and wild plants in your area should be a goal for all permaculturists. It is important to know which ones are edible, poisonous, medicinal or have other economic uses. Knowing the uses of the wild plants

Anna harvesting hawthorn flowers. Photo: Corey Chin.

and utilizing them reduces our need for outside inputs, which is key to having a resilient ecosystem, and is core to permaculture design and practice. This connection to native plants and the teachings handed down through generations was a way of life for indigenous cultures all around the world.

A large part of the world's population still wildcrafts. Almost all traditional agriculturalists wildcrafted from their surroundings. Studies in Nepal show that for every acre of farmland, the farmers needed 2.5 acres of wild land where they gathered food, medicines, livestock fodder, building materials, craft materials, nutrient inputs for their farms in the forms of leaves, etc. Traditional Nepalese farming had virtually no outside inputs. When there are less wild areas per acre of farmland (due to population pressure and land conversion), then the quality of the farmland and the lifestyle of the farming families deteriorate.

Resilient Ecosystems & Economies

Also important to a resilient system, are healthy economics connected to place. Wildcrafting is available to all, rich and poor. Wildcrafting can be a source of income and/or barter goods, and most localities have multiple opportunities for this. To be a wildcrafter is a boon to yourself and to those whose lives your gathering enhances. But, wildcrafting should be done on a sustainable basis—you don't want to kill

the goose that lays the golden egg! Permaculture is about sustainability. There needs to be lots more research and writing about how to sustainably wildcraft the many possible species, and there are tens of thousands of species worldwide!

One of the services I offer is wild plant surveys. This can be a single walk-through or multiple visits at different times of the growing season. I will list all the plant species I can find on site with common names, Latin names, and uses, especially for edibles and medicinals. A key point of identification is which species are in sufficient abundance to provide an economic harvest. Along with that, I give management recommendations to increase valuable plants and to reduce problematic plants. This is all done through a permaculture lens.

While regenerative economics are integral in permaculture, perhaps even more important is the joy and peace that comes from connecting to nature. This is a joy that accrues from day to day. Of course it is possible to be in nature and not have any connection, but a wildcrafter has to be very observant: hear the wind and the birds; feel the rain; smell the fragrances; observe the plants and life. It is hard not to feel the presence of the Creator Source while observing nature.

I remember an old farmer telling me that it would take about four years before I had enough experience to know how to pull off crops successfully.

Keeping the Traditional Knowledge Alive

I have been wildcrafting since I was a toddler when my mom took me on berry-picking expeditions. As a rural homesteader in the 70s onward, I have wildcrafted many things. In 1995, I decided to become a professional wildcrafter of medicinal plants. My Friends of the Trees Botanicals business has been one of my main incomes for the last 25 years. It is now a father/son family business, with Ashley Kehl, and our dedicated colleague Anna Pallotta, and many part-time interns.

When I was in my 20s I interned on quite a few organic farms. In my first year of farming, in 1972, I remember an old farmer telling me that it would take about four years before I had enough experience to know how to pull off crops successfully. Interestingly, that is about how long it takes to turn a poor quality soil around. In my turn, over the years, I've worked with many dozens of interns and helped mentor them. I am happy that many of them went on to become farmers, wildcrafters, and permaculturists. These relationships have spun off several other herb businesses over the years. It has been a pleasurable journey. Stick with it!

Mentoring Anna Pallotta for the past four years has been a real joy. She is now an integral part of our team and helps me with many skills that I do not have. She is likely on the road to a lifetime herbal career, and will in her turn mentor others. Passing it forward as humanity has been doing for millennia—keeping the traditional knowledge alive, from generation to generation. We should all be involved in the inter-generational passing on of knowledge. Δ

Michael "Skeeter" Pilarski is a Farmer, Educator, Author, and Permaculture Instructor who has devoted his life to studying and teaching how people can live sustainably on this Earth. He grows a diversity of medicinal and food plants in complex agroforestry systems, blending permaculture, restorative ecology, and ethnobotany to enhance restorative land practices. www.Friendsofthetrees.net

Passing the wildcrafting torch. Out harvesting Sarsaparilla (Aralia nudicaulis) *and Oregon-Grape Root* (Mahonia aquifolium). *Photo by Sam Jervey.*

An Apprentice's Journey

The Journey to Find Home

Anna Pallotta, Friends of the Trees Botanicals and Ramble Botanicals

AS A KID, I always enjoyed collecting plants and making potions. Little did I know I would be doing the same as an adult! As I left the suburbs of my childhood, in my early 20s, although I still lived in cities, I started exploring wild places. I was quickly hooked and frequently went on hikes and backpacking trips in the wilderness, often in the high mountain backcountry. During these wanderings, I was noticing the plants I walked with and was very curious about them. Books were a helpful guide at first, but they could only get me so far.

My education quickly deepened once I found mentorship with elders who had been working with plants for decades. My first mentors, Liz Matteson and Jeff Bodony of Viriditas Wild Gardens in Oregon, showed me the world of wildcrafting and growing medicinal herbs. Their strong relationships and knowledge of plants were integrated into the core of their lifestyle. Living with them was an immersive education which I am so grateful for.

I am planting roots and experiencing the full seasonal rhythms and richness of staying in place.

February 2017 was a turning point in my life, when the opportunity unfolded to work with avid wildcrafter and medicinal herb farmer, Michael "Skeeter" Pilarski. It felt like a random happenstance at first, but looking back now, I can see I was on a clear path that led me to that point. In the years leading up to that time, I was on a quest for connection to food, land, place, and community, and had bopped around several farms in Oregon, Washington, and Montana. I was feeling a little lost, but my journey kept bringing me closer to connections that felt good. Skeeter took me under his wing and introduced me to the local and bioregional community, some of whom I now consider kin. I have been

Preparing for a wander up the slopes.

living in a little off-grid cabin at a permaculture homestead, with a dedicated family and community stewarding this land. Finally landing after many years of a nomadic lifestyle, I am planting roots and experiencing the full seasonal rhythms and richness of staying in place.

We are based on the Olympic Peninsula, tucked in the woods where the mosses and ferns blanket the forest floor. Magic is afoot! I am honored to be here and have learned so much about this place and the world around us, but I still have a long way to go on this journey and consider myself to be a forever student of the natural world. Skeeter and I have been working together closely for almost four years now, and there is never a dull moment! We wildcraft and cultivate over 100 medicinal herbs. Skeeter is a walking encyclopedia and every plant has a song and story. Working alongside him, I am constantly picking his brain. We have created a symbiosis with me supporting his mission in exchange for my herbal education. Over the years I have been capturing his knowledge on video and uploading them online to share with others far and wide.

Immerse Yourself in the Wild

Wildcrafting and foraging is a simple yet powerful practice. I believe engaging in wild landscapes is just as nourishing as consuming the plants we are harvesting. Going to the

mountains is part of the medicine. The practice of gathering and communing with the plants can be quite fulfilling—it's where the magic happens. I always feel invigorated and uplifted after a wildcrafting excursion.

When wildcrafting, we look for the plant guilds. Natural plant guilds are repetitive across the landscapes, but you will also find some variations in them. When we are searching for a particular plant, we can often find it by looking for its companions. This is a core literacy in natural patterns that is key to living more connected to the natural world.

Humans are a part of nature, not separate. When wildcrafting, we must do it sustainably, ethically, and also be positive actors in the regenerative process. We help scatter the seeds after a harvest; and when digging roots, we replant the root crowns in the same hole. Many songs and prayers are sung during the harvest.

Memorable Wildcrafting Adventures

We often travel to northeast Washington to remote wild landscapes which Skeeter has been visiting and tending for decades. He knows these places like the back of his hand. These landscapes are diverse. Some days we are hiking up steep shrub-steppe hillsides, with a 15-pound steel digging bar and burlap sacks hanging over our shoulders, and digging honkin' tap roots like fernleaf biscuitroot *(Lomatium dissectum)* and arrowleaf balsamroot *(Balsamorhiza sagittata).* Other times we are in a cool golden larch *(Larix* spp) forest, with small patches of first winter's snow, harvesting kinnikinnik *(Arctostaphylos uva-ursi)* tips with bright red berries sweetened from the frost.

Every year I look forward to the arnica flower *(Arnica cordifolia)* harvest in May, up in the North Cascade foothills. There, we are surrounded by carpets of bright yellow flowers and Ponderosa pines *(Pinus ponderosa),* which are charred black from the wildfires as far as the eye can see. Arnica blooming follows fires, just like yarrow. They are soothing the forest floor, much like how the medicinal uses of arnica soothe our own skin. The first three post-fire years are the strongest, and then the blooming tapers off.

The high alpine meadows are most cherished. When traveling there, it feels as if we are entering another realm. Imagine sitting just below a dazzling cirque—an amphitheater-shaped mountain basin carved by glaciation, surrounded by misty peaks, and with a cascading waterfall pulling at your heart strings. Washington's native osha *(Ligusticum* spp) dwells there, along with many other fragrant and potent roots. These require a discerning eye and close attention. We must tread lightly.

Next Cycle of the Spiral or Full Circle

In 2018, I started applying what I've learned from working with Skeeter and the many amazing herbal teachers I have crossed paths with, and started a micro-business called Ramble Botanicals, focusing on wildcrafted herbs. Going to the wild helped guide me on this path, and I am grateful to be able to integrate this healing practice into my livelihood. Recently, I revisited some of the same trails I hiked during my early wandering days and realized that these now familiar plant allies were there all along. Δ

Anna is looking forward to cozy fires, wearing lots of wool, and picking cottonwood buds this winter. Feel free to reach out. She'd love to hear about your wildcrafting adventures. RambleBotanicals@gmail.com

Some References:

Growing & Wildcrafting Medicinal Plants in the Pacific Northwest. Michael Pilarski. $30.
Michael Pilarski's series of wildcrafting videos on Youtube: www.youtube.com/c/AnnaPallottaPlantRambles
www.foraging.com A huge amount of information. A lot of book reviews. I own about 2/3 of the books he reviews. It includes a list of plant species databases. He has done a lot of legwork for us. A lot of his info has hot link urls. Recommended.
The EcoHerbalists Fieldbook: Wildcrafting in the Mountain West. Gregory Tilford. 1993
From Earth to Herbalist: An Earth-Conscious Guide to Medicinal Plants. Gregory Tilford. 1998
Pacific Northwest Medicinal Plants. Scott Kloos. 2017. Field guide and uses with info. on sustainability included.
Medicinal Plants of the Pacific West. Michael Moore. Mainly uses, but for every species he gives harvesting information and sustainability guidelines.

This article was inspired and edited by Jillian Hovey, a colleague of Skeeter's and a mentor of Anna's, and who has also written for this publication.

Hawthorn berries.

Black Walnuts

A Persistent Staple

Mary Vance

DO YOU KNOW THESE NUTS? When they fall from the tree, they look like massive greenish-yellow tennis balls in your yard or in your driveway.

In the Midwest, the black walnuts in their hulls are now dropping from the trees. The animals are gathering and storing their winter supplies! And so can you!

Black walnuts are a great wild edible to teach kids. They are fun to play catch with, fun to make dye with and dye shirts or baskets or crafts, and fun to crack open for hours with stones and eat!

Have you ever wondered how to eat the wild edibles?

Let's start with a few general rules of gathering for all wild edibles:

1. Ask permission to gather if it's not your land or your tree. That is good manners.
2. Look all around the area and determine if it's a healthy landscape. If the area looks diseased, deformed, if it smells like foul territory or if the water source nearby looks highly polluted, consider moving on.
3. Properly identify the plant to be harvested. A good way to be 100% sure is to check three different sources to identify the plant.

   Black walnuts are pretty easy to identify! The outer casing looks like a tennis ball, and the hull has an intense spicy smell. If you pick them with your bare hands, you'll stain your hands. You can make a beautiful dye from the hulls. The tree is easy to identify as well, there aren't many leaves that look similar to the pattern and color of black walnut leaves.
4. Leave 1/3 of the harvest for the animals, leave 1/3 to go back to the earth for next season, and gather 1/3 of wild crops for yourself or just as much as you need.
5. Remember to give thanks to the plant or tree that gave up its fruit and to the caretakers of the land.

Okay... on with how to get the nut meat out of the hull and shell.

Doing what we know works best

It can be messy if you choose to do it by hand! If you do remove the hulls by hand, definitely wear gloves.

Collecting sunshine and smiles as well as walnuts.

Here is how we have always done it on the farm that I grew up on. We gather the walnuts that have dropped out of the tree in bushels and drop them into the driveway.

Next, we drive over them for a couple of weeks with our vehicles until the nuts are exposed, the hulls are decomposing in the driveway, and the rains have naturally washed away the dye.

Once, the nuts are exposed and mostly dry, we gather them up in baskets or cardboard boxes. We store them in the basement in a corner nearby the fireplace to store for the winter until ready to use. My grandmother stored hers in bushels in her root cellar. Any dry place with good ventilation will do. The nut casing is very hard and will protect the nut from going bad. Any doubt about this, just look for a squirrel cache, and you'll see they store fine even outside.

How do you open these nuts?

Regular nut crackers that work on English walnuts or almonds or other store-bought nuts will likely be obliterated! The black walnut is an extremely tough nut to crack! In our house, we use a strong flat fieldstone on the bottom and then place the walnut on top of the stone with a cloth on top of the shell and take another pounding stone or mallet and firmly pound the top of the nut. It takes some practice to get the hang of it. It's a fun skill to master, especially for kids!

Eating the nut meat!

Black walnuts are a tree nut. If you are someone allergic or sensitive to tree nuts, please be cautious and perhaps don't eat them!

It's good to have a small pick to get out the pieces that get stuck in the shell. Gather your nut meats in a bowl. You can eat the nut meat immediately out of the shell. If they haven't been seasoned or dried for long the meat will be soft, oily, and delicious.

To dry a batch of nuts for snacking:

- Lay out the fresh nut meats on a baking tray. Preheat the oven to 275°F.
- Turn off the oven.
- Place the nut meats in the oven, and let the oven slowly cool down while drying out the nuts.
- If they are still a little moist and you'd like them more dry, repeat the above process.

You can also add the nut meats to soups, stews, salads, or baked goods, or make into a trail mix. A great source of fat calories! You can also make dye from the hulls as well as a variety of medicinals.

This simple tree gives great abundance. Enjoy!! Δ

Mary Vance is an Apprentice to Tom Brown Jr. and has been studying the old ways of physical and spiritual survival skills for over 20 years. Her main focus of training in this lineage has been herbal mixing and compounding. She is also the mother of 3 teenagers, is a Sports Nutritionist, Licensed Massage Therapist, and Lifestyle Habit Change Coach, and has dedicated over 25 years to studying the human body.

Black walnut husks make a wondeful natural dye.

Identify the fruit/nut and the leaf to improve your craft.

Wildcrafting as Hope for the World

Michael Skeeter Pilarski

So many humans have strayed far from nature. Our modern technologies have cut us off from nature, more and more. This separation isn't good for the individuals involved, nor for society. Civilization is large and complex, but it is frail, subject to interconnected disruption as one disaster can spread to the whole. Knowing the food, medicine, and natural resources that are found in nature makes you resilient in the face of scarcity.

Perhaps more importantly is the joy and peace that comes from connecting to nature. This is a joy that accrues from day to day. Of course it is possible to be in nature and not have any connection, but a wildcrafter has to be very observant. Hear the wind and the birds; feel the rain; smell the fragrances; observe the plants and life. It is hard not to feel the presence of the Creator Source while observing nature. This offers treasures greater than money or fame.

To be a wildcrafter is a boon to yourself and to those whose lives your gathering enhances. A large part of the world's population still wildcrafts. Wildcrafting is available to all, rich and poor. Wherever you live, you are surrounded by food and medicine. Wild foods are almost always way more nutritious than what you can buy. Δ

Paw-paw Handling and Processing

The Art of Harvest

Michael Judd

"Delicious, nutritious and free for the taking."
Earthy Delights

THERE ARE MILLIONS OF WILD PAW-PAWS growing and fruiting in over 26 states in the US, and yet most people seem mystified that this fruit even exists. A number of factors explain this mystification, but a large one is the dearth of understanding around harvesting. This article is meant to help educate folks on how to work with the paw-paw fruit so that it is a positive experience, as mishandling paw-paws can quickly lead to poor results.

Your first experience with eating a paw-paw makes a lasting impression. This can be a love story or a total turn-off. Which one it will be is greatly affected by quality and ripeness of the fruit. Hand-picking and eating a perfectly ripe paw-paw from a tree with good genetics can be an exquisite experience that combines custard-like pulp with floral aromas and sweet notes that transport you into a tropical daydream. On the other hand, you can have a paw-paw fruit from a random tree that has fallen to the ground, been bruised, and sat in the sun for three days before someone comes along thinking 'oh boy I've finally found a paw-paw,' only to experience a fruit with discolored mushy texture, funky aromas, and bitter notes. In short, timing and handling are key to a positive paw-paw experience.

The ideal is to hand-pick paw-paw fruit. Hand-picking paw-paws is part science and part art, one that involves a fair amount of fondling. Paw-paw fruit remains dead hard and green until it is almost ripe; and then it goes very quickly. Depending upon the cultivar, paw-paw fruits may or may not change color to signal they are ripe; those that do will change color when ripening, moving from a solid green to light green to yellowish. This is commonly called 'color break.' The key is to observe and feel the fruit daily as the ripening season comes on by gently squeezing the fruit—as you would a peach—to test for softening. When the paw-paw is just beginning to ripen, the yield from finger pressure will be subtle, but you can sense it is not rock-hard anymore. If it has been ripening on the tree for a few days, it will be obviously soft to the light squeeze, and this is where being gentle with your testing is key as the fruit will bruise very easily once ripe. Any bruised areas of the fruit will ripen and rot quickly, usually within 24 hours. You don't want just anybody to fondle your paw-paws!

Handle paw-paw fruit carefully if not eating right away as any impact will bruise the flesh. For prim-grade fruit, do not pile paw-paws on top of each other, but rather lay

Often this well-intended soul plucks underripe fruit from wild trees, returns home and excitedly shares this uncommon fruit with friends and family.

Paw-paw fruit are born singly or in clusters of up to nine per bunch. Some cultivars turn a lighter green/yellow when ripe.

them single file in your harvest bin or box, as even their own weight will cause damage—that is how easily a ripe paw-paw can bruise!

Spreading a thick layer of fresh straw under your paw-paw trees just before harvest season helps cushion fruit that falls in between hand-picking sessions. Note that fruit already fallen to the ground is usually quite ripe and will have a very short shelf life. Eat or process these fruits right away.

Fruits can be picked when the earliest signs of ripening are detected and then left to ripen quickly at room temperature or refrigerated for slow maturation. At room temperature, a just-ripening paw-paw will mature to perfection in about 24-36 hours. A fragrant, fruity aroma will be detected, the flesh will be firm and evenly textured, and the lighter, sweeter notes of flavor will reward your senses in delightful ways. Over 48 hours at room temperature, the fruit texture will become considerably softer, more custard-like, the flavor and aroma notes richer and deeper. At 72 hours, the fruit skin and flesh become discolored and very soft. Flavors tend toward rich bitter notes, caramel, and coffee—but believe it or not, this is how some folks like their paw-paws! By day four, throw your paw-paws in the compost and hopefully next year new seedlings will sprout. To each their own—just know that a paw-paw fruit will taste different as it ripens.

If you pick the fruit just as it is ripening and refrigerate it right away, the ripening process comes to a halt. It may be held this way in suspended animation for as long as three weeks max, and still finish ripening properly at room temperature. A fully ripened paw-paw can be refrigerated for a week, usually, and still maintain its perfect condition. For large harvests, pulping your fruits and freezing is a great way to preserve them.

Tree shaking works, but will bruise the fruit.

If fruit is picked before the ripening process has begun, it will stay hard and not ripen. If you persist to try and eat an under-ripe paw-paw, you will likely end up with a serious tummy ache. There is a story that gets repeated around paw-paw harvest season where some eager soul heads out to pick paw-paws without knowing about the fruit's ripeness window. Often this well-intended soul plucks under-ripe fruit from wild trees, returns home, and excitedly shares this uncommon fruit with friends and family. Move forward a few hours, and there is a line to the bathroom. Worse is when this soul takes their under-ripe paw-paws to a local café who likewise does not know how to work with the paw-paw but is excited to hop on the paw-paw bandwagon. The café makes some paw-paw dish and hypes it up. Low and behold, it is a disaster, and the word gets out that folks got sick eating paw-paws. Bum rap. Likewise scooping half-rotted paw-paws off the ground and sharing with newbies distorts the fruit's reputation.

Tree shaking works, but will bruise the fruit. If you are eating or processing the fruit right away, then this method is a sure time-saver. Ripening paw-paws come off their stems easily, so trees need only be gently shook; otherwise you risk dropping unripe paw-paws that will never mature. Bruised fruit will ripen unevenly and spoil quickly, so be ready to use.

Paw-paw Picking Season

Generally speaking, paw-paws have a harvest time spread out over a two to four-week period from late summer through first frost. Climate, weather, location, and genetics each play a role in paw-paw harvest time and will vary from region to region. In North America, this can range from July in the warmest reaches of the Deep South to October in the coolest reaches near the Great Lakes, with September generally being the prime time in central paw-paw country.

Warmth and moisture are the two biggest climatic factors affecting fruit harvest, which in any given region will fluctuate year to year and alter harvest dates. For example, here in central Maryland (prime paw-paw country), we generally have long, warm, humid summers with approximately 200 frost-free days. On average years, we expect our harvest range to fall mainly in the month of September, with the second and third week at peak, but this can shift a week or two in either direction depending on seasonal weather.

Ryan Lambert finds a score of ripe paw-paws along the C&O Canal near Paw-paw, West Virginia.

Safe Handling

Certain wild animals are paw-paw fruit aficionados. Sometimes they have all-out parties in the paw-paw patch during harvest season. A wild party is a messy affair that leaves behind certain deposits... some of which are hazardous to human health. I'll spare you the details but clearly state that fruit picked off the ground could have undesirable funk on it that should be properly washed and disinfected before being consumed. There are numerous fruit and vegetable washes on the market today, but a homemade vinegar wash—three-parts vinegar to one-part water—usually does the job. Just be sure to wipe the fruit clean so you don't get vinegar-flavored paw-paws!

Some factors that affect seasonal harvest are:

- Cool and cloudy summers can delay fruit ripening.
- Wet weather can increase fruit splitting and bring on fungal issues.
- Drought can make fruit ripen early and fall quickly.
- Wind and storms can knock fruits en masse to the ground.

Note that soil infertility can affect harvest by lowering fruit set and causing premature fruit drop.

Some average harvest times noted in the US, from early to late:

- Louisiana – late July to early September
- North Carolina – early August to mid-September
- Missouri – early September to early October
- Ohio - early September to early October
- New York* – late September to mid-October
- Washington State* – October

*For those in the colder regions of the paw-paw, zones 4/5, fruit may get hit with frost and never ripen. Those regions with warm summer days but cool nights can also end up with unripe fruit at season's end.

Foraging

You don't have to be a hairy, hippy, mushroom jerky-eating forager to easily score wild paw-paws. Within the naturalized range, paw-paws grow abundantly. They may well be found along bike paths, urban parks, suburban woodland patches, or as I recently discovered, ringing a cemetery. Paw-paws often hide in plain sight. Look near waterways, an obvious start, but you will likely find just as many growing in upland areas where there is sufficient moisture and wind protection.

The easiest time of year to spot paw-paw trees is in the fall when their big leaves turn a golden yellow. This usually occurs after harvest but is helpful for the following year. The fruits are a giveaway too, although they can be hard to see under the dense foliage, especially when unripe and green. Most likely the wild-harvested fruits will be small—two to three inches long by about an inch wide—typically not like the big honking beauties you get on select, cultivar trees. That is not to say there are not some large, gorgeous, very tasty fruit to be foraged; indeed, most of the named cultivars are from savvy foragers with keen observation. Even many of the little fruits are excellently flavored. Just beware that there are some bitter, musky wild paw-paws lurking out there. Don't be that person who perpetuates funky fruit—leave it to the raccoons!

If you do plan to share or sell foraged paw-paw fruit, please know what you are doing. Under-ripe paw-paws are a belly ache, and ground-harvested fruit can be contaminated.

Storing and Processing

Ripening paw-paws pump out large quantities of ethylene gas, a plant hormone that stimulates ripening metabolism, which means ripe pawpaws do not store fresh very long. Under ideal conditions, when paw-paws are hand-picked just prior to ripening, and not bruised in transit, they can be kept in refrigeration (34°F) for up to three weeks. Basically, a ripe pawpaw fruit will last only one week in refrigeration. So, paw-paws are not like apples that can be stored for a long time. The good news is that paw-paw fruit freezes well.

