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Permaculture is a holistic system of DESIGN, based on direct observation of nature, learning from traditional knowledge, and the findings of modern science. Embodying a philosophy of positive action and grassroots education, Permaculture aims to restructure society by returning control of resources for living: food, water, shelter, and the means of livelihood, to ordinary people in their communities, as the only antidote to centralized power. For 30 years Pc has combined top-down thinking with bottom-up action to make a world of difference in over 100 countries. We are everywhere.

Editor's Edge

Eating Local Goes Main Street

Scott Horton

ONE OF THE MUSINGS I hear often when permaculturists gather is “what can we do to take permaculture mainstream?”

Assuming we want to take permaculture “mainstream,” I can’t think of a better action portal through which to roll it out than taking our ethics “main street” by buying and eating locally. While closing a circle of growing, buying, eating, and composting food locally is not the entire gestalt of permaculture, this cycle and model can graphically demonstrate in miniature how our design science works. Vital needs are matched with elegant and efficient solutions and diverse relationships emerge organically as we design strategies to feed people, nurture nature, and take care of others.

In most communities today food is purchased entirely at a grocery store or market, with only about 7% of local food dollars staying in the community.

Less is more

To begin with, local organic food implies a conscious choice to apply biological solutions to the problems of nutrition and those of food access, availability, and economy. With local food, less is sure to be more: Fewer inputs of fossil fuel, less loss to spoilage in storage and transport, less loss of nutritional value due to early harvesting for storage and shipment, etc. Waste is minimized when farmers plant crop varieties and amounts that will actually be consumed. This requires observation—a key element of design—to streamline farm operations and to size them appropriately. The ethical distribution of after-market surplus becomes straightforward, too: Create and nurture relationships between farmers, community members, and entities like food banks and other non-profit organizations that make it their business to address needs on a local level. Do that, and the surplus food will be distributed to the hungry.

Participating in the local food system boosts community prosperity and the quality of life rather than sending grocery dollars far away to line corporate pockets. According to

Sustainable Table (www.sustainabletable.org): “Annually, Americans consume more than \$600 billion in food. In most communities today food is purchased entirely at a grocery store or market, with only about 7¢ of each food dollar staying in the local community. The other 93¢ leaves town to pay processors, packagers, distributors, wholesalers, truckers, and the rest of the infrastructure that a global food system demands. This stands in stark comparison with 1910, when 40% of food dollars spent remained in the local economy. When more food dollars stay in the community, through buying local, they are transformed into thriving Main Streets and local jobs.” Talk about economic stimulus: The best “bailout” each of us could undertake would be to eat food grown within 100 miles of home.

It is believed that a diet of local food improves health. As of this writing, the University of North Carolina at Chapel Hill is at the mid-point in a two-year study on the health effects of a diet based on fresh foods grown within a 100-mile radius of consumers. Nutritionist Dr. Alice Ammerman, who heads the UNC study, says, “Significant research is ongoing in many areas related to local food systems, but rarely has it been coordinated to focus on potential collective solutions.” The study is examining the health, environmental, and economic impacts of growing and consuming food locally. It posits that such a diet by its very nature automatically increases the daily consumption of fresh fruits and vegetables, among other things.

Spinning webs of relationships through food

And let’s not forget the permaculture ethic of caring for people. Participating in a local food system fosters direct relationships between producers and consumers. Saying hello to the farmer who grew your heirloom tomatoes while she’s weighing them at the market is the first step to joining a web of people in your community who care about the earth and each other.

This issue presents a panoply of articles, insights, and experiences with local food, from detailed accounts of the pride and pitfalls of how it’s done, to lofty ideas about inoculating food production and distribution in large-scale networks with permaculture memes and practices. So grab an apple grown nearby and settle in for a good read before dashing out to the farmers’ market.

Scott Horton is Editor of the Permaculture Activist and lives in the San Francisco Bay Area.

Please send your stories, your ideas, your letters, and images to the *Permaculture Activist* and contribute to the rich interconnectedness of your community. You can send article submissions to editor@permacultureactivist.net.

Expanding the Niche of Local Food

Peter Bane

LIKE MANY AMERICANS, I live in a community where most of the food comes from somewhere else. Unless your address is the Salinas Valley of California, the lower Rio Grande Valley of Texas, or far south Florida, it's likely that your community raises only 1-2% of its own food within the county where it's consumed. Industrial agriculture is fabulously successful measured from the display case of the supermarket: thousands of types of food, fresh, frozen, preserved, and processed, are marshaled from points across the country and around the globe, distributed to thousands of stores in bright and colorful packaging in near uniform arrays of choice at all seasons of the year, for the consumer to select from at all hours of the day or night.

But scratch the surface, follow the trail of evidence, and delve into the cellular and chemical make-up of what's on the shelf and the story turns decidedly dark.

The food quality issue is several stories in itself, and has been well-documented elsewhere. Even before melamine-contaminated food arrived from China and manure-contaminated spinach from California, we had a long history of tainted food. The meatpacking industry has always been lurching around the curve on two wheels when it comes to sanitation and working conditions. From the muckraking days of Upton Sinclair to the present, scandal has seldom been more than one inspection away. From PCBs in Michigan milk to pesticides on Washington apples, to rocket fuel in California lettuce or aflatoxins in Georgia peanut butter, a growing number of the public have been awakened to the dark side of industrial food. This unease and other factors are fueling a surge in demand for organic, and increasingly for local food.

I think this is a good thing, especially if people press for more local food. Organic farming as we came to understand it in the 80s and 90s is all well and good, and has increased healthy food choices for millions. But we are seeing more and more agribusiness involvement in the organic sector, with the predictable consequence that cost-cutting methods and profits-before-people will crowd out quality and integrity, regulation will be corrupted, and we'll find ourselves soon enough back in that muddy

sewer where monopoly markets shove tainted product down the throats of flummoxed and dazzled consumers. Put simply, the organic standards, now owned by USDA, are not enough to ensure quality.

Put simply, the organic standards, now owned by USDA, are not enough to ensure quality.

Organic food, however good or bad it may be, is also not enough from another perspective, and that is the story that moves me to write today.

Industrial food from far away—and it's all from far away—processed, packaged, and delivered, uses 7.3 calories of energy, almost all of it from fossil fuels, to put on the plate one calorie of food energy.⁽¹⁾ It's a bankrupt system that has to fail and fairly soon. The year 2008 was a wake-up call as oil topped \$145 a



The Pepper Lady at the Bloomington, Indiana Farmer's Market grows and sells some 400 varieties. She has expanded her offerings at this market over the years as demand for local food has grown.

barrel, subsidized ethanol demand pulled grain out the American crop for transport fuel, and food riots broke out in over 30 countries as shortages and price spikes combined to drive hundreds of millions more of the world's poor into hunger.

Fifty million Americans are food insecure—presumably the same 50 million, more or less, who are unemployed or underemployed. The rest of us are in denial about how secure things are.

Home town policy

Bloomington, Indiana, where I live, is a mid-sized university city southwest of Indianapolis set in a landscape of rolling wooded hills and slow meandering streams. West and north of us there are more expansive farmlands, mostly planted to industrial, genetically-modified corn and soybeans—feedstocks for industrial food, fuel, and materials. Real food is celebrated in this town—there's a 30-year old bustling food coop, microbreweries and wineries, a surviving local apple orchard, some CSA farms, well-organized food pantries for the needy, and a vibrant seven-month farmer's market down at City Hall Plaza and indoors during February and March. A local grower's guild has sprung up in the last couple of years. But despite all this and more that I could carry on about, most of the food eaten in this town comes from somewhere else—as much as 98% of the 140 million pounds consumed each year. In that way, Bloomington isn't very differ-

Industrial agriculture is fabulously successful measured from the display case of the supermarket...

ent from Anytown, USA or Canada.

Where it differs is in the leadership recently demonstrated by local government officials in exploring the implications of a contraction in energy supplies on the local economy and community. On December 2, 2009, the Bloomington Common Council accepted the report of the Peak Oil Task Force it had commissioned in late 2007, and which had been prepared over some 20 months of meetings, research, and expert testimony. The document is available at the city's website for those interested in its complete findings on energy supplies, economy, land use, transportation, housing, sustenance, and municipal operations.(2)

One of the questions the report undertook to answer was what would it take to address the vulnerability of our community to disruptions in the supply of industrial food. If you follow the numbers on oil production and field depletion rates, energy return on energy invested (EROEI) of current and new fossil fuel production and of alternative fuels, and the energy cost of food, the conclusions are sobering and inescapable: dire crises are not far off, and as we have seen, hungry people are quite capable of raising a ruckus. Indeed, nothing tends to scare, shake, and topple governments more than bread riots.

Production of real food is something of an art, and although

billions of people practice it all over the world, few North Americans grow more than a tiny portion of their own. The number of farmers feeding the population is little more than 2-3%, even including transient and undocumented farm workers. This is not a cause for celebration as some economists would have you believe (marginal efficiency of labor, harrumph, harrumph...), but rather reflects a condition of extreme vulnerability.

Restoring the foodshed

What would it look like for this city of 70,000, in a county of 110,000, in a seven-county region of 400,000 in south central Indiana, to grow its own food?

Fifty million Americans are food insecure—presumably the same 50 million, more or less, who are unemployed or underemployed.

The short answer is: It would take time, maybe a generation, so we need to start making changes immediately. The slightly longer answer is: We need to mobilize land resources, train new farmers, create markets, stimulate public interest, engage institutional partners, harvest the organic waste stream, increase the water supply for irrigation, build or convert structures for year-round growing, composting, food preparation, and distribution in every one of the city's 55 natural neighborhoods, and we need a plan that does this with broad public support and which allows the whole community to climb the many steep learning curves it faces, incorporating the lessons of early mistakes to improve subsequent efforts.

Let's tease that out a little bit.

The amount of land it presently takes to supply Bloomington with its annual food consumption of some 72,000 tons (using the 2007 national average of 2,053 lbs per person) is 193,000 acres.(3) That much farmland isn't presently available in the city—which only covers about 20,000 acres altogether, nor in the county of 262,000 acres, less than a quarter of which is prime farmland. Nor, if we include food for the residents of the broader region, is enough prime farmland available in the seven counties that include and touch Monroe County, where Bloomington is located. But at that scale, we begin to get close. The implications of this are two-fold: either the area is overpopulated, or the present diet or food production system or both are wasteful of land and hence, local farming could become more land-efficient while still meeting real human needs.

The Task Force chose to assume the latter, and to shape its recommendations toward more intensive, land-efficient forms of food production, and to assume a diet based on lower levels of meat, milk, fat, and sugar consumption than the present Standard American Diet (SAD).

How much is enough?

That SAD story requires 2.74 acres of land per person (1.2 ha), about 120,000 square feet. With some modest changes in diet, this amount can be shrunk below the limit of 2.2 acres per capita (0.9 ha or 102,000 sf) of land available in our region. And with some very dramatic changes in production methods, a further reduction of 90-95% of the land required may be possible. It turns out that Bloomington has about 5,300 sf of open space per person within the city that might be cultivated under the most extreme conditions. John Jeavons has demonstrated and documented that a vegetarian diet for one person, including the fertility crops that would be needed to sustain soil health indefinitely, may be grown on about 4,000 sf. And while I don't think we'll be out sheet-mulching the University's golf course any time soon, it's comforting to know that land, even within the city limits, would be adequate to prevent starvation. In between a vegetarian diet gardened from an absolute minimum of land, and the SAD state of affairs grown all over the world, there's a lot of room for creative adaptation to both improve health and shrink the foodshed while meeting everyone's need and most people's preferences. Those preferences include some meat, eggs, and animal fat.

Land itself is not enough, nor would the fertility of the present farmland, let alone lawns, ball fields, and empty lots, be adequate to the demands of continuous intensive cropping if begun abruptly. Besides harvesting all available local sources of organic matter and nutrient to bolster soil fertility, a new garden-scale of farming will require many more farmers. To increase the output of food per acre over present levels, we must decrease the labor efficiency of cultivation. This is another way of saying we must have more farmer hands and feet on the ground. How many?

Fitting farms to food

The most nutrient-dense foods that can be grown easily on small acreage with limited use of technology are herbs, vegetables, fruits, and small animal protein. These are the kinds of foods that are most likely to be grown in and immediately around the city on plots of 1/4 acre to 2 acres, and that would do the most to complement local broadacre grazing and arable crops easily grown in the surrounding region.

The intensive management of small plots of up to two acres can be handled by a farming couple with some part-time assistance and very little machinery. The report recommended that at least 300 new urban garden farmers be put to work in the next five years. Each of these new farmers, working up to an acre of land, would be able to supply a significant portion of nutrient-dense foods for up to 50 people, based on a modified Jeavons standard, and by feeding poultry, rabbits, and fish on wastes of



Wheels of cheese and good conversation lend to the conviviality of the local market.

the system. While 60 new garden farms brought into production each year for five years may seem ambitious, it also seemed possible in a community of 70,000, given a focus on training, access to public and other land, and some financial and organizational support.

In the medium term, the report envisions that each new farm would, through action learning by farm apprentices, help to generate several new farmers each season or two, so that in the medium term (years 6-15), establishment of new farms would be spreading three times as fast and would begin to infuse the county and surrounding region as well, with 10,000 new farmers coming into local agriculture in the seven counties by 2024. The city of Bloomington's share would be about 1,700 of these. This would require mobilization of educational programs and resources at the local community colleges and high schools, but over a 5-year period it seems very possible to begin the effort, and over 15 years to hit full stride.

A new yeomanry

Over the following 15 years another five-fold increase in farmers would be needed in the region, bringing the total to about 50,000 by year 2039. Most of these would then be managing a smallish farm (up to 20 acres) or sharing part of a larger holding. Keep in mind that this is about one-seventh of the population of the region today. Perhaps a comparable number of people would become involved in food processing and distribution. Though far from returning the Hoosier State to the condition of a peasant so-

Bloomington Peak Oil Task Force Report Recommendations for Food Security

Short-term (1-5 years)

1. Create a community food security plan.
 2. The city should plant edible landscapes on public property.
 3. Organize City-led horticultural services to include organic waste collection, processing, and distribution.
 4. Expand water storage within the city to support agriculture.
 5. Subsidize the cost of materials and education for building a resilient infrastructure.
 6. Adopt a Food Security Resolution.
 7. Establish Bloomington as a Slow Food City.
 8. Food security should figure prominently in the City's new Sustainable City Initiative.
 9. Through education and funding, increase food storage in Bloomington household and community pantries to three months supply for all residents—about 18,000 tons aggregate.
 10. Train and deploy 300 new urban garden farmers.
 11. Remove or reduce legal, institutional, and cultural barriers to farming within and around the city, and open institutional markets to local food.
 12. The City and other stakeholders should establish food-business incubators with access to community kitchens.
 13. The City should dedicate at least 200 acres of public land to intensive gardening and farming within city limits and identify an additional 500 acres for future use.
- In order to increase local food marketing and processing ten-fold (from 1-2% of local consumption to between 10-20%):
14. Identify and zone appropriately a food processing and distribution hub in each of the city's 55 Natural Neighborhoods.
 15. Permit transitional uses in these districts to bring these hubs into existence.
 16. Inventory commercial-rated kitchens within the city and identify unused capacity.
 17. Acquire and make available to local animal farmers at least two mobile abattoirs for safe and economic local processing of poultry and other meat animals.
 18. Work toward a year-round regional farmer's market.
 19. Map a strategy to harvest, compost or otherwise process and recycle to soil 100% of the city's organic waste.
 20. Establish a local land trust for the banking of farmland and the acquisition and holding of development rights to preserve open space for future farms, and to coordinate a program of placing new farmers on such land.
 21. Reserve open land for agriculture and make additional land available for food production.

Medium-term (6-15 years)

1. Establish an agricultural park in every Natural Neighborhood district of the city with community gardens, year-round production under greenhouses, limited processing, and food storage facilities.

Continued on page 8

ciety in the next 30 years, this does point to a tremendous social transformation, as many people, now or soon to be disemployed from the modern economy, discover that cultivating soil, plants, and animals is not only a challenging and rewarding art, but far superior to poverty, welfare, migration, or criminal or military servitude.

The easiest way this transformation can come about is by helping young people starting their careers to choose gainful employment as small farmers. Certainly some older workers will turn to farming by choice, and they too deserve our regard and encouragement, but as a practical matter, it will be the young who can most easily set aside cultural assumptions and expectations to take up a new way of life. To make gardening and farming esteemed pursuits thus becomes an important leverage point for a successful energy descent.

The local food economy can grow, and there is a need for it to do so, but there is enormous inertia.

Hunger for nutrients

After land and labor are supplied, fertility must be addressed. Chemical fertilizers will grow ever more expensive. Phosphates have risen 700% in price since 2007, and agribusiness giants like Monsanto have moved to buy source mines.(4) An energy analysis alone would reveal how farming must learn to generate its own fertility on the farm. Fortunately, cities are great sources of wealth, not only money and labor, but organic matter too.

Bloomington generates about 88,000 tons of garbage a year, which has to be trucked 55 miles to a distant landfill. About a quarter of this is estimated to be organic matter, suitable for composting if it could be separated at source. Since trucking costs will surely rise, there's a strong financial incentive for the city to reorganize its collection services to facilitate separation of organics from other waste. City workers already collect brush and leaves throughout the year. To this treasure could be added 22,000 tons of organic waste presently going to the landfill, plus more that is handled by private haulers, plus paper and cardboard. That's all before we look at actively cultivating compost crops and putting more of the city's biomass through animals to produce manure. These are the easy parts.

Based on the model of North America's largest municipal composting operation, in Edmonton, Alberta (cold climate no impediment), Bloomington's organic wastes, perhaps mixed with biosolids from the sewage treatment plant, could generate upwards of 8,000 tons of compost per year.(5) That's about one ton per acre of potential farmland in the city. While this may not be enough, it would certainly represent a good start.

Industry reborn on the home front

Alright, now we have land, skilled labor, and fertility. What do we do with the resulting food? Food processing is a major industry in all modern societies, commanding a larger share of the food budget than farming itself. But if local food is not to rot in the fields, it must be sold, processed, or stored after harvest. Bloomington has many restaurants, as well as institutional kitchens serving the University and the public schools. It also has church kitchens. These represent the first front in the effort to turn farm produce into products that can be stored, as well as into local jobs. A business incubator for food products, slow food promotion, and local food celebrations in connection with the city's cultural events are all strategies envisioned by the Peak Oil Task Force Report. Food lockers, pantries, and root cellars too must all be created and expanded.



Over 5,000 farmers markets operate in the U.S., including this one in Santa Rosa, CA.

Thus, the marketing, processing, and distribution of local food represents not only a limitation, but a great opportunity to bolster economic development, perhaps one of the best.

Promoting cultural change

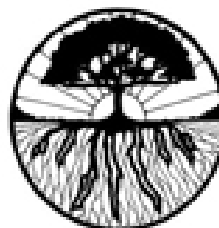
The local food economy can grow, and there's a need for it to do so, but it faces enormous inertia. Much of the food eaten in Bloomington, which admittedly is a company town—Indiana University with its 42,000 students being the main show, is served up from institutional and commercial kitchens. If these food buyers don't get on board, the boat won't leave the dock. How does one begin?

Woodbury County, near Sioux City in the western part of Iowa, has made sustainable and organic agriculture its main engine of economic development.⁽⁶⁾ Besides strong support for starting farmers, including property tax incentives, the county

has mandated an organic food supply for its public schools. Not only does this create a steady market for local farm produce, but it introduces future citizens to better food, and it improves public health in a way that will pay dividends for decades to come. The Bloomington Peak Oil Task Force Report calls for introducing local foods to local institutional customers and moving the Monroe County Community School Corporation, Bloomington Hospital, Ivy Tech Community College, and Indiana University food service toward greater involvement with local growers. Along with serving local food, these institutions have a role to play in helping promote local food production through training and education about its economic and physical health benefits.

New life for the economy

Research in the Puget Sound area indicates that spending at local food economy (LFE) businesses had a disproportionately



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positive impact on overall income in the region. Though the study showed that in 2003 only 0.5% of food spending was directed through LFE businesses, it calculated that a shift of 20% of food

Report Recommendations Continued:

Medium-term (6-15 years)

2. Create a year-round food market for local produce and supplementary foods in every Natural Neighborhood district.
3. Provide 100% organic and local or regional food to students in the Monroe County Community School Corporation schools.
4. Provide 50% local or regionally-sourced food to institutional kitchens at Indiana Univ., Ivy Tech, and Bloomington Hospital.
5. Implement a community service requirement for all Indiana University undergraduates with a significant fraction of this community service dedicated to local sustenance issues.
6. Establish region-wide farm training programs at local institutions and of this community service dedicated to local sustenance issues.
7. Design and build five million square feet of greenhouse space for year-round growing of integrated aquaponics.
8. Establish or expand local creamery and livestock butchering facilities.
9. Create a local, publicly-controlled seedbank and arboretum of food and useful plant species for propagation and sale within the region.
10. Inventory, document, and disseminate information to the public about the local flora and fauna of the Bloomington region, including native and adapted species, economic crops, other useful plants, and so-called "weed" species, as well as their ecological relationships.
11. Establish a credible local financing facility for the acquisition and development of farmland into small (0.5 to 20 acres), intensive integrated polyculture farmsteads.
12. Encourage the IU Kelley School of Business to offer at least a graduate degree in local business design and the School of Public and Environmental Affairs to offer a degree in applied environmental design. (Permaculture design training is already available to undergraduates at IU for credit.)
13. Work with Monroe County to identify agriculturally-suitable, publicly-owned parcels within and near the city to be zoned and brought into use as small farm allotments.

Long-Term Strategies (15-30 years)

1. Bank at least 100,000 acres within the seven-county region for small-farm leaseholds (in usufruct).
2. Train and deploy 50,000 additional farmers in the area.
3. Create 50,000 new jobs in food, fiber, and organic goods processing and related services within the region.
4. Realize the goal of being able to feed all 120,000+ people in Monroe County primarily from the resources of the region (at 2 acres per person).
5. Extend the local food production system to other central and southern Indiana communities, and support the expansion of similar systems within the state and the Midwest. Δ

spending into LFE businesses would generate an increase of over \$400 million in local income. That's about 30 cents of extra local income for each dollar spent in the local food economy. Farmers market sales are estimated to have a multiplier of over 3.0, that is, a dollar spent in the farmers market results in over three dollars added to the state economy.(7) But there was yet very little LFE impact in the manufacturing and distribution sectors. Thus, the marketing, processing, and distribution of local food represents not only a limitation, but a great opportunity to bolster local economic development, perhaps one of the best.