Pulping paw-paws is a learned art. My family used to pulp our fruit soon after picking; we split them in half, scooped out the pulp and seeds with a spoon, then mushed through the pulp to remove the seeds. It took 15 minutes to pulp one

Prime harvests of up 35 plus pounds per tree occur when ideal moisture, good soil conditions, and warmth combine.

fruit, and was it ever messy! Then we discovered the secret of freezing.

First, freeze the fruit whole (skin and all). Once frozen solid, pull them from the freezer. Wait 20-30 minutes, peel the skin with a peeler, like a potato, then pry the slightly thawed flesh open. The seeds pop out as clean as can be. If you don't wait the 20-30 minutes, they won't pry open. Pile your chunks of still mostly frozen pulp into freezer bags, and pop them back in the freezer where they can stay for up to two years.

Granted you need enough freezer space, but the whole fruits only need to be frozen for 12 hours or less before pulping. When I get behind in pulping, I just leave the whole fruits in the freezer and come back—sometimes months later—to pulp. This eliminates a lot of pressure during harvest season when you quickly become inundated with fruit. Note that this freezing method will drastically reduce pawpaw seed viability for germination.

When I get behind in pulping, I just leave the whole fruits in the freezer and come back—sometimes months later—to pulp.

Whether you are pulping fresh or frozen, be sure to remove all the skin as it adds bitter notes to the pulp. Some folks add a little lemon juice to the pulp to preserve its vibrant yellow color, but if fruit is pulped and frozen quickly, the color should stay intact. However, if pulp is allowed to sit at room temperature for very long, it will begin to oxidize and turn brown, much like a banana. A step up from hand processing is using a conical food mill or colander where you have to really press the fruit to squeeze through the holes. This is not a favorite approach at our place, but it is worth experimenting with. A coarse mesh culinary basket is another useful method because its mesh is wide (¼ inch)—small enough to hold back the seeds and large enough to push the pulp through quickly.

Some paw-paw pulpers have had moderate success using a Roma tomato sauce maker to process paw-paws at home. This requires modifying a grape spiral attachment by removing the last two spirals to allow the seeds to move through, and using a salsa screen. Fruits still need to have the skins removed before running through the mill. Expect at least a 10% loss of pulp with this method, as plenty of pulp will still cling to the seeds. On the plus side, the pulp that comes out is evenly textured and can freeze flat in freezer bags.

When pulping paw-paw fruit, toss out any bruised or discolored parts as they may add bitterness. And be sure there are no small or aborted seeds lurking in the final puree. If one gets thrown in a smoothie, you will be in for an unwelcome "cleanse."

Pulp can be further pureed by running through a food processor until creamy, and optionally strained through a fine mesh strainer for uber smooth puree. The drawback of the food processor is that it incorporates a lot of air into the puree, and this hastens oxidative browning. If not freezing right away and storing in the refrigerator for a few days, cover the pulp or puree tightly with plastic wrap to block out any air that would oxidize the fruit. On the other hand, if you are making ice cream, you may want a puree that contains chunks of pulp; such as can be achieved with the culinary basket.

Be sure to label and date pulp. Unless you are planning a big event that will use a lot of pulp at once, consider freezing in one or two cup quantities. When frozen pulp thaws, it will oxidize quickly, so it's best to plan as soon as possible or keep covered with plastic wrap as mentioned above.

Capturing and preserving the exotic flavors of pawpaws is a rewarding art. Happy pulping! Δ

Michael Judd has worked with agro-ecological and whole-system designs throughout the Americas for nearly two decades, focusing on applying permaculture and ecological design. His projects increase local food security and community health in both tropical and temperate growing regions. He is the founder of Ecologia Edible & Ecological Landscape Design and SilvoCulture, a nonprofit supporting agro-ecology research. Michael is also the author of 'Edible Landscaping with a Permaculture Twist' *a popular how-to manual on creating productive and beautiful landscapes.*

Michael and his family live in Frederick, Maryland, at Long Creek Homestead. The Judd's Long Creek Homestead is 25 acres of mixed woodland, food forests, gardens, and nursery designed for experimentation and education. To learn more please visit www.ecologiadesign.com.

Yum! Pawpaw pulp and seeds.

Freeing Our Selves

The Sapience Curriculum

Frank Forencich

Wild Body, Wild Spirit

> *Society tames the wolf into a dog. And man is the most domesticated animal of all.*
>
> Friedrich Nietzsche

IN A NUTSHELL, the last 10,000 years has been a story of agriculture and domestication. First it was plants, then selected animals, and finally, people themselves. Plants were relatively easy, and the non-human animals took some work, but the people turned out to be a real challenge. It took thousands of years to bring wild people to heel, but today, many of us have become willing, sometimes even eager participants in our own domestication.

If this had happened all at once, we would have noticed it immediately and rebelled. But once again, it's the story of the frog in warming water. First, we agree to wear clothing and shoes, then we agree to do the chores, attend school, and balance our checkbooks. We learn to be responsible and complete our tasks on time. We follow directions, and by the time we're finished with college, we're passive, compliant, and non-resistant, ideal subjects for life in a corporate world where obedience is paramount. At this point, the domestication is complete, and our lives as wild animals are over.

So it's no surprise that we're suffering. We try to regain our health through all manner of substances and lifestyle tweaks, but we miss the larger point. That is, health is intimately tied to our original state of wildness. We might even say that wildness *is* health.

Going with the flow and appreciating the tree at the beach.

Deal with the devil

The problem of domestication is that it systematically devitalizes the human spirit as it sucks the life out of the human animal. Domestication holds out the promise of wealth, security, power, and comfort, all at the cost of our animal vitality, our spirit, and vagility. On the face of it, it might sound like a good deal, but for most of us, it's a false promise and for many, a lose-lose proposition.

Wildness isn't just normal for the human animal, it's deeply embedded in every cell.

The problem with wildness in the modern world is that it's a hugely inconvenient reality. Wildness disrupts the modern social order, reduces efficiency, and inhibits productivity. It makes us poor consumers and threatens the bottom line. It's no wonder that corporate wellness programs embrace relaxation, mindfulness, and similar practices, but never encourage participants to embrace their animal nature. It's all "health and wellness," never "health and wildness."

In short, wildness is a threat to culture-as-usual. It's a revolutionary spirit. It resists incarceration of any sort, whether physical, spiritual, economic, or cognitive. It mistrusts pigeon holes, taxonomies, and human-created structures. Most of all, it distrusts social hierarchy and pyramid-shaped organizations. Wildness remembers its origins and when threatened, it fights back.

The domestication curriculum

Children are born wild and if all goes well, retain that spirit throughout their lives. But of course, we try to train it out of them. More or less intentionally, modern schools are designed to quash wildness and replace it with compliance. Learning is mostly beside the point. "Good students" sit still and do what they're told. Students with high energy and physical curiosity are accused of "acting out" and tagged with all manner of diagnostic labels, most of which have no medical

basis whatsoever. If you act "wild," which is to say "normal," we'll medicate you, and if that fails, we'll kick you out of the tribe. In our modern opinion, wildness is deviant.

Naturally, this entire enterprise is doomed to fail. Wildness isn't just normal for the human animal, it's deeply embedded in every cell in every student's body. The young student has the entire history of the biosphere running through her body, the very same energy that pulses through every lion, tiger, and bear on the planet, every fish, every bird, every microbe. It's a fool's quest to try and repress this. Even if we succeed in the short term, the long term blow-back is catastrophic: epidemics of depression, anxiety, unhappiness, and suicide. This is what happens when animals are denied a chance to be who they are.

The problem with domestication is that it leads us towards resignation and defeatism.

Warning signs

So how do we know if we've been duped into domestication? Warning signs include:

- Passive acceptance of the cultural and social status quo. Resignation: "There's nothing we can do."
- Your dreams, passions, and values aren't your own, but are produced and handed to you by marketing departments.
- You reflexively "go along to get along," even when your gut tells you to fight back.
- Your sense of identity and purpose are diffuse, weak, and vague. Depression nags at your soul. You'd like to follow your own path, but, you don't dare rock the boat.

Recovery

For most of us in the modern world, our wildness is endangered. Our health is suffering and our spirits are weak. Many of us are content to accept this as our lot in life and we visit all manner of health practitioners to set things right. But when we view it from a big-history perspective, we remember who we are and what we used to be. And now, some of us are inclined to say, "I'm in recovery from domestication."

And so the question becomes: How do we retain and regain our wildness in a world that does everything possible to make it go away? The obvious place to begin is with our physicality. When we're wild, we can feel the vitality coursing through our bodies, and we refresh that feeling with regular sessions of vigorous movement.

But sadly, the modern fitness industry misses the point. The industry promotes physical movement but labels it "exercise," something that we're supposed to do to "get in shape." At no point is there an attempt to connect the practice of movement with human or biological history. In one of the greatest ironies of the modern age, it seems that the fitness industry itself has become domesticated.

But while physicality is a necessary element of wildness, it's not enough to revive and sustain our spirit. To keep our wildness alive, we've got to act at every opportunity and at every level. Curiosity is a great starting point and question-asking is a powerful path. Don't be content with the conventional boilerplate explanations. Don't just accept the standard methods or practices. Dig. Explore. Take charge of your education. Likewise, resistance and activism are vital. Speaking truth to power is a pure expression of our wildness. Risking for change refreshes and revives our spirits.

The problem with domestication is that it leads us towards resignation and defeatism. Beaten down by the modern world, we conclude that there's nothing that can be done. But not only is it possible to live with wildness, we can actually use it to our advantage. Wildness doesn't just make us better animals, it can also make us better people and better citizens. Wildness doesn't turn you into a criminal or an outlaw. It turns you into an activist and a leader.

It's perfectly possible to live in the modern world and still keep one foot in the Paleo. We do this by way of memory, identity, and affiliation. Remember your deep history and your ancestry as a wild, outdoor animal. Remember your outrageous strength and adaptability. Who do you identify with? The dog or the wolf? The horse or the zebra? The common sheep or the mountain goat? The wild animals of the world are your "people," your team, your tribe, your soul

Hand drill fire practice.

mates. Think of them often.

Wildness is about health, but it's really about a lot more than that. Your wildness keeps your body strong, but it also keeps *us* strong and contributes to a functional future. As it stands, we are in grave danger of even more domestication, more robotic humanity, and more passivity. And this, even beyond the rampant destruction of the biosphere, is a future that's unacceptable, a future that no self-respecting animal would want to live in.

In other words, your wildness is vital for all of us. Keep it alive. Δ

Tensegrity

All have their worth and each contributes to the worth of the others.

J.R.R. Tolkien
The Silmarillion

Integrity is the essence of everything successful.

R. Buckminster Fuller

It might well seem obvious, but if you want to understand and work with complex systems like human bodies and ecosystems, it's essential to look at the whole thing. Fragments can be interesting and important, but it's how they relate to one another that makes the difference in what we ultimately care about: total system function.

This is precisely what we see in the world of physical training, where today's coaches and trainers are quick to emphasize whole body integration and coordination. As they see it, strength, power, and injury-resistance come from orchestration and integration of the entire system in motion, not isolation.

The body's neuromuscular system is a lot more than just a bunch of muscles, joints, and nerves. It's a tensegrity structure. That is, all the skeletal and soft tissue elements participate in carrying the loads of gravity and producing movement. As with everything in nature, it's interdependent; loads are—or should be—distributed across the body.

In this paradigm, individual muscles are not considered particularly interesting. Rather, the idea is to engage "kinetic chains," combinations of muscles and neural circuits that produce movement. By learning to orchestrate these chains, our movements become more graceful, powerful, and effective. This is the path to athleticism and injury-resistance. In practice, coaches often use these cues to help their athletes focus on orchestration and integration:

"Hips talk to shoulders!"

"Lift the weight with your whole body!"

"Bend your knees!"

And of course the classic "Toenails to fingernails!"

Complex systems

We see a similar theme in all complex systems, from bodies to ecosystems. This is why the bicycle wheel is such an ideal metaphor. When the system has lots of spokes of roughly equal length, tension, and strength, all is well, and the wheel rolls true. But if you lose more than a few spokes, muscles, or species, the structure becomes weak, then unstable. At this point, all it takes is a minor insult or injury for the entire system to collapse.

Which of course, is precisely where we stand on our planet today. The loss of biodiversity and cultural diversity is the equivalent of losing spokes in our bicycle wheel. In turn, the wheel begins to wobble, which increases our stress, our fear, and our anxiety for the future. We know that something is desperately wrong with the system, the structure, and the modern world, but we're not sure precisely what. Some spokes are too short, some are too long, and some are completely missing. In our fear, we keep tightening the remaining spokes, but it only makes matters worse.

In turn, the wheel begins to wobble, which increases our stress, our fear, and our anxiety for the future.

Whole-part-whole

But how exactly does a master wheelsmith correct the imbalances in a wobbly wheel? It's an art that takes years to master, but the basics are pretty easy to understand. The first and most important lesson should be obvious, but often escapes our attention. That is, focus on the totality of the wheel. Examine the whole wheel first, and see how it behaves on the stand. Give it a spin and look for wobbles, left-right and up-down. Take your time. Watch closely and try to take in the whole thing.

Then, take your best guess as to the offending spokes. Something is broken, something is short, something is weak. Use your best judgment, pick out the offending spoke and give the wrench a turn. But of course this action, simple as it may seem, doesn't just adjust the spoke in question; it also affects the totality of the structure. So, you must go back to the whole and re-check the wobble. Has it gotten better or worse? Has it shifted in one direction or another? Are you adjusting in the right direction?

This process of oscillating attention is the key to success. Athletic coach Vern Gambetta has called this the "whole-part-whole" method of athletic evaluation: Watch the whole

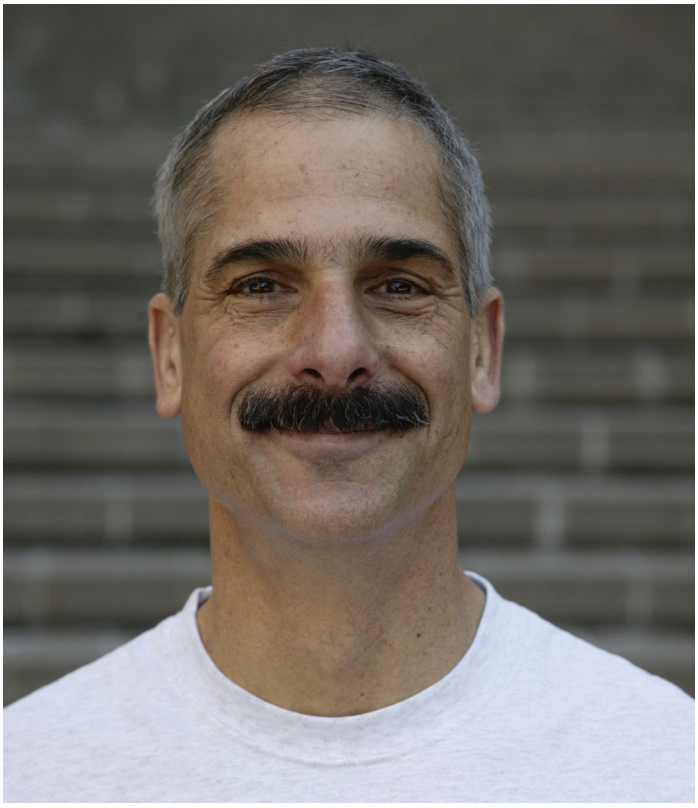
athlete in motion, then focus on the offending limb or joint, apply some kind of treatment or therapy, then return your attention to the whole athlete in motion. It's a great method, but this is about a lot more than rehabbing creaky athletes; the pattern is ideal for making adjustments to any complex systems.

Our problem of course, is that we simply aren't trained to work this way. On the contrary, we're taught to focus on the condition of individual spokes. We're trained to become spoke specialists, and we get rewarded if our particular spoke-specialty works as desired.

Sometimes we get lucky, and our approach actually gives a solid, whole-wheel outcome, but more often, this spoke-by-spoke approach fails to give us what we seek. An army of spoke specialists just doesn't see the big picture. In fact, we're often actively discouraged from looking at bigger pictures. The rewards go to the experts, those who keep their eyes on individual spokes.

This is particularly obvious in the domain of modern medicine where each of the body's spokes has its own specialist practitioners, facilities, and professional organizations. Every organ, every tissue type, and every condition: every spoke gets intensive attention, while the whole goes mostly ignored.

What we really need are students and professionals who are adept in whole-part-whole oscillations. We need people with fluid intelligence and the ability to zoom in and zoom out, constantly comparing their work and adjustments against the totality of the system. To put it another way, we need the training and ability to move easily from big pictures to small and back again, over and over continuously throughout life.



Tensegrity in Life

This is something native and indigenous people seem to understand intuitively, and in fact, it's built into their cultures and value systems. A person might specialize lightly and become a good hunter or a good warrior, but the holistic perspective is implicit and assumed by everyone. Young people are taught to ask, "How will my action or behavior affect the totality of the tribe in context?"

But such is not the case in our narcissistic modern culture. For us, it's very much the inverse. We're actively rewarded for focusing intently on ourselves, especially our personal athletic or career performance. For the modern athlete or career professional, it's all about my spoke and my career. Who cares what effect it has on the totality of the wheel? That's not part of my job description. And besides, if I back off on my intensity, one of the other spokes might get ahead. Obviously, this is not a prescription for systemic health or sapience; it's no wonder our wheel is so wobbly.

No individual action or element is good in and of itself; it's how it affects the whole that really matters.

Fortunately, a more sophisticated understanding of wheelcraft seems to come with age and experience. The master craftsman in any discipline has an expanded view of the totality and is inherently suspicious of any single movement, action, or point of view. He or she is cautious and patient, always scanning and looking for ripple effects that cascade through the system. Watch and listen, then turn a spoke, just a little, then wait to see the systemic consequences. No individual action or element is good in and of itself; it's how it affects the whole that really matters.

The message is obvious. Treat your life, your community, and your culture like a wheel. Take care of all the spokes and adjust continuously. If something's short, lengthen it. If something's weak, strengthen it. If something's dormant, wake it up. If something's hyperactive, calm it down. And whatever you do, keep your eye on the whole. Δ

Frank Forencich is the creator of The Sapience Project (www.sapience.earth) and the author of numerous books about health and the human predicament. After studying human biology at Stanford, he traveled to Africa to learn about human history and the ancestral environment. He's been deeply involved in athletics, martial art, and climbing for over 30 years.

Milkweed:

A Truly Remarkable Wild Vegetable

Sam Thayer

MILKWEED ISN'T YOUR AVERAGE WEED; in fact, I feel guilty calling it a weed at all. Milkweed flower buds first appear in early summer and can be harvested for about seven weeks. They look like miniature heads of broccoli but have roughly the same flavor as the shoots. These flower buds are wonderful in stir-fry, soup, rice, casseroles, and many other dishes. Just make sure to wash the bugs out.

In late summer, milkweed plants produce the familiar pointed, okra-like seedpods that are popular in dried flower arrangements. These range from three to five inches long when mature—but for eating, you want the immature pods. Select those that are no more than two-thirds of their full size. It takes a little experience to learn the knack of recognizing the suitably immature pods, so as a beginner you might want to stick to using pods less than 1 3/4 inches in length to be safe. If the pods are immature, the silk and seeds inside will be soft and white without any hint of browning. It is good to occasionally use this test to verify that you are only choosing immature pods. If the pods are mature, they will be tough and bitter. Milkweed pods are delicious in stew or just served as a boiled vegetable, perhaps with cheese or mixed with other veggies.

Silk refers to the immature milkweed floss, before it has become fibrous and cottony. This is perhaps the most unique food product that comes from the milkweed plant. When you consume the pod, you are eating the silk with it. At our house, we eat the smallest pods whole, but we pull the silk out of the larger (but still immature) pods. Open up the pod along the faint line that runs down the side, and the silk wad will pop out easily. If you pinch the silk hard, your thumbnail should go right through it, and you should be able to pull the wad of silk in half. The silk should be juicy; any toughness or dryness is an indicator that the pod is overmature. With time, you will be able to tell at a glance which pods are mature and which are not

The variety of products that it provides ensures a long season of harvest.

Sam Thayer in his natural element. Photo, Melissa Price.

Milkweed silk is both delicious and amazing. It is slightly sweet with no overpowering flavor of any kind. Boil a large handful of these silk wads with a pot of rice or cous cous, and the finished product will look like it contains melted mozzarella. The silk holds everything together, so it's great in casseroles as well. It looks and acts so much like cheese, and tastes similar enough too, that people assume that it is cheese until I tell them otherwise. I have not yet run out of new ways to use milkweed silk in the kitchen—but I keep running out of the silk that I can for the winter!

With all of these uses, it is amazing that milkweed has not become a popular vegetable. The variety of products that it provides ensures a long season of harvest. It is easy to grow (or find) and a small patch can provide a substantial yield. Most importantly, milkweed is delicious. Unlike many foods that were widely eaten by Native Americans, European immigrants did not adopt milkweed into their household economy. We should correct that mistake.

You will find that some books on wild foods recommend boiling milkweed in multiple changes of water to eliminate the "bitterness." This is not necessary for common milkweed *Asclepias syriaca* (which is the subject of this article, and the milkweed that most people are familiar with.) Common milkweed is not bitter.

The multiple-boiling recommendation pertains to other species of milkweed, and in my experience, it doesn't work to eliminate the bitterness. I advise not eating the bitter species at all. Why would you want to, anyway, when the good stuff is so readily available?

Common milkweed contains a small amount of toxins

that are soluble in water. (Before you get too worried, remember that tomatoes, potatoes, ground cherries, almonds, tea, black pepper, hot pepper, mustard, horseradish, cabbage, and many other foods we regularly consume contain small amounts of toxins.) Boiling milkweed parts until tender and then discarding the water, which is the usual preparation, renders them perfectly safe. Milkweed is also safe to eat in modest quantities without draining off the water. Do not eat mature leaves, stems, seeds, or pods.

Finding and Identifying Milkweed

You might laugh at the proposition of looking for milkweed, as this plant is so well known and widespread that many of us would have trouble hiding from it. Common milkweed occurs across the eastern half of the continent, except for the Deep South and the Far North. It grows well up into Canada and west to the middle of the Great Plains.

Milkweed is a perennial herb of old fields, roadsides, small clearings, streamsides, and fencerows. It is most abundant in farm country, where it sometimes forms large colonies covering an acre or more. The plants can be recognized at highway speeds by their distinct form: large, oblong, rather thick leaves in opposite pairs all along the thick, unbranching stem. This robust herb attains a height of four to seven feet where it is not mowed down. The unique clusters of drooping pink, purple, and white flowers, and the seedpods that look like eggs with one end pointed, are hard to forget.

The young shoots of milkweed look a little like those of dogbane, a common plant that is mildly poisonous.

Milkweed in a permaculture garden. Photo by Rhonda Baird

Beginners sometimes confuse the two, but they are not prohibitively difficult to tell apart.

Dogbane shoots are much thinner than those of milkweed, which is quite obvious when the plants are seen side-by-side. Milkweed leaves are much bigger. Dogbane stems are usually reddish-purple on the upper part, and become thin before the top leaves, while milkweed stems are green and remain thick even up to the last set of leaves. Milkweed stems have minute fuzz, while those of dogbane lack fuzz and are almost shiny. Dogbane grows much taller than milkweed (often more than a foot) before the leaves fold out and begin to grow, while milkweed leaves usually fold out at about six to eight inches. As the plants mature, dogbane sports many spreading branches, while milkweed does not. The flowers and form of mature plants are drastically different. Both plants do have milky sap, however, so this cannot be used to identify milkweed.

There are several species of milkweed besides the common milkweed. Most are very small or have pointed, narrow leaves and narrow pods. Keep in mind that this article refers specifically to *Asclepias syriaca*, the common milkweed, although other plants may be locally called "milkweed." Of course, it goes without saying that you should never eat a plant unless you are absolutely positive of its identification. If in doubt about milkweed in a particular stage, mark the plants and watch them throughout an entire year so that you know them in every phase of growth. Consult a few good field guides to assure yourself. Once you are thoroughly familiar with the plant, recognizing it will require nothing more than a glance.

Common milkweed's reputation as a bitter pill is almost certainly the result of people misidentifying dogbane or other, bitter milkweeds. Keep in mind this rule of mouth: If the milkweed is bitter, don't eat it! Accidentally trying the wrong species might leave a bad taste in your mouth, but as long as you spit it out, it will not hurt you. Never eat bitter milkweed.

Milkweed should be a lesson to us all; it is a foe turned friend, a plant of diverse uses, and one of the most handsome herbs in our landscape. We are still discovering and re-discovering the natural wonders of this marvelous continent. What other treasures have been hiding under our noses for generations? Δ

Sam was born in Wausau, Wisconsin, where he first learned to gather wild food in vacant lots, backyards, city parks, and at the edge of town. His first presentation on edible wild plants was to his seventh grade science class, demonstrating the foods that he collected regularly on his three-mile walk to school. You can find him at foragersharvest.com.

Organic Gardens Cooperative

Matt Noyes

ORGANAGARDENS COOPERATIVE (1), a landscaping business in Colorado's Pikes Peak region offers an inspiring example of how to nurture and structure a cooperative culture that takes into account not just collective ownership and shared resources but also mutual care and social transformation. Founded as an LLC in 2000, the self-described "collective of organic gardeners and garden designers, experienced landscapers, and permaculture designers" is now in the process of converting to a cooperative under Colorado State law.

Before Covid-19, most of the discussion about cooperative conversions focused on the "silver tsunami" of retiring small business owners seeking to exit their business without closing it down or selling out to a larger corporation. The pandemic and the ensuing economic crisis has added the challenge of keeping small businesses afloat and creating economic opportunity in the face of collapsing demand, rising debt, job losses, and rising competitive pressure. At the same time, the upsurge in mutual aid efforts has added urgency to the search for alternative ways of doing business. There are many resources available to help owners and workers make sense of the options, especially when it comes to legal and organizational questions.(2) But to make the cultural transition to cooperation, we also need creative examples: people who are finding new ways to cultivate and grow cooperatives, not just in the narrow sense of isolated businesses, but as elements of an emerging system of justice and regeneration.

To make the cultural transition to cooperation, we also need creative examples.

Becky Elder

OrganaGardens was founded by Becky Elder, a leading permaculture practitioner and educator who had already been working in collaboration with like-minded gardeners and landscapers in her businesses "Blue Planet Earthscapes"

Becky Elder

and "Becky, the Gardener LLC." A co-founder of Pikes Peak Permaculture, Elder is a long-time environmental activist in organizations like Ancient Forest Rescue, SINUAPU (wolf recovery), and Earth First! Elder has been active in local politics and in alternative economic projects like Transition Town Manitou Springs where she began collaborating with Brian Scott Fritz, OrganaGardens' current business manager.

In its first incarnation, OrganaGardens operated as a kind of loose—but very effective—coalition. Demand for their work grew and OrganaGardens thrived. So much so that by the end of the third year Elder's accountant at the time became nervous, worried that "the increasing growth in sales income and the unusual structure/relationship that the coalition fostered among its members might attract the attention of the IRS." They decided "to end the coalition and return to a more conventional model of doing business." OrganaGardens started operating as a traditional LLC. But the urge to collaborate remained and in 2018, Elder and Fritz began talking with other landscapers and gardeners about converting OrganaGardens into a legally recognized cooperative.

The conversion process started in earnest a year later, with support from co-op development specialists Dan Hobbs and the late Bill Stevenson from the Rocky Mountain Farmers Union. OrganaGardens was preserved as the "parent" company, with each of the eleven co-op members creating

OrganaGardens Points System	
Hours Worked	1 point per hour worked (extra for rock work)
OrganaGardens Meetings	1 point per hour spent in meetings
Relevant Classes Taken	1 point per hour, or, if multiple hours, one point for every half hour
Relevant Classes Given (Taught)	1 point per hour, or, if multiple hours, two points for every class hour taught
Bringing in a New Client	1-10 points, based on volume of business and longevity
Attending Relevant Workshops and Events	Usually ½ point per hour
Attending Weekend Events (e.g. Permaculture Convergence)	To be determined, and usually up to a maximum of 5 points
Performing Client Consultation/Proposals	2 points per event
Shadowing a Consultation	½ point
Design Work	To be determined
Other Relevant Social Activism Work, e.g. protesting	To be determined, but usually ½ points per hour, up to 5 points
Food Projects,	2 points
Specialty Projects, other	To be determined

their own independent gardening companies operating as sub-contractors.(3)

Landscaping and gardening are largely seasonal work; in the busy spring and summer months, demand can quickly outstrip capacity. To meet the demand, OrganaGardens members decided to hire non-member workers on a short-term basis. The workers are hired at $15 per hour for no more than a total of 39 hours. This ensures that most work is done by co-op members and provides aspiring members the opportunity to work with the cooperative on a trial basis. If the cooperative members and the new worker feel it is a good fit, they can join the cooperative.

Why a Cooperative?

Cooperation, equality, mutual care, and learning had been part of Elder's practice all along, in keeping with the larger ethos of permaculture. As a cooperative, she says, OrganaGardens can be "a voice in the world both as an individual (one member, one vote) and also as the whole of OrganaGardens moves into philanthropy to further the permaculture ethics... " The cooperative form appealed to her for a number of other reasons:

it seemed easier to manage than a traditional business;

it offered the "added value of shared collective brilliance, knowledge, and the skills of members being shared willingly for the benefit of the whole and the future" as well as shared tools and resources;

it seemed suited to building the capacity of the young people who constitute most of its members "to operate as professional landscapers while developing skills and expanding their knowledge;"

it offered a way to support and encourage members to "step forward and participate in social movements, to participate in the larger "rooms" of the social works of this country;"

the group can provide "support and compassion to the individual as life happens (to us all!)", and

it held the promise of sustainability, "OG outliving all of us into the future is a wonderful vision."

In short, a cooperative organization was a good fit for a group with a clear and effective business idea and a common vision of shared resources, personal and collective growth, constant learning, and social transformation, offering a way to put into business practice the permaculture principles of care for the earth, care for people, and sharing of resources.

"Permaculture is an ecological design system, utilizing core ethics, principles and appropriate technologies to mimic nature in creating habitats that meet human needs without damaging or destroying life. It is a designing system for establishing resilient, ecologically-based human habitats which meet the food, energy, shelter, and social needs of the community by modeling the structure and interrelationships found in natural systems. Permaculture applies ecological design to architecture, agriculture, production, consumption, art, transportation, business and finances and to our everyday life to create an enduring culture for humanity on this planet."

- Becky Elder

That's a bit like saying a garden exists to benefit its gardeners.

An Innovative Point System

One challenge for cooperatives is how to ensure that the group's commitment to social transformation stays at the center of their practice. For OrganaGardens this means permaculture as well as cooperative principles. To that end they established a point system for remunerating various types of work, including livelihood work, but also care work, education, and activism.

In a cooperative, the money used to compensate members for their labor comes out of the surplus generated by the enterprise.(4) Some of the surplus may be used for buying new tools or equipment, some for creating a reserve fund, some may be donated to other organizations or projects. At OrganaGardens, the group decided to compensate members not just for the work they do for a living—designing, landscaping, and gardening—but also for pro bono and care work inside and outside of the cooperative.

Members accumulate points throughout the calendar year, based on a point system approved by the members. According to Fritz, the process is "all very spontaneous... when members fill in their time sheets, they often put down activities like tabling at the farmer's market, sitting on organizational boards, attending protests, taking or teaching a particular class, etc., and the number of points that each activity may represent. I double check this when I receive them."

At the end of the year, assuming the cooperative has a surplus, they determine how much to retain to continue to pay company expenses, including taxes, operating expenses for the following year, reserves, etc. The remaining surplus is distributed to members according to their accumulated points. "So far, we have done this only once, in 2019, and it seemed to work fine," says Fritz. "Members received anywhere from $165 to $2,870. This dollar range represented a percentage of income range of 19% to 31% of yearly income." Points are credited according to the following system which, Fritz points out, is always open to revision.

The OrganaGardens Points System

For Mercedes Perez-Whitman, a 26-year-old landscaper, owner of MycoSprings, and founding member of OrganaGardens, the cooperative has offered the chance to operate within a non-hierarchical structure.

"I have been able to voice concerns and feel heard… I have worked in places where I didn't feel comfortable to speak up or if I did my concerns weren't taken seriously." She also embraces the points system. "I love it, it really helped my dividend last year. I do a lot of volunteering, going to different conferences or gather-

Mercedes Perez-Whitman

ings. I lead workshops, go to meetings, for example for the Pikes Peak Mycological Society. I go to Colorado Springs Utilities board meetings [about closing down the coal power plant]. While I would do this advocacy and education anyway, it's great that I am rewarded for it… It is also beneficial for the cooperative since we are able to bring more awareness to OrganaGardens. We table at the Colorado Farm and Art Market, giving away plants to people who donate to local activist groups like the Empowerment Solidarity Network and the Haseya Advocate Program."

Towards a Cooperative Permaculture

"As a socially conscious organization, OrganaGardens Cooperative follows the deep ecology ethics of earth care, people care, and sharing the surplus. Therefore, we actively take a stand around food sovereignty and food justice (the principle that all people inherently deserve affordable, healthy, and fresh food and water.) We recognize and champion ancient and modern earthwork, gardening, and farming technologies in our work, which support the principle of authentic sustainability and community resilience." (from the OrganaGardens website)

Cooperative developers will sometimes stress that co-operatives operate to benefit their members, distinguishing co-ops from traditional for-profit businesses which operate to benefit their shareholders. But that's a bit like saying a garden exists to benefit its gardeners. It's true, but misses the point. There is a world to be gained—and protected—when we understand our work and ourselves as part of a larger social ecosystem. The worldview, values, and core practices of permaculture provide uniquely fertile ground for developing regenerative cooperative models of work and ownership that respond to our increasingly unstable environmental and social context. Δ

Matt Noyes is a social movement educator based in Colorado Springs, Colorado who writes on horizontal education, union democracy and reform, workers cooperatives, and solidarity economy.

Resources and Notes

1. https://organagardens.com
2. See for example the Cooperative Educators Network https://ed.coop/learning-path/worker-co-op-conversions/; the Co-op Law website https://www.co-oplaw.org/legal-guide-cooperative-conversions/; and the Democracy at Work Institute – https://institute.coop/resources/lending-opportunity-generation-faqs-and-case-studies-investing-businesses-converting
3. A local artists cooperative – Commonwheel – uses a similar structure. https://www.commonwheel.com/
4. See Luis Razeto Migliaro, "How to Create a Solidarity Enterprise," Unit VII (forthcoming on GEO.Coop)

Tree Vaccination with Pure Mulch

Alicja Szubert

"This oak tree and me, we're made of the same stuff."

— Carl Sagan

THE INCREASINGLY COMMON SPREAD of devastating pandemics is a glaring reminder of the key role of the immune system in disease protection. This extends beyond us to all living things, including the trees in our forests and those used as a food source. The steadily increasing insensitivity of pathogens to synthetic pesticides makes it clear that the days for our current mode of treating infected trees are numbered. Other sanitation strategies which involve felling or burning sick trees have not proven as effective as hoped; the need for alternative control strategies has never been more pressing.

According to Natural Resources Canada, tree diseases in both urban and natural forests are expected to worsen in the coming years due to climate change and the introduction of non-native pathogens. Pests like the emerald ash borer and beech bark and Dutch elm diseases have been particularly damaging in Canada. As with the novel coronavirus, infected trees may be asymptomatic, meaning they carry the disease and can spread it, but do not exhibit symptoms. The price tag for dealing with these problems is steep—an estimated $2 billion over a 30-year period for the emerald ash borer alone. For apple growers, a major threat to their crop is apple scab, a result of the *Venturia inaequalis* fungus. The disease has caused severe economic losses in Canada in years with more moisture.

Untreated Apple Tree. Photo by Glynn Percival.

Research on disease suppression with mulch is not a new field.

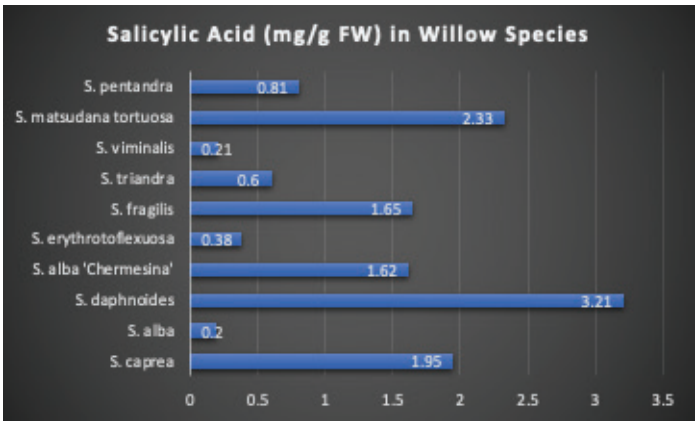
The disease is equally destructive in the UK, which is why Dr. Glynn Percival, a researcher at the Bartlett Tree Research Laboratory at the University of Reading, has been studying ways to combat it. In his search for an alternative to plant protection products (otherwise known as chemical pesticides) Dr. Percival began studying the effects of mulch sourced from a single species of tree, also known as pure mulch. Early experiments of mulching apple and pear trees with woodchips from hawthorn or cherry showed 80% increased fruit yields due to the higher sugar content in these trees' wood. The same mulches also improved transplant survival rates of beech trees from 10% to 70% as well as increased their crown volume growth.

Research on disease suppression with mulch is not a new field. However, relatively few studies examine the effects of pure mulches. In fact, some research shows harmful effects from pure acacia, beech, cypress, and eucalyptus mulches including inhibiting seed germination. On the other hand, Dr. Jim Downer at the University of California—a pioneer in the field—has found that pure eucalyptus mulch enhances the growth of sycamore. Such varying results highlight the need for more comprehensive research. Building on this previous work, Dr. Percival found application of pure mulch sourced from a number of different trees decreased severity of root rot on horse chestnut caused by pathogens *Phytophthora cactorum* and *P. criticola.*

Many people know offhand that willow trees *(Salix alba)*

contain salicylic acid (SA), a compound most commonly associated with the pain-relieving effects of aspirin. Commercially available plant products containing SA have been shown to increase resistance against a number of pathogens including powdery mildew and tobacco mosaic virus. With scientists only beginning to understand how plants are able to synthesize SA in the first place, SA's role in reducing disease severity is still not clear. According to Dr. Percival, the protein B-glucanase appears to play a pivotal role. He likens the effects of SA on trees to vaccination in humans. Receiving a dose of SA turns on a tree's natural defense system, much like a vaccine injection creates antibodies in humans which grant us immunity from disease. What's even more surprising is that whereas humans require a unique vaccine for each disease, just one dose of SA increases a tree's resistance to a multitude of pests and fungal, bacterial, and viral diseases. Up to 13 defense mechanisms are activated, causing the tree to thicken its leaves and produce phenolic acids, tannins, and defensive enzymes. This is a clear advantage over the application of synthetic chemicals which often require a unique product—bactericide, virucide, etc.—for every problem.

Studies have shown that SA products control disease as effectively as agrochemicals and require only one application for the entire growing season. However, considering the need to spray these products on sometimes very tall trees (a difficult task in urban environments where drift is often an issue), Dr. Percival set out to test whether pure willow mulch could have similar disease-fighting effects. A field lab through Innovative Farmers and delivered by the Soil Association looked at the ability of willow mulch to prevent apple scab. These 10 conventional and organic apple cider growers were interested in exploring alternatives to copper treatment. The main cultivar studied was Crown Gold, which is very susceptible to the fungus. Because different willow species contain varying amounts of SA, this was also measured and is shown in the graph below.



Diagnostician, Glynn Percival.

Treated Apple Tree. Photo by Glynn Percival.

Apple trees were top dressed with 5 kg of willow woodchip in early spring. The results reported that summer, although not unequivocally proving the benefits of white willow mulch, are nonetheless promising. Results showed decreased apple scab severity on both leaves and fruit of trees mulched with willow at several sites, although these results were not statistically significant when pooled together. Similarly, fruit sugar content of mulched trees tended to be greater than controls, but again without statistical significance.

There are several possible reasons for the lesser effect of the willow mulch. Most of the willow species used in the trial were white willows *(S. alba, S. alba 'Chermasina,' S. fragalis),* which have a lower SA content than other willow species such as violet willow *(S. daphnoides)* or corkscrew willow *(S. matsudana tortuosa).* Where the latter variety was used, significantly lower levels of scab were observed. On top of this, at certain locations the recommended 5 kg dose of willow mulch was not applied and especially for large trees, a smaller amount of SA may not have been enough to generate resistance. Finally, researchers later identified that SA is concentrated in the willow's bark and therefore using woodchip from this part of the tree may prove more effective. As willow bark is a by-product of the basket-weaving industry, there is a potential source of this mulch. The next trial plans to examine the addition of biochar to increase the effects of SA, timing of the pure mulch application, and various willow species' performance in the same location.

Although finding a suitable quantity of pure willow mulch may not be an easy task for everyone, those who can

afford the space could consider growing willows for this purpose. There is a reason willows have been used as biomass for centuries—they are notoriously quick and easy to grow. Even planting them upside down will have them sprouting new roots in no time. This also makes them a good choice for coppicing or pollarding, techniques that involve heavy pruning—either at the base or to the trunk—to stimulate new growth. Note that fresh, not composted, wood chips contain higher amounts of SA as decomposition leaches the chemical from the wood. And if willows are not a viable option, then poplars *(Populus spp)* also contain salicylic acid, albeit less.

Dr. Percival's own research is continuing in a similar vein. He is examining the effects of pure mulches within a genus—for example, whether pure crabapple mulch differs from pure McIntosh mulch. He maintains that using pure mulches makes sense from a financial perspective as well. Unlike some disease management strategies, pure mulch requires a relatively small capital investment. Yet another perhaps underrated advantage is the empowerment it can provide to farmers and gardeners who, in a world of desperately marketed products, can take action to boost the immunity of their trees in an independent, safe, and organic way.

Even as the discovery that pure willow mulch helps trees combat disease stirs with hopeful potential, yet another compelling reason to protect our trees emerges. The growing worldwide loss of forests to farmland is being blamed for the spread of diseases such as COVID-19. According to a recent Stanford study, risk of human physical interactions with wild animals and the pathogens they carry are increasing as humans and animals begin competing for the same resources. Once again, we see that the health of our trees is uniquely tied to the health of people. As countless sage individuals have previously declared, we would be wise to protect the trees as we do our own family members. Δ

Although she grew up in a backyard full of flowers and fruit, Alicja Szubert didn't take her gardening roots seriously until living in a big city became a little too much to handle. Now as a third-generation grower, she is completing the Prairie Horticultural Certificate from the University of Saskatchewan online and has worked for McGill University's Macdonald Permaculture Showcase Garden. She currently grows as many fruits, flowers, and vegetables as she can squeeze into her tiny urban yard in Montreal as she waits patiently for more room to play.

Trial sites. Photo by Glynn Percival.

Moral imagination meets Experience

Permaculture and wild yields

Rhonda Baird

IT SOUNDS SO EASY — "wild yields." A dreamy utopia of being able to wander out into "nature" and gather basket after basket of fruits, nuts, mushrooms, wild edibles, and medicinals. Indeed, foraging and collecting is incredibly gratifying. It meets a primal need within us to be in relationship with land and meeting our real needs at the same time. This is a fundamental relationship—a life-giving opportunity to connect to what is "larger than self."

From a permaculture perspective, we are seeking to reintegrate with the natural world in ways that foster health and well-being for the Earth, ourselves, and future generations.

Foraging and wildcrafting are fundamentally aligned as part of our practice; and this is fertile ground to explore the relationship between design, cultivation, and the natural world. In this article, we look at the philosophy and one path to begin incorporating foraging and wildcrafting into your permaculture practice.

Muscatatuck National Wildlife Refuge near where I grew up. Photo via Pixabay.

Birds chided us from the overgrown areas. Tick checks and tending the scrapes and scratches were part of our follow up.

Back in the day

When I was a child growing up on two-acres outside the small farm and factory town of Seymour, Indiana; we traveled weekly and sometimes daily to the wildlife refuge three miles away. Our home had a very large garden, an earth berm, solar-intelligent house with wood heat, a good well, and berries and grapes. Still, we fished and foraged; and my father hunted rabbits and squirrels at times. Mushrooms (which I wasn't very good at finding), blackberries, raspberries, fish, walnuts, hickories, pecans, persimmons, and pawpaw made a regular appearance in our diet in a seasonal manner.

Besides food, we gathered fibers and materials to make crafted goods for Christmas gifts, and at times we harvested wood from the woodlots of friends. I remember my grandfather introducing me to sassafras *(Sassafras albidum)* roots and my other grandfather pointing out the hican tree (a pecan-hickory cross) that popped up in the hamlet he lived in.

I remember putting on long sleeves and jeans in the high heat and humidity of every July to pick blackberries at an abandoned homesite. Mosquitoes, biting flies, wasps, and blue racers kept us company while we picked for hours in the sun. Birds chided us from the overgrown areas. Tick checks and tending the scrapes and scratches were part of the follow-up. Then, the delicious cobblers and jellies appeared at the table. Each part of the season held a new opportunity to gather and learn. We might tell stories, or work in silence as the moments slipped by.

I always loved being on the land and outside in nests of grass or reading underneath a tree. I imagined making camps on the creek running through the neighboring farm and loved running in the forests that have also been traveled by Miami, Kickapoo, Adena, and Shawnee.

I learned to help clean the squirrels and watched my mother carefully when she cooked. My imaginary camp included a paint pony that I could "ride like the wind." In my mind and heart, my pony and I belonged to the land in a way all of my indigenous ancestors would have known as normal.

As a middle-schooler and high-schooler, I dreamed of reclaiming the land my great-grandparents had lived on in a nearby county. I imagined building a home with a creek running through it. Little did I know that Frank Lloyd Wright had had a similar dream. I poured over seed catalogs and priced out massive garden installations. It was impossible for a 16-year-old to realize that dream, but somehow I've come closer to my vision over the years.

As I grew older and became a mother, my interests included medicine-making, and I began to learn simple herbalism. My foraging and wildcrafting began to include leaves and bark and roots and flowers from landscapes other than my garden. This reinforced my desire to see these shared lands protected and the soil and water in better health.

I also love to spin, weave, and knit, so I began to grow nettle and work with wilder fibers from my own garden and common lands. For our home, the garden is a mix of pre-existing "wild" species; intentionally planted garden, and welcomed-in upstarts of plants and animals. As I continue to hone my skills, I am including greater care of and appreciation for these landscapes.

A few years after beginning my permaculture adventure, I began taking courses at the Tracker School with Tom Brown, Jr. While permaculture helped me to understand the ethical need and the design possibility of Earth repair, the philosophy and skills shared at Tracker School healed the part of me that worried humanity was ONLY a cancer upon the Earth. I understand that there is much ahead of life on the planet, but the relationship—the flow of possibility and life between humans, plants, animals, landscapes, and everything else around us—is entirely the point. Can we work on the side of life itself? Can we interrupt our patterns of domestic, civilized ease and comfort for the sake of future generations? Can we move from consumer to producer—and maybe become one who tends the whole of life?

Our garden in June.

Is there a "wild"?

What is "wild"? We differentiate wild from domesticated. Wild, presumably, means that a species or individual or space is untamed. It's natural. Wild can mean that it's not tended or cultivated by humans. Wild can also mean something that's not civilized. So, "wild" is derived from social constructs around what civilization is and is not. Each of these definitions or approaches to the very notion of "wild" brings up very important perspectives on humanity's relationship to the Earth. These are moral conversations. Permaculture's ethics can support us in finding our way forward.

Care of the Earth is our primary ethic. The word "care" suggests we are engaging in a manner more considered than "managing" or even "cultivation." In permaculture, we focus a lot on cultivating our small farms in a regenerative way, but we also put ourselves in a strong position of determination about what is going to happen in a space. When we move to caretaking, we are interacting in a way that builds connection and relationship. "I care for you," implies we are in a mutually supportive relationship for the long run. This is the power of the commons work championed by David Bollier and Dave Jacke as well as many other permaculturists and nature connection schools.

The beautiful thing about caring for the Earth in this way, is that it often overlaps and builds on our self-care.

So, what is your relationship to the Earth? When you walk into the forest, are you comfortable? Do you know the tree species? The birds that move in and out throughout the seasons? How can you build that relationship?

Relationships create a flow of energy

In permaculture we start with observation and interaction. Then we move on to obtaining a yield. This principle of obtaining a yield delivers the energy and incentive to repeat a positive experience. Just watch a toddler discover persimmons in the forest. From a systems design perspective, we want to engage in positive feedback loops and reinforce them. We tend the forest; persimmons fruit; the toddler discovers them; the toddler learns to identify and care for the persimmon trees; there are more persimmon trees in the world—success all around.

Core routines of nature connection as outlined in *Coyote's Guide to Nature Connection* can help us become aware of and informed about what is happening. Many nature connection-based schools and programs throughout the world offer mentoring and support in implementing these practices. There are also several permaculture teachers, including myself, who integrate permaculture and nature connection practices in our course offerings. For more on this subject, see Looby Macnamara's forthcoming book, *Cultural Emergence.*

The beautiful thing about caring for the Earth in this way, is that it often overlaps with and builds on our self-care the other permaculture ethics and principles. In this way, we might begin to let go of the wild/domesticated distinction in our rational mind and relax into our larger self through a recognition of relationship and communication with everything around us.