Converting a business-as-usual local economy into one that is truly grounded in place can't be done overnight; it requires a generational effort.

Converting a business-as-usual local economy into one that is truly grounded in place can't be done overnight; it requires a generational effort. The opportunities for failure are all too apparent. Market forces are by no means in a stable trend, and they don't help the small grower much yet. Institutions are indifferent or clumsy or just ponderous, hog-tied as they may be by corporate contracts and government mandates. Political opposition can rear its ugly head—Bloomington's POTF Report drew fire from the local paper and representatives of the local Republican Party: "Will take us back to the horse-and-buggy age," "May force people to move out of town," "Ignores the wonderful possibilities of new fuels and new technologies," and other even sillier arguments. And crisis may well overtake the slow, deliberate growth of a new system, derailing the community's best intentions.

It seems to me that we really have no choice but to do our best to get out in front of the problem, however long the odds, however unlikely the path ahead of us. Clean, fresh local food is a mom-and-apple-pie issue, and it has drawn that kind of response from most people in our community. The POTF Report, and the recognition by Council of the problem of peak oil that preceded it are part of a broad approach to sustainability being tested and tasted here. Parts of city government are doing their best to digest and implement worthy if somewhat dated approaches to good government and good city form: a uniform development ordinance to try to curb chaotic growth, and policies of new urbanism and support for a strong local downtown to maintain the city's character.

The University has recently created an Office of Sustainability, and the City of Bloomington is about to do the same. The peak oil-related efforts here also draw inspiration from the pioneering work of regional activists at the Arthur Morgan Institute for Community Solutions in Yellow Springs, Ohio, which sponsored

several annual conferences on the Peak Oil phenomenon. Key members of the Bloomington community, including councilman Dave Rollo and this author, brought that perspective home to City Hall, and found in the community other informed citizens willing to give time, thought, and care to the crafting of a vision for a prosperous way down the energy descent curve.

The work now enters another phase, as Council and the city administration grapple with the tough problems of turning recommendations into policy and law, and as the community, including a local Transition group, step up to fill in the many missing pieces of a bold but skeletal plan. Our town is building on a long run of small but significant efforts toward local food—the local food coop, determined organic growers, deep concern for the environment—as we start the real race for the prize. If we make it, the city's future residents may be able to look back and say, this was the time we began breaking away. △



In seaside communities, the street markets may offer fish, just as wild forest mushrooms appear frequently in Bloomington's.

**The easiest way
this transformation can
come about is by helping
young people starting
their careers to choose
gainful employment
as small farmers.**

Peter Bane served on the Bloomington Peak Oil Task Force in 2008-09, and is writing a book on permaculture and local food production.

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A Small Farm Shows Steady Self-Reliance

Local Food Starts with the Garden

Darrell E. Frey

HOME FOOD PRODUCTION IS THE FIRST STEP toward a sustainable food system, and the best model of a home food system I know is the work of my first garden mentors. Ellen and Bob Benek have been producing abundance on a small northwest Pennsylvania farm for 30 years. Their five-acre home system is built around a seasonal cycle of animal husbandry, gardening, and food processing.

Riding horses, goats, chickens, and rabbits assure them a plentiful supply of manure and bedding for creating compost. After 30 years of applying the farm's compost to their raised garden beds, the soil is extremely productive.

The family eats their own vegetables 12 months of the year, and in their cold temperate climate that means food storage as well as fresh harvest. Squash, cabbage, potatoes, and apples are stored in the basement. Onions and garlic are stored on a cool side porch. Home food processing of fruits, sauces, and vegetables is an annual tradition. A small herd of goats has provided milk for cheese, yogurt, custards, puddings, and fresh use as they have raised their family of five children. They get fresh eggs from their hens. Most summers the family raises a few dozen meat chickens. These are processed and frozen, along with venison and goat meat. Some years they may raise a pig, also destined for the freezer or smoker.



Ellen Benek with winter greens.

The Benek's garden begins literally at their doorstep. Each spring they set up a small propagation greenhouse on the south-facing deck just outside the kitchen door to start garden plants. In the summer they move the metal-framed greenhouse to the side, where it is used for curing onions and garlic, to dry herbs for teas and cooking, and to cure seeds for next year's garden. A picnic table replaces the greenhouse on the deck each summer. An adjoining stone-terraced herb and flower garden provides an intimate setting for outdoor dining and fresh herbs for the kitchen.

The main garden consists of about 4,000 square feet of raised

beds. It features perennial beds of asparagus and berries, many annual crops, and abundant flowers. The rich soil yields superior harvests. Carrots, given special treatment with rabbit manure compost, are huge, yet tender and juicy. Sweet corn ears are long and full. Cabbages, head lettuces, and other greens also seem extra large and healthy here.

Ellen is a sharp observer of her garden's biodiversity. She plants her cabbages, other brassicas, and potatoes close to the sweet corn. Corn attracts swarms of minute pirate bugs, which devour cabbage worms, Colorado potato beetles, aphids, and other garden pests. Hoverflies, ladybugs, parasitic wasps, and other beneficial insects are plentiful in the flower-filled landscape. Favorite herbs like sage, chives, and thyme are planted at the ends of many garden beds. She interplants vegetables with patches of parsley, basil, and cilantro, some newly sown and some in flower. Dill, borage, mache, and annual red poppy self-sow and scatter themselves throughout the garden.

Ellen's work as a midwife and Bob's contracting business keep them off the farm much of the time.

Smaller gardens around the farmstead are planted in a regular rotation of main crops of sweet corn, potatoes, squash, and other staples. The landscape includes many flowers, both perennial and annual, along with flowering and native trees and shrubs. Wild birds are fed in winter and are present in large numbers. Ellen reports that the much-maligned invader, the house sparrow, *Passer domesticus*, has been observed snatching the occasional cabbage worm and helps control pests both winter and summer.

Bob has constructed several small season extenders, cold frames, hot beds, and a small plastic tunnel. These provide earlier crops in spring and summer and salads and cooking greens well into winter. The chicken house and pig pen are located at the far end of the garden.

Garden prunings, comfrey, and weeds supplement purchased grain fed to the animals. Goats especially relish larger weeds, corn stalks, and damaged produce. The gardens are surrounded with "fake electric fence." Once trained to the real thing, the horses avoid these highly visible wire strands of recycled romex and baler twine tied with ribbons. The horses are rotated through sections of the lawn to keep the grass neatly trimmed. The farm dog, the third in 30 years, keeps the gardens free from marauding groundhogs and rabbits. Goats are kept in their place behind

heavy pasture fencing. Frequently they are tied out to browse the edge of the surrounding woodland.

Fresh and preserved

The Benek's landscape includes a lot of fruit. Apples, both home-grown and foraged from abandoned trees on neighboring farms, provide cider and sauce. Ellen also makes her own vinegar. Hardy kiwi vines bear heavily most years. A wild patch of blackberries has been encouraged and has, for three decades, provided more berries than they can pick. They also harvest and devour red raspberries and blueberries, with any excess frozen for later use. A family favorite is thawed berries with dried fruit.

The Benek's tap a dozen maple trees during thawing weather, between January and March, to make their year's supply of maple syrup. The sap is simmered into syrup on the wood cookstove. Firewood cut from the surrounding forest supplies both the cookstove and a larger woodstove that heats the house.

The farm's old-time barn stores garden equipment and baled hay, and houses goats and horses. Each year the family contracts with a neighboring farmer to receive several wagonloads of hay. Family and friends share the sweaty but satisfying labor of filling the barn with scratchy hay on hot summer days.

The Beneks take advantage of the convenience of the local grocer regularly, but their purchases are far smaller than those of the average household. Much of the rest of the household food is purchased in bulk through a local buying club and from natural food wholesalers. Whole grains, beans, flour and other staples are stored in containers in the basement. Most foods are made from scratch, with a focus on economy and healthful vitality.

Dinner at the Benek's is always a pleasure. A mid-summer meal might begin with a salad of mixed lettuce, spinach, wild edibles, snap peas, and early tomatoes. An appetizer may be slices of herbed goat cheese (chevre), or crumbly hot pepper goat feta. The main course is likely rich venison or goat stew, heavy with potatoes, onions, and carrots with a side dish of steamed asparagus. Red raspberry pie for dessert, and a cup of Ellen's power-woman tea, (a personal blend of beneficial herbs), is a fitting end to a perfect meal.

Abundance is the word that comes most to mind at the Benek's farm. Ellen's work as a midwife and Bob's construction contracting business keep them off the farm much of the time. Yet all this home food production is done with a rhythm and schedule that does not seem to overtax the family, who have abundant time for many family activities and travel. Boy Scouts, 4-H Club, horseback riding, cross country skiing, and just plain relaxing all somehow fit in.

Certainly the entire family works hard. But the work is so integrated into their lives that a balance is achieved. Bob and Ellen and their teenage children all help with the spring garden rush. The animal stalls are cleaned regularly and the bedding is piled to compost. Beds are fertilized as needed. Many crops are mulched. Weeding the garden becomes feeding the goats and chickens. Harvesting and tending the garden are a pleasurable part of daily life. On less than five acres of pasture and gardens, this bountiful landscape supports a healthy and happy family. △

Darrell E. Frey can be reached at this email: defrey@bioshelter.com and found at these websites: www.bioshelter.com and www.sustainabledesign.net



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Living the Local Food Life

Doniga Markegard and Susan Osofsky

EATING LOCAL ISN'T EASY. It takes time and a strong commitment to build the relationships that can sustain a local food system over time.

The San Francisco Bay region, where we both live is unusual in providing many farmers with right livelihood. Community structures within the region also enable low-income families to enjoy eating local, organic food, while the efforts of local farmers are creating carbon sinks, bringing back threatened and endangered species, and cultivating a wide array of land from small backyards to vast public rangelands and out into the wilderness. We will describe parts of this local food system with which we are familiar, and we have different cultural and geographic perspectives on these processes: Doniga lives in a rural part of the region; Susan in a suburban district.

The ancestors' perspective

Before the 19th century rise of industrial agriculture, our ancestors all lived and ate locally. That we are here is testimony to the fact that most of them knew how to build relationships with the land, species, and resources that ensured their survival. They knew how to take care of the acorn crop one year for it to return in surplus the next. Doniga's adoptive Lakota father, Gilbert Walking Bull, was raised in this way:

Growing up in a refugee camp on the outskirts of the Pine Ridge Reservation in South Dakota, where a band of Lakotas fled the missionary schools to continue practicing their tradition, Gilbert was raised by many elders in his community. He told me how his grandmother would ask him to fetch her an herb. She would tell him a very complex story about the plant, "Follow the line of pine trees down the river. When you get to the pine tree with the crooked branch pointing north, turn towards the rising sun and follow this over two ridges until you get to the prairie dog town. You will then go down into the valley where you will find the herb." Gilbert had stories about everything they used from tools to hides to rope and berries. He had a deep relationship with his place, his foodshed.

Most of us were not brought up with this connection to the source of our food. We have gone so far from an indigenous connection to food that a common response from people when asked where their food comes from is, "the grocery store." We must cre-



Picking oranges with Village Harvest.

ate these connections again—we have no choice, our quality of life and our very survival depend on it. We can strengthen our relationship with place and with our foodshed by nurturing the connection between people and nature both in and around the city.

The urban perspective

The suburbs of the Bay Area provides access to an abundance of local food from backyard gardens, local markets, CSAs, local orchards, farmers markets, and the rural areas that lie beyond the suburban fringe.

Susan's journey to eat local food started out innocuously:

Most of our fresh fruits and veggies are local. We have a huge backyard garden, belong to a CSA, and regularly shop at the farmers market. But my real exploration of the local food scene came as a result of producing Conexions' Green Fork

100-Mile Thanksgiving Celebration event for the past three years. Green Fork decided to join the 100-Mile Diet (<http://100milediet.org/>) call to create a 100-Mile Thanksgiving, so we put on an event meant to inspire participants to prepare their own holiday feasts using local food.(1) Getting ready for the Celebration each year propelled me to look beyond basic fruits and vegetables into the depths of the local food scene.

I scoured a number of items from the local farmers markets and Country Sun, a local grocer, for hard-to-find food that I needed to round out the Celebration dinner. I found an abundance of ingredients—rice, beans (cranberry, black, cannellini, etc.), field corn (for polenta), walnuts, almonds, flour, wheat berries, honey, tofu, cheese, jam, olive oil, vinegar, grass-fed beef, lamb, and turkey, salmon, butter, milk, mushrooms, seaweed, and wine.

The whole story of local food is about relationship—to place and to people. Farmers grow food. The cities are full of people. The two are primed to work together.

Our house is a local distribution spot for Two Small Farms CSA. So over the years, we've created strong relationships with the two families of farmers who run the CSA as well as their office staff and drivers. Our relationship goes far beyond the CSA program. When we're in need of food, we contact our farmers.

When they're in need of people to eat their food, they contact us. This is all about sharing the surplus. Not only do these farmers share surplus produce through the CSA and by donations. They reduce their prices for community events, and they have other innovative offerings.

Mariquita Farm in Hollister, California, has two programs that do this: the Mystery Box and the Buying Club. A Mystery Box (2) is like a CSA box but different. "Mystery Boxes," says Mariquita Farm's Julia Wiley, "are guerrilla vegetable deliveries. Not a CSA, they are more like taco-truck-meets-farmers-market. No pre-payment, no credit cards. You give me your cell phone number as collateral that you'll show up, I give you mine so you can find me or contact me that night."

A Mystery Box contains the vegetables that are harvested for Mariquita Farm's San Francisco restaurant route deliveries. It's a mystery to the customers as to what they'll receive although they do get information with the box. The distribution location varies for each delivery. Every other week or so Julia decides which restaurant is the delivery spot, and that's where people come.

The Buying Club (3) is a service for the convenience of people who want to can, pickle, juice, dry, or otherwise process bulk quantities of fresh vegetables, herbs, and fruits whenever the harvest permits. From the farmers' point of view, the club

The whole story of local food is about relationship—to place and to people.

allows farmers to sell produce locally to an appreciative audience when there's an overabundance of a particular crop. People on the email list do not need to be CSA subscribers and are asked to forward the email to people whom they know.

The Buying Club works on pre-orders and cash payment. The Palo Alto runs are located at our house. Being the fanatic CSA hosts that we are, we thoroughly enjoy helping Julia unload the truck and walk people to their cars with 20 pound boxes of tomatoes, strawberries, apples, or pumpkins. In return, we get our produce delivered straight to the house!

Getting surplus to those in need

The larger San Francisco Bay Area through to Monterey has such a variety of climates that we can grow fruit year-round. Citrus is harvested from January to June; stone fruit from May to August; apples and pears from August to October; and persimmons from November to December.

The hungry in many communities do not have easy access to fresh fruits and vegetables. Most food banks stock food that's easily stored and distributed. Some of the processed food like bakery items (bread, cakes, cookies, and cookies) are perish-

able but don't need refrigeration. Because of the cost and effort involved in distributing fresh produce, food that is extremely perishable and requires refrigeration makes up a very small portion of what's distributed to the hungry and low-income families.

Village Harvest (4), a non-profit organization located in San Jose, California, harvests surplus fruit in urban and rural areas and then distributes it to local food agencies to feed the hungry. Village Harvest orchestrates the web of producers (homeowners and orchard owners), agencies who feed the hungry, and volunteers who harvest the produce to make the program run. In 2009, its best year yet, Village Harvest harvested and distributed over 149,000 pounds of fruit. Since its inception in 2000, Village Harvest has harvested over two million servings of nutritious fresh fruit for the community. Often, the fruit travels only five to fifteen miles from tree to plate. Volunteers who help harvest the fruit also share the abundance by taking home the culls, which I do quite frequently as a volunteer leader. We often end up with our own fruit "emergencies," caused by having to juice, dehydrate,

Foodshed

A foodshed may be defined as the area in which your food is grown and processed specified as a distance from where you live, either in miles (e.g., a 50-mile radius) or as days of travel by bike or on foot (e.g., up to three days away). Or a foodshed may have the same boundaries as one's watershed, or it may be identified by established trading relationships within a territory.

process and distribute to friends and neighbors up to 200 pounds of fruit before it ends up in our compost. We've loaned out our juicer to the neighborhood and have taught others how to make applesauce. I'm constantly building relationships and strengthening my web of fellow locavores who will take twenty-pound boxes of fruit from me without blinking.

The foodshed is not defined with hard and fast boundaries. Rather, consider your foodshed an opportunity to learn about your relationship with food and to observe and adjust the way you think about buying and eating food. Taking up the challenge to eat from your local foodshed is not "all or nothing." It's about making conscious choices about the food you eat. Start wherever



you are on the spectrum of eating locally, then make more mindful food choices as you learn more about your local food system.

The rural perspective

The San Francisco Peninsula is unusual, in that the Santa Cruz Mountains create a geographical divide between the city and the country. Many city dwellers travel through this small mountain range to enjoy the outdoors, to bike, surf, or find a local farm stand. Even a recreational relationship to the countryside can deepen one's appreciation for local food.

So, what happens when permaculture meets cattle ranching?

The small coastal town where Doniga lives consists of a general store and a post office: Most of the time you know every truck parked in front of the general store and recognize about nine out of ten people you pass on the road. It is a farming community. The Markegard family are cattle ranchers and supply part of the 0.73% of the agriculture market in that county that comprises beef cattle. By far the greatest value in agriculture in the county comes from nursery, greenhouse, floriculture, and sod crops, some 91.34% (5). These crops require a lot of external inputs and are mostly exported. Cattle ranching is on the decline, holding on by a thread.

Doniga continues: When I first met my husband Erik Marke-

gard, a sixth-generation cattle rancher, I toured the few thousand acres he managed in cattle. At the time, I lived on a neighboring property, where cattle had been fenced off since the land was divided. As I walked around, I mused at the diversity of species on the ranch. Huge flocks of quail sprung from the bushes, bobcats hunted in the meadow along with several species of raptors. On the ranch where we currently live, there is a large population of the endangered California red-legged frog (*Rana draytonii*) in a stock-water pond that Erik built. I didn't expect any of this. My curiosity piqued, I became keen to find out why wildlife was flourishing. This led to the question: Just what happens when permaculture meets cattle ranching? Mutually beneficial relationships grow. If the abundance of wildlife, including threatened and endangered species, had not convinced me that something important was going on, my study of holistic management would have.(6)

Holistic management is a system similar to permaculture in that it works with natural processes to repair damaged lands. By employing holistic management on rangelands, ranchers can mimic the movement of wild herds of grazing animals. The native herds traveled in tight groups; predators kept them moving. This meant they were never able to overgraze any one area, but grazed in a pattern which enhanced the productivity of perennial grasses, kept diverse grasslands open, and encouraged seed germination.

Recent research indicates that the productivity of grassland managed with appropriate timing and herd movement could sequester carbon at a rate that has the potential to stop global warming in 15 years or less. Grassland ecosystems could become the largest contributor to carbon sequestration.(7)

Incorporating wilderness foraging into your foodshed will greatly enrich your diet.

This type of grassland management builds soil. A 0.5% increase in soil organic matter on 75% of the world's rangelands, which total roughly 11.25 billion acres, would sequester 150 billion tons of atmospheric carbon. This would bring CO₂ levels in the atmosphere to below 330 ppm (we are now at 388), and would likely solve the climate change crisis we are facing.(8) As a species, we need to shift from carbon-releasing agriculture to carbon-sequestering agriculture.

I have been on a campaign to manage more rangeland with cattle as my primary contribution to the local food movement. Erik and I started Markegard Family Grass-Fed (9), providing the community with locally born, raised, and processed meat. We manage over 3,000 acres of grasslands and sell to over 100 families in the area as well as to local restaurants. The rural-urban food connection is a function of supply and demand. If the demand for grass-fed beef increases, then the demand for beef finished in CAFOs (10) is likely to go down. This would begin to shift the market toward pasture-based livestock. And that would

Ways to support localization:

1. Create local food processing plants to eliminate long-distance transport and create local jobs.
2. Educate land trusts, public land stewards, and private land owners on the benefits of ranching and farming, providing good science to back up the claims.
3. Work with the local offices of the Natural Resource Conservation Service and your Resource Conservation District to promote policy changes that encourage rather than restrict regenerative farming practices.
4. Point out to industrial farmers in your area that a switch to more ecological and local means of production would help them prosper in the long run.
5. Organize local consumers into buying clubs to help farmers and ranchers in the area sell bulk food.
6. Start a community meat locker powered on renewable energy, where people can freeze large quantities of meat or other bulk items for storage throughout the year.
7. Educate local restaurateurs and grocers on the advantages of local food and connect them with farmers.
8. Encourage the success of farmers markets.

require new forms of management that regenerate the land.

Living in a rural area, we have access to Zone 5 wild areas to provide some of our most nutritious food. On a fall day, my family will take a short hike from a developing permaculture site we have in the Santa Cruz Mountains and come back with a significant native plant harvest. We incorporate this food into our diet. These foods include tanbark oak acorns (*Lithocarpus densiflorus*), manzanita berries (*Arctostaphylos tomentosa*), evergreen



Pacific Madrone berries add to a local diet.

huckleberries (*Vaccinium ovatum*), golden chinquapins (*Chrysolepis chrysophylla*), yerba santa (*Eriodictyon glutinosum*), toyon berries (*Heteromeles arbutifolia*) and Pacific madrone berries (*Arbutus menziesii*). The abundance of medicinal and useful plants available in the wild is too large to list here. Incorporating wilderness foraging into your foodshed will greatly enrich your diet. It will also help you to connect with the story of your place.

We are committed to connecting local food with as many people as possible and reaching out to the farmers and ranchers who are out managing the land and bringing the product to the customer—we would not have a local food economy without these connections. Farmers need dedicated people in the community, not only to eat the food, but to spread the word to the people in power, such as the large private land owners, land trusts, state parks, and county officials. We hope that you'll join us in this effort to support localization of agriculture in your community. Δ

Doniga Markegard is founder of www.EarthActionMentor.org and director of Peninsula Permaculture. She lives on a cattle ranch in San Gregorio, where she and her family raise organic, grass-fed beef and lamb. She does permaculture design consulting: Designs by Doniga, holds a B.A. in Sustainable Community Development from Prescott College, and is currently pursuing a M.S. in Eco-Social Regeneration from Gaia University.

Susan Osofsky is a suburban permaculturist. As the co-director of Conexions' Green Fork project, she inspires and educates the

community to grow, buy, cook, and eat seasonal, local, organic food. She teaches Permaculture Design Courses with Peninsula Permaculture and is a mentor for Earth Action Mentor, a community collaborative. Susan also leads teams to harvest and glean community fruits with Village Harvest.

Notes

1. Recipes from the 100 Mile Thanksgiving Celebration available at <http://www.conexions.org/greenfork/recipes/holidays>.
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Food Interdependence in the City

Robert van de Walle

GROWING FOOD IN YOUR OWN YARD is surely the local food movement's ultimate expression. But is it the most sensible option? What prevents people from growing their own food? As we move from agrarian to urban environments, we perceive a lack of space, time, knowledge, skill, or opportunity to grow our own food. These are constraints, but we can use permaculture's design principles in an urban context to overcome many of these limitations.

Our retrofit cohousing community in Oakland recently began practicing permaculture. We have food gardens, bees for honey, and chickens for eggs. Greywater filtered through soil recharges our groundwater. We drive veggie oil vehicles, an electric car, and bicycles. We walk. In age, we range from children to seniors; we are families and couples and singles, and are of nearly every religious stripe. We are all committed to building community. Gathering for meals is a key part of our commitment to know, love, and celebrate each other. Discovering how to eat a local diet has become part of our journey. Over the last two years as we've explored some problems and their solutions related to sourcing food. And we think we've uncovered some ideas that can be shared with a larger audience.

Living in a big city, I've come to appreciate the critical step of inviting input from all stakeholders. Far too often, solutions can feel imposed if the "answer" is developed in a vacuum. For example, bees scare some of our neighbors, so we are careful to site the hives in order to minimize the possibility of antagonistic human interactions. We also talk with our neighbors about the bees, and we share the honey we harvest. We've now built so much goodwill that neighbors contact us to catch swarms from their yards rather than calling an exterminator!

The local food web

In an urban environment the quest to provide food locally takes on several dimensions. What will grow in the city? What can be grown in a backyard? In a median strip? On rooftops? In community gardens? In the margins of schoolyards, parking lots, brownfields, or unincorporated areas? Due to the fractal, crenelated nature of a city's boundaries there are ample opportunities to grow food. But what policy changes are necessary? What changes in public opinion will support local food production?

Our cohousing community is settling into a multi-layered approach to eating local food. We grow some of our own food, and we shop daily farmer's markets to increase our seasonal eating. At the supermarket, reading the labels for the origins of

fruit guides our choices. We are, of course, blessed to live in the San Francisco Bay Area, with its amazing weather and diverse productive microclimates. So we have access to specialty shops for preserved goods from local farms. We participate in a CSA and we harvest from our plots in community gardens. Very little, if any, of our food travels 1,500 miles to reach us. Most of it is sourced within 150 miles!

All across the United States, CSAs and community gardens are springing up. Some people are experimenting with rooftop gardening. In some areas it's becoming quite possible to eat a diet consisting entirely of local food.



Good fences make good neighbors—and removing them sometimes makes for better neighbors. Removing this fence meant more light for growing food.

Searching for solutions in the garden

Despite the benign climate, planting gardens proved to be a significant challenge for us. In our urban setting, a permaculture zone map is nearly meaningless (our lots are under a tenth of an acre) but sectors are critical to consider. Site a compost heap too near a kitchen window and there could be trouble! Some sectors to consider in the urban setting are sun, shade, buildings, water, neighbors, vandalism, verticality, vermin, and emergency access (for police, paramedics, and the fire department).

Our design process opened with too many expectations; full-blown garden plans resembling wombs or complex sacred geom-

etries couldn't be fit into the available space. We took a collective step backward and wrote out what we really hoped for. This list guided the design. We wanted: non-linear paths, raised beds, private nooks, beds without rows and keyhole gardens. We also wanted to have an outdoor meeting (party) space, a permanent chicken coop, and a good space for our bees and fruit trees. We wanted to reserve space for other ideas. We realized we needed to communicate with everyone in the household just what beds had been planted so we didn't plant them again, and also to signal which were ready for harvesting. I assessed the group's knowledge of and commitment to annual gardening, and subsequently shelved or shifted my own goal of establishing a no-till food forest. Drawing and sketching led inexorably to plans out of scale with the available space. Worse, we were constantly wishing the shade sector to go away. Of course, it didn't. Eventually we hit on the idea of standing in the yard and laying out the edges of the beds with hoses, so we could easily maintain 4-foot-wide beds and narrow footpaths.

Growing food in your own yard is, surely, the local food movement's ultimate expression.

How we achieved our desire for a meeting area along with garden space provides an excellent example of permaculture's problems-into-solutions consciousness. Originally, an east-west fence punctuated by a large and ancient willow tree separated our conjoined urban lots. The people living with the shaded yard wanted sunlight to grow food, and the people with the sunny yard wanted an outdoor gathering space (where, of course, some shade would be welcome). When we agreed to remove the fence, swapping yards to achieve apparently impossible goals suddenly seemed a real possibility. Removing a fence in an urban setting is a powerful statement and symbol. The space around a fence is often underutilized (even if planted!). Debris collects at its margin. A rule of thumb that seems to work is this: There is a perceived loss of space equal to height of the fence. Reclaiming this space makes the combined yards feel larger than the sum of their parts. The shady place under the willow was the obvious location for an outdoor gathering space once we took down the fence. In return for offering this to the larger community, the stakeholders with the shady yard gained access to a sun-soaked garden space.

We developed a hybrid sheet mulch and *hugelkultur* bed design. (*Ed. note: Hugelkultur is a traditional German method of making raised beds using large pieces of woody mulch covered with soil and lighter material.*) Some of the benefits we capture are the use of on-site and local resources: subsoil becomes a microbial inoculation layer, branches and canes from long-unpruned fruit trees become stakes and woven sides for the beds, and woodchips from an urban arborist becomes the nutrient and water capture layer. We planted "traditional" annual gardens and also used ideas from Toby Hemmenway's backyard permaculture

book, *Gaia's Garden*—specifically, in one bed we adopted Ianto Evans's planting guide. We densely sowed radishes, carrots, lettuces, and other greens such as mustard, kale, and chard.

The densely planted bed began yielding a harvest two weeks later. We thinned and ate whole plants, making room for the remaining plants to grow. For several months our community of 20 people ate all the salad we wanted from a single raised bed of less than 80 square feet. Weeds were non-existent. Some pests crept in but the bitter mustards kept them confused. The dense growth

Far too often solutions can feel imposed if the "answer" is developed in a vacuum.

prevented our cats from using the bed as a litter box. The plants grow in such strong mutual support for each other in this dense, forest-like planting method that it is well worth the effort required to learn how to harvest. And it is a learning process!

For example, a visitor to our community thought he would repay our hospitality with a little garden work. Without knowledge of no-till gardening or of beneficial, nitrogen-fixing oxalis plants, he weeded out all our nice little oca starts. (Oca is an oxalis that grows edible tubers.) I came home to beds with raw earth open to the drying sun and our cats very excited to have a new place to poop. Tiny half-formed tubers littered the brush pile. Without education, even the most well-intentioned idea can have negative consequences. We stuck thorny rose canes into the vacant spots to discourage feline paws and tossed in lettuce and radish seeds so weeds wouldn't gain a foothold and further the damage.

Our gardens produce fava beans, red scarlet runner beans, peas, bush beans, nearly every brassica ever cultivated (collards, kales, cabbages, kohlrabi), raspberries, gooseberries, strawberries, tomatoes, spinach, chard, lettuce of any type, potatoes, and several varieties of squash. Trees provide several varieties of plums, lemons, and oranges. We cure olives from the olive tree. We've started many other plants to see how varied a diet we



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might be able to produce. It is amazing what we have been able to accomplish.

Although we have improved our soil fertility and are using some great intercropping techniques to increase yields, we are a long way from being able to feed ourselves from the yard. Thankfully, we support and are supported by many layers of diverse, local food production.

Building a local food economy

Cities often have laws to prevent food cultivation in public areas. One concern seems to be that forgotten harvests will become a food source for vermin. Someday we might take on the legislative barrier to planting food crops in medians, but for now we can also support people who grow food for their livelihood. In our city, community gardens and nearby farms are sources of food already supported by public policy.

Cities often have laws to prevent food cultivation in public areas.

Bartering food is another layer of interdependence for us. A widening circle of friends and families shares the bounty of their lots and labors. Some of the food exchanged recently included honey, sauerkraut, pickled lemons, blackberry preserves, plum sauce, and hard cider. If our chayote vine is as prolific as it appears, many neighbors will receive squash in the next month. Surely everyone reading this has at one time or another, on a walk through your town, spied fruit rotting on the sidewalk or branches of a heavy-laden tree overhanging the walkway. If you've picked one and eaten it, you're a part of the foraging movement. This layer of food procurement seems best organized at the neighborhood scale; our local group is Forage Oakland. Foraging is a unique, guerrilla-like activity. By all means, foragers should respect the rights and property of others. We always ask permission to gather. We offer an important service: in exchange for some or most of the fruit, we remove a food source for rats! Most homeowners appreciate our efforts.

Foraging is a great layer of local food production, accomplishing many goals: we eat locally, we eat seasonally, we initiate contact between community members who might otherwise avoid each other, and we help make our city a little less vermin-friendly.

The final layer for us is the rather unnatural trip to the market. As yet, some items are not easily found at the neighborhood level. When we shop, though, we keep our eyes peeled for local sources of protein, bulk carbohydrates, and alcohol. This is voting with our dollars, pure and simple. If an apple is from Chile, it might get a pass in favor of an apple from the local hills (or even no apple, favoring local pears instead!) and beer from Chico, California is purchased ahead of beer from Olympia, Washington.

Eating local food requires a stronger commitment than merely voting with your dollars, however. By searching out and support-

ing local food growers, you encourage an upward spiral towards food justice for all. People's Grocery in Oakland is a community-based organization developing creative solutions to the health, environmental, and economic challenges we all face. They are bringing local food into West Oakland, a food desert, where a single supermarket serves over 25,000 people. Many people in the area shop at corner stores where as little as 1% of the shelf space will carry fresh produce.

As rewarding as planting a garden and growing your own food is, in an urban setting the opportunity to build a dense, interconnected web to procure food must be a carefully considered decision. In order to secure sufficient calories and nutrition, we need to rely on each other's strengths to build a robust local food economy.



A bare back yard was the beginning of the design.

Strength through interdependence

Just as vast monocropped fields are susceptible to complete failure from pest or weather damage, so too is a highly centralized food distribution system (such as our present supermarket system). With true “problem is the solution” awareness of our lack of supermarkets but ample local food production, Oakland is becoming a shining example of food interdependence. Δ

Robert van de Walle, a permaculturist co-creating retrofit co-housing in Oakland, California, shares a multi-layered approach to securing a local diet. He is documenting his journey from affluenza sufferer to urban permaculturist inspirator at <http://homeofthefuture.blogspot.com>.

Will Work for Food...

Colorado Food Bank Adds Own Gardens and Orchards

Melissa Marts

THE SNAKE HARDLY PAUSED for a second look as it glided with regal elegance deeper into the garden. It was a warm summer morning, and the hand-dug trench full of annual rye grass was the perfect channel for passage to a more secluded and protected place.

I entered the Care-and-Share Food Bank Garden on that same morning, and I, too, hardly paused for a second glance upon seeing the snake. I did not, however, exit the garden with grace and regal silence. I proceeded to leap straight into the air, tucking my knees to my chest and squealing with breath so short it hardly made noise as it escaped my mouth. My rapidly beating heart and reflexes caused me to leap and scream out a few more times before I finally stomped my feet into the earth and forced myself to breath deeply.

“Darn it,” I thought. What a missed opportunity to see a snake, to observe its reflective, shiny scales and unblinking eyes, and to witness its amazing ability to move fluidly—floating across the land. As graceful as



Planting day in the garden promises food for the hungry at harvest time.

Other food banks partner with local farms...but Care-and-Share is the first to plant our built urban landscape with gardens that yield food.

they are, why is it so many folks are petrified of snakes? I had been dreaming of the day wildlife would bless the Food Bank's first-year gardens. The day it came, I screamed.

Bridging the gap

The food gardens at Care-and-Share Food Bank for Southern Colorado are in their first year of operation. The Food Bank's mission is to bridge the gap between hunger and abundance for those who experience food insecurity in a 31-county area of southern Colorado. Warehouses in Colorado Springs, Pueblo, and Alamosa distribute over 14 million pounds of food a year. The

food comes from many sources and includes highly processed canned and boxed products as well as raw produce, dairy, and meat. Care-and-Share Food Bank has a goal to distribute up to 80% nutritious food.

Care-and-Share distributes food through pantries most often located in churches with missions to “feed the sheep.” Food must be given for free and recipients are not required to prove need, they need only ask for help. The stereotype of a hungry person is a scruffy fellow on the corner holding a “Will Work for Food” sign, but the Food Bank supports diverse populations of the needy through soup kitchens, children's programs, shelters, and senior feeding sites. The efforts of the Food Bank and our partners are all about redistributing surplus and caring for people.

Our goals to redistribute surplus and supply more nutritious food led the Food Bank to build a larger warehouse with more refrigeration, and to partner with community gardeners and commercial organic farmers to increase food security. We are also motivated to plant food gardens around our facility instead of the conventional landscapes. Other food banks partner with local farms to donate food, but Care-and-Share is the first to plant our own urban landscape with gardens that yield food. With the blessing of our Board of Directors and the help of volunteers, Care-and-Share built a permaculture food forest with plans for six distinct guilds, an orchard with three varieties of apples and two plum cultivars, and lastly a traditional row crop garden. Although we have the support of volunteers, this venture was by no means a certain thing. At our new location on the barren eastern edge of Colorado Springs, dry northeast winds and sandstone put the gardens at risk.

“Will work for food” has become our garden mantra. We are working to better understand and cultivate a harsh landscape on the edge of town, on the edge of the plains, to develop a sustainable community, to provide food free to those in need, and ultimately to teach people to grow food for themselves. Many lessons were there to be learned in this first year of working for food, and as I reflect back, I can see that the snake’s visit was a message of change to come.

The snake—conventional annual crop garden

The garden into which the snake had slithered covers more than 9,000 square feet on the southwest side of the Food Bank warehouse. Looking westward, one can see the granite batholith of Pikes Peak 20 miles distant, while to the south, the Front Range spans 150 miles to the Spanish Peaks. It’s a stellar view for such humble terrain, and I drift into it frequently as I tend to the changes and needs of the garden underfoot.

The soil consisted mostly of sand and it sloped gently away from the building toward the southern access road used by the food delivery trucks to reach the docking bays. Both slope and sand posed significant challenges, as did the wind. I spent the winter leading up to the first garden season observing the path of the sun and charting the winds, and had decided the three-story warehouse marking the north edge would make a great heat sink

The snake arrived in the summer, bringing a message of rapid learning, change, growth, and even healing.

for a small, three-season hoop house. We set one up with the help of the local Pikes Peak Urban Gardeners, and it proved to be a valuable and productive first garden structure—after we got it securely lashed down.

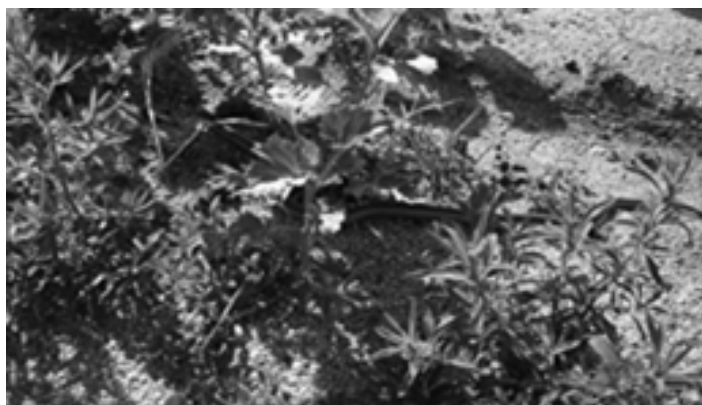
As the winter continued, I turned my attention to the flow of water in the landscape. Each storm would find me out in the elements, decked out in waterproof gear, taking notes and digging. Despite it still being winter, each melt would bring torrents of water down off the 52,000 square foot metal roof with enough force to blow out the gravel from next to the building into the parking lot. I knew this floodwater would have to be diverted and slowed as it went into the garden, so I attached six-inch corrugated pipes to two downspouts and directed them into the garden. I then dug a series of connected trenches (which would eventually become home to the snake) that fed into the vegetable beds laid out across the slope. As the spring came, I planted a cover crop of annual rye in beds I knew I wouldn’t have time to tend. The rye was watered only by the trench run-off.

We amended the soil with four-year-old composted manure (donated from a neighbor’s stable), molasses, gypsum, and whatever other organic material I could procure. A small turnout

of volunteers helped to dig it into about half of the garden space.

I started small because I was unsure of the support I would have, and was concerned that gardening this place “on the edge” would be a big challenge. The decision to develop only half the space proved a sound one because I also had the orchard and the food forest to cultivate.

We got transplants from a variety of sources including four after-school children’s programs, two folks from the Colorado Springs permaculture community, and a neighbor. We were able to get a healthy variety of tomatoes, peppers, cucumbers, cabbage, chard, squash, and herbs to help ward off deer. We planted



Startling to the unwary but a harbinger of good things for the ecosystem, this snake in the Care-and-Share garden sought its own good fortune among the tender plants.

peas, beans, carrots, radishes, bok choy, lettuce, and spinach directly from seed. I had volunteers to help plant but few stuck around for maintenance and harvesting. Those jobs fell to me, and there were plenty of days when I was challenged and discouraged.

The snake arrived in the summer bringing its message of rapid learning, change, growth, and even healing. Rapid change is contrary to the permaculture principle of slow and small change, so I was on high alert as to what lay ahead in my path.

According to *Animal Speak*, a book by Ted Andrews that explores mystical connections with the animal world, the snake is often a paradox, presented in some cultures as evil, and in others as a healer. The Native Americans see the snake as the symbol of transformation and healing. The physician’s caduceus of two entwined snakes symbolizes wisdom through healing. The snake has also been depicted as a guardian. It is said when a snake shows up in your path, you can expect death and rebirth to occur in some aspect of your life.

I was to witness this firsthand with the evolution of the Care-and-Share crop garden. Although I have been a gardener for over 20 years, I had much to learn about farming in the very public space of a food bank. I had many folks helping and contributing, but I needed to have my own vision and direction to keep projects focused and on track. I had to maintain this focus while working my body harder than I ever had when gardening for myself. Was I experiencing a healing and growing moment? Did I have enough wisdom to collaborate and work with others? Or was it all just pure evil?

I took to heart the need for learning new systems and developing a tough skin, messages inherent in the snake vision. First,

when the snake eats, it is able to unhinge its jaw and take in large amounts of nourishment. The analogy here is that when a snake comes into one's life, it will be time to open up and take in more information than normal. As I learned more about the landscape at Care-and-Share, I found I needed to let go of preconceived notions in order to be open to new ideas and to help from others. I balanced this new openness by developing a tough skin, one that could withstand the critical eye of the public.

The snake medicine was indeed shocking yet it did lead to growth as I applied permaculture ethics and principles: I showed care for the Earth, observed and interacted with the land and people, caught and stored energy, integrated rather than segregated, produced no waste, and obtained a yield.

The rabbit—food guilds

The next area to come under my care was the permaculture food forest, strategically located at the entrance to the warehouse. Similar in size to the annual garden, it consists of more level land oriented north to northwest, and is bordered by both the busy four-lane, east-west corridor of Constitution Avenue and the staff/visitor parking lot. It has nowhere near the runoff from the warehouse roof, and its lack of relief was boring. But here we have been able to show the community a vision of a little understood, yet quite sustainable way of growing food: the food forest guild.

Care-and-Share planted four apple trees and two peach trees in the fall. We took occupancy of the warehouse in January and hosted a soil-building party where we brought in truckloads of composted manure and mulch. We built up the land, layer after layer, to prepare for spring planting. In the spring, we received donations of perennial food plants and berry bushes, fertility plants, herbs, and annual food plants that volunteers tucked in around the first fruit trees. Within no time the garden had its first visitor: a rabbit.

Although people worried that the rabbit would destroy the plants, it did not. Nor did it stay long, most likely due to constant human traffic. Rabbit medicine, I learned, is symbolic of fertility. How appropriate this was for a food forest with the lofty goals of immediate food production and also perennial yields. Rabbits also embody ambition and finesse. I would need both of these attributes to build the guilds in the face of skeptical garden volunteers. At the end of the growing season, the food guilds had produced the first homegrown Colorado Springs watermelon, and the tomatoes outlasted the blight that hit the annual garden. The volunteers and I harvested more tomatoes and peppers from the food forest than from the crop garden. The land also gave us berries, pansies, and pumpkins. And by both increasing yields and drawing newcomers into permaculture practice, it seemed to validate the permaculture principle: "Integrate rather than segregate."

Mourning doves—the orchard

The third area of cultivated land near the Food Bank is a small orchard located on a 35-degree slope facing west to southwest. The steep ground was clearly unpromising and the orchard was consequently something of an orphan. As volunteers hand watered and tended the 12 trees, they struggled to hike the hill and more than once, actually took a slip and fell. We thinned the early fruit to encourage root growth but left a few samples to see how

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the apples and plums would taste. A few of these fruits survived a season with ruthless hail, and they proved sweet and delicious. So in the fall I began to take renewed interest in what the orchard might yield.

During the garden's first year, Colorado Springs experienced one of the wettest summers on record (leading to tomato blight in other gardens). Sometimes three thunderstorms would occur during the day. I watched this water flush out of the orchard, and periodically dreamed of capturing it. I decided to swale the hillside. Local permaculture instructor Becky Elder volunteered to make swales a reality for the Food Bank. With the help of corporate volunteers from Colorado Springs businesses, we meticulously measured and dug a series of swales across the landscape. As we worked to catch and store the energy of water, two mourning doves paid us a visit.

Mourning dove medicine centers around the traditional female and mother symbols. In Christianity, they are associated with peace. I was very touched by this as Becky Elder is considered the mother of permaculture in our region and has been a significant proponent of peace. It was a touching sign to be visited by the proverbial feminine and peace birds. The mourning dove song, distinctive and luring, is said to invoke the new waters of life. It reminds us, as Andrews states that, "no matter what our life conditions, new waters and new life are still possible." This was a very meaningful message as we set about diverting the waters that flowed on the land and looked forward to planting asparagus, rhubarb, and more in the swales. It is said of the mourning dove that it tells us to mourn what has passed and awaken to the promise of the future.