If our aim is to "reintegrate with the natural world"—a phrase commonly used in defining permaculture—then we are on a journey to "re-wild" ourselves. At least we might begin to let go of what "civilization" has meant to us and begin to imagine what life could be. What might that look like for you?

Working with a client in the field, I am able to help them see the yields and values of their predominantly forested property. They were so excited to see how much the forest they love supports them. We were able to find syrups, craft woods, medicinal herbs, mushrooms, and fibers for multiple uses throughout the seasons.

As one who is now very, very allergic to poison ivy, I'm grateful for my childhood friend jewelweed.

Yields = Surplus to the System

This issue also invites us to think about yields from the "wild." Yields aren't a free-for-all. Yields are produced from the excess in the system. They are part of the giveaway of natural abundance. The persimmon doesn't produce just a few fruits. It produces enough for birds, coyotes, deer, humans, and many seedlings carrying forward into the future. In our tended systems, it's cliche to talk about how many extra zucchini plants are produced in a season. Working with nature, we have the opportunity for abundance.

However, we also want to put this in perspective. Gardens are not usually perfectly balanced systems—especially when we start out. Soil amendments, mulch, seed, and tools are all important imports into the system. When do we reach the point of surplus value? Have we designed our systems well enough to not need additional inputs after the first three or five years? I am not sure enough permaculturists are planning or doing true cost accounting in this way. We could do much better by more closely mimicking our "wilder" ecotones. I know from experience that my little "wild garden" benefits from my benign neglect. It is still a productive sanctuary for insects, birds, and animals of all types while minimizing my work. David Holmgren's focus on EROEI (energy return on energy invested) is the secret to breaking free of the domesticated mind. For minimal energy invested, I can get more yield.

I just described working with the Earth to re-naturalize our personal garden spaces. We also have a responsibility to tend the common lands for Earth repair. As people who observe and practice awareness, we know all of our ecosystems are under immense pressure. Recognizing the value of what is already there; taking only what we personally truly need; and working for the health and well-being of the entire system is an important role for humans on the Earth.

Needs vs. Wants in the Permaculture System

What do we truly need? Humans actually require very few material things. Most of our needs are social and spiritual in nature. Companionship, safety, trust, belonging and appreciation, the ability to contribute in a meaningful way to that which is beyond our own limited self… these are some of our foundational needs. If we are able to store away surplus from gardens, forests, and prairies before the winter comes; if we can save seed and propagate new forests and gardens in the coming years; if we have enough tools to do the work of tending and a few wants for music, art, craft, or learning and sharing—what more do we need?

Gaia University's ecosocial design program speaks of the idea of *buen vivir,* simple living. Can you begin to back yourself away from the mainstream story of "more is better"? Mixing wildcrafting or foraging with a robust household economy can support us as social and economic infrastructure collapse. I named my permaculture design and education business Sheltering Hills, because I recognized that our permaculture systems become sanctuaries for life within increasingly challenged landscapes.

I recoginzed that our permaculture systems become sanctuaries for life within increasingly challenged landscapes.

As industrial crops become more susceptible to disease, pesticide-resistant insects, and climate change, community agreements and support for healthier, more biologically complex and functional public lands can help our communities bridge the gap between our smallholdings and the needs of the larger community. A larger area of commonly managed space has the potential to become a leverage point in changing a watershed. If the pattern is replicated, then there is much that can be accomplished in healing the Earth.

Zone 5 does not equal insurance

In permaculture courses for years, I've followed the pattern set by my teacher, Peter Bane. Each of the zones represent an economic function that helps to regulate the energy and investment we put into that zone in terms of meeting our own needs. Zone 5 is typically understood as the unmanaged land left to tend itself and touched only if a species is completely out of balance with the rest of the system (such as bush honeysuckle or euonymus). Zone 5, from the economic perspective, has been taught as the unmanaged zone for insurance. The thought goes that if we have to abandon or leave an area, Zone 5 becomes the seedbank and habitat for plants and animals to recover the area.

I find this to be a human-centric perspective. It perpetuates the idea that our designs and management only need to leave some zone 5 in case we screw up the rest of it. It's also idealistic. On one hand, most people have a hard time managing zones 1-4 well. We need more "dirt time" as it's called at Tracker School. Trusting in zone 5 as insurance is idealistic on the other hand, because climate change and human impact on biodiversity have so severely negatively impacted natural communities. This means that humans need to intervene wisely almost everywhere, but grounded in ethics, and guided by the needs of future generations. Wildcrafting and foraging can help us understand the baseline diversity and health of the typical zone 5 landscapes and consider how best to introduce and support more biodiversity and resilience. This is an underlying rationale for Earth repair.

The importance of re-wilding

What does this all mean? This means, as our infrastructure and old ways of doing things are challenged, we need to become more adaptable in our thinking and in how we live. Covid-19 is the beginning of this, but further system disruption can be expected. I'd love to be wrong. Still, the Earth and our communities will be better off when we are more in line with natural patterns and shedding some of our more domesticated strictures. We can start with our children.

Children and the wild

Let's consider "untamed." As toddlers begin to navigate home environments and gardens, they begin their education about what is safe and civilized and what is challenging or off-limits. As toddlers acquire language, push against their parents' expectations, and explore the world, they are deep in the educational process that "tames" their will and imagination. Already there are significant limits on what is possible and acceptable in the world. From here forward, we become domesticated to one degree or another.

Neighbors or critical family members might remark that a child is "running wild." In the past generation, some of us have begun to embrace alternative forms of educating and raising our children that helps them to navigate between their wilder imaginations full of possibility and the social forces penning them in.

In a social media post from the Art of Mentoring community, I saw a challenge to the idea of "wild" places. The headline questioned whether the designation "wild" served a colonial mindset. This put to mind the ideas of Frank Forencich whose new book is excerpted in this issue.

From philosophy to practice and back again

Philosophy is no good to us if it doesn't inform our choices and help us to become more aware of who we are and what we are doing. So, here are some practical thoughts about where to start with "wild yields."

Appreciate what is showing up for you. "Weeds" and unwanted trees are showing up in your area—even in the cracks in the sidewalk and along the foundations of the most urban environments. What species are persistent enough to give it a go there? How did they get started there? What gave them just the right temperature and moisture? How have people used them as medicine, food, or fodder in the past?

Find the commons. What areas are managed for the public good? Are they in balance? Do those areas need support in managing pernicious plants like bush honeysuckle? Can you support those areas through tending? Oftentimes, you're not allowed to harvest from an area, but I've had permission to harvest plants and dyestuff even from the local university. Again, relationships are key.

One of our best persimmon trees is in an alley in the middle of town. While it might feel uncomfortable to park in the bank lot after hours and harvest persimmons, it's neither illegal nor immoral to put them to use. Still, asking permission can sometimes be a good move.

For the sake of our children and others' children, it is important we give them the opportunity to explore alternative educations that might just yield us a healthier culture.

Some of the last pawpaws of the season, our family found on a wander on a new trail.

Ask permission. Yes, ask permission to harvest from private and public landowners unless there is an well-known policy in place. Sometimes a neighbor asks for a portion of what I harvest. Dried apples or applebutter can make for good memories and relationships.

I also believe in the spirit of every plant I come in contact with. (This has led to some very interesting conversations with my children about weeding.) So, I ask permission, and I give thanks when gathering.

Beginning in harvesting and foraging

Find the local common species and traditions. I am not going to find pine nuts easily in my region. If you live in Arizona, good luck finding sugar maples. Harvest something every day—or every week. On your Sunday hike, begin to identify the plants you are encountering. Get to know the flower, leaf, fruit, and root. Learn the tree species. Start with learning really poisonous plants in your area. Those are the ones to stay away from. Then introduce yourself to two new species every week, and within a year you will know more than a hundred plants you didn't know before.

Go on guided hikes with naturalists and environmental educators. Or study with an herbalist or person who has dedicated their lives to foraging.

Research what you find. Really get to know that plant. Use all of your senses. (Do be careful about touching and tasting every single plant. Remember some of them are poisonous. That's why we started with them). Use your passions to help you learn. Draw the leaf if you like to draw. Photograph it wherever you can.

Carefully begin to harvest and use the plant. There are varying guides to how to ethically harvest. Some people say you can take one-third of a stand. Others believe that ten percent is the maximum amount of something you can ethically take. My approach is to consider how common it is in the landscape, how much there is, how it relates to the rest of the landscape and species that depend on an item at that season—and still ask permission. This year there were no mulberries for the catbirds and many birds that depend on the mulberries. Even in my own garden, our family decided to forego driving the birds off of our black raspberries so that the birds could have that food.

I also consider strongly whether my harvest of what I need will make space for something else that needs to be in the area for balance to the whole. Include it in cooking a recipe once you know what it is. Make medicine if that's appropriate.

Tend the spaces. Save seed and take propagation cuttings of plants that are rare in your area. Spread those plants around in places that are disturbed and need to recover. Again, asking permission to do this on land that isn't yours can go a long way. Read more deeply into the landscapes around you. Observe more carefully the life and death and changes unfolding all around you. Learn to see the relationships between things more clearly.

This can seem like a lot, so get your family or household involved. If they aren't into it, connect with a friend and do this together. It's a lot more fun. In this way, you can honor your own wilder, more peaceful, and more joyful nature. That's something we all need a lot more of now. Δ

Rhonda Baird makes her home in Bloomington, Indiana among many, many unkempt species. She is the senior editor of this publication and a permaculture teacher and designer. If this line of thinking resonated, you could join her community of mentoring and sharing at Touch-the-Earth.life.

Resources

Frank Forencich. *Sapience Curriculum,* 2020, Sapience.earth. My first introduction to his thinking was *Exuberant Animal*, 2006.

Looby Macnamara, *Cultural Emergence.* Permanent Publications, 2020.

Mark Morey, markmorey.com

Jon Young, Evan McGown, Ellen Haas. *Coyote's Guide to Connecting with Nature.* Owlink Media, 2010.

Sam Thayer. foragersharvest.com. Essential guidance on learning to wildcraft.

Tracker School. Tom Brown, Jr. TrackerSchool.com. Any of the guides, and especially the book *Grandfather* are helpful for this journey.

Decolonizing our Foodways

NATIFS

Rhonda Baird and the NATIFS staff

FOODWAYS are one of the most important interfaces for cultural renewal and strengthening. At this time of year, we are often reminded of family and community traditions that center around sharing food and abundance drawn from the land and our gardens as well as the local store. As we move to decolonize our food choices, we can also integrate and support projects like North American Traditional Indigenous Food Systems (NATIFS). Borrowing from their frequently asked questions, we are introducing this project and asking you to consider supporting NATIFS or other local projects of a similar nature as an ally.

Q: What is NATIFS and the Indigenous Food Lab?

A: North American Traditional Indigenous Food Systems (NATIFS), a nonprofit organization founded by James Beard award winners The Sioux Chef, is dedicated to addressing the economic and health crises affecting Native communities by re-establishing Native foodways. We imagine a new North American food system that generates wealth and improves health in Native communities through food-related enterprises.

Indigenous Food Lab is an education and training center that will serve as the heart of NATIFS' work establishing a new Indigenous food system that reintegrates native foods and Indigenous-focused education into tribal communities across North America. We envision a future of developing and supporting Indigenous kitchens and food enterprises in tribal communities, bringing cultural, nutritional, and economic revitalization across North America!

Q: Is the Indigenous Food Lab a sit-down restaurant?

A: The Indigenous Food Lab is a training center that will cover all aspects of Indigenous food service: research and development, Indigenous food identification, gathering, cultivation, and preparation, and all components of starting and running a successful culinary business. Due to the coronavirus pandemic, our plans to include a restaurant as part of the Indigenous Food Lab have been put on hold. We will share news and updates on this project as the situation around the coronavirus pandemic continues to unfold.

Q: Can I order food at the Indigenous Food Lab?

A: Due to the coronavirus pandemic, our plans to include a restaurant as part of the Indigenous Food Lab have been put on hold. We will share news and updates on this project as the situation around the coronavirus pandemic continues to unfold. Stay tuned over the next few months for updates on ways you can access Indigenous foods!

Q: Where is the Indigenous Food Lab located?

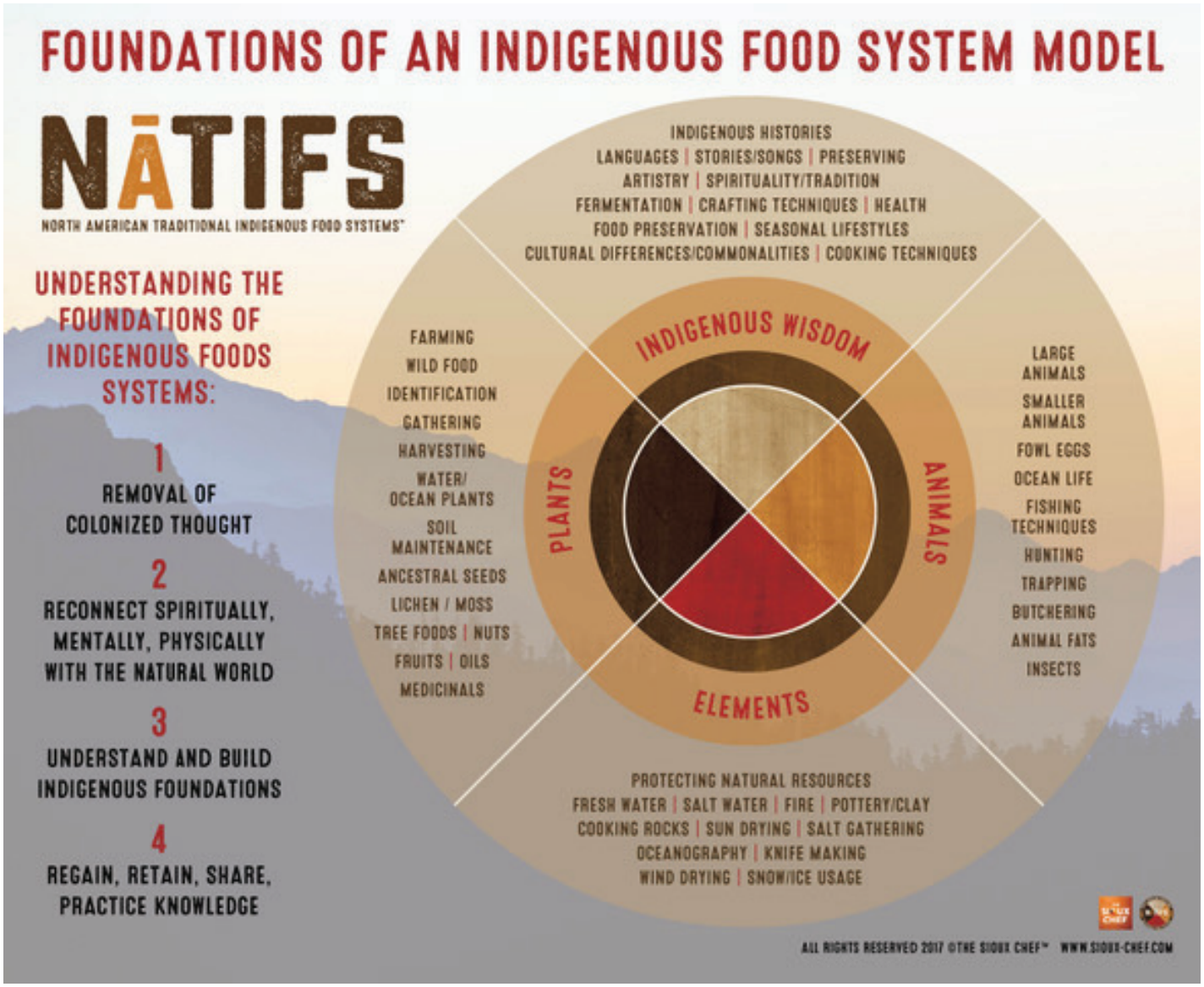
A: The Indigenous Food Lab is located in the Midtown Global Market on Lake Street in the heart of Minneapolis.

We envision a future of developing and supporting Indigenous kitchens and food enterprises in tribal communities.

Q: How does Indigenous Food Lab help the local community?

A: With skills and support from the Indigenous Food Lab, trainees will be equipped to open satellite food businesses in their tribal communities. By providing education and training that gives Native people access to healthy, local, Indigenous food, we can not only address serious issues of malnutrition, food-related illness, and economic impoverishment on tribal lands—we can also use our shared heritage to build bridges and build power within and between Native communities and our allies.

In response to food insecurity made worse by the pandemic, as well as the George Floyd murder and following social justice riots and destruction, we mobilized our team at the Indigenous Food Lab in Minneapolis to get healthy Indigenous foods out to those in need in our community. The Indigenous Food Lab has since been preparing 200-400+ free meals a day as part of a collaboration with Minnesota



Central Kitchen. We currently have support to feed homeless encampments, elder centers, people accessing food shelves, and other at-risk groups through December. We hope to raise funds to continue these efforts and integrate them into our training programming.

Q: How can I get involved with the Indigenous Food Lab?

A: Building strong community is at the core of what we do. If you want to get involved, you can sign up for volunteer shifts in our kitchen.

We will have updated volunteer opportunities as our vision evolves depending on so many things, so please keep checking back.

Q: Where can I access the ingredients used in *The Sioux Chef* cookbook that are showcased at the Indigenous Food Lab?

A: Head over to the Sioux Chef website (sioux-chef.com) to explore Indigenous food producers working with these ingredients and other Indigenous foods.

We plan to have indigenous ingredients for sale on-site in the near future at the Midtown Global Market to create more food access.

Q: How can I access the e-learning education modules for Indigenous Food Lab?

A: You can find these at the NATIFS website, where our e-learning modules will be shared with the public. We are working hard to get that curriculum jump-started, and we estimate the first classwork will be online by mid-October. Δ

You can find more about NATIFS and suppor their mission by visiting NATIFS.org.

Covid-19 Impact on Farmers: Support is More Accessible

Newest Round of Federal Aid for Farmers

THE USDA IS HANDING OUT $14 billion in the 2nd installment of the Coronavirus Food Assistance Program (CFAP 2.0). The new program is a marked improvement on the last version with more eligible commodities and a payment option based on lost income rather than price decline. The application period runs through December 11. However, the money may run out before that, as they are paying out $1 billion per week, so you should apply as soon as possible. If you did get money from CFAP 1.0 you can also apply for 2.0. The program is run through FSA offices.

To be eligible, you must be an individual or a legal entity farming at the time of the application. You do not have to have a prior relationship with USDA. Eligible commodities must have been produced for sale in the USA. No processed products will be funded. Also "gardens" are not eligible, but there is no definition of gardens, so if you think you might be considered a garden, you should contact your FSA office to ask what this means.

ELIGIBLE COMMODITIES: Almost all crops and livestock are eligible under CFAP-2 and apply to one of three payment calculations. A farmer may be eligible for three payments depending on what commodities they produce. Notable ineligible commodities include those produced under contract when the farmer does not maintain ownership (i.e. contract poultry).

Price Trigger: Similar to CFAP-1, farmers who produced commodity crops (i.e. soybeans, wheat, corn), dairy, broilers and eggs (NEW), or livestock between April 1 – August 31, 2020 are eligible to receive a payment proportional to the decline in price of the commodity due to COVID-19.
Flat Rate Crops (NEW): This payment option is for farmers who grew a specific commodity crop between April 1-August 31, 2020 where there is insufficient pricing data to demonstrate a decline in price (i.e. hemp, cotton, rice, small grains, alfalfa). Payments will be calculated using the flat rate of $15 per acre.

Sales Commodities (NEW): A very important change to CFAP-2 is the option to receive a payment based on lost sales due to COVID-19 for commodities not covered by Price Trigger or Flat Rate Crops. This opens up access to many farmers who couldn't apply under CFAP-1 or for whom the financial return was too low. Many specialty crops, nursery, aquaculture, and other livestock are listed as eligible commodities. Payments are calculated based on 2019 sales revenue of the eligible commodities multiplied by the CFAP payment rate.

The price trigger group is like CFAP 1.0, where USDA has determined that prices fell due to COVID-19 and so you are eligible for payments, except they have added things that 1.0 did not include. This category now includes livestock (cattle, hogs, pigs, sheep, lambs), cow and goat milk, eggs, chickens, and commodity program field crops (wheat, soybeans, etc.).

In order to receive payment for livestock, you choose a date between April 16 and August 31, 2020 and report your livestock census on that date (but no breeding livestock), and that number is multiplied by a per head payment. For broilers, payments will be equal to 75% of the producer's 2019 broiler production multiplied by the payment rate of $1.01 per bird (head). The payments for eggs will be equal to 75% of the producer's 2019 egg production multiplied by the CCC payment rate. Use the CFAP 2 Application Generator and Payment Calculator to calculate your farm's eligible ccc payments. Some examples are as follows:

- A farm who produced 15,000 broiler chickens in 2019 would receive a payment of $11,362.50.
- A farm producing 32,000 dozen eggs in 2019 would be eligible for a payment of $1,200.

The flat-rate group includes most other field crops. They pay $15/acre. You must have acreage reports on file with FSA or file them as you apply.

Sales-based crops include specialty crops, nursery, flowers, goat milk, turkeys, etc. You report your sales in 2019 and multiply by 8.8-10.6% depending on your total sales—the higher your sales, the lower the percentage.

You are self-attesting in filing an application, but you need documentation to back up what you put on the application form, because they say they will audit some producers; they provide no information about whom they will audit. When you sign the application form, you are attesting that you have the written documentation in case of audit.

The application is simple and there are on-line calculators to help. Once you file an application, you have 60 days to also file:

- Farm operating plan
- Legal identity document
- Adjusted gross income
- Conservation compliance document
- FSA report on acreage, but this requires an FSA farm number and is only for acreage-based crops

The county FSA might reduce the amount they pay or deny the application. If denied, you could eventually appeal. They have not been forthcoming about reasons for denials of CFAP 1.0.

Contact your local FSA office if the program seems right for you. Δ

Nested Permaculture Communities

Dan Palmer

HERE WE ARE. Hovering on the cusp of Phase Two of this project. Toward the end of 2019, we set the scene by way of chopping down a certain tree. We then disappeared for a while. (1) We took a breath. We pondered. We came back. It is time to start navigating the path ahead, starting right here, right now.

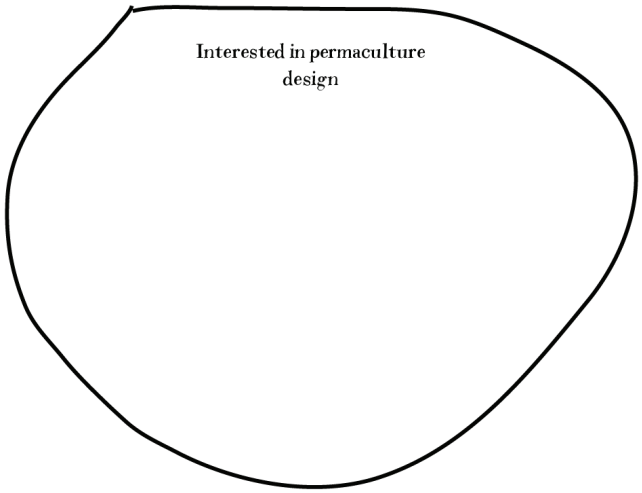
Before we take an actual step, however, let us metamorphose into birds and catch an updraft to consider relevant patterns from up high. In other words, we'll zoom out to get a sense of some of the things we'd like to make true of our subsequent steps forward.

Toward this end, I ask you to bear with me as I explore a fresh framework for thinking about different ways of relating to permaculture as design.