Each community inspires the other to continue doing good work and bringing new resources to the table.

As I look toward the future and continue to work for food in Colorado, the three Care-and-Share Food Bank gardens are but one tributary feeding the river of food security. The other forces at work include local networks rallying around resources and education and the efforts of commercial growers to glean their fields and redistribute the surplus. When these streams come together, they wield a force with the ability to carve a new food landscape.

Growth of local food security

Colorado Springs has a diverse population, from the conservative Christian right to the GIL Foundation dedicated to advocating for the rights of the gay, lesbian, and transgendered folks. Colorado Springs also has the dubious distinction to have been the model for *Fast Food Nation*, a book chronicling and critiqu-

ing the growth of cheap food in America. Yet, we have some of the most dedicated neighborhood and organic food producers.

In the past five years we have seen the establishment of the Peak to Plains Alliance (PPA) and last year the formation of Pikes Peak Urban Gardens (PPUG). Both organizations work with Care-and-Share Food Bank on issues of food security. The PPA was founded by local producers looking for a way to educate the public about the benefits of a local food economy. They have grown to partner with restaurants and school districts. PPUG was formed to help develop more community gardens. With a population of well over 500,000 people and only three community gardens, Colorado Springs very much needs to enhance local food production.



Onions grown by Care-and-Share provide fresh, nutrient-dense food to the food bank.

This fall the Care-and-Share gardens inspired the creation of another community garden at the Salvation Army. After a visit during which children in their care took classes here on growing plants from seed, planting, tending, harvesting, and preparing snacks and meals from them, the Children's Program Director at Salvation Army found grant money to build a series of raised beds with fencing for planting their own garden in the spring. We are all looking forward to more such local bounty.

Reaching out to the fertile edge

Care-and-Share Food Bank serves 31 counties in the southern tier of the state. This reach gives us a distinct advantage as we work to build food security. We are able to exchange resources and ideas with other communities. To better understand these communities, we conduct a gap analysis every five years. We host town hall meetings in each county, inviting people who are familiar with the issues of hunger, and we discuss the gap between those whom the agency serves and the under-served, and what resources would be needed to close it.

Each community inspires the others to continue doing good work and to bring new resources to the table. From donated Community Supported Agriculture shares in the frontier town of Silverton, Colorado at 9,318 feet to the school/health department/food pantry collaborative community garden at 3,898 feet in

the agricultural community of Las Animas, that Care-and-Share learns about and advocates unique solutions up and down the region. We are helping to build a model for local food security by reaching out to the fertile edge.

The area's large vegetable farmers leave thousands of pounds of food in their fields every year.

Commercial growers hold another piece of the local food security puzzle. The area's large vegetable farmers leave thousands of pounds of food in their fields every year, or send it to the garbage dumps when the product is damaged or doesn't meet the standards of their contracts. Some growers leave the food in the fields to rot, some plow it under, while others haul it out to the dump. Working through the local USDA Office and the County Extension Offices, the Food Bank identifies growers who would be interested in donating these wastes to the food pantries. Care-and-Share hopes to secure grant funding in the future to help pay these growers to use their equipment to bring the food to the edge of the field. The current model involves organizing volunteers to glean the fields. Gleaning offers a great opportunity for people

unaware of the farming industry to learn about it; however, it often requires a commitment of weekend time which many are unable to offer.

What's to glean?

The year 2009 was a significant time of learning, transformation, and hope as the animal visits promised. Care-and-Share Food Bank is still working to bring its three gardens into full production and to play an active role in food security policy in the area. I continue to have faith in our mission, and am encouraged by our growth. There is wisdom in small, slow solutions and value in both the crops and the community yields.

I will continue to focus on practices within the gardens that capture and store energy, from the water systems to the most effective planting selections. Care-and-Share Food Bank will work to implement the recommendations from the Gap Analysis including the Food Security Summit in El Paso County and the planning of one for the other counties. As the snake passes through the garden, we "Will work for food." Δ

Melissa Marts, a first year permaculture graduate, is working to reshape the Colorado Springs landscape to grow healthy soils and hearty food. As Director of Partner Agency Development for Care-and-Share Food Bank of Southern Colorado, she is responsible, among other things for more garden space than she can handle alone. Melissa is also a member of the Peak to Plains Alliance, an organization dedicated to promoting locally produced food and the region's agricultural heritage.

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Sharing the Surplus

Designing a Community Garden to Grow the Food Bank

Barb Fath

IN THE COMMUNITY WHERE I LIVE, in Warren County, Ohio, McMansions and high-end subdivisions exist alongside old farms and small villages. There are also noticeable pockets of poverty. The community has been hit particularly hard by job losses due to the closing of a large employer.

For the past several years, I have been volunteering at our local food bank: Little Miami Food Service, named after the river that forms our watershed. We receive generous donations of processed, boxed, and canned foods but little in the way of fresh produce. Early last winter I approached Carol Miller, also a food bank volunteer, about the possibility of starting a community garden to help supplement the processed food. Although many people in the area own land, most do not have gardens, or they live in trailers, apartments, or in other situations that prevent them from raising food.

We considered various forms the garden could take and decided against individual plots for the first year. We felt that if we set up individual plots, people might not care for them properly, and we very much wanted the first-year garden to be a success.

Our pilot garden in 2009 had to teach us what we needed to know: How many volunteers would we get? How much community interest would the garden generate? We planned to teach gardening to anyone who wanted to learn, especially food bank participants.

We were energized and determined. So, we contacted each other almost daily with ideas. Carol went to area churches for donations, while I interviewed other community garden and CSA organizers for tips. The Civic Garden Center in Cincinnati was helpful and suggested I visit www.communitygarden.org and click on "Learn" for good information. The site was useful.

The food bank is located in a late 19th-century school building which is owned by the local township. In front of the food bank there is open land which also belongs to Salem Township. Early in February we sent a letter to the township trustees detailing what we planned and asking to be added to the agenda for their next meeting. Carol and I presented our petition. After some discussion of the idea, the trustees asked me what size the garden would be. This was one area Carol and I had not discussed. I made a quick mental calculation of how much land I could manage by myself should no volunteers be forthcoming, and asked for 20' x 30'. The trustees agreed the garden was a good idea, but they needed to check their insurance and a few other details. Soon afterward I was notified that we had been given permission to use the land with the proviso that we should keep it looking nice and clean up at the end of the growing season.

We then sent letters to church groups, scout troops, master gardeners, high schools and vocational schools, garden clubs, and extension agents asking for volunteers and donations. Unfortunately, these letters elicited little response. We had the most success soliciting donations and getting volunteers through personal contact. The Civic Garden Center donated seeds. Carol got her church youth group to donate money for fencing, and the Sunday school kids agreed to start flower seeds. I asked two of my neigh-



Photo by Gary Copen.

The growing Community Garden plot for Little Miami Food Service.

bors to start tomato and pepper seedlings, and they asked a local farmer to donate fencing for trellises. The president of the food bank got a nursery to donate some plants. Two of my friends as well as my veterinarian agreed to help us plant.

In March, we handed out fliers at the food bank with an invitation to the garden opening and asking for volunteers with "no experience necessary." Several food bank recipients did approach us to say they would help. But, even with a reminder call, they did not show on the day we had mutually agreed upon. A few people said they wanted to start their own gardens and asked for advice. Some people gave their own gardening tips.

Tilling as archaeology

Our future garden was a grassy area so we decided to have it roto-tilled. It was early April before we found someone to do this work. We had quite a bit of rain and it was early May before

it was completed. We had hoped for a second roto-tilling to help with weed control, but after two more weeks of rain, decided to proceed with forming raised beds.

It was obvious that we had good soil. It was dark and friable to a depth of between six and eight inches. It was also obvious that the area had been used as a dumping ground by the school at one time. There were chunks of coal, broken bits of glass and ceramics, as well as small unidentified objects. One of the township trustees mentioned that the land had been used as pasture for many years and that Salem Township bought it for a park but never developed it. There were dandelions, chickweed, clover and other good “weeds” in the land so the pasture had apparently not sprayed with herbicides but just cut with the clippings left on the ground.

Despite the debris, the soil turned out to be wonderful!

We began greeting each person who came out of the food bank...and asking if they would like something from the garden.

After the rototilling, Carol’s husband, their neighbor, and I raked the soil to remove vegetation, rocks, coal, and other debris. We made a group decision to leave a grass walkway three feet wide around the garden and to erect the fence around all of that. Carol’s husband and a neighbor offered to mow and trim the area, and they did so until garden plants grew into the pathways and made them too narrow for the mower. While Carol’s husband and their neighbor put up fencing around the plot, I began digging raised beds.

The area we chose for the garden has a slight slope to the southwest and gets full sun all day. The long side of the garden (30 ft.) runs southeast to northwest, and we laid out the raised beds with the same orientation. This enabled runoff to be caught in the walkways between beds. We determined to put shorter plants toward the southeast end so none of the plants would shade others. A two-foot wide walkway was dug in the center of the plot running parallel to the short sides for better access to the beds. Five beds approximately 14’ x 3’ were arranged on each side of the center aisle, all ten beds parallel to the long side of the plot with 18” walkways between them. We dug soil from all the walkways and used it to raise the beds.

Quite a few people were puzzled by the raised beds. Some thought we were going to plant lots of potatoes in the walkways, covering them with the soil in the beds, some thought of sweet potatoes in the beds, one commented that it didn’t look like a garden but a cemetery. Several returned later to see how the beds worked. They liked what they saw—one commenting that we got more in that small space than he did in a larger garden.

As the garden took shape, I approached people who live nearby to introduce myself and let them know what we were doing. I also attended another Salem Township meeting to thank the trustees for letting us use the land and visited them again at the end of the growing season to share our experiences. I asked permission to use the land for 2010 and to turn in an official report. We sent notes or made phone calls to thank each donor and volunteer. We contacted the local newspaper reporter who gave us some good publicity. This resulted in other donations.

On Memorial Day, three of us planted butternut squash and red beet seeds between zucchini, wax beans, collards, mustard greens, carrots, sunflowers with cucumbers to climb on them, broccoli, cabbage, Brussels sprouts, and peppers. We trellised lots of tomatoes and half runner beans in the same beds. Marigolds and zinnias went into the end of each bed with nasturtiums around the compost fencing (located in one corner). We scattered parsley, dill, cilantro, and basil. We put a layer of straw on each bed prior to planting. This definitely helped control weeds, as very few appeared in the garden. The straw was also intended to conserve moisture but was barely put to this test as we had a good bit of rain. The flowers were beautiful but also a bit of a problem as some grew huge and blocked the aisles and attracted lots of

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bees. The bees were great, but also a potential hazard as people came into the garden.

On June 11, we harvested four small bags of collards and mustard greens for the food bank. Soon we were harvesting other produce, but there was often some left over at the end of the day. Since we operate only on Monday and Friday, the food wasn't fresh the next time we put it out.

Realizing that a new strategy was needed, we began greeting each person who came out of the food bank with their order and asking if they would like anything from the garden. Most people responded positively, asking what was available. As expected, some people did have gardens and didn't accept the offer, saying they would leave the food for others who needed it more. Some were just not interested. Several people said they didn't know what they'd do with fresh produce. Many, however, did find something they wanted.

We harvested the vegetables while the recipients waited and most people came into the garden. Some even helped to harvest. A few very young helpers stepped on plants, and one woman harvested entire parsley plants rather than just some leaves. Carol and I felt this was a small price to pay for getting people into the garden. It was often hectic as we averaged one family every five minutes or so through the food bank, which serves over 400 families a month. We limited how much produce each family could take based on what was ready to harvest that day, adjusting the amount as the morning progressed. Two wonderful women, Ruby Edwards and Alice Patience, helped with the garden in 2009 and plan to be part of the 2010 garden.

When school was out for summer, some of the neighborhood kids came over to see what the garden was all about. Soon, they were helping water and weed whenever the mood hit them, and they definitely kept watch over the garden. Carol found this out when she stopped by on a day when the food bank was closed and was asked by the children what she was doing there.

After the tomatoes were finished (they were determinate) the half runners really took off and the zucchini were replaced

by more carrots and radishes. Carrots were a definite hit. Many people had never tasted them fresh from the garden before. The greens were followed by Roma beans and the wax beans by fall greens. Our first hard frost came October 18 killing the peppers and beans. There were still some greens, radishes, parsley, and carrots being harvested in November. When the garden was closed for the year, the kale, collards, Swiss chard, mustard greens, and parsley were dug and moved to one of my solar-heated greenhouses for continued use during the winter. A neighbor delivered manure to the garden in late November and after it was spread, we added a thick layer of straw.

We decided to sheet mulch the grass walkway up to the fence and also an area about a foot wide just outside of the fence. This should eliminate the need for mower and weed-whacker next year. We will put cucumbers and beans on the fence and plant a border of flowers and herbs (including many perennials) on the

A few people said they wanted to start their own gardens and asked for advice, and some people gave their own gardening tips.

outside of the fence. This will keep the flowers and bees out of walkways and give us over 400 sq. ft. more gardening space.

One added benefit of the garden was the produce a local grower was able to donate. I had been frequenting this grower's produce stand over the years. We discussed the food bank garden when I stopped by this year. The grower was aware of the food bank and had donated a few times in the past but this year, with me as a contact, donated 240 ears of corn, almost 100 cantaloupes, over 150 pumpkins, and other items. Some other local people also donated smaller amounts of produce from their gardens, and we noted what came in and will try to grow a bit less of these items next year.

This garden was definitely blessed, and the weather was good for growing. The plants grew large and produced lots. We kept track of how much we harvested each day. The total was just over 600 pounds for the season. This was accomplished with a minimum of effort. We worked in the garden when the food bank was open—Monday and Friday mornings, with only a few visits in between. We logged 388 volunteer hours for the garden in 2009. Knowing this will help the bank obtain matching grants, as will the amount of food we donated through the garden. Notes were taken at the end of each day with suggestions for the next garden including how to change our plantings, what produce the recipients liked, what



Photo by Beth Goldenfeld

Food bank garden and volunteers in the first season of growing.

they didn't, and how to get more volunteers. With this kind of information, we will be much better prepared for success in 2010.

The Salem Township trustees have given permission for the garden for 2010. We have great plans for the year including plant-

Getting the participants to come into the garden was great. We had a chance to meet them and hear their stories.

ing a spring garden, planting fewer tomatoes, more carrots and cabbage, starting more plants in pots for faster succession, and possibly a container planting demonstration area. Recipes and basic directions for preparing items such as squash will be available. We are trying to determine if anyone is interested in individual plots which we will help maintain and take over if they are neglected. In return for use of a plot, participants would give a small amount of their harvest to the food bank. This would necessitate expanding the garden a bit and getting permission to do so.

Everyone at the food bank, the township trustees and workers, and the general community were very supportive of this effort. Some of the small, local businesses I frequent have already agreed to donate materials, plants, and seeds for 2010. This support was one of the keys to our success.

Getting the participants to come into the garden was great. We had a chance to meet them and hear their stories. There were people who lost good-paying jobs and now were working one or even two jobs and still not earning as much as previously. They also lost their health insurance or other benefits. There were people who had lost their homes and gardens, people who had been evicted, and older people with no one to care for them. Many people had lost their vehicles and had borrowed one to get to the food bank, or even walked to get their food. Many people we met had debilitating illnesses and many were undergoing treatment for cancer. There were extended families—children and grandchildren who moved back in with their parents when income was lost. Some people even moved to this area on rumors of good jobs only to find there were none available. A few were recently divorced and trying to get their

lives back together. Several confided they sometimes were out of food for themselves and their children. We met people with all sorts of problems, and think about the many people whose stories we'll never know.

Knowing this, it is no wonder that most of these people are not helping out in the garden or learning to garden. They are struggling to live and keep their children fed and clothed. The garden recipients were very appreciative of the fresh food, and we received thanks, hugs, and smiles from lots of them. I can't wait for the garden to open again. It's a great way to share the surplus. △

Barb lives on ten acres in Pleasant Plain, Ohio where she and her husband have been developing a permaculture site for the past 20 years.



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A Local Foods Movement Worth Its Salt

Tao Orion

IT STARTED WITH AN WALK IN THE WOODS and some musings on Gandhi's struggle for justice. We wound up at the edge of the sea.

I had recently moved to Aprovecho Institute, outside of Cottage Grove, Oregon, after a brief stint in Portland. With my partner Abel Kloster, and our new friend and Aprovecho staff member Josh Fattal, we hiked to the top of the watershed. Our trek took us through remnant oak savannahs where madrone and incense cedar still stand amidst a small ocean of rapidly growing Douglas fir seedlings. We hiked through hundreds of acres of clearcut and replanted Doug fir plantations. The foothills of the Coast Range in Oregon are covered in these monocultures. Still, the trees have their beauty, and the understory plants, the salal, Oregon grape, the trailing blackberry, come back after a time to provide food and habitat for some of the former residents.

We reached the top of the watershed, where—looking north and west—you can see the drainage of the Siuslaw River as it carves its way through the rugged Coast Range to the Pacific Ocean. Looking south and east, we glimpsed the beginnings of the Willamette River, of which our little creek is part. Our eyes drawn to the gorge of the Siuslaw, we struck up a conversation about making a seasonal migration to the coast, where we could harvest seaweed and salt. We could walk there in a week, we reasoned, and with a group, would be able to carry enough salty, mineral-laden foods back to the valley to nourish us for the rest of the year.

...we struck up a conversation about a seasonal migration to the coast, where we could harvest seaweed and salt.

This sparked a conversation about the salt march led by Gandhi in 1930. In the early 20th century, the British rulers of India taxed salt. Even the poorest had to purchase it from the government-owned salt works rather than harvest it themselves from the sea, as had been done traditionally for centuries. Gandhi led his first *satyagraha* march in protest over the salt tax. He walked with people for 240 miles to the coast, where he picked up a lump of salt and catalyzed a non-violent revolution.



Pedro Ibarra and Ash Aymond lighting the fire for the saltworks with a five-gallon bucket of saltwater waiting.

On every grocery list

From this conversation, our ideas about sourcing the necessities of our diet more locally took shape. I began to research the subject of salt. As a necessary component of our daily diets, salt has always been a valuable commodity, traded from the coasts inland or harvested from inland seas in landlocked areas.

Prior to the advent of refrigeration and canning, salt was the primary method of preserving many foods. Salted fish and meats were vital commodities for trade in many cultures for thousands of years. In modern times, salt curing has fallen to the wayside as more energy-intensive forms of food preservation have been favored. However, salt still features regularly on every grocery list. Like many of my friends, I have spent plenty of money on gray Celtic sea salt. While this salt is tasty, I began to wonder about the merits of shipping salt from France when the cold salty waves of the Pacific Ocean broke less than 100 miles from where I lived.

These ideas simmered for another year, while life went on in our community. Students came and went, many meals were shared. At this time, I was responsible for ordering bulk foods for the community. This meant that I took inventory, made an order, then met the big truck at the bottom of the road where various 25- and 50-pound bags of grains or beans were traded for money. Then, the trucker and I both went our separate ways—he back to an organic wholesale distribution warehouse in Eugene, myself back to our campus kitchen.

At Aprovecho, students were immersed in learning many aspects of sustainable living—organic gardening, appropriate technology, and sustainable forestry. I began to wonder about all of this food being trucked to our doorstep. Was it sustainable? Let's see...mung beans from China, quinoa from Bolivia, olive oil from Argentina, salt from...Cargill? I started to realize that as an education center, we had the ability to radicalize the expectations of our students not only through courses but by the menu offerings. We could also use the consistent income from our programs to support local farmers, not only to grow vegetables, but to supply us with dietary staples. As this idea was discussed

I started to wonder about the merits of shipping salt from France when the cold salty waves of the Pacific Ocean broke less than 100 miles from where I lived.

among the staff, we decided to embark on an experiment.

We cooked up a new program, which we called "Local Food Networks and the 100-Mile Diet." We wanted to educate our students about the value and the possibilities of local foods by actually feeding them that way. It required several months of planning. We networked with many local groups and individuals who were and are pushing forward local food initiatives. These included the Willamette Farm and Food Coalition, Eugene Local Foods, Slow Food Eugene, Harry McCormack and the Ten Rivers Foodweb, Food for Lane County, and more. We made contacts to purchase and trade agreements with local farms, in order to ensure that we could source enough food for 25 people for the duration of the program. The Aprovecho garden was planted to capacity in order to meet the swelling demand of our local foods challenge.



The saltworks cooking away.

Preparing for the experiment

The first two weeks of the program, we stayed on our normal diet. Many of the course participants were vegetarian or vegan, and started to slowly incorporate animal products during this time as they would feature prominently once we began the four-week "One-Hundred Mile Diet." People also had time to wean themselves off of caffeine, sugar, and tobacco. As the day of the local foods challenge approached, we had all of our local food staples on hand: milk, butter, eggs, chicken, beef, lard, pork, acorns, filberts, potatoes, winter squash, corn, pinto and black beans, some

wheat, and more vegetables than we could possibly eat. The one thing we were missing was our salt.

The pilgrimage that we had imagined years earlier from the top of the watershed came to pass one beautiful September day. We chose a beach that was far enough from any inhabited drainage that we felt comfortable with the cleanliness of the seawater. We woke two hours before sunrise when the tide was at its lowest. Our groggy group hiked down to the rocky in-



Savoring the first salt as it precipitates out of solution.

Gandhi ... walked with people for 240 miles to the coast, where he picked up a lump of salt and catalyzed a nonviolent revolution.

tertidal zone to harvest seaweed in the gray dawn light. Then we began setting up the salt works. After consulting with our resident appropriate technology instructor and stove designer, Mike Hatfield, we came up with a simple wood-fired salt evaporator that could be set up on the beach.

Consisting of three 18"x 30" stainless steel pans and two pieces of corrugated roofing metal, this salt cooker is cheap and easy to set up. We set the pieces of roofing metal on edge in the



Watching over the pans while the water evaporates from the salt. And adding water to the pans just before collection.

sand so they stood up straight, and then set the pans on top. Sand was piled around the outside of the metal for insulation, and a fire was built under the pans. We had three pans to provide for different levels of concentration: to the first pan, we added the fresh seawater, and then scooped the water as it boiled to the second pan, then to the third where the remaining water boiled off and the salt was scraped into a jar.