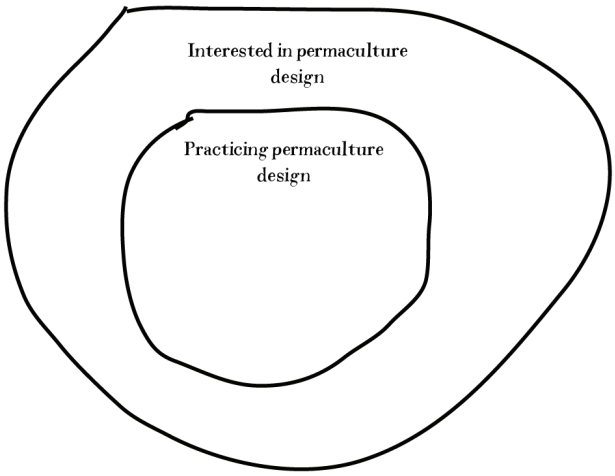
This arose after a previous framework led me to the question of "what is a community of practice, anyway?" Looking up that phrase led me first to the distinction between a community of practice and a community of interest and second to the related notion of a community of inquiry. Together, these three then came together in my mind to generate a further framework. (2)

Communities of Interest, Practice and Inquiry

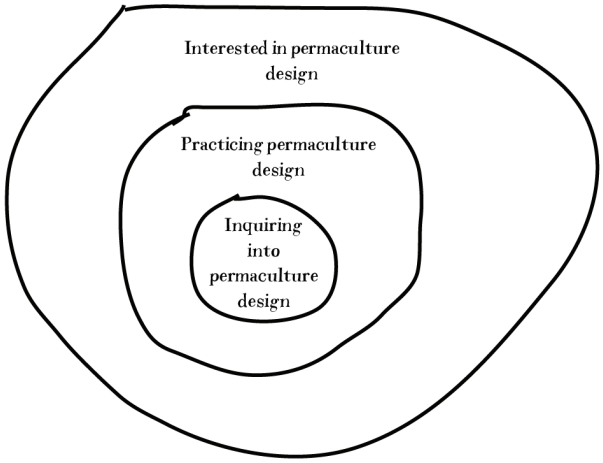
There is a group of folk in the world that are interested in permaculture design.



Within this group, there are folk who are not only interested in but who also practice permaculture design.



Within this practicing group there are in turn folk who consciously inquire into permaculture design. Who do research and experiments and make the results available to other inquirers as well as those practicing without inquiring or interested without practicing.

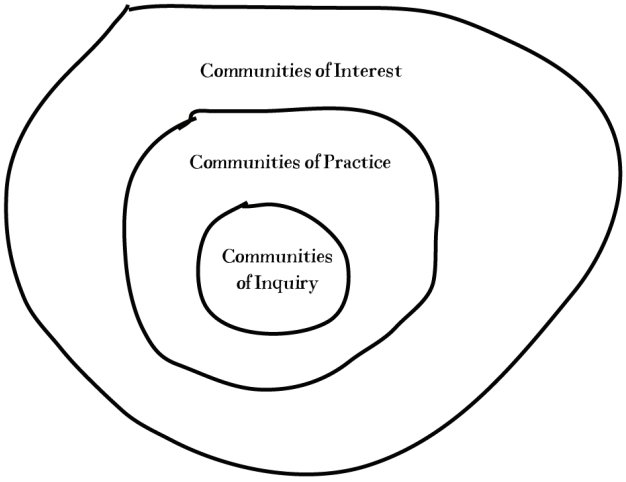


I'm not fussed about the exact lines of differentiation between these three nested layers. The lines can remain somewhat fuzzy so long as you agree that it is possible to draw the lines. (3)

The point is that it is possible to be interested in permaculture design without practicing it, and it is possible to practice permaculture design without (consciously and explicitly) inquiring into the way of designing that you have learned to use and are using. None of these are good or bad, better or worse. They are options.

Now.

Let us move from the idea of *groups* or sets to groups that have internal connectivity, whether online, offline, or both. Here, we move from groups to *communities.* As I'm guessing any permaculturalist knows, communities are *where* it's *at.*



From here on as I develop this diagram, I am always talking about communities, not just sets of individuals. I personally am part of a large community of folk interested in permaculture design, a smallish community of colleagues who go beyond interest to practice permaculture design, and a tiny community of colleagues who go beyond practice to consciously inquire into permaculture design. (4)

Overall Ratios, Flows, Blockages and Orbits

We can now consider the overall flows, ratios, blockages and orbits between and within the three kinds of communities. Along the way, I'll start laying out what this means for Phase Two of this project.

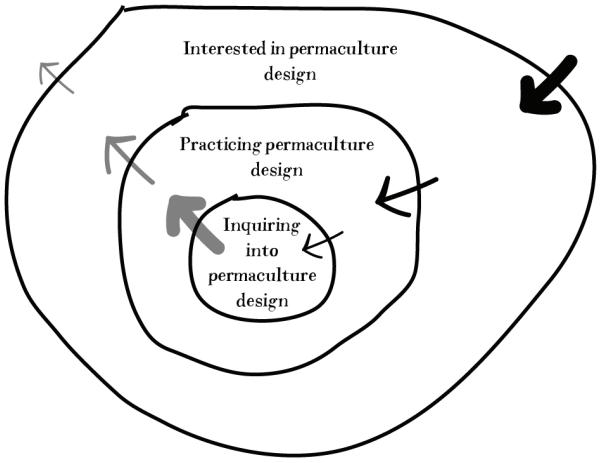
Flows and Ratios

The above diagrams are not to scale, and numbers of people within each of these three nested community types obviously fluctuate.

As far as flows go, the way folk become permaculture design practitioners is via interest. The way folk become researchers or inquirers, surely, is as a result of questions that arise within their practice. Where, ideally at least, the findings then move back out through the other communities, and in some cases even out into the beyond-permaculture community and culture. (5) Indeed, permaculture itself was birthed from a two-person community of intense interest then practice and inquiry that lasted a couple of years and catalyzed huge waves of interest and in some cases practice in others.

The following diagram captures this sense of overall flows in a very simplified, limited way. The black arrows represent people transitioning into communities at each of the three levels, and the grey lines the inquirer's findings then shared in an outward direction. Presumably more findings are shared with (and are relevant to) practitioners, some subset of these are then shared with those in communities of interest, and some further subset of these may end up being shared with the wider world (indeed some of them may end up catalysing folk to get interested in the first place).

In the inward direction, as indicated by the differing arrow sizes, more people get interested than end up practicing and a similar reduction occurs as we move from practice to



inquiry.

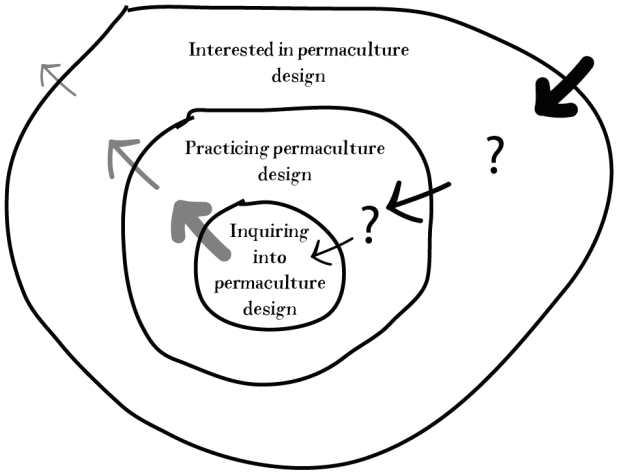
Now there are presumably some desirable ratios between the respective numbers of folk in the three levels that when departed from too much reduce the health of permaculture as a whole. Clearly at any moment there are many more people, perhaps two or three orders of magnitude more, interested in permaculture design than practicing it. Something like the same reduction probably occurs in the move from practicing to inquiring (as in inquiring and practicing and interested).

My sense is that if there is not some certain minimum amount of inquiry happening that is folding back to enrich the communities of practice (and indirectly interest) that those communities are more likely to lose their way. (6) And where if the amount of actual practice relative to interest is too low it becomes a situation like a pig-owners club I once read about that quietly disbanded when they discovered that not one member actually owned a pig!

Making Permaculture Stronger is not explicitly focused on increasing the numbers of people interested in permaculture design. I am glad that many people and projects are, and indeed the things I do focus on are utterly dependent on their important work. Part of this work is being in position such that when external circumstances (climate shocks, disease shocks, economic shocks, energy shocks, etc.) compel more and more members of the general public to look beyond

denial, despair, anger and protesting against, escapism, isolationism, survivalism etc. There permaculture awaits, offering a profoundly different way forward. A way focused on designing ourselves back into our local ecosystems and our local ecosystems back into us in a way that boosts community resilience and the health of the whole. Here, it is essential that introductory information, courses and books about permaculture are readily accessible. Indeed, if there were not already many growing communities of interest in permaculture design, this project couldn't exist.

With reference to this new framework, I can now start honing in on what Making Permaculture Stronger is about as it moves forward. Where I'm clear a core focus is participating in and supporting the existence and health of communities of permaculture design practice and inquiry in service of permaculture's overall health and evolution. Reflecting on this, I am particularly interested in helping to increase the practice side of the interest:practice ratio as high as it wants to go. Once practice is up in a healthy place then the same approach can be taken to upping the number of folk engaged in communities of inquiry.



Which brings us directly to certain systemic dynamics that are blocking key flows that I see as highly desirable. Namely what is happening where the question marks are in this diagram:

Blockages and Orbits

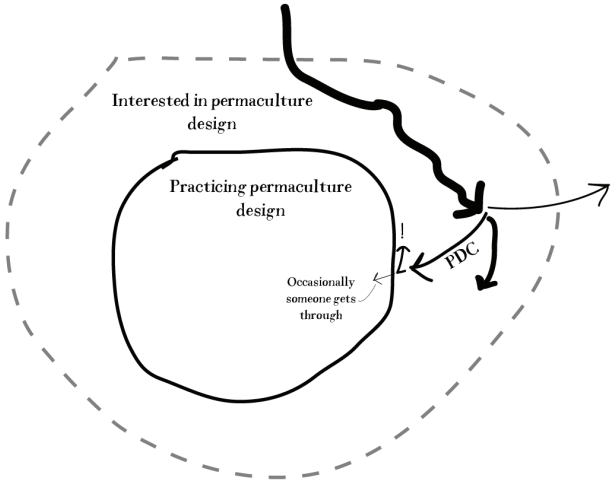
Interest to Practice

It is a lot easier to become interested in permaculture design than it is to start practicing it.

Let me back that claim up.

People regularly tell me they are interested in permaculture design but struggling to find a path from interest into practice. "Tell them to go do a PDC," you say. Thing is, they all already have at least one PDC, sometimes several. Completing a PDC does not get you across the line. A PDC generally takes you from interested to more interested. The domain of practice still eludes you. As Jason Gerhardt put it, you get shot out of a PDC into a void as large as the whole world. As Ben Haggard put it, you leave this energy-building conversion experience to confront the sheer disjunct between the energy and approach you just experienced and the reality of your everyday life and social circles.

I attempt to catch these facts in the framework diagram by



making the line between the outside world and communities of interest faint and dashed (i.e., highly permeable) and the line between interest and practice solid. Now I'll explain the various aspects of the situation that I've represented in the diagram. Maybe for fun you can try and decipher yourself first?

Many people, while keen to start practicing, get deflected.

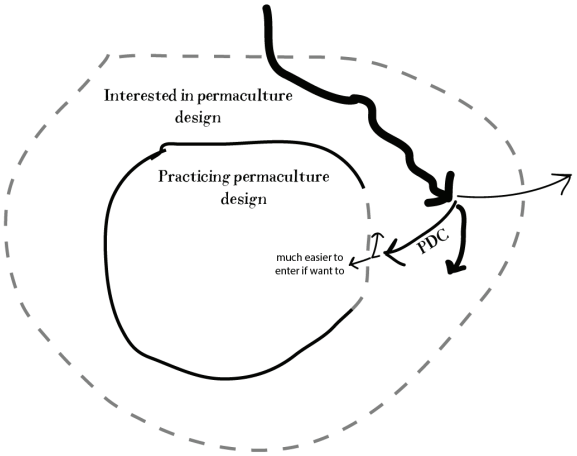
So the thick black line is folk initially entering communities of interest in permaculture design. After cruising along and perhaps deepening their interest a little, some of them continue being interested, some of them leave to pursue the next thing that has come along (in some cases to later return), some of them do a PDC. The PDC arrow shows a deepening of interest and a bringing up against the cusp of the transition into practice. However as I shared above many people while keen to start practicing get deflected back into the orbit of interest. Some make a second or third attempt

by doing a second or third PDC over time. Where of course some get through, as shown. But not that many, as best I can tell. Often those that break through are either already designers of some kind, or are hard-headed and determined enough to just keep charging at the boundary until it yields.

Anyways, supporting interested folk to start practicing permaculture design within a community of practice is henceforth a core focus of Making Permaculture Stronger. In the below diagram I show this by helping make at least a section of the boundary between the two more permeable and friendly to navigate. I have no question that this will increase the numbers of folk making it through.

I also want to be clear I hold no assumption that everyone will want in. It is totally legitimate to do a PDC then not continue to practice permaculture design. I'm talking about serving the folk that come out of a PDC wanting or called to start practicing, without any expectation of anyone else.

I also want to acknowledge the great and many permaculture inquirers out there who are already doing exactly this fine work of helping folk across the line—kudos to you, please reach out and share your learnings with me, and let's continue to up our game together!



My currently active interventions in this space are:

- hosting a six-weekly gathering of project supporters where we're developing our permaculture design skills together
- writing a book sharing the first Phase of this project in an accessible way focused on actual design practice
- writing another book clearly showing how what I'm calling Living Design Process works on the groun

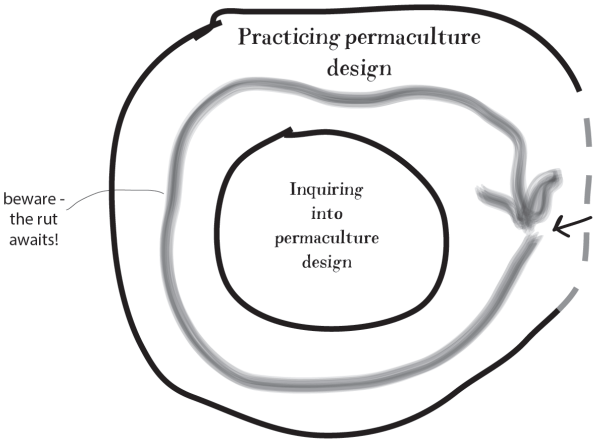
Practice to Inquiry

Another category of folk who are semi-regularly in touch have already been practicing permaculture design at a professional level for several or even five or ten years. They have made it through the membrane between interest and practice in their own unique way. However, they now find themselves bumping up against certain systemic issues we've heard so many of my podcast guests (and myself) mention:

- Clients not able to receive / understand designs
- Designs getting second-guessed
- Designs never being implemented
- Designed systems failing to co-evolve once implemented
- General sense of disillusionment with the whole design approach they've been taught and are trying to make work
- Sense that a different, better, more inclusive and successful way forward is possible, yet are unsure about how to make some of these new flavors work within their existing business or value-exchange model

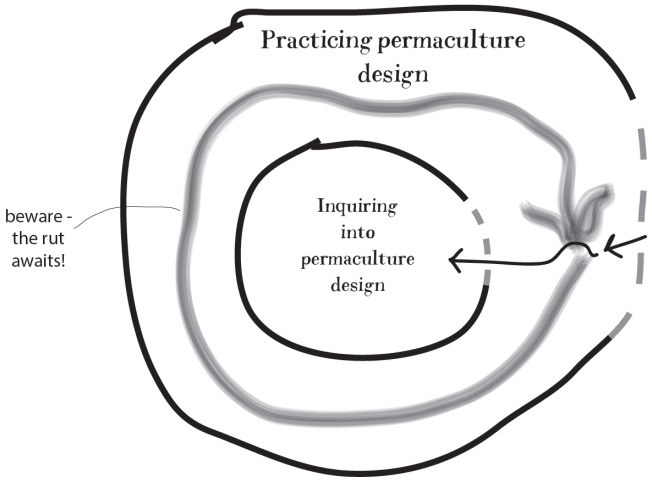
One way I think about this is that it is all very well and good to make it across the line and to really truly start practising permaculture design. What we generally don't realize until many years later is that there is this massive rut we almost inevitably fall into. It is a rut that leads to the complaints above. It is the rut of practicing permaculture design using the default design process paradigm of our wider culture. The rut is made from ideas including:

- design is fundamentally a mechanical process of assembling elements into whole systems
- permaculture design is a process of inserting objects into empty space
- design is primary a noun as in a professional-looking picture that is drawn by a qualified expert then handed over to the 'clients'
- the way to create something is first to finish a rational-



ly considered detailed design only then to implement it
- permaculture design practice is about becoming a designer who does designs for others
- what 'clients' say they want is what they want
- other have already figured out permaculture design process so we can just run with what they said
- along with many other ideas we need not crack open right now…

As I write, this gets me reflecting. I feel that some folk have to escape the rut and deepen their practice and make it into a community of inquiry to generate fresh understandings from outside of the rut that then become ladders or frames folk still in the rut can use to get out or clamber clean over



it. Where everyone involved supports each other to stay the heck away from the rut and when they (almost inevitably) start falling back in…

It makes me think that part of Making Permaculture Stronger's interest is calling attention to the rut, growing living bridges right over it, and in the process making the line between communities of practice and inquiry more permeable also:

My current experiments in this space of supporting existing designers (including myself) to transform, deepen, and grow their practice in community are:

- Continuing to record interviews with experienced designers and hear about their rut-escaping/hopping adventures
- Starting a series of podcast episodes where I work one-on-one to support existing designers to transform, deepen, and grow their practices. Flick me a message if this sounds like a bit of you, and you want to get in line.

Part of my emerging intention here is to help create, consolidate, and strengthen global and local communities of practicing permaculture designers who are consciously deepening their practice and building unprecedented levels of shared permaculture design process literacy. I mean what the heck—you're only young once, right?

Other Foci Emerging from this Exercise

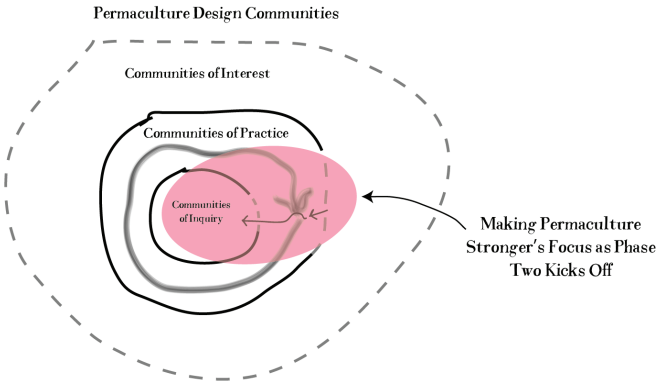
In addition to supporting interested parties to get practicing and practicing parties to deepen their practice, here are two more places I'll be focusing attention as integral parts of Phase Two:

Consciously supporting the development of communities of inquiry

My main way of doing this is this blog and podcast and all the conversations happening inside and around them. This feels like it is growing and I'm excited for that. I feel like the main thing is co-creating more spaces and places to support each other's inquiries and sharings. An annual or bi-annual distributed online gathering? Who knows! One clear inclination I have here is to partner with or at least contribute more to existing forums such as the excellent *Permaculture Design* magazine. [Editor's Note: Thank you!]

Within communities of inquiry, co-developing process understandings aligned with permaculture's originating impulse.

Now I've gone and chopped the tree down, alongside the above things I'll be focusing on, I want to support myself and others to develop and share process experiments and understandings that grow from and resonate with permaculture's core. With what Ben Haggard referred to as permaculture's original creative impulse. Part of this is starting to share more



and more about what I'm calling Living Design Process, which is one humble attempt at just that. I am also motivated to continue exploring more of the riches the regenerative living systems thinking approach of Carol Sanford and the Regenesis crew have to offer permaculture. In particular to increasingly use Living Systems Frameworks to non-judgmentally lift our game as permaculture designers.

Wrapping Up

Okay, that gives you a heads up on what is happening from here, toward Making Permaculture Stronger's current purpose:

Making Permaculture Stronger inspires creative exploration and dialogue around permaculture design, in a way that develops our ability to think and act creatively as a community, to enable permaculture practitioners to effect the large scale systemic change we need.

Thank you, bless you, and catch you amidst the fun times ahead! Δ

Dan Palmer is a permaculture design philosopher, consultant, and teacher who lives in Central Victoria, Australia. Aside from co-directing permaculture design company Very Edible Gardens, Dan is constantly co-founding things (such as Permablitz, Holistic Decision Making, and Living Design Process). You can read more about Dan's work at www.DesigningForLife.com, and contact him at dan@veryediblegardens.com.

Endnotes

1. I'd say "and waited for the heat to die down" if it wasn't for the fact there was no heat…
2. Where the job of this framework is to generate further questions, which will no doubt generate further frameworks, and so on, indefinitely, hopefully taking us to deeper and more useful places as we go. The main thing is to remember to let a framework go once it has done its job, lest it becomes superfluous baggage that blocks further progress.
3. For you types that like a drop of clarity, that said, wrap your chops around these two statements from the Wikipedia entry on Communities of Practice: "The purpose of the Community of Interest is to provide a place where people who share a common interest can go and exchange information, ask questions, and express their opinions about the topic. The purpose of a Community of Practice is to provide a way for practitioners to share tips and best practices, ask questions of their colleagues, and provide mutual support."
4. In truth I'm part of more than one community at least at the practice and inquiry levels but this is already complex enough so I'll not go there right now…
5. Yep, for the information of those of you that live in a permaculture bubble, there are still some folk not into permaculture yet :-)
6. As an aside I see this as similar to how if the ratio of people teaching permaculture design to people practicing permaculture design falls too far in either direction, the health of the whole is compromised.

We cannot act fast enough

Atmospheric Collision Courses

Albert Bates

AS OUR ANNUAL DESIGN COURSE at Maya Mountain Research Farm in Belize was drawing to a close our international students reported with alarm that the March 7 advisory by the World Health Organization calling for action to "stop, contain, control, delay and reduce" the spread of CoV-2 had prodded many countries to announce plans to close their borders. Our Guatemalan students left immediately and only just made it back across their border in time.

I had planned to stay in Belize a few more weeks to work on a planned microenterprise hub in a nearby village. Instead I dashed to the safety of Isla Holbox, México, where I had spent the previous winter developing a ecosystem regeneration plan in the Yum Balam Protected Area. I could have flown back to my ecovillage in Tennessee but given known deficiencies in the healthcare system of the USA and my age, I decided my odds might be better waiting out the pandemic on a remote island.

But really, Zeta's cyclogenesis started 130,000 years ago in the Southwestern Levant when we sedimented in that giant lake.

From a thatched palapa here, I have been watching the weirding of the weather—a viral phenomenon of a different sort. At this writing, Las Vegas has seen 198 consecutive days without rain. Parts of California have gone 204 days. In October, temperatures across half of the USA dropped to 40° below normal. Thousands of birds were found dead throughout the western USA due to the weather. The year also saw record wildfires and devastating droughts, landslides from heavy rains, and new dust bowls. In late October, Colorado firefighters were battling the largest blaze in state history amidst swirling ash and… snow.

For the past four billion years, Earth has been producing unique lifeforms. Probably it will continue doing that until the rock on which we stand is drawn closer to the collapsing star it circles. Six times in that great span there have been extinction events. Life was pared back to something simpler. Eventually, conditions recovered and the process of evolutionary expansion resumed. We are in the sixth event now. We do not yet know if there will be any recovery this time. We still have agency, and for better or worse our agency grows more powerful by the year.

Over the past 1.2 million years (aka the Late Quaternary), Earth's surface temperature rose and fell as ice ages waxed and waned. Not every cycle followed precisely the same pattern, but they were broadly similar, until now. We won't be experiencing the old cycle again for quite some time, probably millions of years. We have pushed the hot extreme to a new high mark and the cold extreme is unknown—likely much warmer; potentially a habitable cool; possibly not. We are conducting a large biogeophysical experiment with no predetermined outcome.

One summer evening a year or two ago, ecosystem regenerate John D. Liu leaned over our table in a cafe in Covent Garden to show me a ground-penetrating radar view of ancient watercourses in the Arabian Peninsula. Pointing to a geological lake bed at the edge of the Eastern Mediterranean, he described how all the freshwater drainage of the Peninsula had converged.

After a few thousand years tilling most fertility out of the lush savannas of the Levant and felling the cedars of Lebanon, formerly migratory, now stationary, bipedal mammals had begun changing the climate of Earth. The Arabian Peninsula and Fertile Crescent desertified, and when that happened, the winds flowing eastward across the Mediterranean reversed direction. Where once there had been reliable monsoons to re-wet the area from Ash Sharqia to the Zagros, now the winds drained down from the mountains of present-day Armenia and Azerbaijan and flowed towards the Atlantic. The wind change created a reinforcing feedback.

Desertification accelerated.

The Anthropocene had started.

However, because the orbit and tilt of the Earth predisposed us to periodic glaciation, the tools of early humans merely countered natural cooling trends. We stabilized into a geological epoch, the Holocene, that would be the envy of Goldilocks. Not too hot, not too cold, just perfect for the expansion of a warm-blooded, fecund, mammalian species. The reforestation of Europe brought about by the Mongol Invasion from 1220 CE (~700 megatons of CO_2 drawdown) and of the Americas in the Columbian Encounter (~10 gigatons of CO_2 drawdown) were minor perturbations compared

to the Industrial Revolution. Now we melt ice in the Arctic and change the net reflectivity (albedo) of the planet. The darker ocean stores more heat, and that in turn changes the way the polar vortex—the circulation of air contra to the spin of the planet—moves. The stream meanders. The October blizzards and freezes just experienced across half of North America were a southward dip of the vortex. Drought and wildfires break out when the river of air swings north.

In late October, I sat quietly at the desk in my one room palapa watching the approach of Zeta via earth.nullschool.net. I had only just returned to the island from the mandatory evacuation for Hurricanes Gamma/Delta, but remained for Zeta because there was simply not enough time to evacuate safely, given how quickly it developed. Zeta was the seventh Atlantic storm since July to hit the meteorologists' definition for rapid intensification. The term coined by climatologists is "explosive cyclogenesis."

But really, Zeta's cyclogenesis started 130,000 years ago in the Southwestern Levant when we sedimented in that giant lake, using irrigation and the plow. Today the wind that blows across the Sahara carries tiny bits of sand, some of them the memories of ancient fortresses, temples, and granaries. Those grains become seed kernels of raindrops, clouds that drift west along the Tropic of Cancer until they encounter warmer water in the mid-ocean doldrums and assume a counterclockwise cyclonic motion in the Eastern Caribbean. That is how most Atlantic hurricanes reach my island.

I had less than a day to secure everything and get off the island.

Sometimes the waters of the Central Atlantic become so warm that hurricanes will form spontaneously without taking days and weeks to cross an ocean. On October 15, 2005, an unusually large, monsoon-like circulation organized itself into a tropical cyclone east-southeast of Grand Cayman, in the Western Caribbean. In the span of just 24 hours, Hurricane Wilma intensified from a 60-knot gale to a 160-knot category 5 hurricane. When Wilma made landfall on October 22 it dumped 62 inches of rain on Mexican coastal cities and collapsed many beachfront hotels.

In 1988, I asked M.I.T. meteorologist Kerry Emanuel, whose interests tilted towards hurricane events, whether climate change would increase the frequency, not just the power, of 21st century hurricanes. He didn't think so. I thought he was wrong but kept it to myself.

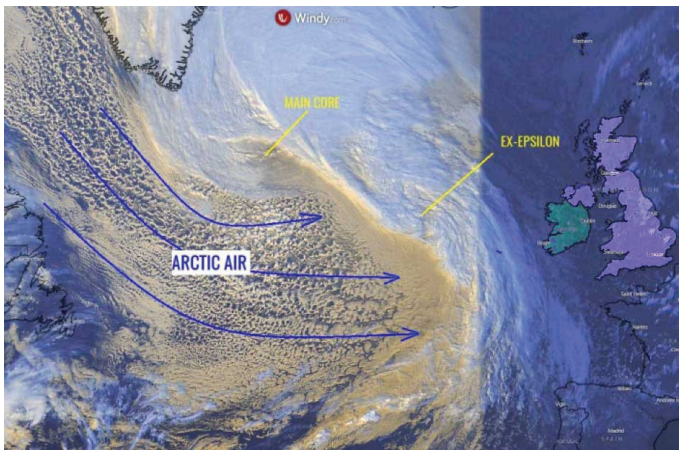
On November 1, Eta, the 28th named storm of 2020, tripled in strength in just over a day, explosively intensifying from 40-mph gusts Sunday morning to sustained winds of 120 mph Monday and 150 mph on Tuesday—only 5 mph shy of Category 5. A couple weeks ago, Gamma produced Category 1 winds and even as the rain fell, we learned about Delta taking shape and undergoing explosive cyclogenesis to Category 4, tracking directly in Gamma's wake. With almost no advance warning, I had less than a day to secure everything and get off the island before Delta arrived. When I returned a week later, I cleared pieces of some distant neighbors' roofing tiles from the path to my door, counted the dead amongst plants and wildlife, and removed spoiled food from the fridge to the soggy compost. Then explosive cyclogenesis replayed, not once, but twice more. Eta tied the 2005 record for named storms and the season runs until November 30.

Last year I elevated my floor above the then-risen Atlantic waterline and this year I changed my roof from thatch to biochar ferrocement. There are other improvements needed, but at least, for now, I seem to be keeping pace. In UN-speak it's called "adaptation."

Away in the Arctic, things appear to be speeding up. I experienced Gamma, Delta, and then Zeta, but Epsilon swung north before it reached my part of the ocean. Epsilon transitioned to a North Atlantic "extratropical cyclone" before reigniting into a zombie hurricane.

Arctic Sea ice is not refreezing in October for the first time since measurements began. The warming of the Arctic slows the jet stream and lets it meander. On October 26, Epsilon's remnants in the North Atlantic merged with an extratropical storm south of Iceland, absorbing each other into something unfathomably humongous that pounded Ireland, Northern Ireland, and Scotland with 9-12 meter (30-38 feet) waves. Fortunately for much of Northern Europe, wind shear broke Epsilon apart before it went any farther.

Even if, with carbon dioxide removal, we could return to 220 ppm CO_2, we are at the beginning of new climatic conditions and a profoundly different biosphere. Biophysical inertia, technological lock in, and the socioeconomic addictions we hear parroted in the speeches of our political candidates condemn us to this self-inflicted fate. A few decades



The broad channel of arctic air imaged by satellite folded into the two merging cores, creating a superstorm, Zombie Epsilon.

ago, we might have stopped the slide, but it is too late now. We've passed numerous forks in the road—Kyoto; Copenhagen; Rio + 20—and chosen to go the wrong way, each detour taking us further off course and locking in delayed consequences.

Antarctic sea ice loss is now irreversible because of heat accumulation in the Southern Ocean. Felled forest conversion to grassland augurs warmer soils, increasing microbial respiration, releasing CO_2 and methane at greater rates. Ocean methane hydrates bubbling to the surface decompose a million years of microbial and abiogenic exhalations in every summer season. Peat and permafrost carbon that require millennia to regenerate can burn away in hours. Fires release more carbon from soils than from burnt trees and it won't be replaced in a few seasons, or even a few centuries.

The future all these signs portend was represented in Figs. 1 and 2 of the PNAS paper by Steffen, Rockstrom, Richardson, et al., Trajectories of the Earth System in the Anthropocene (2018). Beyond a planetary stability threshold, intrinsic biogeophysical feedbacks control the dice. At 2°C the dice get loaded by tipping elements that raise the temperature further, increasing the likelihood of further tipping elements joining in. The game switches from dice to dominoes. Even if the Paris target of a 1.5°C to 2.0°C rise in temperature is met, a cascade of feedbacks can push Earth onto a "Hothouse" pathway.

There are, even now, ways back, and cascades that accelerate the return. There are good people showing the way, including John D. Liu. Ecosystems can be regenerated. The tools nature provides are still functioning. But we will need to perform repairs while adapting to changed conditions. I write this having just experienced a fourth explosive cyclogenesis in the Western Caribbean in a single month. I'm adapting. For human civilization as a whole, we will not have a lot more time to make changes. Δ

Albert Bates is an emergency planetary technician and climate science wonk using naturopathic remedies to recover the Holocene without geoengineering or ponzinomics. This essay was originally posted to Patreon, Blogger, and Medium where donations empower his Global Village Institute (gvix.org), a tax-deductible 501(c)(3) charity. Albert's latest books are Burn: Igniting a Drawdown Carbon Economy to End the Climate Crisis, Transforming Plastic, Dark Side of the Ocean*, and* Plagued: Surviving a Modern Pandemic. *A children's version of his* Ocean *book called* Making Waves *will be out by Christmas. Please help if you can.*

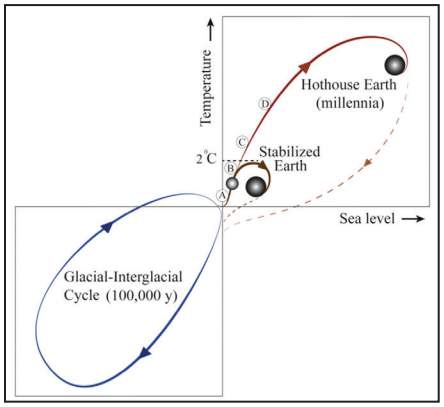


Figure 1. A schematic illustration of possible future pathways of the climate against the background of the typical glacial–interglacial cycles (Lower Left). The interglacial state of the Earth System is at the top of the glacial–interglacial cycle, while the glacial state is at the bottom. Sea level follows temperature change relatively slowly through thermal expansion and melting of glaciers and ice caps. The horizontal line in the middle represents the preindustrial temperature level. The current position of the Earth System is shown by the small sphere on the red line close to the divergence between the Stabilized Earth and Hothouse Earth pathways. The proposed planetary threshold at ~2°C above the preindustrial level is also shown. The letters along the Stabilized/Hothouse Earth pathways represent 4 time periods in Earth's recent past that may give insights into positions along these pathways: A, Mid-Holocene; B, Eemian; C, Mid-Pliocene; and D, Mid-Miocene (positions on the pathway approximate). *(figure from Steffen, 2018)*

References

Steffen W, Rockström J, Richardson K, et al. Trajectories of the Earth System in the Anthropocene. Proc Natl Acad Sci USA. 2018. 115: 8252-8259. doi: 10.1073/pnas.1810141115. Epub 2018 Aug 6. PMID: 30082409; PMCID: PMC6099852.

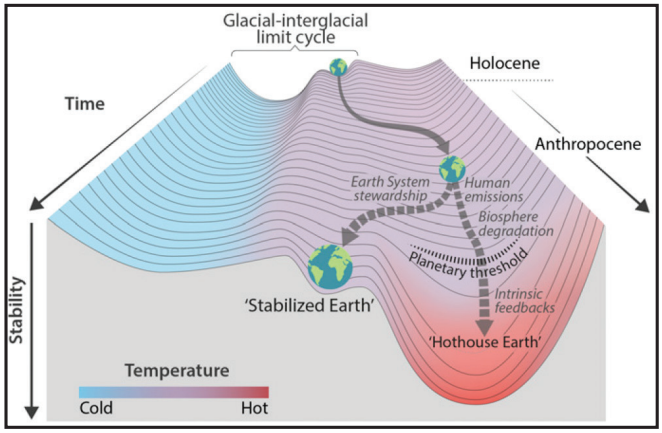


Figure 2. Stability landscape showing the pathway of the Earth System out of the Holocene and thus, out of the glacial–interglacial limit cycle to its present position in the hotter Anthropocene.
The fork in the road in Fig. 1 is shown here as the two divergent pathways of the Earth System in the future (broken arrows). Currently, the Earth System is on a Hothouse Earth pathway driven by human emissions of greenhouse gases and biosphere degradation toward a planetary threshold at ~2°C (horizontal broken line at 2°C in Fig. 1), beyond which the system follows an essentially irreversible pathway driven by intrinsic biogeophysical feedbacks. The other pathway leads to Stabilized Earth, a pathway of Earth System stewardship guided by human-created feedbacks to a quasistable, human-maintained basin of attraction.

(figure from Steffen, 2018)

Mastering the Growing Edge

Luke A. M. Simon

IT SEEMS THAT ALL A GARDEN'S PROBLEMS meet their end under piles of grass mulch. Without sun, the weeds and grass beneath die. A thick wall against wind and sun, mulch reduces fluxes in temperature, and wind erosion. Water stays longer under mulch, and soaks into the soil, making a moist home full of food for worms, bacteria, and many other creatures. It follows that more life creates the possibility for more life.

From here, the good effects branch out and grow, transforming soil into the stuff a gardener's dreams are made of—if handled correctly.

Mulch is an excellent transition tool in gardens. It's the tipping point in my practice between the lawn and weeds I start with, and the up and up creation of delicately managed useful plants which follow. The grass mulch works simply as a timed delay of sun-blocking, a timed buildup of water and nutrients. This is because grass mulch eventually breaks down, and leaves the ground bare. Mulch is an inefficient tool when it must be applied over and over.

When everything is carried out in the right way, I don't ever apply it to an area again; I only use it once for establishing my ground covers. The thickness of the mulch, the time of year that it's applied, and how I tie in the ground covers that follow puts an end to the weeds and grass for good.

For instance, the mulch should be at least four to six inches thick when first applied. This might sound excessive, but keep in mind that it quickly decomposes to about half that thickness.

Although thicker is not always better, I have built beds using long grass (which has a bit more space between each grass blade for air, so settles down more dramatically than short grass cuttings) which started about ten inches thick. It billowed up with clouds of green shortly afterward (all intentional planting, no weeds) and is now one of my most productive beds. All this in a year that was unusually dry.

Another point: if you include branches and sticks, place them underneath the mulch to hold it higher off the ground. This makes more space that any weeds and grass beneath must grow through to access light. It also keeps the sticks moist, which speeds up their breakdown.

Is there a best time to apply mulch? Naturally this changes from climate to climate, but in my experience, working with USDA zone 5 temperatures, grass mulch applied in late summer is less effective in comparison to applications over frozen ground or snow. When grass is growing in summer, full of vigor, it seems to have a far greater energy reserve to push through. My best beds have followed mulch laid over bare ground frozen in late winter, or even snow.

There is no lush grass for mowing at that time of year, as you might guess. I rake up dried, long grass I've left on the soil over the winter for these applications, and this is how I get the best results.

Mulch is still effective later in the season – it just needs to be thicker. When the grass is just at its peak of bloom but hasn't begun making seed (towards the end of May), I cut it, making beds like the afore-mentioned ten inch thick bed, and then allow the grass to grow for the rest of the season. This is how I have plenty of dried grass on the ground for raking early next spring.

Clearly this practice won't work for everyone, and before you throw this book away, let me be clear in saying that I don't expect you to adopt this practice. It's just what works for me. Short grass cuttings you get from the average lawn mower, applied whenever you have it, will give pretty good results providing you make it thick enough. You should nevertheless be careful about your time of planting.

For me, spring is the ideal time for actually planting into the mulch. It gives time for plants to establish before the potential dry summer weather and heat set in. For those who live in climates with mild winters with little freezing, plants establish best if planted in fall or late winter.

Although the idea of timing sounds like a pain, remember that it's a one-time event. After experiencing the seamless transition from lawn to mulch to ground-covered garden, you'll find attention to timing is a most efficient and enjoyable use of your time.

Beneath the piles of mulch that fix all garden problems,

A mulched bed in beginning the transition from lawn/weeds to productive growing bed.

some of the ground covers I use are simply better at the waiting game compared to grass and other weeds. As the grass languishes beneath the mulch, you can have the ground cover preparing for an all-out invasion, delivering stunning results you never would have expected.

Violets

It's very exciting to see little umbrella-like leaves start popping up from the mulch you've applied until the whole place is a homogeneous carpet of green, studded with little violet-blue flowers. This is why one of my favorite tools for covering the ground is violets.

Tenacity like this in any other plant would suggest an aggressive character – but not violets: they're just patient.

As long as your preferred plants among them grow taller than four to six inches, violets are negligible competition. At this height, the taller plants are able to grow up yearly to completely shade the violets beneath them, but again the violets patiently bide their time. The minute that sunlight becomes available once more, the violets will hop to it and plate the ground with leaves to prevent the growth of unwanted weeds.

A neat ground cover of violets and mint growing alongside daylily (edible flowers) in early spring.

This is what they're used to doing below grass in lawns: catching the springtime sun before the grass once again drowns them in shadows. So far, such serendipitous colonies that were already growing in lawns before I laid the mulch are the only way I have grown violets as a ground cover. I've never planted them. If you wish to try them but don't have any in the area to be mulched, there are several nurseries that sell the seed, and Oikos Tree Crops sells the plants in bulk quantities.

Although not a standard crop, many wild crafters and perennial vegetable gardeners use violets as an edible crop. I encourage you to explore this diverse aspect of violets if it interests you.

When you plan to use violets as a cover, it's important that you plant the new bed of the species you want to establish a few months after, or at least in the same year, that you lay the mulch.

Things aren't the same the next year; violets are highly efficient at leaning their leaves in to fill any holes in their barrier. This is part of the way they block weeds, but it can make establishing small plants the second year difficult, to say the least.

There are few plants which have quite the same effect. The closest I have found is *Ranunculus ficaria:* it grows from bulbs, and goes completely dormant in the heat of summer, supplying no cover. Violets are certainly not as vigorous in the summer and fall, but they still provide a decent amount of cover. Since most weeds sprout in spring, it isn't a major issue. If you take steps to ensure that the later cover from your perennial vegetables is thick, this characteristic shouldn't be a problem, and could make an excellent replacement.

Creeping Charlie

Perhaps it would be a little too menacing to call creeping charlie *(Glechoma hederacea)* a seedy character, but that is its secret to showing up so quickly as the mulch begins to thin. Combined with its creeping advancement of vines along the ground, it is scarcely less talented than violets at appearing out of nowhere.

Because it either has to sprout in, or work its way in from another bed, there is a slight latency between the receding mulch and the effective weed blocking cover of vines.

While this has the benefit of allowing even more time for my planting to establish and climb above the creeping charlie, it also allows a small window of time in which weeds could appear, before the creeping charlie has installed its impenetrable mat. I keep an eye out then, but aside from a casual pluck as I inspect the progress, there are seldom any problems before the creeping charlie fills in. After that, weeds seldom recur.

On the other hand, if the creeping charlie works its way in a little too early, or the planting goes in a little too late, I have had good success scraping up the growth as I would collect cobwebs, piling it around the small plants. This blocks the creeping charlie from growing up against the plant again until it has risen above the creeping Charlie, and offers the same moisture retention and nutrient release as mulch.

Once installed, by no means worry about crowding out the creeping charlie. Its characteristics are most advantageous as a minority plant, filling in the cracks in summer and keeping the ground covered through most of the winter; as it stays active with leaves up for much of the cold seasons when other plants are dormant.

Personally, I find it a very attractive plant. There is even a variegated form for the avant-garde; Companion Plants is the only place I've seen it available, but you might be able to find it elsewhere. A single plant would quickly "inoculate" a large area with its seed.

A friend of mine, who has been exploring what a yard does when you let it grow wild, has a gorgeous patch of creeping charlie in the middle of his front yard I was hardly able to recognize at first glance; I snapped this photo of the patch below in December.

It gave me the idea of a monoculture of creeping charlie for a lawn as opposed to a monoculture of grass— you would never need to mow it! In my opinion, it would be both very pretty, and far less work.

Creeping charlie may boast the highest amount of similar species of all the ground covers. Closest is the pink flowered plant Kenilworth ivy *(Cymbalaria muralis),* which has ivy-shaped leaves. It is slightly less aggressive, and does not excel at creating thick carpets, but is just as good at filling in cracks by piling vine on vine in search of sun, incidentally providing thick cover even in the off months in the same manner as creeping charlie. For those who just don't like creeping charlie as a result of many years battling its valiant invasion of the growing edge, but on reading this are tempted

to experiment with it to reap the benefits, this is a good alternative.

The other is *Lysimachia nimularia* (sometimes called creeping jenny, although I would not say Charlie and Jenny make a good pair—too similar). It grows very low, and makes excellent carpets. The light golden variety is gorgeous year-round. I have also found the green version growing wild in fields, still leaf-covered even in January.

Comfrey

Comfrey has what I term an excellent spread to crown ratio: the crown only takes up a few inches of space, with the spread covering two feet or more. This, along with the roots delving deep in the ground and leaving the upper soil alone for the most part, enables other plants to grow right next to it with little competition, and plenty of ground cover.

In my climate, comfrey also produces enough growth it can be cut at least twice a year; this cut material can be laid on nearby ground for further mulch. the cutting puts the comfrey back down to ground level, and lets everything else explode with growth because of the nutrients flowing into the soil and the sun pouring in.

It's standard in my food forest that every tree has its companion comfrey or two (or three).

Most have three around them in a triangle to keep the ground mulched with living, and decaying leaves. I use this same technique of "triangulating" comfrey for asparagus too because asparagus has a feathery leaf which cannot shade the ground effectively. The young asparagus shoots grow fast enough they can easily clear comfrey leaves in spring, and in fact such shade elongates them, and keeps them more tender.

Be careful when digging around comfrey: the roots spread before going deeper, allowing a good chance of cutting the roots and making new plants within a circular foot to a depth of four to six inches. You might not mind a little more comfrey, but it is indestructible once established, so randomly making new plants can be hazardous.

A rather nifty, and more controlled, way to utilize this attribute is to place a pot-bound comfrey where you want a new plant: when the roots grow out of the bottom, break off the pot; more than likely a new plant will grow on the site.

Another propagation problem with comfrey is its seed. Only the true species, *Symphytum officionalis,* presents a real problem: if you have any, pay extra attention to keep them cut so seed can't form. If you don't plan on keeping them cut, I'd recommend you skip that kind, because it spreads ferociously.

The kind I recommend is Russian comfrey, a cross between *S. officionalis* and *S. uplandicum* (or *asperum* depending on who you ask). It is, for all practical purposes, sterile, and far more interested in leaf growth. The Bocking 14 cultivar is one of the largest, at four feet wide by four feet tall in fertile soil.

A more established polyculture showing some happy comfrey around a peach tree. The ground cover here also includes alpine strawberry, oregano, creeping charlie, mint, and golden oregano.

Here is one of my favorite polycultures of tartarian aster under peony.

As suggested by the name, there were other hybrid comfreys – and the breeding wasn't done by Russians either. The parent *S. uplandicum*'s common name is Russian comfrey, hence the name for its hybrid progeny. The cultivars are called Bocking because the breeding was done by Lawrence D Hills at the Doubleday Research Center in Bocking near Braintree, UK.

While as many as 21 hybrids came out of the program, as I understand it, Bocking 14, and to a lesser extent Bocking 4, are the only ones still in circulation.

'Axminster Gold' is a variegated form of Russian comfrey that would make quite a breathtaking addition to the edible landscape.

All of the above are large comfrey that function best as single plants carefully placed in the permanent planting, but there are smaller species that perform better as low growing carpets.

S. ibericum has a diminutive variety called 'Goldsmith' which is only about three inches tall in leaf growth.

The species is known for its shallow roots by which it spreads—something other comfreys seldom do. Overall, it's fairly weak, and can be ripped out and transplanted without the missed roots sprouting.

Another option is a smaller variety of *S. officionalis,* sometimes referred to as "Chinese" comfrey. It has light blue flowers, with spots of red on the younger, unopened buds. In my experience, it's lower growing than the larger comfrey species, and hardly seeds at all. I mention "hardly" as a caution, but I've never seen a seedling from my plants.

It can reach eight inches to a foot tall, so it is better planted as a carpet only under tall plants, or used as single plants among perennial vegetable, as for the large comfrey.

Late Season Cover

Because many perennial vegetables are early season risers, and mid to late season sleepers, there are some instances thick cover, beginning in the heat of summer, coming to its peak at the onset of fall is ideal.

For example, if you have a bed which is well stuffed with early rising but late season dormant perennial vegetables and herbs like valerian, rhubarb, *Camassia* species, the bed will be just about bare once the days get long and hot.

The other category is plants that become long and lanky during the end of the season, like asparagus, and tiger lilies; these don't shade their ground very well, but are tall enough to stay above the weeds, or a very thick ground cover.

To solve the problems presented by these two situations, I turn to two different plants for the solutions.

Down near the ground, with low plants that only maintain sparse leaves for gathering energy over summer, it's best to use blue mist flower *(Conoclinium coelestinum).* Although similar in form to annual ageratum, this plant is perennial.

It doesn't show itself until around June, when it slowly

begins to grow in an upright fashion, later flopping over if it's in fertile soil, covering quite a bit of the ground around it. Usually the vines reach somewhere between one and three feet long. The flowers, appearing anywhere in late September to early October, are a pretty addition themselves.

The ones shown above are in my friend's ornamental garden, with a lovely ground cover of golden creeping jenny next to it.

Blue mist flower has long, white, very shallow roots that run and sprout up, filling the cracks in the planting quickly.

It pulls out like cobwebs from dusty corners, and doesn't come back from the smallest micron of root the way some weeds will. What's more, it cohabits quite well, and doesn't stress other plants like many weeds do—unless of course they're buried under the vines, which are also easily removed. Overall, it's quite easy to manage.

Towering up to six feet by September, alongside our lanky end-of-the-season plants such as tiger lily and Asparagus, is tartarian aster *(Aster tataricus).* A bit later than blue mist flower, tartarian aster unfurls its light blue flowers around late September, and well into October in my climate.

Up until July, it's just a thick mat of leaves. Then all at once they shoot up in leafy spires, leaving the ground beneath in darkness.

In ornamental gardens, like my step-grandmother's garden pictured, I've seen this work well with peonies, which are just looking drab as the asters shoot up. This obscures the peonies from view, but it isn't so aggressive as to grow through the peony's leaves: they leave a little spot of sun to continue feeding the peonies until they are satisfied and ready for dormancy, the cycle happening year after year quite successfully.