All in all, we boiled 25 gallons of seawater (collected in five-gallon buckets by brave souls who ventured out beyond the sandy wave break), and it yielded a half gallon of salt, a 50:1 ratio. I am told that this is similar to the ratio of maple sap to syrup. The process took six hours of sitting in the sun on a beautiful beach. We also burned 1/16 of a cord of wood in the process. It took about two hours for the fire to get hot enough to start the water boiling and for the salt to be removed from solution. Saltwater boils at a higher temperature than fresh water, so we had to be careful with it as we ladled and scraped from one pan to another.



Pure sea salt is all that remains in the final concentration pan.

Daytrip to the beach can yield a year of salt

Many people agreed that the salt we made tasted “saltier” than other salt. As we cooked with it, we found that we had to use less

than some recipes called for. The salt was very fine, and whitish grey in color. That half gallon of salt lasted our group of 25 for three of the four weeks of the program; a smaller group had to go and make a bit more to ensure an adequate supply for the last

With this level of production, a small family could easily make their year’s worth of salt during a day trip to the beach.



Scooping out finished salt. The process yielded a half gallon of salt from 25 gallons of sea water.

week. With this level of production, a small family could easily make their year’s worth of salt during a day trip to the beach.

One of the drawbacks we found with this process was that the stainless steel started to warp and turn colors near the end of the boiling, perhaps due to the higher temperatures. This was a bit concerning, and the next time we went, we used cast iron. However, with cast iron, the salt pulled the iron out of the pan and we were left with rust-colored salt that tasted, well...like salty rust. Our latest approach has been to commission a ceramic artist to make a mold in the size of the shallow trays, so that we can make our own hand-fired ceramic salt-cookers.

I am still on the lookout for an area where salt accumulates naturally in shallow rock depressions along the coast, but have yet to find one that seems clean enough. The Oregon Coast lacks the wide, shallow flats of some coastal areas, such as the west coasts of India and France, where saltwater is collected and evaporates naturally in large shallow pools.

We have also thought about bringing the seawater home to evaporate in our solar wood-drying kiln at Aprovecho. This



Josh Fattal, Ash Aymond, Pedro Ibarra, and Sean Butler at the saltworks on the coast of Oregon.

would change the dynamic from an outing to processing directly in the “home economy.”

While the “One Hundred Mile Diet” experiment is over, we are still, as an organization and as individuals, endeavoring to source as much of our food locally as possible. We know that it is possible to obtain all of our food locally, but the allure of chocolate, tea, mate, and coffee, has won over some of our tastes. We now buy olive oil from northern California, and have discontinued the purchase of the grains and beans from other continents. We have formed lasting relationships with local farmers and producers who are pushing the common conceptions of what is possible for the area.

The local foods movement is thriving in the Willamette Valley of Oregon. Perhaps it is not as immediately visible as the efforts of Gandhi and the satyagraha movement to overcome British control of India, but here, in this land, our efforts and our economics have been mobilized towards a durable and resilient local food system. Δ

Tao Orion lives and works at Aprovecho, outside of Cottage Grove, Oregon, a sustainable living education, demonstration, and organizing center, where she is the garden manager. She loves growing food while participating in the creation of a diverse and abundant regional economy and lifestyle. She also helps people create more sustainable homes, gardens, farms, and forests through her business, Resilience Permaculture Design.

We know that it is possible to source 100% of our food locally, but the allure of chocolate, tea, mate, and coffee, has won over some of our tastes.



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The Permaculture Perspective: It Depends **Reintroducing Staples to Regional Farming**

Michelle Ajamian and Brandon Jaeger

FOR THE PAST TWO YEARS we have been working in our home region of Appalachian Ohio, with other farmers, food businesses, and locavores to grow a robust staple food farming and processing system. We are in the beginning stages of opening a commercial milling facility.

This is the story of how we came to do this project and what we've learned so far. We also raise some ethical questions that this vision incites in us, as practitioners of permaculture.

First principles

Whether we were traveling in California—where Brandon joined the 2007 farm apprenticeship crew at Green Gulch Zen Farm—or back home in southeastern Ohio, we were always delighted to enjoy the freshness and security of fruits, vegetables, meats, and dairy products offered by farmers market vendors.

Then we talked. Brandon asked the question: “Where do we go to get our beans, grains, and oils?” The answer: grocers and buying clubs who source from across the continent or around the world. That led to another question, which we couldn't readily answer: “Where's the food security when these foods, coming from far away, represent more than 70% of our diet—the bulk of what we eat?”

We discovered that staples are easier to grow than the labor-intensive veggies we both knew from experience.

What dawned on us out of this conversation was that we had been in denial about the extent of our dependence on the petroleum-driven food system. Afterward, though the farmers market food was no less wholesome, our that extra enjoyment of food security that came from eating out of our own garden and from local markets diminished. We started seeing how multinationals dominate the world market in staple crops. Hybrid seeds increase their control over genetic resources, while patented GM (genetically modified) seeds—sold under the promise of increased yields only provide more business and profit for the makers of chemical herbicides. We started seeing how government sub-

sidies and corporate control of commodity crops exacerbate already epidemic levels of diabetes and obesity in our region and elsewhere, as these crops increasingly are converted into sugary drinks and feedlot meat. Meanwhile, most cropland across the country stands in vast monocultures of virtually inedible corn and soybeans. Our enthusiasm for the seeming independence offered by the burgeoning local food movement waned. That was 2007.

Michelle had heard about small, farmer-targeted grants through the U.S. Dept. of Agriculture, and we considered a plan to go back to Ohio, start growing some of the beans and grains that we eat, and promoting locally grown staples in our community. We headed to Davis, California where we went into a grant-writing hiatus at the home of good friends Marisa and Tim, using their computer while they were at work everyday. In gratitude,

Where's the food security when staples represent 70% of our diet?

we cooked, shopped at the co-op, and helped with the laundry.

Over the next two weeks, we wrote two grant proposals to the USDA's Sustainable Agriculture Research and Education (SARE) program. One grant was to support growing test plots of high-nutrition staple seed crops on four farms in southeastern Ohio. The other proposal was for a partnership with two other land-based households to form a permaculture work circle as a remedy to land fragmentation, food insecurity, and a depressed rural economy. The latter project proved too esoteric for the grant reviewers.

They saw something in the staple crop project, though, and we were given a little over \$5,000. Fulfilling the work of the grant over the past two years has felt like a walk in the park, only the park is full of squirrels and stray cats, and we are holding the leashes of six adolescent Saint Bernards who haven't been out of the house for days!

Early on, when our test plots of amaranth, buckwheat, millet, quinoa, and adzuki beans were barely planted, we started getting inquiries and pre-orders from the bakeries, restaurants, and pizzerias in our community that are committed to buying local crops. We even got a call from a CSA in Maryland, asking to buy all the adzuki beans we were growing. We explained that our 16 small test beds were not sized for sales and we were at least a year

away from growing enough for market. The result was the emergence of something like a staples crop support group. Everyone we met or talked to was eager to join us for harvest on our farms. This included the owners and staff of Village Bakery in Athens, Ohio, who tromped off at the end of the day with freshly picked heirloom dent corn, which they had prompted us to add to our test plots. They used the dent corn for their famous tortillas.

Visible structures

When we returned to our home in Athens County, we were expecting to bask in grant-funded bliss—ambling through test plots of vibrant and nutritious plants, clipboards in hand, comparing varieties for germination rate, size, vigor, pollinator activity, seed-set, etc. Instead, we were roused from our food security dreams by the clamoring desire within the broader community to buy locally grown staple foods and by the uncanny timing of recent spikes in global grain prices, along with the stories of shortages and hoarding. We had to get serious about developing a collaborative of farmers, wholesale buyers, and eaters. We pared down the number of crop varieties we would grow, and increased our acreage.

We discovered that staples are easier to grow than the labor-intensive veggies we knew from experience. However, harvesting and processing calorie- and protein-rich staples on a commercial scale required a certain investment in equipment and infrastructure, without which we would not be able to produce the fully cleaned dry beans, milled flour, or pressed oils these crops promise us with their seeds.

This infrastructure represents a sizeable capital investment, a fact that has a great deal to do with the “get big or get out” trend in grain agriculture throughout the last century’s petroleum boom.

So, we went on another grant-writing spree, winning a larger SARE grant, as well as funding from the Ohio Farm Bureau, Ohio State University, Ohio University, the Athens Foundation, and the Central Appalachian Network (CAN) to deepen our partnership with other farmers, work with local food businesses to develop recipes and do market research, and to purchase the farming and processing equipment we would need to and implement a prototype system for producing, processing, and selling grain, beans, and oil.

The facility is coming together and we are poised to put out our first products. We purchased a seed-cleaner we were lucky enough to locate from an Ohio family business. Then we bought a de-huller and a commercial-scale stone mill, as well as various pieces of grain-handling equipment, a ¾-ton diesel-engine truck and a 28-foot-long gooseneck trailer for moving machinery and crops from farm to farm and to the processing facility. We have also partnered with a local group to develop appropriate technol-

ogy for pressing oils on-farm, so that we can produce cooking oil (sunflower, etc.).

On the farming side, we have been working through three channels. Green Edge Gardens, an organic vegetable farm in Athens County, has loaned the use of four acres, a tractor, and implements. Here we have been growing small plots of less conventional crops, including amaranth, millet, and buckwheat, among others. We hope to demonstrate a specialty niche model for other veggie farmers who may have extra acreage to cultivate. We have been exploring several different technologies for harvesting and threshing, such as a 60-year-old pull-type combine that has been kept in working condition.



Brandon Jaeger (second from right) preparing community members for the harvest on one of their farm sites.

We have also been working with local Amish farmers, who have been growing grains and beans on small plots for many generations. They have become very interested and are growing open-pollinated flour corn, spelt, and buckwheat for us.

Finally, we have contracted with King Family Farm, a local pork and poultry operation that grows and combines some of its own animal feed. They grew three and a half acres of heirloom yellow dent flour corn and one and a half acres of black beans this past summer. The farm also planted six acres of spelt for the winter of 2009-10. We intend this to demonstrate an alternative to the conventional rotation of commodity feed corn, soybeans, and wheat on many local farms.

Invisible structures

In order to get a yield from the broad and enthusiastic community support our project has drawn, in 2008 we formed the Appalachian Staple Foods Collaborative (ASFC), which works in a wide range of fields, to figure out what kinds of invisible structures would help to build a regional system for staple foods.

Through ASFC, and the funding it has received from the Sociological Initiatives Foundation (SIF), Ohio State University (OSU), Ohio Department of Agriculture, the City of Athens, and Athens County, we are reaching out to more local businesses, farmers, OSU Agricultural Extension, non-profit organizations, and community and school gardens. The collaborative is mapping and inventorying the resources and needs of our region, and building a network of stakeholders, to build an appropriately scaled staple food system.

We are also looking for ways that public agricultural land and well-head protection areas might grow staple crops, as well as focusing on how food bank kitchens can develop high nutrition cereals to distribute to school children. Our key motivation for that work is to respond to energy descent by addressing the needs of those who are already the most food insecure, understanding how farmers and fallow land can be gainfully employed to feed area residents, and working toward zero dependency on chemical inputs in agriculture.

But is it permaculture?

In order to build our knowledge and skill base for creating a regional grain, bean, and oilseed system, we have been seeking out the traditional knowledge of old-time farmers and locals whose families have farmed here for many generations. They describe a time, before farming came to be dominated by petrochemicals, that sounds agriculturally and socially utopian in comparison to today.

Then, we realized that we were talking about the heritage of immigrants from the British Isles, who came to the area with a lens that was jarringly different from what a native, an ecologist, or a permaculturist would see in the ancient forests of

Michelle Ajamian uses petroleum-powered machinery to restore the culture of staple crops to her region.



Appalachia. The primarily British and ex-colonial immigrants who settled this region in the 19th century saw land as something to clear of trees in order to graze sheep or cattle or to plant grains. We respect agriculture and lament the modern disconnect between people and the source of their food, but we realize that deforestation and an agriculture dominated by annuals, even when practiced on a village or town scale, never gave the greatest yield for the least effort (a permaculture aim) in the Appalachian

...should we view wheat as we regard olive oil or mangoes?...neither native nor agriculturally suited to our climate...

biome. Rather, agriculture as it came to America from Europe and ultimately from the Mediterranean and the Near East, was a cultural construct rooted in the limited capacities and understandings of Neolithic peoples. Perhaps we should be gardening the forest instead of reproducing Mesopotamia.

The ever-present question accompanying our work is this: Where should we put our energies as we start the transition to a post-petroleum era? Do we first use petroleum and coal-powered machinery to reclaim our staple foods from the oligarchic grip of the centralized, petroleum-saturated global system? (Can we?) Or

should we aim instead to draw our sustenance from other ecosystems and other methods? If we are successful on the first hand, could we then harness the improved food security, community wealth, and democratic empowerment generated by local production of grains, beans, and oils to move our community to plant and cultivate rich and diverse forest gardens, dominated by guilds of perennials? In other words, will the petroleum bust happen in a way that lets us detach from the global grain market in stages and steps? Or is our present strategy too much like promoting “clean coal” in order to shift our energy economy toward something better, ignoring as it does the fact that our nation’s energy demands are wildly unrealistic, that our grandchildren will have severely constrained resources, and that our atmosphere, climate, aquifers, and soil cannot bear the toxic load? These perhaps Faustian bargains are very much on our minds because our region is also on the front lines of the coal wars.

Our motivations as permaculture activists working for food democracy are

certainly a far cry from those of Wall Street investors and the directors of large utility companies, but perhaps we are fooling ourselves as well. While we enjoy the warm feeling of reintegrating antique, pre-mega-farm equipment into our region's food production, not to mention the challenge and adventure of loading an 11-foot-wide, metal contraption onto a seven-and-a-half-foot trailer, hauling it across the state, and then unloading it, we occasionally wonder if the forests are frowning on us.

To spin a mixed permaculture metaphor, perhaps we need to stop installing willow trees and gabions on the riverbank below the cracking levy, and just head to high ground, or learn to live with wet feet. Perhaps we should accept our reliance on calories from the global grain and bean system, while we work single-mindedly on our forest gardens; because, after all, a combine that harvests open-pollinated grains for regional human consumption instead of harvesting GMO commodity-market cattle feed for some distant



Test seed plots of amaranth and millet.

...we are working in a context of culture and economics just as much as we are working with soil and seeds.

CAFO, is still a combine. One day (how far from now?), when there isn't enough oil to warrant its intended industrial use, it's going to be rusting away in a first-succession forest as a shelter for mice and bees.

We ask ourselves, should we view wheat the way we regard olive oil or mangos? They are neither native nor agriculturally suited to our climate, so they are special, rare treats. Maybe we should get more accustomed to filling our bellies with roots, tubers, nuts, and wild game in place of beans, grains, and bread, but we look around at what people eat, even people who are consciously practicing healthy and local food culture, and we see a predominance of bean and grain foods. Even at our permaculture courses, we see warm, homemade breads, slathered with butter from a local cow, or crackers and black bean dip with local tomatoes, peppers, and cilantro. Beans and grains have become the staples of most human cultures, for better or for worse.

Even if we set a goal of reducing our reliance on these annual crops, we have to bear in mind that we are working in a context of culture and economics just as much as we

are working with soil and seeds. The work of The Land Institute to develop perennial grains comes to mind, but the thought of perennial grasslands in the middle of Appalachian forests would dismay any practicing agroecologist.

We know that this is a glaring case of either/or: a false dichotomy whose value lies not in a literal answer, but in its rhetorical tilth. These questions need to be kneaded, their yeastiness activated into a more and more complex flavor, kept alive and fermented for better digestion. We are working to assemble the visible and invisible infrastructures that will bring local beans, grains, and annual oilseeds back to our regional markets. We want our local farmers to be raising staple cash crops in Zone 3. Simultaneously,

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we maintain our loyalty to monthly meetings with our local permaculture guild, supporting each other's home-site designs and implementation, and spreading the word in the right circles about polycultures, low-tech solutions, and edible forest gardens.

We look for ways that we can serve both aims. For example, as part of promoting our work and building a customer base for our soon-to-come products, we host farm field days where participants: farmers, restaurateurs, families, and college students cooperate in the harvesting, threshing, winnowing, and hand grinding of grains and beans. They sample many of the delicious, simple, and nourishing recipes made from some of these crops. We feel that this not only promotes the current support that a budding regional staple production and processing system requires, but also builds awareness and skills for community food security.

Likewise, on the production side, we give great consideration to how much tilling we do. We subsoil, disc, and



Older techniques for harvesting, paired with heritage staple crops, can provide local food through our time of transition.

...will the petroleum bust happen in a way that lets us detach from the global grain market in stages and steps?

strategically interplant whenever possible, and we are looking into no-till, soil building technologies such as the roller-crimper. While talking with farmers who are growing for or with us, we have broached topics that seem to be acceptable, given the tone of our relationship and the farmer's pre-existing beliefs and



Reclaiming older technology to harvest local staple crops.

awareness about agroecology. For example, we may discuss the concepts of planting on contour, Keyline plowing, or even alley-cropping with perennial fruit, nut, and nitrogen-fixing trees. It's a messy world, there is no single solution, and we are continuously reminded of the idiom that has countless times been proclaimed almost religiously, and unabashedly, by the permaculture community: "It depends."

We ask the readers of *Permaculture Activist* to help us consider these questions: Think about their implications in the biome and culture of your own region. Perhaps we shall just stay our course, working on all fronts simultaneously, remembering that a more diverse system is more stable and resilient. Nonetheless, we have much to gain from putting our heads together, improving our tilth, and making wholesome loaves of bread for all. Δ

Brandon Jaeger grew up in Levittown, PA, literally a textbook example of suburban sprawl and the loss of rich farmland and forest to development and fragmentation. He holds a B.S. in Regional Environmental Land Use Planning, has traveled across the continent on a bicycle, farming and learning about life, and is particularly interested in regional self-sufficiency and reculturing.

Michelle Ajamian holds a B.A. in Appalachian Ethnography from Ohio University, has worked in social services, ecology, economic development, and agriculture for over 20 years. She has recently helped found the Athens Food Policy Council, which enjoys the support of a wide range of community members, including the mayor and city planner. The authors share a growing homestead and forest garden in Athens County, Ohio. goodfooddirect@gmail.com

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Growing Staple Crops in the City

Sunroot Gardens: Urban Survival Farming

Mike Thayer

OCTOBER 12, 2009: It's 10:30 pm and the wind is absolutely howling, funneling cold air through the garage-turned-greenhouse where I am just now sitting down with Farmer K for a dinner of simple farm fare. It is delicious and nourishing, and gives us the needed energy to finish this long day of work. We have been incredibly fortunate to get 10 days of very low humidity at harvest. Each day the blessed dry east wind is a brings our crops, spread on racks in the garden, closer to the dryness needed for storage. We have watched closely and acted quickly on an intuition of timing—of a “closing window” in this case—and seen our guess play out well.

The welcome dry spell is ending. For days now, a storm has been gathering in a way I have not felt before. Perhaps this tension is a taste of what people who grow grain for survival must feel during a harvest full of uncertainties. For hours, Farmer K and I have been scrambling to get hundreds of pounds of recently harvested staple crops in various stages of threshing and winnowing under cover of some sort. The forecast calls for seven days of rain beginning tonight.

The weather is deciding everything we do. Any plans we had are dropped so we don't lose six months of work to mold. After supper, I find myself loading 4'x4' custom-made drying racks onto my bike and head home, where a good 90 lbs. of soup beans are already drying in spare corners of the house.

This is the Staple Crops Project, part of Sunroot Gardens CSA in Portland, Oregon. Kolibri terre Sonnenblume (the exoticism of which quickly led to the nickname, “Farmer K”) founded Sunroot in 2007 and describes it as “not a business or a non-profit,” but, “simply an effort to feed as many people as possible by offering them ways to participate in the growing of the food.”

A distributed farm

The “farm” is a collection of backyards and empty lots around southeast Portland where the vegetables and fruits are grown and gathered. How many plots were there altogether? Farmer K would shrug when asked. Published numbers over the last two years have varied from seventeen to fifty.

Since 2005, Farmer K has been cultivating staple crops in



Winnowing wheat in the field with a homemade machine.

small batches in some of these urban plots, to grow enough seed for planting larger patches. In addition to the urban produce gardens, Sunroot grows staple crops on two larger parcels: “Bailey’s,” a 1.75 acre parcel in Milwaukie, just south of Portland; and “Carver,” which is two acres just outside the city.

Carver is the only land Sunroot leases. The rate is agricultural, meaning the amount of money per acre, per season is a fraction of what most people pay for rent or their mortgage. “Sunroot puts the lie to the idea that you need to own land to farm,” is something I heard Farmer K say many times that season as workers and visitors passed through.

The land at Carver had been conventionally farmed for decades and Farmer K describes the soil there as “the worst I have ever seen, anywhere. Dead. Lifeless. Approaching lunar.” I visited Carver several times as part of the wheat harvest and saw the same thing. An airless clay, dried hard as a rock by summer, for the rest of summer. No worms. No insects. Very few weeds.

2008 wheat harvest at Carver

Already in 2008, the acre had an overwintering wheat cover crop planted on it, so Sunroot simply let it go to seed. An area

of about 1/3 acre yielded over 600 lbs. of finished, ready-to-eat wheat berries. Over 600 hours were logged on the project in a month by several dozen helpers, from in-field harvesting to in-town processing. Harvesting consisted of pulling the heads from the stalks by hand, filling bags, buckets, and tarps. Household-sized city recycling bins turned out to have just the right dimensions, durability, and weight for this kind of work.

The harvested heads were put into burlap coffee bags to transport to town where they were spread out on big tarps on a driveway. People stepped and stomped (and danced and shim-mied) until the grain came loose. This threshing doesn't hurt the very hard seed. Many traditional farmers had the livestock tread on the wheat.

Winnowing separates the chaff from the grain. Sunroot set up stations where volunteers poured the threshed wheat from bucket to bucket in front of electric fans set up on chairs. After a dozen or rounds, the wheat would be clean and free of chaff.

The first wheat crop

In 2009, Sunroot leased additional two acres at Carver, the original acre having been put under chicken pasturage. Some 1.7 acres of the new plot were already planted with a wheat cover crop, so as before, we let it ripen for a grain harvest.

Later in the year another Sunroot farmer took over direction of the wheat field at Carver and, in view of the larger acreage, upgraded our technology. He purchased high-quality Austrian scythes, built a thresher out of a wood chipper, and rigged a winnower by combining a leaf blower with metal air ducts.