It also runs quite successfully; so you don't need many initial plants to eventually fill a large space. Established plants run at least a foot a year. If you begin with a two foot distance between plants, the space should be filled in two to three years.

Again, pulling is quite easy. It's best done late in the year when, due to the long stems, pulling can be done while standing upright.

More importantly, these late season bloomers are quite vulnerable to losing their precious energy store for the winter by keeping so much energy in their stem so late; snapping off the big stems just at or before blooming weakens them severely.

Building so much biomass in the fall, this is a plant which beautifully blends the intensive soil feeding of cover crops with the perennial reliance and minimal work of ground covers. The aster and blue mist flower provide enough growth in fall that the ground is quite well covered in spring until they make their appearance. It isn't necessary to plan cover specifically for spring, because the mulch they produce persists, and sometimes must be pushed down so the perennials beneath can get access to light. With all this surplus, you might just pirate some of that mulch for other beds.

There is a shorter cultivar of tartarian aster called "Jindai" if you want to try it among lower species. Many of the rules for the tall kind still apply, because this one still pushes four to five feet on average.

Sunchokes

Plowing through masses of weeds and grass, laying waste to them before I have even laid the first of the heavy mulch is perhaps one of the single most valuable traits that any of our top 10 dynamic mulches have shown.

Sunchokes, or Jerusalem artichokes *(Helianthus tuberosus),* are not so much a stable ground cover as they are masterful bed builders: they don't just block grass lawn, they obliterate it, taking the place of bed building mulch if handled correctly.

Its home is the American prairie biomes, where it stretches for sun among massive grasses and other highly competitive plants. Placing it in the standard lawn, full of short, European grass species, or even an overgrown field is like releasing a saber-toothed tiger into a playpen with modern house cats—it's a brute.

It begins by pumping nutrients from deep in the soil to power billowing clouds of leaves on stems up to 15 feet tall in fertile soils. At the end of the season, less fortunate species smothered below, it sucks all the nutrients gathered in its stems safely below ground for storage in its edible tubers. Every year it sends out runners, some species more aggressive than others. Some varieties, such as "Supercluster," are rumored to be 'well behaved;' most are decidedly imperialist, surging several feet out in all directions. As long as it fills its nutrient reserves every year, the size of the open field it inhabits is its only limit.

To unleash the beast, get a bucket of the tubers in late fall, and make small slits in the ground with a shovel about one foot apart, inserting the tubers deep enough they aren't exposed, and walk away. The days of the nearby plant residents are now numbered.

In the following spring, don't worry when the tubers don't sprout early: sunchokes don't like frost, and wait until late in the spring to pop up their furry little heads. I have planted these in completely unamended yards where lawn grass was struggling, but the sunchokes still flourished. Results of removing grass and patch expansion are best if the patch is left a year or two before harnessing it for actual bed building.

You can't use brute force when putting powerful beasts like sunchokes to work—you have to outsmart them. This is done by pinpointing their one weakness, and suddenly you have them in the palm of your hand.

Exploiting this weakness is so effective, I have to go begging to my friends for new tubers in fall because I have accidentally wiped out my propagation patches.

I have quite a hard time assuaging their disbelief; sunchokes are otherwise known in the gardening world as 'hard-to-chokes,' which is why I do not recommend digging up your newly cleared bed to remove the plants. I have never seen this work. However sure you are that you have removed any and all traces of the tubers, the plants always return. Some varieties were selected from patches sprayed with Roundup—and lived.

Biologically, sunchokes are the impenetrable tanks in an ecosystem war, and have the potential to become the worst weeds for your new planting. I would not in any way suggest their use anywhere near your garden if it wasn't for the single vital gap in their armor.

Sunchokes go all out to ensure they grow as tall and bushy as possible. Having invested every last bit of stored food from their tubers into the above ground stems, it's as though the plant stood on top of the ground, and could just be gathered up as a pile of stems to be placed somewhere else.

I discovered this one year when a particularly healthy, bushy specimen blew over in a windstorm, partially uprooting it. I broke the plant off, cracking up the lush growth to mulch the bed, expecting to see the plant return next spring. I was surprised when the next year there was nothing.

The exact point when they seem most vulnerable is just before bloom, at a certain time when the growth of leaves changes from being as tightly stacked and lush as possible, to

A mixed perennial, annual vegetable, and woody mulch planting that illustrates PASSIVE gardening.

becoming slightly more sparse, the stem getting harder, and the flower buds showing up quickly afterward.

Flowering, and in fact most dieback processes of plants, are accompanied by the production of ethylene gas, which in the sunchokes likely begins the back-flow of sugars in the leaves to the more complex carbohydrates in the tubers. It also plays a role in the oxidation of the stem fibers, making them woody and brittle. Cutting sunchokes down just before signs of this hormone's activity appear seems to be their secret weakness.

In my climate, this means cutting the plants off at about a foot tall in July. It is helpful to leave some stem to make lots of side shoots. In my experience, a second cutting about a month later to remove the side shoots and what's left of the stem, perhaps even some roots, weakens the plant beyond recovery.

Hacking off all this biomass leaves a lovely, thick mulch for planting into next spring. Grass is usually gone by this time. Adding some grass mulch early in the following spring ensures that establishment is smooth the next year, but very little is necessary compared to normal bed building. If used well, in conjunction with the other ground covers, sunchokes are a real workhorse, with the potential to carry your efforts to the blissful state of a well-established, productive, thickly ground-covered food forest.

Defining Edge

Towering spires of emerald sunchoke over blazing gems of daylily flowers, creeping charlie running around beneath it all, violets just patiently waiting in the shade for someone to let some light in; we have the concepts of our 10 model tools of the growing edge. Now to fine tune them.

There are three kinds of gardens in which I use these tools: food forests, perennial vegetable gardens, and annual vegetable gardens.

Food forests are gardens where all the normal layers of a natural forest are put to use, with tall trees dominating most of the light unless spaced far apart. When these forests are out of sight from your daily route, the best choice is to plant large carpets of plants for blocking grass and weeds. The best tools for this job are comfrey, such as the Chinese comfrey, daylilies and their attendant vines, both of the late season covers, oregano, and mint planted about a foot eight inches to a foot apart for quick cover.

It's convenient to have wild places like a food forest to let these tools multiply for divisions like oregano, which grows rather slowly, and digging up sunchoke tubers, (I already explained my dilemma with those), and cuttings of mint for establishing a new perennial vegetable bed. This way you won't have to go begging from your friends every time you build a new bed.

The technique for successful perennial vegetable beds is to establish a planting and keep it full. This way weeds can't find a way in; soil and water resources are carefully conserved by the plants and their roots.

The late season ground covers, and shorter ground covers—creeping charlie, oregano, mache, strawberries (especially the alpines), and violets are best here. Comfrey should be carefully interspersed in these beds so they are within easy reach when it's time to cut down their lush growth for mulch.

Annual gardens need some definition here, because the annual gardens I am referring to are PASSIVE Gardens. Permanent Agriculture System Sustaining Intensive Vegetable Ecology (PASSIVE) gardens are a fusion between food forests and the annual garden vegetables that take a great deal of work and fertility to grow. They include a system that grows mulch every year to provide fertility, and condition the soil for annuals while deterring opportunistic weeds.

The best ground covers in these situations are those that come back from seed quicker than most weeds, and don't compete with annual vegetables. Creeping charlie, if it's allowed to creep around the garden from open spot to open spot, and made to behave itself by plopping a big pile of mulch on it every once in a while before planting, can be an effective tool to prevent intolerable weeds from finding a way in. Used well, they can increase the amount of space you can manage in a PASSIVE garden, improving the 'Chaos Ratio' as the technical term describes it. Δ

Luke Simon is a pioneer of PASSIVE gardening, a Fukuoka-style minimalist approach to food growing. This article is an excerpt from his book, Mastering the Growing Edge. *Read more about his work at mortaltree.blog.*

Permaculture and Culture Change

Grow Engagement with Systems Design

Sociocracy for All Permaculture Circle

OUR PLANET IS IN DESPERATE NEED of regeneration and permaculture is positioned to be a system of influence guiding humanity's paths forward. SoFA's Permaculture Circle believes:

- Sociocracy, as a system of decision-making and governance, amplifies the effectiveness of any framework.
- Sociocracy can help the Permaculture movement become increasingly effective, engaging and impactful
- Permaculture design can help further the goals of sociocratic organizations by providing an ethical and systematic approach to regenerative practice.

However, currently Sociocracy is not widely adopted within the Permaculture Community; and not all Sociocratic groups are familiar with Permaculture. To remedy this, the Permaculture Circle at Sociocracy for All held its first conference on October 22, 2020.

It was inspiring to see how many wonderful groups are already exploring this fruitful edge.

"Growing Engagement with Systems Design" collectively explored the ecotone ("Use Edges and Value the Margin") between Permaculture and Sociocracy, to harness the innovative and transformative forces in the space between them ("Catch and Store Energy".)

Our time together was structured to help participants articulate their own growth edges in this rich and inspiring conversation. We used a Miro Board and volunteer support to ask questions and harvest the knowledge and vision of the group for everyone to see and reference going forward.

Presenters were thought leaders using their own experience to support everyone's learning. Out of the conversation, we developed our body of practice together with every intention of seeding effective solutions based in permaculture and sociocracy around the world.

Laureen Golden from the US opened up the first session and facilitated a World Cafe-style framing of key questions for participants. People were able to "meet" each other and create a sense of connection and network to support each other.

Henny Freitas from Brazil (and a member of the SOFA permaculture circle) and Rakesh "Rootsman" Rak shared a session speaking to the shared language and concepts linking permaculture and sociocracy. Theat common ground allows for synergy and ease of adoption among permaculture people. Henny also shared about her initial work to form a local political party based on permaculture and sociocracy.

John Schinnerer (US) spoke to human systems, being human, and and permaculture overlap with society. His session was concurrent with Andreas Jonsson's (Sweden; SOFA Permaculture Circle) session on the application of sociocracy and permaculture to a chartered highschool in Sweden.

John Buck wrapped us up with a look at the dire need for implementation and change in our world now and the critical need for both permaculture and sociocracy in every bioregion.

This was our first conference, and there is a great deal of feedback and engagement from the whole event to integrate into the vision of our circle and what is possible. We are so appreciative of those who attended the conference and brought their questions about projects and actions of all kinds to the gathering. It was inspiring to see how many wonderful groups are already exploring this fruitful edge.

We also introduced our upcoming SoFA Permaculture Circle course. If you would like to learn more about our circle and what we are doing to promote synergies between permaculture and sociocracy visit: www.permaculture.sociocracy.org or to watch recordings of the presentations visit: www.sociocracyforall.org/permaculture-sociocracy-conference/ Δ

To begin learning sociocracy, you can work with your group through the Empowered Learning Circle material available at Sociocracy for All or check out the events page for introductions and other trainings.

SociocracyforAll.org

Permaculture Plant Profiles: Let us introduce you to…

Schisandra chinensis

Just The Facts

SAY: schiz-AN-dra chi-NEN-sis

AKA: Schizandra Vine, Five-flavored Fruit, Chinese Magnolia Vine, Wu wèi zi

Description: Climbing, twining, perennial, deciduous vine 6'-8' high and wide. To 25' in ideal conditions. Resilient, hardy. Attractive flowers and fruit hide beneath abundant bright green foliage of pointed elongated oval leaves on red petioles.

Hardiness: Zone 3/4—9

Family: Schisandraceae

ORIGIN: Northern China (Manchuria), E. Russia

Why we love this plant…

Important in Traditional Chinese Medicine for +2,000 years, this beautiful vine's fruit has all five TCM tastes (sweet, salty, bitter, pungent, sour) plus vitamin E, iron, magnesium, potassium, and phosphorus. An adaptogen, boosting vitality, reducing stress, chronic coughs and much more. All parts scented and medicinal, fruit best.

Dense leafing on slender woody vines provides three-season privacy on fence or arbor. Leaves lighten in color through summer to a showy translucent gold in fall. Dark, woody vines persist and add winter interest after leaf drop.
No pests or diseases, little deters this hardy plant including deer.

Fragrant magnolia-like 1" snow-white flowers yield striking dark red berries in small grape-like clusters. Fruit used medicinally in teas/tinctures, or for juice, wine, sweets and extracts. Once you taste it, you never forget it!

Related Species

Although there are 23 species in this genus, few are commercially available. *S. chinensis* 'Eastern Prince'

S. grandiflora: 'Apricot Blush' with pale orange flowers and lemony red fruit is typically paired with 'ValentineT Strawberry' vine for pollination. Are very decorative, less hardy (Zone 7) but similar medicinally.

S. sphenanthera has showy rusty-orange flowers. Long, pointed leaves, while *S. rubrifolia* sports bright red, flowers and fruit. Rarely sold in the US.

Schizandras are sold as plants, to ensure self-fertility or gender as seeds of any variety are of indeterminate sex. Synonymous with *Kadsura chinensis* and *Maximowiczia chinensis.*

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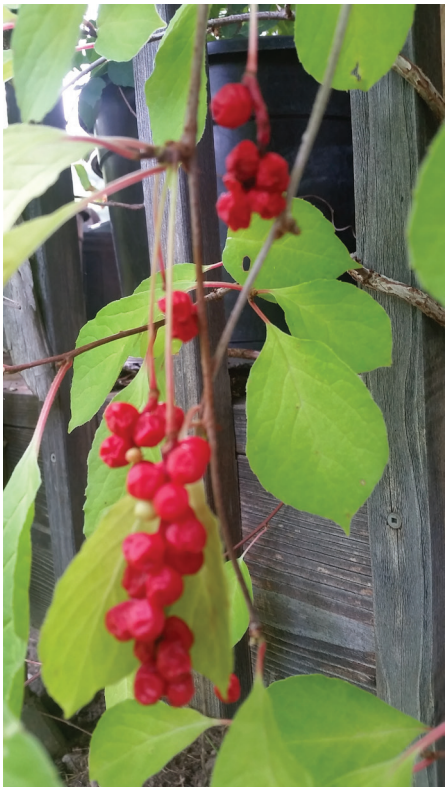


Flowers in April. Fruit begin to appear after 2-3 years and ripen in September. To preserve fruit, dry, freeze or tincture. Allow to sprawl or support with sturdy trellis, fence, arbor or tripod. Pruning unnecessary unless to control growth.

Cultivation and Care

Easily grown in well-drained soils in partial shade with medium water needs. Prefers slightly acidic soil but tolerates a wide range. Can exceed 20' height in favorable conditions. Low maintenance and not susceptible to insects or diseases. Deer resistant. One source warns of snails on seedlings.

Propagates readily from layering, cuttings. Seeds need overwintering but problematic to germinate.

Typically dioecious (need male and female plants to fruit), the popular variety, Eastern Prince, is self-fertile.

This article was produced by Gloria Flora, who regularly contributes to this section. She lives in the Pacific Northwest.

Reviews

We Need a Net
Rhonda Baird

Cultural Emergence
Looby Macnamara

Permanent Publications. 2020
London, UK
Paperback. 336 pp. $29.95

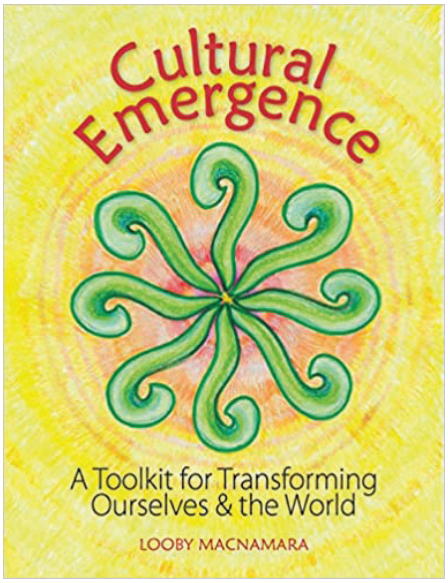
WE NEED A STRONG NET to help us collect ourselves, our values, and our communities and hold us together as we navigate the collapse of economic, political, and natural systems. We need a strong net to hold us, and Looby Macnamara provides us with such a net.

In Cultural Emergence, Macnamara wove her net of many strong threads forged by the experience and wisdom of our indigenous ancestors everywhere and using systems thinking.Threads are woven from the natural world and from permaculture design. The Work that Reconnects weaves into the whole as well. Strand by resilient strand, this book weaves together a net that captures our imagination and puts it to practical use in claiming the healthy cultures our children deserve.

From the very beginning, Macnamara demystifies the abstract idea of "culture." She empowers us to realize that: "Cultures are collections of beliefs, ideas, values, priorities, norms, parameters, phobias, behaviors, preferences, aversions, assumptions, rituals, activities and much more; all of which can and do change over time. As our awareness of culture deepens we realize that culture is made, and can therefore be unmade and remade, and this can be very liberating." What we do makes a difference.

It is often recognized that cultural systems don't change until the way people have been doing something isn't working anymore—or ideally something more efficient, more joyful, more fun, less expensive, etc… comes along. Humans are wonderfully adaptive, which is one of the great things about our species. However, for the past two hundred years or more—we've been locked into systems that could have changed in the previous decades but didn't. Now, many of these systems are breaking down, and people are eager to find those better possibilities.

While we can adapt incrementally, more often it is better to work from a common vision with other people. Macnamara identifies the vision of Cultural Emergence: accelerate global cultural transformation towards a peaceful connected world to bring people and planet into alignment for a positive regenerative future. And within that vision, the specific mission Macnamara and community are engaged in is to: create



a profoundly effective toolkit to challenge and awaken; move and invigorate; nourish and empower individuals, groups, and communities to bring us into a state of fertile Cultural Emergence.

Indeed, this is the entire layout of the book in grounded, thoughtful terms. After carefully introducing the subject and clearly defining the abstract terms involved in the process of Cultural Emergence, the book is divided into three main sections: Challenge and Awaken; Move and Invigorate; Nourish and Empower. Each section builds on the others to create a flow of possibility. These are sections filled with tools, reflection questions, and practices meant to get you into your body and connected to the people and land around you. They remind us of the attitudinal principles articulated by Bill Mollison. Meanwhile, core routines draw on nature connection practices and the work of Jon Young, but also build on the familiar ones with creative new possibilities.

Using the cellular organization of permaculture, this text has us become more aware of and empower our personal cultures, and then uses our spheres of influence to ripple outward. In the challenging section, we are gently called on to look at how our language, our beliefs, and our actions can become the seeds for a more resilient world. Building community by community, we begin to shift toward stronger connections that are more supportive.

In the Challenge and Awaken chapters, Macnamara helps us to recognize the boundaries and shapes of not only our own personal cultures, but also the emerging cultures around us. Her practical advice helps identify the systems of culture we are navigating and the patterns they use. Many of the patterns we are working with are destructive, and so Macnamara skillfully empowers us to disrupt destructive patterns, shift our thinking, take responsibility for our language, and work effectively with systemic privilege. She does not shy away from leveling privilege and using our self-responsibility and personal power to direct emergent culture in a healthier way. These tools are essential for us to practice and master. Brene Brown would call us to have "courageous conversations."

Language especially is reviewed as a powerful medium of cultural exchange. Macnamara points out that "English is awash with violent, war and militarized words and phrases…." These are used to reinforce hierarchy, patriarchy, and abuses of power. With better options in our bundle of skills and tools, Macnamara encourages us to take up Donnella Meadows' advice: "You keep speaking and acting, loudly and with assurance, from the new one (paradigm)."

In the Move and Invigorate section, Macnamara builds on her work from *People and Permaculture.* She tells the story of the design web developed in her former book, and then deepens that work with a new layer of understanding and action. By this point in the text, those who have been playing along are more ready to not only develop their personal passions and visions through design, but to begin working collaboratively.

This is when we go more thoughtfully and with more awareness into building relationships and nurturing ourselves and others. The author delves deeply into self-care, building trust, and peacemaking. How many of us tend peaceful relationships and use our time to prevent conflict rather than nursing a small hurt into something larger?

The final section of the book helps us to bring all that we've been working on throughout the text into the world itself. It's then that we realize this is a pattern language for a peaceful, resilient, abundant life rich in its connections to the larger than self world—including our human communities. This net captures and clarifies the key ideas we need. It helps us to clarify our language, beliefs, and vision to align it with the values we espouse as permaculturists. It soothes out the tangles and creates a space in the middle for the next wonderful thing to emerge.

While the writing is inspiring, this text is also filled with charts, graphs, images, and models that help to put together all the pieces. Drawings have an organic, relatable feel and are used to make abstract ideas more concrete. Sidebars with examples help us identify how these concepts show up in our own lives. Reflection questions support our personal growth and action throughout the book.

For anyone that loved *People and Permaculture,* this belongs right beside it. If you haven't had the pleasure of reading Looby Macnamara, now is the time to dive in. This isn't a text to put on the shelf to get dusty. Leave it on your table. Journal with it. Re-read it, practice it. Join in with Macnamara's community-building conversation, and above all, bring it to life in your community. Δ

Soil Supreme

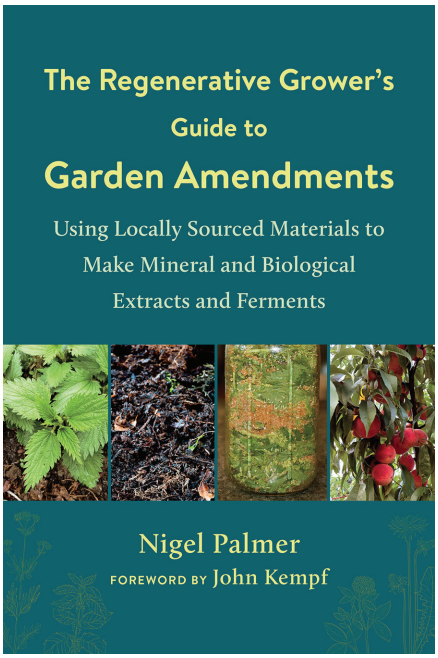
Rhonda Baird

The Regenerative Grower's Guide to Garden Amendments:

Using Locally Sourced Materials to Make Mineral and Biological Extracts and Ferments

Nigel Palmer

Chelsea Green Publishing. 2020
White River Junction, VT
Forward by John Kempf
Paperback with color illustration. 207 pp. $24.95.



WE ALL KNOW that water is life, but without the living matrix of the soil, our terrestrial systems falter and diminish the health of every other living thing. Much of our horticultural and agricultural work in the past half-century has relied on mined minerals and chemical processes to make nutrients available to plants for plant health. Even organic and permaculture techniques incorporated extractive means to import key fertility elements to our soils. Nigel Palmer brings us an exciting and hopeful book on remedying this dilemma.

With a new garden model, he explains how we can balance soil fertility through familiar, but slightly different techniques. Chapter 1 explains this new model and the soil chemistry and biology behind it. Chapter 2 identifies these larger methods and strategies for working with new plots, for working with perennial crops, and working throughout the growth cycle. Chapter 3 looks at the basic tools: water, foliar sprays and drenches, compost, cover crops, mulches, weeds, and crushing. Chapter 4 helps us with data and measurements. This is where we start to see the nutrient quality connection between biologically active soils and the food on our plates. This directly relates to our own health. We can only effectively change what we track, and tracking this data has me more excited about garden math in my garden journal than I've ever been.

In Part Two, Chapter 5 identifies the raw materials—which are local whenever possible. Chapter 6 is full of amendment recipes. Six Appendices give us supporting data in the form of tables and flow charts. They're definitely worth poring over. Throughout the book, graphics, images, and examples show us what things should look like and help us imagine what is happening at a microscopic level.

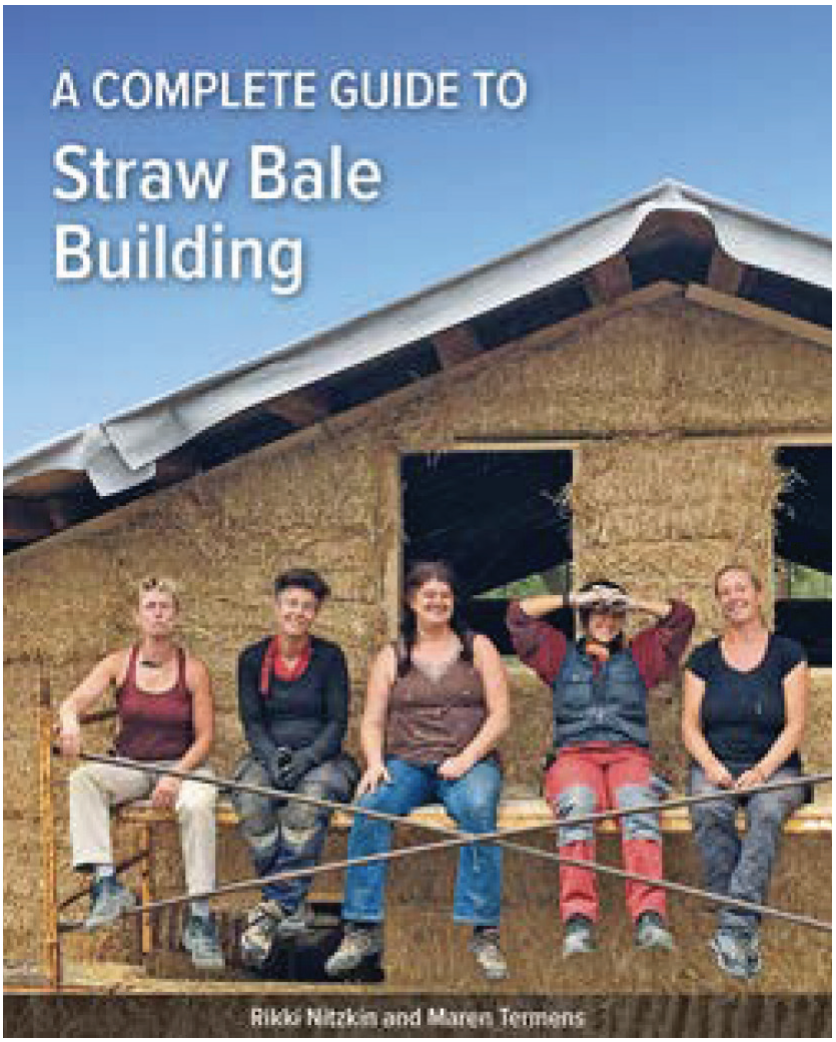
This handy reference is worth studying and putting into practice. It puts the keys to soil fertility and plant health into your hands—as I hope this book will be. I'm grateful to Nigel Palmer for making this information accessible and to Chelsea Green for continuing to publish practical books on the tools, strategies, and stories we need to build a stronger future. Δ

Your Ultimate Guide to Straw Bale Building

Review by John Wages

A Complete Guide to Straw Bale Building

Rikki Nitzkin & Maren Termens
Permanent Publications. 2021
Paperback with color illustrations. 320 pp. $39.95



The title says it all, and the authors, founders of the Spanish Straw Bale Network, do not disappoint. This is a very comprehensive guidebook to using straw bales. Don't build without it.

Straw-bale building techniques are accessible, opening up owner-builder possibilities to bring home ownership to the masses. The authors have both feet on the ground, however, and are realistic about costs. It's not possible to build a home the vast majority of people will be satisfied with, for no expenditures. Discussion of actual costs the owner-builder should expect are included. Space is also devoted to renovation because renovation is almost always more ecological than building new. Chapter 15 is devoted entirely to the subject of wrapping—enveloping an existing building in a straw-bale wrap.

Part 1 provides a global introduction to straw-bale building, including its history. How do we know it can work?

Part II, "Before Building," is organized into five chapters. First, we learn about the physicochemical properties of straw and why it's such a great building material. Also, why it's important to keep it dry. Quality issues, increasing difficulty in sourcing bales at reasonable cost, are covered. A moisture meter is advisable. The rest of Part II covers general building concepts—quite useful to the novice owner-builder. The discussion covers elements of particular importance to straw-bale buildings, such as roof overhang and a solid knee-wall foundation to ensure the walls stay dry. Organizing the building materials and the site is covered last. Because of the volumes of material used in straw-bale construction and the typical work-party approach, organization is key to finishing the job.

Part III covers various straw-bale technologies, beginning with the Nebraska-style, loadbearing approach. Nebraska-style construction uses the bales themselves not merely as insulating infill, but as loadbearing, structural elements. There are no timbers or stud-framed walls. While one familiar with conventional construction and the children's story of the Three Little Pigs might assume this is not the best or the safest approach, Nebraska-style buildings are now built worldwide, and multi-story structures and even domes are possible. The key is bale quality and placement, which the *Guide* details in useful depth. Early books on straw-bale construction advised the use of lightweight roofs with loadbearing bale walls, but as the authors point out, this may have been due to the poor availability of densely packed bales in the early days. But again, quality is key. Pre-compression of the walls may increase strength, but is not necessary. Simple tools like hydraulic car jacks can be used to compress bale walls during construction. Plaster increases the compressive strength of the walls, and the authors emphasize the importance of getting good penetration of the plaster coat into the walls in these type of buildings.

Infill-type construction covers most of the straw-bale methods we're most familiar with in the USA. Post-and-beam construction and the modifications and adaptations necessary for use with straw walls are covered first, with a thorough treatment of post placement options with advantages and disadvantages of each. Multiple approaches to posts, from more-or-less standard stud framing to truss-posts made from low-diameter recycled wood such as shipping pallets, are presented in an ecological context. After all, one of our primary goals in straw-bale building is to reduce use of wood. Other options such as concrete, stone, and metal are treated briefly as viable, while noting

loss of insulation through their greater heat conductivity (than wood) and the importance of avoiding water infiltration. Loss of insulation with stone may not be much of an issue in mild climates, and the *Guide* presents examples from the authors' native Spain.

Chapter 12 covers hybrids, where loadbearing and infill walls exist in the same structure. One case where the builder might opt for a hybrid approach is a two-story structure. Using framed walls with bale infill for the lower structure removes the requirement for compression prior to starting work on the second floor, which can then be loadbearing. Cases where a wall experiences earth pressure may advise an entirely different building approach such as rammed earth on the side with earth contact. Building such hybrid structures, especially including those that combine infill and loadbearing walls, requires consideration of compression, as the loadbearing walls will compress to a different extent than the infill walls.

Over the years since straw-bale building first began to be popular, many innovative techniques have been developed, and the *Guide* does an admirable job of surveying what must surely be the vast majority of them. Multiple means of creating curved walls are described. The use of jumbo bales and pre-fab wall sections and roofs are presented. By this point, you get the impression that the book really has it all. Maybe it does. Did I mention loadbearing domes with living roofs? These are beautiful, organic structures that make you want to get some bales and dive in all over again.

Chapter 14 is devoted to a short overview of the pros and cons, along with the hows and whys, with examples, of pre-fab panels. While most of us think of industrially manufactured panels, it is also possible for the owner-builder to build sections of a wall and store these until the dry season or until time permits construction. Generally, these will still weigh enough to require some heavy machinery, such as a crane, to move into place. Knowing how much work goes into building a straw-bale house makes me appreciate the potential for breaking out part of the work in this way to better organize the time spent on the actual construction site.

Part IV dives into the building process itself. Beginning with a chapter on Foundations & Stem Walls, the most common, as well as more experimental approaches to building are discussed. These chapters are the heart of the book: the tutorial for the actual building project that is being undertaken. After the foundation, we raise the walls, install doors, windows, and any electrical. Emphasizing the widespread use of loadbearing technologies, the wall-plate merits its own chapter. The wall-plate ties the bale walls to the roof, hence its importance. Compression, while dealt with summarily in previous sections, is considered in more depth in Chapter 20. An amazing array of possible roof options are presented, and this reader is realistic enough to know that some of them require skill beyond the ability of the novice. If your heart is captured by one of these unique roof designs, seek expert help!

Part V covers Finishes: natural plasters and cement plasters. Chapter 26 on lime plaster is my favorite. Natural pigments and floors finish out this comprehensive treatment of straw-bale building. Indeed, much of the material in this book is easily applicable to other natural building approaches.

The text is thankfully interspersed with photos, diagrams, cutaways of walls, and the like, to illustrate important points. Even more useful in this reader's opinion is the information concisely laid out in bullet points. Not only does this presentation make it easier to find something in the text if you need to refer to it later (we all know the limits of indices), it makes it easy to gather and digest the main points.

My only critique of the *Guide* is that its caution about plumbing seems too mild. Yes, encasing in-wall plumbing in double tubing is no doubt a good idea, but what if (not "if" but "when") you have to remove it? The authors do give brief advice to situate plumbing in conduit on the outside of the wall, which is extremely important in my view. Having experienced frozen and burst pipes (although this would not likely ever happen in my climate, inside a straw-bale wall), I would not take the risk on a wall into which I had put so much effort. I would have emphasized these cautions more prominently and given more examples.

Reading the *Guide* rendered me nostalgic for my one and only foray into straw-bale building, some 20 years ago. I can attest that even with poor sealing, the walls have lasted intact except for a corner of the building that developed a roof leak, while we were away for five years. Don't let that happen is my only advice. *Nota bene.* Other than that, organize a work party! Don't try to build anything bigger than a 10x10' by yourself. And having a solid, up-to-date construction guidebook like this one in hand is a must. Δ

EVENTS

14 IPC
(International Permaculture Convergence)
Argentina
postponed to
November-December 2021

All updates regarding these events will continue to be shared on the official webpage *14ipc-argentina2020.org* and on social media.

Permaculture Design Course
Online

Dates: Ongoing
Description: Our course is the classic, official 72-hour Permaculture Design Certificate Course (PDC) as taught by the founders of permaculture.

This course involves study modules supported by practical exercises, fieldwork, and videos.

Instructors: Dr. Alan Enzo, Jessica Enzo, Steven Cran, Steve Hart
Cost: $550
Contact: PermacultureEducation.com
info@PermacultureEducation.com

Permaculture Design Course
Online

Description: Oregon State University's online Permaculture Design course is a great way to build essential sustainable landscape design skills in a convenient online format. After ten weeks, you will complete a finished design with:

* One-on-one guidance from experts who will walk you through each assignment.
* Timely feedback on your individual project from your designated instructor.
* Low student / teacher ratio to ensure individualized attention for you.

Also, since the program is entirely online, you can access our expert-led courses from the comfort of your own home.

Instructors: Andrew Millison and others
Contact: pace.oregonstate.edu/permaculture

Permaculture Design Course
Online - Temperate Midwest

Dates: March 1-June 25, 2021
Location: Online
Description: Take the permaculture design course in a way that works for you! Through more than 15 years of teaching the permaculture design course and facilitating online learning. The course will cover the standard material of the PDC (acknowledged by PINA), as well as include additional material on sociocracy, project development, connection to the landscape, garden development, and community-building practices and projects. Students found in the past that the focus on personal implementation over the length of the course and the emphasis on practice supported their understanding and development as practitioners.

One-to-one mentored experiences are also a part of this course and support your learning, as well as one-on-one support throughout the course. Set up a call to see if this is a good fit for you.

Instructors: Rhonda Baird, William Faith, Milton Dixon, former student "reunion" and community
Cost: Sliding scale: $750-$1,150. Payment plans available.
Contact: rhonda@shelteringhills.net; shelteringhills.net

Permaculture Design Course
Costa Rica

Dates: November 22-December 5
Location: Rancho Mastatal, Costa Rica
Description: Join our diverse team of permaculture instructors led by Scott Gallant for this annual life-changing two-week experience. The course covers the core Permaculture Design curriculum and emphasizes creating diverse multi-functional human landscapes based on ecological patterns. Utilizing Rancho Mastatal as a living classroom, the class will mix lectures and hands-on work, exploring design solutions for both temperate and tropical regions. Putting Permaculture into practice, the course concludes with students working in teams to create their own permaculture site design.

This course is applicable to anyone with an interest in designing resilient and regenerative futures as well as professionals in the fields of architecture, planning, ecology, education, farming, and community development. The whole-systems design thinking outlined in the course will give participants the tools to re-design and improve their surroundings: from gardens, farms, and homes, to livelihoods, relationships, and communities.

Instructors: Scott Gallant, Hugo Soto,
Cost: Costa Rican National, US$950
Legal Costa Rican Resident, US$1,350
Other, US$1,500
Contact: +506 2200-0920
info@ranchomastatal.com
ranchomastatal.com

Send Event and Calendar Listings for Issue #119
(February 2021)
Spring in the Air
by the December 1 deadline
events@permaculturedesignmagazine.com

Permaculture Design Course
California

Dates: June 12-24, 2021
Location: Santa Cruz, CA
Description: Permaculture is an ethically based whole-systems design approach that uses concepts, principles, and methods derived from ecosystems, nature connected communities, and other time-tested systems to create human settlements and institutions. It's also been called "saving the planet while throwing a better party." Learn more about permaculture.

Our course brings in leading designers and teachers from around the region, each experts in different areas of permaculture. The Santa Cruz Permaculture network of instructors, alumni, community partners, and resources continues to grow each season, and by participating in our course, you become part of this network! Read interviews with our alumni here to learn how folks use the skills and knowledge they gain in this course.

The 2-week intensive is followed by our 8-day Advanced Permaculture Design Course (June 26 – July 3) and 5-day Permaculture Institute for Educators (July 5-9). Please consider joining us for all three courses.

Instructors: John Valenzuela, David Shaw, Lydia Neilsen, Janine Björnson and Miles Taylor, Lee Klinger, Della Duncan, Kanyon Sayers-Roods, Doniga Markegard, and Greg Richardson
Cost: $1,850, see the website for discounts and pricing
Contact:
info.santacruzpermaculture@gmail.com
santacruzpermaculture.com

Permaculture Design Course
California

Dates: December 5-18
Location: Occidental, CA
Description: Two-week residential intensive using the beautiful grounds and facilities at OAEC as our classroom. 100 hours of course time including lecture, discussion, hands-on activities, and visits to local permaculture examples. Students will learn the ethics, principles, and practices of "permanent culture" by exploring topics such as organic gardening, water retention and generation, erosion control, community process, energy systems, composting, natural building techniques, and much more.

Groups create a real design project for a local community organization. Course and retreat participants at OAEC can also expect to experience powerful personal transformation and inspiring networking opportunities. Upon completion of the course, you will receive a Certificate of Permaculture Design, accredited by the Permaculture Institute of North America.

Instructors: Brock Dolman, Kendall Dunnigan, and guests
Cost: $1,750; $1,850 **Contact:** oaec.org

Permaculture Design Course
Arizona

Dates: Spring 2021
Location: Tucson, AZ
Description: This Permaculture certification course covers all aspects of sustainable design with a Southwest dry lands flavor, including a balance of hands-on experience, classroom time, and design practicum.

Dynamic exercises encourage pattern recognition, noticing the links between plants and animals, climate, and landforms that make up natural ecosystems. The course focuses on dry land communities with a strong urban and semi-rural emphasis, addressing individual site and neighborhood "problems," such as storm water flooding.

Course topics include agroforestry, appropriate technology, building design, design principles and patterning, site analysis, drylands gardening principles, ecosystem restoration, philosophy and ethics of permaculture, regenerative community economics, soils and erosion control, village and community design, water harvesting, invisible structures, and many other topics.

The classroom site is in the Central Tucson area and at other permaculture sites in the Tucson area. Much of the class is held outdoors. This course is taught and facilitated by our lead instructors, each with two and a half decades of permaculture experience, as well as our many extraordinary associate SPG teachers.

Instructors: Dan Dorsey, Brad Lancaster, and Barbara Rose
Cost: $785
Contact: Dan Dorsey
dorsey@dakotacom.net
sonoranpermaculture.org

Permaculture Design Course
Texas

Dates: June 5-18, 2021
Location: Georgetown, TX
Description: During this Permaculture Design Course, participants will be introduced to the ethics, principles, and methods of Permaculture while learning how to design, create, and maintain agriculturally productive ecosystems and sustainable human settlements.

The two week intensive class structure is designed with teachers in mind but is open to anyone, and is ideal for anyone who wants to complete their certification in a shorter time frame. This intensive permaculture design course will cover, but is not limited to:

Introduction to permaculture – ethics, principles, methods and function of design. Patterns in nature & design. Climate and how to mimic natural ecosystems. PA Yeoman's Scale of Permanence. Water management strategies. Earthworks & Mapping. Eliminating Waste & Increasing Yields. Soil sciences & soil conservation strategies – roads, dams, conservation terraces, key line plowing. Culinary, medicinal, pollinator, and annual gardens.

Edible beneficial perennial gardens. Intensive cell grazing systems. Plant propagation & wood lot management. Participants will create a design of their own to take home.

Instructors: Kirby Fry and Pete Van Dyck
Cost: $795
Contact: EarthRepairCorps.org

Permaculture Design Course
Vermont

Dates: July 30-August 8, 2021
Location: Vermont
Description: This course offers a uniquely hands-on opportunity to gain skills in applied permaculture skills immersed in one of North America's most diverse and intensive permaculture research sites now 17 years in, along with our 2nd site where we are establishing our approaches learned over a decade at the first site, to the commercial permaculture farm scale.

Participants engage with high-performance home and community resource systems that are more resilient in the face of problems posed by peak oil, climate change, environmental toxicity, and the inability of existing economic and social systems to deal with such challenges.

The course is staffed by those who live and make a living as designers, farmers, extension agents, and health care providers. This is not permaculture as a fantastic idea—it's an immersion in how numerous systems actually work over a decade and beyond. It's proof of concept.

Participants engage with systems such as:

A high performance cold climate home and established zone 1 gardens, 17 years in place. Mature fruit, nut, pond, zone 1 homestead systems. A high performance earth-sheltered greenhouse in year 8. A root cellar and established food preservation strategies. Established medicine gardens and medicine-making techniques in use. A working homestead shop, barn, and much else well into its 2nd decade. 7,000 feet of agroforestry hedges and farm-scale permaculture plantings in year 7.

This course includes the standard certificate curriculum but goes beyond the typical Designer's Certification Course by utilizing the background of skills-based trainings offered in Whole Systems Skills, and is filled with practice-based, learning-by-doing experiences, not only concept and information-based study.

Instructors: Ben Falk and team
Cost: $2,150
Contact: WholeSystemsDesign.com

Permaculture Design Course
Florida

Dates: January 2-June 6, 2021
Location: St. Petersburg, FL
Description: This is Grow Permaculture's 28th internationally recognized Permaculture Design Course, based on Bill Mollison's work. This course will be held at our farm in Brooksville and in Lakewood United Church in St. Petersburg, FL, giving people an opportunity to see permaculture in action on the farm, and also studying in an urban environment.

The course is designed to offer multiple opportunities including career mentoring and pathways, community building opportunities, resource networking, and skill building. It is extended over six months to give students maximum time to absorb the information and put it into practice. This also allows people with busy schedules to take the course. It is possible to make up classes if one cannot make every weekend, and we work with students to get you through the materials. The course will meet the first weekend of every month.

There are volumes of material on permaculture on the internet. Our course offers focused and relevant written material, hands-on practice, and interactive learning that will aid students to master and apply key concepts. Materials are designed to guide students in continuing their education after the course, and we also offer apprenticeship opportunities. Instructors are veteran, professional designers and educators who have a wide range of on-the-ground design experience; this experience can help you shorten your learning curve, time, and expense significantly.

We incorporate multiple learning styles including hands-on, visual aids, immersion, lecture, interaction, and more. Our choice of materials, videos, expert speakers, field trips, focused hands-on activities (that give you step-by-step useful skill sets), Florida-specific information, written materials, networking and career opportunities, and design tools are the result of this feedback. We live in this community and care about its future, and we continue to work with graduates in the community to create something better, together.

Instructors: Koreen Brennan, Steve Szmidt, Diane Willis, Laura Oldanie
Cost: $1,295
Contact: growpermaculture.com

Permaculture Design Course
Pennsylvania

Dates: February 17-May, 2021
Location: Philadelphia, PA
Description: Come join us for our annual Winter/Spring permaculture design course! The permaculture design course, or PDC, is an intensive 72-hour internationally recognized permaculture certification. It's designed to give participants the inspiration and knowledge they need to make a positive change in the world, needed now more than ever. It will give you the skills necessary to design your home/yard/landscape into an ecologically-resilient edible system, and for some, it could be the first stepping stone to a permaculture career in design, education, consulting, or regenerative farming.
This course will be offered as a weekend course designed for local residents who don't have time to take an intensive (and expensive) two-week PDC. This course will be mostly classroom-based but will also include hands-on components. It will go through the basics of permaculture design relating to different climates, energy, natural building, the global climate, social systems, and more.

Hundred Fruit Farm is a ten-acre permaculture farm that has been in operation for a little over two years now. We farm using only regenerative practices and aim to create a diverse agroecological system that includes multiple animal and plant species. We grow many different types of fruits and berries, vegetables, mushrooms, pastured meats, pastured eggs, and will someday have nuts as well.

Cost: $650-750
Contact: HundredFruitFarm.com

Permaculture Design Course

New York

Dates: January 16, 2021 and 14 Saturdays
Location: Warwick, NY
Description: Midsummer Farm has been an active teaching farm for many years, offering workshops as well as large scale intensive courses on topics such as Organic Gardening, Herbalism, Biodynamics, Homesteading, Holistic Health, and Sustainable & Artisanal Living. So many of these things culminate in our Permaculture Design Course.

We believe in teaching permaculture on a useful, practical, effective scale. There is a strong focus on homesteading and small farm development. You may want to combine your permaculture learning experience with homesteading ... we offer a Homesteading Course as well, which truly compliments the permaculture course, and we offer a discount if you sign up for both!

Our PDC course is, like our farm, special and different from many other permaculture courses. The Midsummer Permaculture Course will focus on using the permaculture concepts in context and in the real world. It is a practical and hands-on course. Along with exploring the major aspects and principles of permaculture, we will be focusing on applying these concepts to the development of small-scale farming and other holistic-styled businesses.

We find that permaculture is a perfect and simple way to create an energized atmosphere of nature and life bubbling all around you. And that's our main goal—creating a space that acts as nature does—healing and magical and full of life.

We also like to think about permaculture as a type or style of homesteading—homesteading in a beautiful way using nature as a guide in achieving sustainability, restoration, and abundance.

Instructors: Barbara Taylor-Laino, Mark Laino and guests.
Cost: $985
Contact: MidsummerFarm.com

Permaculture Design Course

North Carolina

Dates: August 14-27, 2021
Location: Asheville, NC
Description: This hands-on permaculture design course (PDC) engages the mind, body, and heart. Students get to see permaculture in action in a wide variety of settings, from urban gardens to forest farms. Throughout the program, we get our hands dirty and engage all of our senses; it's about learning by doing. Every one of the instructors incorporates permaculture into their landscapes, businesses, and day-to-day lives. You'll learn from their successes and failures, as they share candidly about diverse experiences applying permaculture principles to real-life situations.

This class will empower you to become an effective ecological designer. You'll learn tools and skills to integrate permaculture ethics, principles, and whole-systems thinking into any landscape and situation. We follow the Permaculture Institute of North America's (PINA) 72-hour curriculum, which is based on permaculture founder Bill Mollison's model. To this, we've added more time covering aspects that we find especially compelling (and useful), including design considerations for the Southeastern US bioregion and interactive, hands-on learning.

Instructors: Laura Ruby and Natalie Bogwalker
Contact: WildAbundance.net

Calendar

November

November 22-December 25. Mastatal, COSTA RICA. Permaculture Design Course. ranchomastatal.com.

December

December 5-18. Occidental, CA. Permaculture Design Course. oaec.org

2021

January

January 2-June 6. St. Petersburg, FL. Permaculture Design Course. growpermaculture.com.

January 16 start. Warwyck, NY. Permaculture Design Course. MidsummerFarm.com.

February

February 17-May 7. Philadelphia, PA. Permaculture Design Course. HundredFruitFarm.com.

Spring, Tuscon, AZ. Permaculture Design Course. sonoranpermaculture.org

March

March 1-June 25. Online. Permaculture Design Course. rhonda@shelteringhills.net. ShelteringHills.net.

Spring. Tucson, AZ. Permaculture Design Course. dorsey@dakotacom.net, sonoranpermaculture.org.

June

June 5-18. Georgetown, TX. Permaculture Design Course. EarthRepairCorps.org.

June 12-24. Santa Cruz, CA. Permaculture Design Course. info.santacruzpermaculture@gmail.com. santacruzpermaculture.com.

July

July 30-August 8. Vermont. Permaculture Design Course. WholeSystemDesign.com.

August

August 14-27. Asheville, NC. Permaculture Design Course. wildabundance.net.

Ongoing

Online. Permaculture Design Course. info@PermacultureEducation.com, PermacultureEducation.com.

Online. Permaculture Design Course. pace.oregonstate.edu/permaculture

Online. Food Forest Course. workspace.oregonstate.edu/course/Permaculture-Food-Forests

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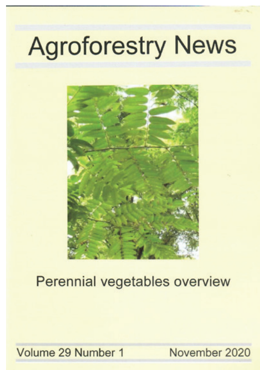
Networking

PERMACULTURE AND SOCIOCRACY go together like peas in a pod. Learn more about sociocracy through efforts like Sociocracy for All; Permaculture Collab; and Sociocracy 3.0. On October 22, the permaculture circle at Sociocracy for All presented a conference: Grow Engagement with Systems. Look for recordings from the event on YouTube.



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