Scything down the wheat leaves it attached to the straw, which has to be removed. This created a bottleneck in the process. It also took time to get the threshing and winnowing machines to work right. A full month passed in all this, during which time some of us speculated that a hand-harvest would have been more productive. After twice as many hours and many more dollars spent, and much more fuel burnt the 2009 harvest was all of 700 lbs.

Soup beans and flax drying on indoor racks.



One plan for next year is to find an investor willing to back the purchase of a small walk-behind combine. These diesel-powered machines can cut, thresh, and winnow an acre of wheat in a single afternoon. They are not made or sold in the USA because the scale of agriculture here has become so grotesquely large. Perhaps only some of the Amish and a few oddballs like Sunroot grow grain on the scale of a few acres.

Sowing corn with sticks

The Bailey's field in Milwaukie has lain fallow as long as anyone knows, with the possible exception of some horses corralled there a few decades ago. It is owned by a convalescent

The weather is deciding everything we do and any plans already in place are dropped so we don't lose six months of work to mold.

home next door. Sunroot made agreements with the brothers who run the home in 2008 and in 2009.

"One of the wisest things I ever heard about farming," said Farmer K in recollecting the 2008 Bailey's quinoa crop, "is that when you are farming a piece of land, all you are learning is how to farm that piece of land."

At Bailey's in 2009 I worked with Farmer K. We grew several crops, but I was most invested in the flour corn. I had saved a quart jar of Mandan Bride flour corn seed from about 30 plants I'd grown in my front yard the year before. The seed came from permaculture friend Rick Valley, who has been growing and improving it for this region for nearly 25 years. We combined my quart with seed of similar varieties of North American indigenous corns that Farmer K had grown.

In late Spring, Farmer K and I, along with two other urban farmers, tried out "seeding sticks" for sowing the corn. Farmer K and Sunroot had been finding that home-garden techniques for planting, cultivating, or harvesting were simply inadequate for staple crops. Hence the purchase of the "seeding sticks," which turned out to be ingenious and useful: a pole about the size and width of a broom handle with a clear plastic hopper attached to it where you put the seeds, a couple hundred at a time. With one quick but firm jab into the ground, a spring mechanism at the bottom of the stick would simultaneously poke a hole in the soil, disgorge a single seed, and load up the next seed from the hopper. These allowed us to plant the corn without bending

over. Very wonderful indeed! We seeded around a ¼ acre of corn by this method.

The rest of the plot was planted with quinoa, several varieties of soup beans, parsnips, flax, millet, and buckwheat. We had previously used a tractor to till the entire field, which had been only partially cover-cropped the winter before. No other solution that we could find would deal with the weeds, so we felt lucky that the tractor was available to us at all. For pre-sowing amendments, we used fishmeal, lime, and AZOMITE.

Learning from the plants

As the season went on, I was in and out of town working on different projects, but was able to check regularly on the Sunroot staple crops. On a visit to Bailey's, Farmer K showed me a patch of buckwheat about 100' by 100' that he had broadcast several weeks earlier. They were all just now coming into flower, and the tops of the plants formed an unbroken but very uneven plane. This "surface" was its own liquid landscape, with waves, holes, mountains, and valleys, varying in height from three feet to two inches. "This is why I love buckwheat as a cover crop," Farmer K said. "It shows you so much, so quickly, about the relative fertility of a given chunk of land. The variation here is indescribably complex and the buckwheat gives you something a soil test never can, which is a map of the area."



Taking a break from harvesting soup beans and corn at Bailey's.

... when you are farming a piece of land, all you are learning is about how to farm that piece of land.

We discussed soil testing, and it came out that Sunroot has never had a professional soil test done at any of its plots. Farmer K admitted that some people find this shocking, but gestured again at the buckwheat in front of us. "People who rely solely on mail-in soil tests are generally buying no more than peace-of-mind. What they don't realize is that all they have only tested a sample of the soil—maybe the sample is multiple samples. But they still know nothing about the unsampled soil, and that is most of what remains."

Design or discovery?

The design of these plots is driven by the land itself. Farmer K sees Sunroot's role as attempting to live in a state of attention to the clues being constantly offered by the soil as it speaks through the plants. Trying to farm—especially the staple crops—has, he says, shown him the truth of the John Lennon lyric: "Life is what happens to you when you're making other plans."

"I gave up the graph paper a couple years ago," Farmer K

said. "Making pictures on paper can be an enjoyable winter activity, but it is not actually farming, and won't do much to help you." Instead, he said, Sunroot approaches each work day at each plot with openness. Perhaps the 400 lbs. of soil amendments will be tarped under the tree—even though the plan was to spread them today—because it turns out there's been a thistle bloom, or an early harvest, or some other task that is seen as more of a priority in the moment.

But surely Sunroot must do some planning? After all, in 2009, there were two dozen different plantings spread out over six different plots. "We do some rough figuring, often informally, usually spontaneously, and take very few notes," he told me. "With a number of people interested in different parts of the project, everything that needs to be remembered gets remembered."

"And the fluidity of this approach means we can spend our energy getting to know the plants, not bashing ourselves in the head for going off-the-plan, or—worse, maybe—congratulating ourselves for sticking-to-it so well. The living world outside our plans and theories has a 'working-ness' to it that is broader and deeper than our human models can conceive of."

Harvesting next year's seed

As of this writing, some of the harvest remained unprocessed. For example, Sunroot is using a portion of the living room of a condominium in the Hawthorne District (a trendy neighborhood in Portland) to dry out millet, buckwheat, quinoa, and popcorn.

Of the four or five varieties of beans planted, the stand-out was Taylor's Horticultural, which yielded 90 lbs. The others bore in the range of 20 lbs. The Taylor's plants were bushier, more heavily laden with pods, and the quickest to mature. They were ready at the same time as the others, even though planted last.

The flax patch I sowed yielded 8.5 lbs. of seed. The quinoa, which went in about two weeks too late, was struck by black mold after the rains came two weeks too early. Two small harvests out of the patch brought in perhaps 4 lbs. altogether. Quinoa is a highly variable species, with hundreds of varieties. These

differences between plants had been apparent in the Sunroot seed stock since the beginning, showing themselves in variations of color, maturation time, etc. The 2009 quinoa was harvested from the variety that matured the quickest. So, it will be very good seed for next year, if the quinoa experiment is to continue.

An initial winnowing of a portion of the millet yielded 7 lbs., with most of the crop remaining to be processed. We had more excitement from this crop than any other. As a grass millet is a light soil feeder, but chokes out the competition with its vigorous growth. It matures rapidly, in as little as three months, so the risk field spoilage, such as happened to the quinoa, is much lower.

The flour corn harvest has not yet been weighed, but I would consider it quite successful. This corn is stunningly beautiful, representing the whole rainbow in every color combination imaginable, from the deep emerald greens of the Oaxacan Green dent to the mind-blowing Mandan Bride, where individual kernels sport tie-dies of bright red and yellow, or blue splatter patterns reminiscent of exploding supernovae. The genetic and cultural history contained in each seed is vast and deep, and I'm grateful that I have food like this to eat.

Lessons for the future

Farming grains in the city has its particular challenges, and assumptions about traditional farming don't always hold. At many points during the harvest season especially, it was very clear that

We lacked the right infrastructure to process staples...we could really have used a barn in which to dry our crops.

we lacked the right infrastructure to process staples. Especially here in the maritime Northwest, where fall brings rain, we could have really used a barn in which to dry our crops. Luckily, we were able to let things dry outside uncovered during a dry spell, but had that period been wet, it would have been very challenging to find enough covered dry space. Yet, this is where we find ourselves, living in a city that wasn't designed for what we're doing. We find creative ways to meet our needs, and it works out.

It has been startling to learn just how much traditional farming knowledge we lack, and what has been all but lost in the culture at large. Even after doing lots of reading, we've still spent countless hours making mistakes, doing things that turned out to be a waste of time, and learning lots in the process. Through this work, I've learned just how unprepared we are for subsistence agriculture, even the most experienced farmers and permaculturists. Farming with the intention of subsistence is a whole new world that we at Sunroot are just beginning to explore.

Lastly, Sunroot does operate largely under the conventional

CSA model; however it also offers an equally significant portion of the harvest to people who provide labor, goods, or services to the farm. This unique aspect has allowed Sunroot to become the hub of a rich and very active bartering community. The goods and services exchanged for farm produce are quite impressive, including medical care by a local naturopath, a custom-built farm bike, food at local cafes, and construction work.

Farmer K sees Sunroot moving more and more towards barter. As the conventional system continues to crumble, this makes

Through this work, I've learned just how unprepared we are for subsistence agriculture, even the most experienced farmers and permaculturists.



Flour corn grown in the Portland metro region using simple hand tools.

practical sense. My barter with the farm has been more valuable than money at times. It is has developing and strengthening a mutual support network on which I can rely on when I'm in need. When I lacked a place to sleep this summer, I was welcomed to sleep in the garden paths. (The coffee bags we used for harvest make great bedding!) Likewise, when the farm was out of money, I stepped in and pro-

vided my food stamps card to buy food for the farm. This giving and receiving has been very rich indeed.

Talking to Farmer K about this, he nodded: "That richness of the moment is all you have anyway. Why distract yourself from it?"

△

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Movement Musings

Let's Take Home Gardening to the Next Scale

Jason Gerhardt

AS I LOOK AT MY WINTER FOOD SUPPLY, I wonder what the next steps toward a regenerative or permaculture-based food system would be. The pantry contains only organic and local foods, but I would suggest that even local, organic production of fruits and vegetables as currently practiced is highly unsustainable. This is largely due to inefficient resource use, but also because current farming practices are wide of the mark when it comes to building fertility and diversity in agroecosystems. The monocultures that produce most of our staple foods are even worse.

Networks of resources are key

In his essay, "Gardening as Agriculture," David Holmgren describes an pattern for food system design. He suggests that much of our food, and perhaps all of our fresh produce, can be grown in home gardens in the cities and suburbs, and that doing so would dramatically shrink our ecological footprint. He points out that urban and suburban areas have networks of resources which make the production of food quite easy and resource-effective. Gardening could easily replace ornamental horticulture and acre-scale produce farming with little disruption of the land use pattern. The availability of reticulated water systems and impervious surfaces from which water can be harvested gives home gardening an enormous resource efficiency compared to produce farming. Unmarketable produce can be profitably conserved in the home kitchen while the farmer's options are usually limited to throwing it out or composting, most livestock having already been removed from vegetable farming. Techniques promoted in permaculture systems such as the use of perennial and self-seeding vegetables, sheet mulch instead of tilling, and using the built urban environment as vertical space for cultivation of food plants offer further efficiencies not available to conventional agriculture.

To produce food right where it will be consumed, with little to no transport from field to table, or with "food feet" instead of miles as Transition Town originator Rob Hopkins would say, is the ultimate efficiency. Good urban agriculture has the equally beneficial effect of greening and screening our urban areas with plants and microfauna to filter pollution from air and water. The heat island effect can be reduced as well, as has been demonstrated by permaculture educator and author Brad Lancaster, whose research offers a great model for urban home garden design.

To take Holmgren's pattern of a garden agriculture a little further, if enough people became home growers then commercial farms can shift from the hustle of produce farming toward staple food production and perennial systems. In designing resilient and regenerative food systems, we need to put our eggs in a few more baskets, ones that are developed from the awareness of peak oil,

climate change, and economic instability. Specifically, we need systems that do five things:

1. Sink as much carbon as possible into the soil;
2. Purify and increase storage of surface and groundwater;
3. Renew and sustain the energy levels of farm workers;
4. Simplify distribution channels; and
5. Support a lifestyle which meets most of our needs regionally.

Our food systems need to yield more than just the maximum food output. They need to regenerate ecosystems if we are to feed ourselves well into the future.

As the threefold crises of peak oil, climate change, and economic instability get more intense, agriculture will come under

... we have an abundance of singular design strategies, what we are missing is a comprehensive pattern from which to design food systems.

increasing strain. The system barely works now, and if it lacks a solid foundation in healthy soil, water, and forests, as energy inputs from the industrial system ratchet down, output is likely to collapse. We would therefore be well advised to work now with all deliberate urgency to put some ecological ground under our food systems. The resurgence of the victory garden movement suggests the transition of food systems is beginning to happen even with current levels of economic wobbling. But instead of reacting to desperate times, we should plan and work for the inevitable. A lot of pieces need to be in place for us to negotiate the transition well.

One piece relating to commercial farms is the need for a new seed industry: home gardeners will need a lot of vegetable seed. Larger farms are well suited to producing seed in quantities. Large-scale seed production can be integrated with other systems such as poultry raising. The seed cleaning process generates a lot of inferior seed otherwise edible to chickens, ducks, turkeys, and other animals as a supplement to pasture for meat and egg production. Don Tipping in *Permaculture Activist* #73 urges the development of regional genetic seed resources to adapt annual

vegetable production to local and changing climatic conditions. Such local seedbanks would be another piece of the new food system. Seed work needs to begin now where it hasn't already been started, especially considering that organic vegetable seed resources in the US are proving inadequate to meet even current levels of demand. Seed producers such as Organic Seed Alliance and Seeds of Change are promoting this work and educating thousands to join in.

Farm diversity and integration

For farmers, the transition from produce or monoculture commodities can take many forms in addition to seed production. In general, farmlands need more trees and shrubs. The also need to diversify income streams, cycle nutrients on site, and use the land in a less aggressive way in general. The work of Joel Salatin in Virginia offers a great regenerative model for animal pasture systems—one that has been proven in wetter temperate regions. This now needs to be refined for dryland parts of the US. Nut tree cultivation is another area needing research and trials in all regions, as production is largely restricted to small areas of the country. Annual oil seed crop varieties need to be reselected for regional adaptation and transitioned away from hybrid and genetic modification so as to perform well in low-input scenarios. Similar shifts will be needed for grain and legume production, too. Annual and perennial grain/legume polycultures need to be developed and tried regionally. The Land Institute at Salina, Kansas has a long lead in perennial grain research, but they are collaborating with other institutes in Australia and China.

... if enough people become home growers then commercial farms can shift from the hustle of produce farming toward staple food production and perennial systems.

Devising efficient hand-harvesting techniques for grain and legumes might be worthwhile as machine harvesting is vulnerable to shrinking fuel resources over time. The land grant universities ought to be leading in the development of low input, integrated farming systems, but as the experience with SARE (Sustainable Agriculture Research and Extension) has shown, producers are more often in the vanguard. The SARE model shows that we can reskill ourselves to do this work: farmer and gardener trialing and plant breeding is one of the best places to begin. Education, research, and how soon we decide to actually pursue them, will be huge factors determining how smooth our agricultural transi-

tion is. Instead of viewing the transition as agricultural energy descent, I prefer to think that the emergence of a diverse, regional, and garden-focused agriculture will represent an ascent, returning farming to the valued place it once held in our culture.

Of course, we will need many more farmers in the future too—that doesn't go away with more people growing home gardens. Out of a mass movement of home gardeners, a lot of serious farmers are likely to emerge, too, pulling from our ancestry those who already have some intuition about farming. Farmers could be coming out of the woodwork of corporations and schools if we make food production part of our daily lives again. Building momentum now is our best hope of making a smooth transition agriculturally, while we can rebuild our human resources.

Organic producers have taken a lead in educating the public about healthy food, but other fronts are active. Some grow-

Most people don't know how to grow food, and if they do, they don't always know how to design gardens...

ers, permaculture designers among them, are organizing their neighborhoods to lay the foundation for the upcoming agricultural ascent. The Eco-hood in Prescott, Arizona, initiated by permaculture educator Andrew Millison and Daniel Quinn, has been at work in this realm for many years. They've experimented with backyard Community Supported Agriculture (CSA) projects, streetside orchards, fence teardowns to facilitate neighborhood chicken runs, water harvesting, etc. The Eco-hood has also spawned a new kind of agricultural enterprise with Food Revolution, an urban farmer-run CSA and farm stand that grows various crops in several different yards around the neighborhood and town. In Boulder, Colorado, the urban agriculture group Community Roots is doing the same thing on a larger scale. Though these new urban gardens aren't always exemplary of permaculture they represent a step in the right direction, bringing fresh food production close to home.

In Boulder, permaculturist Steve Morgan has been training homeowners and residents to take over similar small scattered city farm operations after they have been up and running for a couple of years. He has found that together the busy Boulder neighbors have time to manage one or two projects, but they need the skills and resources to be able to do so. Potentially this approach has a lot of leverage.

Education plants the seeds

The largest missing piece to the development of urban home gardeners is education. Most people don't know how to grow food. If they do, they don't always know how to design gardens in a way that is labor-reducing, resource conserving, and di-

versely abundant. This is where permaculture educators come in. Some of the best on-the-ground work to further appropriate food systems has been the work of permaculture teachers worldwide, spreading the skills of good design. We owe a lot of credit to our teachers, in addition to all the home gardeners, farmers, land-care practitioners, and students out there that have been holding it down for all this time. Together, we are all carrying food system development forward.

The permaculture food system pattern won't work if we don't have a community to start it and to join in.

We can't afford to stop where we are right now though; permaculture food work needs to go on. We need to refine comprehensive patterns for future food systems through discussions, mapping, and widespread practice. One tool that I've discovered through my discussions with other permaculture teachers is the use of zonation. Designing production areas in appropriate positions and sequences to use resources in an effective way is detailed work that needs to happen. Zones can be based upon criteria such as existing land use, available transportation networks, perishable versus storable qualities of food, scale and intensity of production, as well as how often people come and go from gardens, farms, dairies, etc. Zone mapping whole localities for the above criteria can help to clarify best use of landscapes, and will highlight the unique characteristics of individual regions.

Extremely perishable foodstuffs should be produced in close proximity to cities to limit the need for refrigeration, and more stable seeds and grains can be grown further out and shipped in for distribution. Many rural communities can be self-reliant, exporting surplus to needier areas. Not all regions or locations are so fortunate as to have soil, climate, and water resources that can produce the diverse range of foodstuffs for a complete diet. It would be wise to exploit our rural and urban microclimates in ways that best use the available resources within them. As an example, stone fruits will almost always yield better in a more frost-protected microclimate, while another area might have more water that would be better used for growing storable root crops, and yet another area might have gentler slopes more suitable for cereal grains. In this way, most places can become producers as well as consumers, creating a unique and intelligent trade network to spread high quality foods

around an entire bioregion. With proper diversity, research on appropriate cultivars, and further selection and breeding, most areas can and will begin to grow the bulk of their food needs.

Peter Bane suggests we need three permaculture teachers in every neighborhood of the country, a hundred-fold increase over our current impact—I couldn't agree more. I don't see any other way that the necessary agriculture work will happen soon enough.

Looking forward, the unique site-specific strategies being developed and employed in these diverse food-growing microclimates may yield a fascinating future for agricultural ascent tourism. Being a garden geek myself, I can't wait!

Overall, we have to make growing food exciting. The permaculture food system pattern won't work if we don't have a community to start it and to join in. Those who are beginning to work in their neighborhoods, engaging families and children in sowing seeds, collecting eggs, and pulling carrots, are on the right track. Farmers who are pioneering unique marketing schemes, integrating more diversity into food production, and planning for a low-energy future are on the right track. Now we need to step up our efforts and work together. I have no doubt that food systems designed with permaculture principles will help us adjust to the challenging circumstances that are before us. How will you participate? Δ

Jason Gerhardt is a permaculture designer and educator in the Front Range counties of Colorado. Former Seed Manager of Abbo-Regional Seeds, he teaches permaculture design courses and workshops, and consults through his garden design and rainwater harvesting business. He can be contacted at jasongerhardt@gmail.com.

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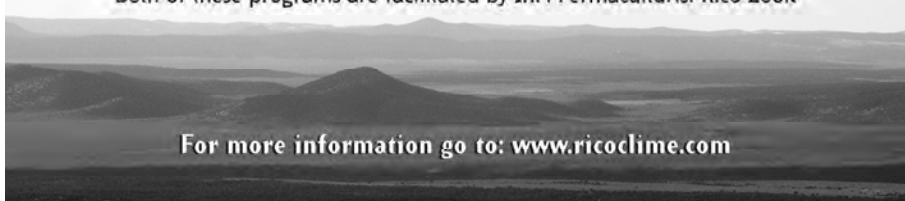
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Indigenous Permaculture: An Operational Framework

Shannon Francis, Glenn Morris, and Pavlos Stavropoulos

WOODBINE ECOLOGY CENTER WAS CREATED to address a basic question: How do we learn to live together in this place? It doesn't take very protracted observation to figure out that, as a society, we have focused much of our energy in teaching our children how to fear each other and how to exploit the natural world. The combined social and ecological crisis we face is simply the product of that design.

If we are to find new ways to be with each other and with the natural world, then it makes a lot of sense to look to people and cultures which have lived, and continue to live, in place since time immemorial. To create sustainable communities, we must look at examples which were here before us, as well as the process through which many of those communities have been severely damaged or destroyed. For us, the indigenous peoples and cultures and the values that many still hold, are not merely an historical curiosity, but a living part of our everyday work. Indigenous peoples have been an active part of the formation and operation of Woodbine since day one.

Woodbine has also included people whose ancestry and cultural upbringing originates from other lands. The Woodbine community hails from many different places. We are indigenous peoples, descendants of slaves, indentured servants, gentry, refugees, and voluntary immigrants. Regardless of how we, or our ancestors, came to this place, we find ourselves—people of all colors and nations—here to stay. This is now our home and the home of our children and great-great grandchildren. What brings us together is our common vision of a better place for our children and for future generations, and our desire to build a world where we are, again, a part of nature.

One of the prisms through which Woodbine strives to address this vision, is permaculture. As the “cutting edge of a 10,000 year old idea,” permaculture offers one of the most exciting possibilities for relearning how to become native to our places and how to integrate traditional ecological knowledge with modern science.

What is “indigenous permaculture?”

We use the term “indigenous permaculture” to define and describe our practice and application of permaculture. We are neither the first nor the only people to use this term, and in our research and interactions with others who practice indigenous permaculture we have found there is no single, clear definition of the term. Given that permaculture itself often defies a simple definition, this should not be surprising. However, we believe that words have meaning, that they are sacred and that when we use them we give birth to our reality. As such, we provide here a brief synopsis of our own evolving understanding of what indigenous permaculture means to us. We humbly offer our framework to the larger indigenous and permaculture communities, in the hope that it will foster discussion, clarity, and common understanding of our practices.

We understand indigenous permaculture to revolve around five basic principles:

1. The recollection and recognition of, and respect for indigenous contributions.

For us, this means more than giving lip service to generic indigenous contributions. We strive for active, respectful and reciprocal contact and collaboration with indigenous communities in our places. And we work to learn about traditional ways of being, always being careful not to engage in cultural appropriation. We recognize and cultivate the leadership of indigenous peoples in their communities as well as in our diverse organizations. We commit to sharing our own knowledge and to give back to indigenous communities.

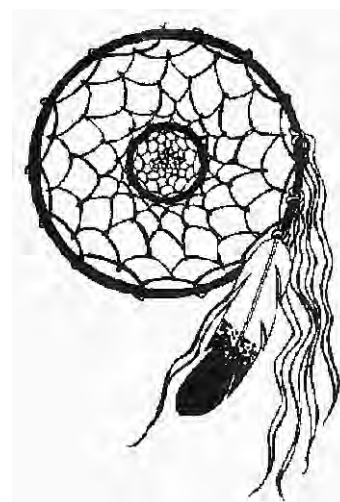
The preservation and restoration of natural places requires the preservation and restoration of the cultures that have lived in those places since time immemorial.

2. Traditional Ecological Knowledge has always been specific to place and culture.

All indigenous and traditional ecological knowledge systems have been specific to a place and have been transmitted across generations through cultural mechanisms, including storytelling and ceremonies specific to the places from which they originated. While it is useful to understand some of the general principles common to most systems of indigenous knowledge, it is also important to develop a strong understanding of and appreciation for the specific cultures within which these systems come alive.

3. Decolonization of our minds, our language, our work, and our communities.

We live in a colonial society and are the products of historical



colonial processes. This is not simply something that occurred in the past and we can now all happily move on with our lives. These processes are very much alive today and indigenous communities continue to be under direct and indirect attack. Much of the mining of fossil fuels, and of rare metals such as lithium and neodymium which are supposed to fuel the new green revolution, takes place in indigenous territories. In order to come together as indigenous and non-indigenous peoples and to build a better world for the next seven generations, we must recognize this history and transform its legacy. For us, this means an explicit commitment to stand with communities under attack, and to work with them to defend and restore their culture and traditions, as well as to help them assess and incorporate new technologies and skills in a culturally appropriate way. It also requires a commitment to become aware of our full history and to decolonize our language, our work, our processes and to challenge eurocentrism and white privilege in our organizations, communities, and permaculture at large.

4. Being and becoming native to this place.

Permaculturists are fond of saying that we are all indigenous, or that we all come from indigenous roots, but the reality is that being native to a place does not happen overnight. To quote Luther Standing Bear, “[m]en must be born and reborn to belong. Their bodies must be formed of the dust of their forefathers’ bones.” We recognize that there are significant differences between being native by having been raised in a culture and community that is part of this place since time immemorial, and striving to become native by learning how to live in a place as part of it. We also recognize that permaculture and its call for “protracted and thoughtful observation” offers an excellent set of tools and practices that we can use in our journey to become truly native to our places.

5. Eco-cultural restoration.

The preservation and restoration of natural places requires the preservation and restoration of the cultures that have lived in those places since time immemorial. It is not accidental that some of the places in the world where biodiversity is the most threatened are also places where indigenous languages are endangered. We are working towards the reintegration of humans and nature by challenging many of the distinctions so prevalent in the West, between the domesticated and the wild. This is where we disagree with one of the permaculture aphorisms, “stay out of the bush, it is already in good order.” Indigenous cultures have often not only lived in the “bush” but have also played an active role in maintaining and enhancing its “good order.”

It is not possible to articulate all permutations of these principles in such a short space, but we do hope that we can inspire some thought and discussion around them. In future writings, we will present in more detail some of the indigenous permaculture projects in which we are involved, and share the lessons and experiences we are gaining from our application of these principles.

We are also organizing an Indigenous Permaculture Convergence at Woodbine, August 13-15, 2010. We are bringing together indigenous community activists and leaders, permaculturists, and anyone who is practicing or interested in indigenous

permaculture, to learn from each other and share experiences as we continue to create a better future for all of our children. We invite you to join us at the Convergence as well as to participate in our ongoing development of these principles.

What brings us together is our common vision of a better place for our children and for future generations, and our desire to build a world where we are, again, a part of nature.

For more information go to www.woodbinecenter.org/indigenouspermaculture or write to ip@woodbinecenter.org Δ

Shannon Francis, Glenn Morris and Pavlos Stavropoulos are on the staff and faculty of Woodbine Ecology Center. Shannon is Dineh (Navajo) from Shiprock, New Mexico, and Hopi from Kykotsmovi, Arizona. She is Towering House clan born for Red Running through the Water clan. Her Hopi clans are Massau', Bear Sand, and Snake Clan. Shannon has been a member of the Denver Native community since her early 20s and has served on various native non-profit organizations, boards, and councils within the native community. She is a mother of six and a certified permaculture designer and instructor.

Glenn is an associate professor of political science at the University of Colorado at Denver, where he directs the Fourth World Center for the Study of Indigenous Law and Politics. He holds degrees from the U. of Colorado and Harvard Law School, and has been involved in the international struggle for human rights for indigenous peoples for over 25 years. Glenn served as a delegate to the United Nations Commission on Human Rights and the U.N. Working Group on Indigenous Populations. He is of Shawnee Indian and Irish descent, having been raised with a strong understanding and respect for both traditions. He continues to serve on the Leadership Council of the American Indian Movement of Colorado.

Born and raised in Greece, Pavlos grew up bilingual and bicultural. He has been active in environmental, sustainability, and social justice issues all his life and as a part of indigenous solidarity struggles for over two decades. Pavlos is a certified permaculture designer and instructor.

Permaculture Ethics and the Chain of Benefits

Bill Meacham, Ph.D., PMP

WHY TO WE ACT AS WE DO? Consider the following two passages from Geoff Mulgan's *Connexity*:

"For it to be right for governments to encourage their citizens to take on more responsibilities, certain conditions need to be in place. ... It is...morally wrong to impose responsibilities that are far beyond people's capacities..." (Mulgan 1997, p. 199)

"Communities are facts of life, as are governments. The only interesting questions concern how they can be used, or shaped, to achieve benign ends." (Mulgan 1997, p. 200)

Two modes of discourse are deployed here, two ways of speaking—and hence thinking—about how to evaluate and choose courses of action. The first is the language of right and wrong; the second, the language of goodness and harm. They often get confused. I will argue that in permaculture, we act based on what is good. Let me explain why, and what that means.

The right

What is right has to do with conformance to rules or regulations. This is easy to see in non-ethical situations. For instance, the right answer to "What is two plus two?" is "Four." We apply a mathematical rule and derive the right, or correct, answer. In ethical situations, we apply a moral rule to determine what the right course of action is. If one finds a wallet with some money in it and the owner's identification as well, the right thing to do is to return the money to the owner. The moral rule is "it is wrong to keep something that does not belong to one."

The problem, of course, is how to determine the moral rules. Humans have an innate sense of morality, of right and wrong, but notoriously, the actual set of rules they espouse varies from culture to culture. Although many people unreflectively adopt the rules taught them by their parents, teachers, religious leaders or culture, one wishes to provide a rational grounding for one's choice of what rules to follow. Philosophers have proposed numerous ways of determining what the rules are, such as divine command, the dictates of pure reason, and using an intuitive moral sense to apprehend an unseen but existent world of values. So far, there is no agreement on which of these is correct.

The language associated with this approach uses the terms "right" and "wrong" to evaluate actions. Some synonyms for "right" are "proper," "legal," and "correct." Some synonyms for "wrong" are "improper," "illegal," and "incorrect."

The good

By contrast, what is good has to do with benefits, not rules. Something that benefits something or someone else is good for that thing or person. The concept of goodness may be instrumental or biological. Instrumentally, a hammer is good for pounding nails, and what is good for the hammer is what enables it to do so well. Biologically, air, water, and food are good for living beings.

To make sense, an instrumental usage must refer to somebody's purpose or intention. Thus, a hammer is good for pounding nails, and one pounds nails in order to build things such as furniture or housing. One's intention is to acquire the comfort and utility these things afford us.

Biological usage need not refer to purpose or intention. It is expressed in terms of health and well-being. That which nourishes a living thing is good for it. The good, in this sense, is that

**Humans are the ones who
horde surplus, and while
doing so has led to great
civilizations, it has also
led to great impoverish-
ment and misery.
We can do better.**

which enables a thing to function well.

The instrumental usage intersects the biological when we consider what is good for something that is itself good for a purpose or intention. For instance, keeping a hammer clean and sheltered from the elements is good for the hammer, and enables the hammer to fulfil its instrumental function. In the instrumental sense as well, the good is that which enables a thing to function well.

The approach to ethics that emphasizes goodness uses the terms "good" and "bad" to evaluate actions, things, people, and states of affairs. Some synonyms for "good" are "helpful," "nourishing," "beneficial," and "effective." Some synonyms for "bad" are their opposites: "unhelpful," "unhealthy," "damaging," and "ineffective."

Confusion between right and good, and why it matters

Too often people confuse the notions of right and good, treating them as if they were the same. The confusion is understandable; both concepts apply to what one should do, and often the debate is about persuading someone to act in a certain way. But the two domains of discourse are different. That something is in accordance with a moral rule does not make it good. That something has good effects does not make it right. If someone says something is right, one can always ask "according to what rule?" If someone says something is good, one can always ask "good for what?" It is not useful to mix the two concepts.

As designers we need to be clear not only about what we are

designing but also why, and that leads us to considerations of ethics. Making the distinction between right and good can help us here because it promotes clarity of thought. The clearer our thinking, the more likely we are to design solutions that satisfy our clients, employers, friends, or neighbors.

The philosophical, or meta-ethical, question is which of the two paradigms is to be preferred in making ethical choices. For many reasons, detailed in another paper, I believe it makes more sense to adopt the Goodness paradigm (Meacham 2008) at least in part because it is more fitting to the connected and interconnected nature of reality (connexity).

Goodness and connexity

The Goodness paradigm is more appropriate in a world of connexity than the Rightness paradigm. The latter implies division and separation. It is too easy to distinguish those who obey the rules from those who don't, and to vilify and persecute the latter. Of course the latter have their own sets of rules and may vilify and persecute the former. The result is strife and discord.

Lacking a recognition that all things are interconnected, a focus on goods rather than rights or duties may also lead to strife, as numerous wars over territory and resources have demonstrated. But it is much easier to consider additional evidence within the mentality that looks for benefits and harms than it is to break out of the Rightness mentality of "us vs. them." Better outcomes result from thinking in terms of good and bad than from thinking in terms of right and wrong.

An ethic based on the Goodness paradigm looks at the health of the whole and of each part of the whole. It seeks to include the parts in the whole. In today's world it is impossible to overlook the connectedness and interconnectedness of cultures and societies. Such social connectedness grows out of the ecological interdependence of all living things in the natural world. The Goodness approach is thus more congruent with the actual state of reality.

Permaculture

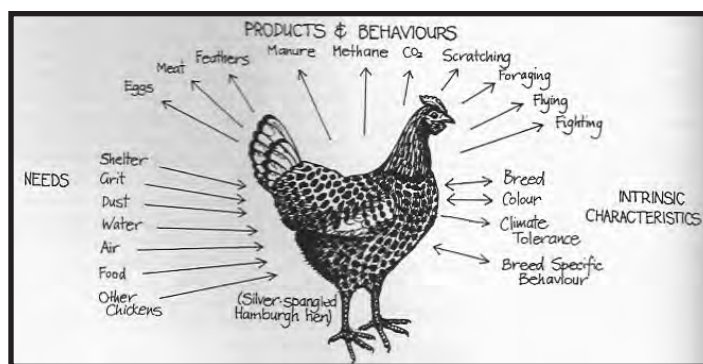
The Goodness paradigm is an integral part of a design discipline called permaculture. Permaculture aims to create sustainable human environments. It takes inspiration from the interconnection between things in the physical world as we find it, designing solutions to problems of living that explicitly take advantage of interconnections between design elements. The term was coined in 1976 by Australian ecologist Bill Mollison and environmental designer David Holmgren as a contraction for Permanent Agriculture, and has been expanded to mean Permanent Culture, for food production is only one of many attributes of a healthy, sustainable environment for humans. (Grayson and Payne 2007) Permaculture is an interdisciplinary practice focusing on sustainable food production, energy-efficient building, recycling, wastewater treatment, land stewardship, and just and workable social structures and economies.

Permaculture's fundamental principle is to design with nature. Mollison says, "In designing with nature, rather than against it, we can create landscapes that operate like healthy natural systems, where energy is conserved, wastes are recycled, and resources are abundant." (Mollison and Slay 1994, p. 72)

Permaculture recognizes that every design element has needs and performs services; that is, every element requires inputs in order to function and produces outputs. The trick is to use the outputs as inputs for other elements. Doing so reduces waste, reduces the need for artificial energy inputs, and enhances the yield of desirable outputs. Traditional site design concerns itself with the placement of elements to achieve aesthetic effects or economic results, or both. Permaculture extends this effort to create environments that are healthful and nurturing for the humans and for other species inhabiting the site, and that are sustainable in their use of natural resources.

[A modern concept of industrial design, the "Cradle to Cradle" approach, bears some resemblance to permaculture in taking nature as an inspiration for design. One of its leading proponents, William McDonough, says "when designers employ the intelligence of natural systems...they can create products, industrial systems, buildings, even regional plans that allow nature and commerce to co-exist fruitfully." (McDonough 2006). Permaculture focuses less on industrial and more on habitat design.]

Take, for example, the chicken, a favorite of introductory permaculture courses (Mollison and Slay 1994, p. 7). Chickens have needs: food, shelter, water, a protected roosting area, and nest boxes. They need a source of grit to grind their food, a dust bath to deter lice, and other chickens for companionship. They provide many useful products: meat, eggs, feathers, manure, carbon dioxide, sound, heat, and methane. (Some of these products may not immediately appear to be useful; the trick is to make them so, because they are products of the chicken whether we use them or not.) In addition, chickens exhibit characteristic behaviors. They scratch for food, walk, fly, roost in trees or perches at night, form flocks, and lay eggs. In order to design the optimal placement of chickens on a site, we want to (a) allow them to behave naturally, thus doing work that the humans would otherwise have to do; and (b) place them close to elements that can make use of their outputs. Some of the ways we can employ chickens in a site design are as follows:



The Permaculture Chicken after Andrew Jeeves, Introduction to Permaculture. 1994.

The garden needs fertilizer, mulch, and water; and it produces leaves, seeds and vegetables. Placing the chicken pen near the garden enables the easy collection of manure for fertilizer and the easy feeding of surplus produce to the chickens.

The greenhouse needs carbon dioxide for the plants, methane for germination, fertilizer, heat, and water. Placing the chicken house next to the greenhouse provides night-time heat to the greenhouse, as well as manure for fertilizer.

The orchard needs weeding, pest control, manure, and some pruning. It provides fruit and nuts, and also breeds insects. If we allow the chickens to roam in the orchard, they will eat the insects and provide manure for fertilizer.

The woodlot needs management, fire control, pest control, and fertilizer. It gives solid fuel, berries, seeds, insects, shelter, some warmth in cool seasons, and shade in sunny times. Chickens can roost in the trees, feed on insect larvae, and assist in fire control by scratching or grazing grasses that would otherwise provide fuel for fire.

The cropland needs ploughing, fertilizing, seeding, harvesting, and storage for the harvested crops. It gives food for chickens and people. Chickens can provide manure and do the cultivating as well. Put a large number of chickens in a small contained area, and they will clear the vegetation and turn the soil over by scratching, as well as eat bugs that would otherwise eat the crops. A time-tested technique is the “chicken tractor,” a movable cage open to the ground. You put the cage in the field before planting, put a bunch of chickens in the cage, and let them scratch and forage. When the area under the cage is sufficiently cleared, you move the cage. Chickens, not people, do the work of tilling, weeding, fertilizing, and controlling pests.

In each of these examples elements are located in a chain of needs and services or benefits, sometimes multiple chains. What benefits the garden (or greenhouse or orchard, etc.) benefits the chicken. What benefits the chicken benefits the garden. Each, of course, benefits the human inhabitants; wise design and usage by the humans benefit the land and the creatures living there. The natural world is a network of such chains of benefit. Permaculture design thus mimics the natural world.

A goodness ethic

Such a chain of benefits, or goods, is exactly what the ethical paradigm of Goodness is based on. When we say something is beneficial or good, we mean it is good for something. There is an end or goal either explicit or implied. Biologically, what's good for an organism helps it survive and thrive. Instrumentally, what's good for a thing is what enables it to serve its purpose.

Just as good is defined in relation to an end, the value of the end is defined in relation to another end. For instance, a hammer is good for driving nails. Driving nails is good for, among other things, building houses. We build houses to have shelter and warmth. And we desire these because they sustain our life.

This chain of goods and ends stretches in both directions from wherever we arbitrarily start looking. A hammer is good for driving nails. So what is good for the hammer? Whatever enables it to perform its function. It's not good to leave it out in the rain; it is good to handle it carefully, swing it accurately with grace and force, and put it away safely.

This feature of the world—that things are interconnected in beneficial ways—has given permaculture a strong sense of ethics from the very beginning. Here is a summary:

- **Take care of the earth.**
- **Take care of the people.**
- **Share the surplus.**
- **Emphasize optimism and cooperation.** (Michael 2004. See also Mollison 1988, p. 2, and Holmgren 2002, p. 1)

All of these ethical principles mimic the natural world. The injunction to take care of the earth means simply that if you want to provide for something—in our case, for human beings—you have to provide for the needs of all the elements that nurture and sustain the humans. Earth comes first, because if you start out focusing on the humans, you risk—as numerous now-extinct civilizations have done—overlooking the factors that sustain us. Taking care of the people thus comes second. In a sense it is the point of the whole enterprise, because as humans we are interested in caring for and perpetuating ourselves and our kin and progeny. But we also have a role in caring for the earth. The earth, as a whole system of interconnected complexity, would be poorer in our absence. The advice to share the surplus comes directly from observation of healthy natural systems. No animal, even those that store food for the winter, takes more than it needs. Every plant and animal provides nourishment and resources for other beings in its ecosystem. Humans are the ones who hoard surplus; and while this has led to great civilizations, it has also led to great impoverishment and misery. We can do better. Finally, the last point, to emphasize optimism and cooperation, reminds us to keep a positive attitude. Just as natural systems are vibrant and resilient, able to absorb the impacts of fire, flood, and storm, so also are human beings, with our ability to handle intelligently any situation in which we may find ourselves.

All of these points are elaborations of an ethic based on Goodness, which can be stated concisely this way: We are all in this together, so we need to find a way to make it work for everyone. Fortunately, we are smart enough to do so. Δ

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From the Regions

Permaculture Seeds Sprouting in St. Croix

Ethan Roland

S AINT CROIX, A 120 SQUARE MILE ISLAND in the Caribbean, is exploding with positive action. Led by the Virgin Islands Sustainable Farm Institute, locally grown food and ecological agriculture are taking hold with locals and travelers. In collaboration with AppleSeed Permaculture and Gaia University, the U.S. Virgin Islands are becoming a center of dissemination for permaculture design.

The Virgin Islands Sustainable Farm Institute (VISFI) is now in its seventh year as a working farm and education center. Founder and executive director Ben Jones reports, “The seed of inspiration for VISFI sprouted from the permaculture movement in 2002, and we are excited to be working this year with the first local permaculture graduates. We are also coming full circle in our vision of community development, as the education program is supporting outreach and extension. We are using scholarships to enable members of the island community to learn along with North American participants in this tropical farm setting.”

“This first course marks an awakening of the permaculture movement in the Virgin Islands, and we’re delighted to be working with neighbors, former students, musicians, activists, and farmers. We hope they leave our living campus full of new ideas

But here . . . an island with a painful history . . . permaculture is already beginning to heal the ecological and social landscape.

to spread the practice of permaculture around the world.”

The course has drawn diverse participants, from a St. Croix reggae artist to a Certified Public Accountant from Pennsylvania, from a new Gaia University associate to a northeastern United States market gardener, and from an international agricultural development consultant to an indigenous Puerto Rican Jibara woman.

The long-term effects of permaculture design courses are always difficult to predict. But here on St. Croix, an island with a painful history of slavery and devastating agriculture, permaculture is already beginning to heal the ecological and social landscape. For more information, visit www.visfi.org, or www.gaiauniversity.org.

Ethan Roland can be reached at ethan@appleseedpermaculture.com.



Members of a permaculture design course in the Virgin Islands working with new materials.

Reviews

The Real Thing Review by Peter Bane

Food Production Systems for a Backyard or Small Farm

Rooster Crows Productions.

Bastrop, TX. 2009.

DVD. 110 minutes. includes bonus Resource CD. \$24.95.

WITH HIGH PRODUCTION VALUES, the authenticity of lived experience, a script sharp as nails, and good narration, this film makes a tremendous contribution to the practical literature of permaculture.

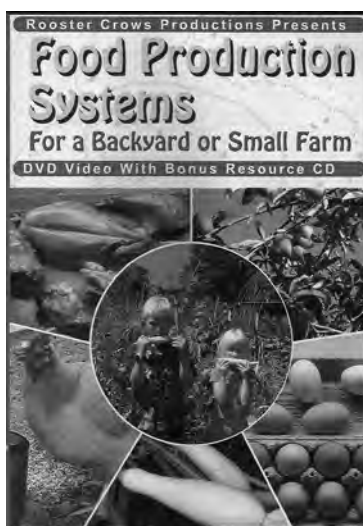
The Glowkas, a family of four living on 30 acres in south central Texas, took their concerns for resource depletion and its impact on the future of society quite seriously a decade ago and set out to create a self-reliant way of life. Though they don't live off the grid, they do provide much of their own food and water; and this video, which the film itself refers to as a "training," does much to transfer a distillation of what they have learned to the viewer.

Marjory Glowka is both the narrator and the primary actor in the film. Other family members play cameo roles. She is completely natural, speaks clearly to the camera, and is refreshingly frank without being too emotional about her feelings and the family's struggles in achieving its goals. Excepting the film, and whatever aid it may offer others attempting to adapt to a low-energy future, the Glowkas have nothing to sell. There is no ideology, no religion, no "you must." They have taken information from many quarters, permaculture quite significant among them, but also biointensive gardening, overseas development aid work, and community action groups; they have kept what works, rejected what didn't suit them, and crafted a working adaptation to their rather challenging climate and landscape. The narrator makes many admissions of her family's mistakes, lending gravity to the recommendations she offers her audience.

I was impressed by the thoroughness and thoughtful editing that went into the script. Marjory delivers the story tersely, without wasting words, and the film editing is crisp, with just enough time between

scenes. Neither is the delivery rushed. She displays just the slightest hint of nervousness from time to time, which lets you know that the narrator is not an actor or a professional, but a passionate and intelligent person with a sincere message.

The Glowkas eat an omnivorous diet based on meat from rabbits and perhaps some beef, milk and dairy from two Dexter cows, chicken eggs and the occasional old hen. They also consume vegetables and fruits adapted to their hot, semi-arid, and variable climate. The film speaks to the difficulty of processing grains, and



was expansive for us in the North Carolina mountains).

The introductory chapter gives us a good overview of their climate and soils, the layout of their farm, and sets clear expectations. They raise all their own meat and milk, about half their vegetables and about a quarter of their fruit. It took them 10 years to stabilize their systems and learn how to produce most of their own foods. The biggest mistakes they made mostly came about from too great a sense of urgency and hasty action. They aren't purists, but use the occasional shot of organic fertilizer and a lawnmower, "because it saves time." They don't address their dairy operation except to say that they have two cows, remove the calves from them soon after birth, and run them on 20 acres: "It takes a lot of land to get a glass of milk." They evidently find it worthwhile, but aren't pretending that it can be done in a backyard. The film's focus is on techniques and limits that can be met in a backyard or on very small acreage.

Chapters cover their water systems, gardening, rabbits, poultry, home butchering, dogs, orchards and food forests, and what they call "Essentials," which is a kind of catchall of odd bits: dealing with fire ants, first aid, food dehydration, how to measure contours with a water level,

... this video, which the film itself refers to as a "training," does much to transfer a distillation of what they have learned to the viewer.

encourages the viewer to consider, as the family obviously has done, adopting tubers, roots, and other vegetable forms of carbohydrate for "energy foods." The Glowkas raise sweet potatoes as a main starch crop, having found that "Irish" potatoes don't keep well in their heat. Fruits have done poorly for them in a climate plagued by long, hot summers and erratic springs. They continue to select better adapted species and cultivars, but have learned the hard way that most grafted trees are poorly suited to their conditions. They have come down to a handful of mostly native species: pecans, persimmons, plums, pawpaws, plus akebia, a Japanese vining fruit that they acknowledge might be problematic in other regions (it

fencing materials, the rocket stove, the use of leucaena—a subtropical legume tree, and a brief glimpse of concerns about the decline of industrial civilization. The DVD set comes with a second disc CD of some 60 documents detailing their path of learning and supporting their choices of species and technologies. Among the included items are Bill Mollison's public domain papers on permaculture from the early 80s. The CD's diverse papers, in pdf form, range over water systems, gardening, seed saving, compost, aquaculture, recipes, useful plants, wild foods, and more, and are referenced frequently during the narration.

The Glowkas catch a huge amount of rainwater—when it rains. Their 34,000 gallons in 14 tanks at the top of the

property weren't enough for the longish droughts of recent years in south Texas, however. With chagrin, they have drilled a well at great expense to ensure that they don't run out of water. In good permaculture fashion, they emphasize the virtue of redundancy in essential functions.

The level of detail in the film is quite impressive. We get real numbers, costs, ratios, sizes, temperatures, names. Sometimes these come faster than you can take them in, but you can always back up and play the section again for the specifics. Though clearly working, the system is still in development: a trellis is planned to cover the alley between the water tanks and the barn; this will create a cool microclimate for outdoor work in summer.

There is no ideology, no religion, no "you must."

Noteworthy among consistently high quality presentations is the section on rabbits. We get to see the daily operations of feeding, breeding, the rabbitry set up, along with details of what works well and what doesn't, and right on through to butchering a rabbit on camera. This is done with respect, but also in a matter-of-fact manner. The Glowkas raise up to 90 rabbits a year and so they are butchering one about every four days. Still, with kindness to the very end, and evident sorrow for the necessity of taking life, Marjory gives the little fellow a decent send off before dispatching him swiftly and with little evident pain or struggle in a manner anyone could replicate. She reviews the qualities of various knives as she works. She continues through to skin, gut, clean, and carve up the carcass for freezing in rather little time. "This rabbit was a little bloodier than usual," she comments. Impressive work, but not all that startling, I thought. The butchering section covers poultry as well, but uses a narrated series of stills to illustrate the operations of killing, plucking, gutting, and carving. Other animals such as raccoons are evidently occasional fare on the Glowka table, but we are left to imagine those details.

I found the chapter on dogs also very practically oriented, with a discussion of the system's need for dogs to defend the gardens against a small horde of voracious wildlife, and how the Glowkas came to

choose two medium-sized mixed-breed animals. We see dog training, feeding, housing, and more, and we learn the logic of using these working animals. The film takes care to make recommendations to translate the family's adaptations to other and smaller systems. So, for example, we learn that a backyard might do well with a 25 lb. dog. Also, if you compost your humanure, be sure to keep the dogs away from it, as they have no compunctions about eating the stuff, which can be bad news for everyone.

The Glowkas' dogs sometimes need human support to drive off potential predators, but rather than get large animals which could handle predators on their own, the family chose to feed less food to

smaller dogs, and thus to take the consequences of sometimes having to get up at night. The dogs eat organs from the butchered rabbits and poultry; they get some food scraps, and they hunt.

Though the Glowkas use a small amount of commercial feed for their rabbits and poultry at certain times of year and during certain phases of pregnancy, the livestock are mainly fed on vegetable and insect wastes of the system.


The Glowkas have faced and continue to cope with challenges that many more of us will encounter over the coming decades as climate change moves hot zones farther north. The erratic Zone 8 weather that they experience at the edge between humid and arid climates, ranging from 4°F to regular summer temps over 100° for 10-30 days, and from 60" of rainfall a year to severe drought, will come to affect wide swaths of the southern and mid-latitude US by 2040, if not sooner. For this reason, and for the profound clarity and honesty of the film, I believe it has wide applicability for many US viewers despite its relatively distinctive Texas particulars.

Many gardeners across the country, for example, would find the notion of growing tree legumes, as this film demonstrates, an odd adjunct to their regular practices. I do not, however. This agroforestry practice, common in the tropics and subtropics, is well adapted to the future ecosystems that will evolve in the United States over

the next five decades. We are beginning now to cultivate an overstory of mimosa, an adapted temperate legume tree, in our southern Indiana gardens, just as the Glowkas grow leucaena, a subtropical tree legume that fixes nitrogen, for a light, dappled shade, for animal fodder, and for both above- and below-ground fertility. We will increasingly have the same needs. Our summers are not yet above 100°, but we have seen a month of temperatures above 95° in the last two years and worrisome levels of drought. They had 20 months in a row with less than one inch of rain per


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month. They tell us just how much water the trees needed to survive.

Visual documentation of working permaculture systems in North America has been scant. Mollison gave us glimpses in his 1991 film, *The Global Gardener*, and certainly much evidence of good work has been published over the years in the pages

of this magazine. But as well all know, seeing is believing. This film, therefore, makes a valuable contribution, most especially for the honest manner in which it deals with the difficulties of putting principles into practice. The fact that standard recommendations haven't always worked for them didn't stop the Glowkas, it sim-

ply forced them to delve deeper into the real limits and needs of their climate, their system, and the land they live in. There are no better rules than these for the world coming at us in a hurry. *Food Production Systems* offers a well-selected portfolio of working solutions that should be widely adaptable. Highly recommended. Δ

Surviving the City Review by Peter Bane

**KELLY COYNE
& ERIK KNUTZEN**

The Urban Homestead

Your guide to self-sufficient living in the heart of the city

Process Media. 2008.

Pt. Townsend WA.

308. pp. paper. illustrated.

This "get-started now" handbook by a couple of middle-aged hipsters presents a great collection of useful technologies for the urban homestead. The authors, who appear to be childless or empty nesters, live in L.A. and can't imagine relocating to the countryside. So, they are doing what many today are attempting or considering—adapting in place to a small footprint world.

The book points to permaculture early on, but the authors don't really explain it much nor try to teach design. Not to worry—the content, while limited, is well-selected for beginners and relentlessly practical. It's also well-organized, easy to dip into and out of, and backed by a substantial and savvy reading list so you can get more good information on whatever you've found intriguing or they've overlooked.

The framework is urban farming, the context—your backyard. They begin with five quick projects which are essential and will support all kinds of other things: composting, vermiculture (worm composting), getting rid of your lawn with mulch, building a raised garden bed, and making a self-watering container for plants. They follow that with 15 tricks and projects that help you flex your gardening muscles, among them fertilizer tea, trellising, drip irrigation, crop rotation and polycultures, soil tests, and no-dig methods.

The urban farmer quickly learns that



Not to worry—the content, while limited, is well-selected for beginners and relentlessly practical.

there's a lot of food in the neighborhood or nearby, so besides growing your own, Coyne and Knutzen tell you how to forage the 'hood and beyond.

There's a major section on small livestock from quail, ducks, and chooks to rabbits, pigeons, and bees. They give instruction on ordering, raising your own chicks, providing feed and housing, and the basics of keeping them healthy. There's nothing but a tip of the hat to butchering, however, (I gather that they don't do so often), which is of course, the touchiest part of keeping animals. There's no vegetarian bias here, just an editorial decision not to go there. They talk of people feeding their families on a trio of rabbits (which breed quickly, of course), but the idea seems more of a quaint cultural artifact than something they do. Not hungry enough yet, I guess.

Lots of page space goes to water management, including how to replumb

your laundry to use the greywater for irrigation, how to catch rainwater and what to do with it, and how to poop in a bucket (see composting). There are also sections on solar energy capture, both thermal and electric, and as with the other sections, they emphasize small, simple, and getting started.

The largest section of the book revives home economics in a breezy way. It covers food preparation and storage, not just jams, jellies, and soup stock, but lacto-fermented pickles, sourdough bread, yogurt, cheese, and butter. Oh, and booze too, from mead to moonshine. There's how-to on drying food as well as a section on safe cleaning methods and how to get rid of ants and roaches without poisons.

They wrap it all up with a few pages

on transportation: walking, biking, transit, and how to know when to do which. They cover work bikes, choosing routes, and how to ride in traffic.

The book is a gloss with an emphasis on fun and easy, but its strength lies in the selection of good tips and techniques, and the assembly of many otherwise disparate bodies of information—from plumbing to animal husbandry—that would take a lot of effort to chase down. The illustrations are rudimentary (clip-art), but they do give a little shape to the concepts. Green pages and borders liven up the mostly black-on-white text.

The book is elementary and cheap but doesn't talk down to its readers. It also doesn't try to teach you how to get along with your neighbors or build community. If you can't do that, get out of the city, join the army or a monastery, or try the self-help shelf at the library. If you want to grow some food, cut your energy bills,

shrink your footprint, or just have a lot of fun doing projects around the house, this fills the bill. From seed starting and potting mix to tree planting, making a greywater wetland, or choosing energy efficient appliances, the book runs the

gamut of the household from attic to over the back fence.

There's much more to be learned on all the subjects the authors cover, but if you learn well by doing, you won't go wrong with this as a beginning point. The

book would be a great gift for yourself or anyone you know living in a city house with not a lot of land. Though the authors live in southern California, the advice should stand up well across the country. Δ

Old Boomers or Oil Boomers?

Review by Peter Bane

THEODORE ROSZAK
*The Making
of An Elder Culture*
Reflections on the Future of America's Most Audacious Generation
New Society Publishers.
Gabriola Isl. BC. 2009.
306. pp. paper. \$18.95.

ROSZAK, WHO AT THE AGE OF 30 chronicled the rise of the boomer generation to social prominence in the 60s, is now well into retirement and not by any means going quietly into that good night. The author of *The Making of a Counter Culture* still writes with verve and style, but in this book he turns his focus to the social transformations that lie ahead as the boomers move into the loving arms of Social Security and Medicare.

Roszak claims the moral high ground in the debates over generational equity and the use of social resources. He excoriates the greed and mendacity of the Republican/corporatist politics of the Reagan/Bush years. How dare people say of their elders that they're no more than greedy geezers? Is that the kind of respect they want for themselves in old age? He tells us that most of the claims that the old will bankrupt the young are specious, and the conflicts whipped up by neoconservative ideologues overlook the fact that the old and the young are tied together by something called family, as in "family values."

Old age, and a healthy old age, he boldly asserts, is what industrialism has always been about, even if that end was hidden until recently. Forget output statistics and the number of patents: the only number that really matters is life expectancy. The ultimate value is life, as in "life, liberty, and the pursuit of happiness." Oldsters, he reminds us, have no interest whatsoever in Social Darwinism or the conceits of young male culture:

getting and grasping. The arguments for competition hold no sway over them, and "them," he points out, are very much the heart of "us," as in the center of the culture still, by numbers, by political influence, by wealth. The old, he asserts, are ironically the indomitable bastion of resistance to this flaming neoconservative spasm that we have lived through the past 30 years. Sheltered behind the nearly unassailable protection of the New Deal and Great Society social programs that sustain their very lives, they are not going to give up on compassion, or collective responsibility, or on social welfare. For the old, entitlement is not an ideological argument—it is bread and butter, and their very survival.

increasingly by corporate greed.

The author rejects outright any notion that there's not enough money to pay for the care we will owe our oldest citizens. The national consensus will emerge quickly and before long, he asserts, to "soak the rich," for it is they who have benefited from the despoliation of nature and the degradation of society over the past generation. The money will be found, clawed back by taxes, pried out of the greedy fists that have squirreled it away into offshore bank accounts and concealed investment schemes.

I have no quarrel with Roszak's values. I find hope in his analysis that the old will defend entitlements. I find his mature

How dare people say of their elders that they're no more than greedy geezers?

So what if we were to spend 30, 40, or even 50% of our national wealth on health care, he asks. You think we should spend it on sports stadiums, iPods, or Middle Eastern wars? It's hard to argue with that. Those who say that Medicare is too expensive should have to answer for the fact that we spend \$630 billion dollars a year (on the books, and maybe another \$400 billion illegally) on slot machines, internet, and casino gambling. That's twice the cost of Medicare. Let's not talk about pet food.

Roszak suggests that the rise of the elder culture will have its galvanizing moment, probably in a crisis of the great unsung heroines of the next era: middle-aged Boomer daughters stretched to the breaking point between the care of their own families, tending to the needs of aging parents, and crushed by their own loss of self in what was once seen to have been their prime years. He is hopeful that the elder revolution will bring our adolescent society around to the more enduring values of care for all, which have been our ideology for three generations, but also a promise forestalled by war, empire, and

condemnation of the puerile behavior of "corporadoes" a valuable tonic.

Where I question his analysis is where it hinges on a continuation of the industrial system—the golden goose if you will. Can it continue without the ever-increasing energy subsidy of fossil fuels, and once these have peaked—now, soon, or just a few years out—how can the benefits of a prosperous society continue to be distributed to an American middle class that is such a tiny portion of a hungry world?

Technological medicine may, as Roszak asserts, be a perfectly sound basis for an economy, but it still wants rare minerals from Africa, and Saudi crude oil to keep the servers and the MRIs turning over.

No, Roszak says nothing about depletion of the planet's non-renewable resources, of the continuation of technological society in an unbroken historical line—one that can guarantee the intergenerational bargain of Social Security. I for one, don't expect Plan B to work, even if an attempt to implement it is made—and that is still a long shot.

I very much want Roszak to be right,

I would like to look forward to the kind of medical support that he has already enjoyed, but I have no reason to believe that the laws of thermodynamics care one way or another for his politics.

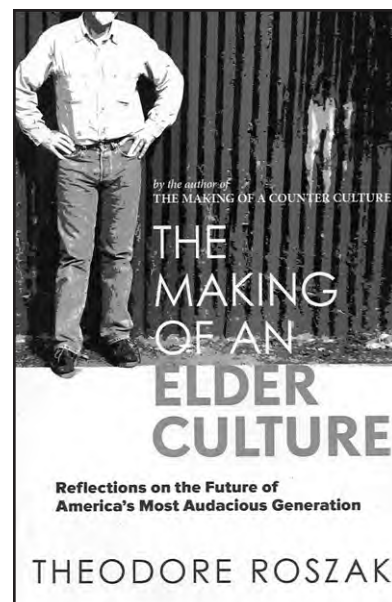
The book is provocative, thoughtful, and cuts through much of the left-right debate about social policy. There's much philosophical reflection in it that is soul-nurturing. It's worth reading. I enjoyed it. It seems, however, to have been written in the bubble of the boom years, or perhaps I should say that its author's mind seems anchored in those expansive times.

The future could be socially and culturally rich, and the old might still look forward to care and nurturance from their society, but the very idea of a mass society seems threatened *in extremis* by the twin calamities of resource depletion and cli-

discourse is so very far from dealing sanely with any of these topics, that integrating them and making progress toward a rapid transformation of industry and settlement, which is likely the only course that will prevent catastrophe, seems unreachable.

By Roszak's logic, China and India, and the rest of the majority world too, must be allowed to complete their industrial development in the hopes that they will achieve the material wealth that has enabled tens of millions of Americans to live lives of aging glory; to achieve demographic shift to lower birth rates, longer lives, social equity. I fear this cannot possibly be done on a depleted planet. And if the aspirations of three or four billion people are to be frustrated, how can we sanguinely look on the future for America's Boomers?

And what does this mean for the social compact? Can elder culture fight not only for social justice, but for a soft landing in a post-industrial future? And can that materially poorer if perhaps culturally richer society provide what Roszak feels we are all entitled to? That is the chapter I wanted to find in this book, and which was missing. △



So what if we were to spend 30, 40, or even 50% of our national wealth on health care, he asks. You think we should spend it on sports stadiums, iPods, or Middle Eastern wars?

mate instability. If New York, London, and Tokyo are facing mortal sea level rise in less than a century, where will the wealth come from to provide mass CAT scans for everyone against cancer? In a world of environmental refugees, how can we hope to provide the settled social engagement for long-term care of the elderly and the invalid?

My concern is not that of the neoconservatives: where will the money come from? I think Roszak answers those false cries. I ask: Where will the energy come from? I think 15% of our society at a minimum in the next generation will have to be cultivating food simply for us all to eat—not the 2% that presently do. The number could as well be 30% in 30 years. In the heat waves in Europe in 2003 and in Chicago a year later, it was primarily the elderly who perished. Can we expect that Medicare and Social Security, however well funded, can protect us from climate change?

There is no inherent conflict between extension of life, care of the elderly, and addressing the realities of energy descent and climate change. However, the public

Getting Along with Greenhouses

Review by Shodo Spring

VIRGINIA COOVER
The Natural Greenhouse:
Growing Plants and Food for Profit
Sun and Shade Publications.
Shade, OH, 2008.
252 pp paper, color photos,

THIS BOOK TARGETS the small-business greenhouse grower. It's also going to provide me a step-by-step program for my personal dream to eat from my own garden year-round in Minnesota. It has two angles: building and managing a greenhouse, and building a business. It's easy to read, loaded with photos, and highly informative.

The author started her first greenhouse in 1982, and her 26 years of experience have contributed to a well-written guide that works. Every question I thought of is addressed, as are many I didn't. Every "how-to" instruction has a series of photos with it. Every decision point has com-

ments on both sides or all three, so you can apply it to your own life. The point of the book is to be able to go into business marketing food and plants, having the first tomatoes at the farmer's market, the healthiest bedding plants, and the happiest customers...sustainably, and avoiding disasters.

Walking through the book, here's what we find: An orientation—what's in the book plus what kind of business you might use it for. Then basic business planning—things to do to find your market. That's not exactly how it worked for Coover: she was already in business selling food at farmers markets, and when she added the greenhouse to get a jump on the market, people started asking to buy plants. By year three, she had to build an extra greenhouse to keep up with it—that story is near the end of the book.

An important detail: Coover's greenhouse is not certified organic. She went into business before there was certification, and when it came around she simply chose to skip the extra expense. However, except for some of the supplies, everything in the book would apply to a certified organic business, and there are

specific resources for implementing certified organic. She discusses why not to use chemicals and sprays, warns about calling your plants “natural” if you’re using pesticides and fungicides, and talks practically about consequences of staying natural. The book includes general greenhouse topics—starting with when you might not need a greenhouse, then size, location, references for construction, dealing with difficult weather, and how to expand your growing space through temporary structures. It covers heating, ventilation, the

That ease continues throughout most of the book—for instance, scheduling your seed planting and germination schedule (with samples), figuring out quantities and space needed, and preparing flats for planting including over two pages of detailed photos such as how to separate those tiny seeds.

The discussions on controlling insects and disease are interesting. After briefly explaining why you don’t want to use toxic sprays, she discusses exactly what she does for prevention as well as con-

Gini Coover is a generalist rather than a permaculturist. Most of what’s done here involves annual plants rather than forest gardening and plant communities. There may be another step to take—but there’s not a book on it yet. Like permaculturists, Coover uses beneficial insects, creates healthy soil, plants in succession, and abhors chemicals.

In the preface Coover says, “There is still very little [information] available on how to raise plants and vegetables naturally in greenhouses. This book is an attempt to help fill the void.” It is a worthy and much-needed start. It focuses on annuals rather than plant guilds—but uses beneficial insects, healthy soil, succession planting, and no poisons.

As we shift to more localized food production, more of us will be growing in greenhouses—whether for sale or for ourselves. If this book encourages small growers to expand their growing seasons, it will have made a significant contribution to that needed localization. As a beginning gardener doing my first cold frames this year, I’ll be using the step-by-step instructions—a lot. Δ

The author started her first greenhouse in 1982, and her 26 years of experience have contributed to a well-written guide that works.

best watering systems, why to build your own benches—what size and materials, and why they should be lightweight. And then she goes into specific examples, with dimensions and photos. It felt a little like a color-by-numbers picture—which is exactly what I would need if I were doing it.

trol. I liked the story about the one time in 26 years that she couldn’t use acceptable sprays (e.g. pyrethrum) to contain a disease. She burned \$100 worth of tomato plants that had picked up blight at the market; the next healthy batch was ready soon because of succession planting.

Pond Perfect Review by Peter Bane

TIM MATSON

Earth Ponds

The complete guide

Chelsea Green Publ.

White River Jct. VT. 2006.

161 pp. paper. color photos. \$30.
with 48 min. DVD. \$45.

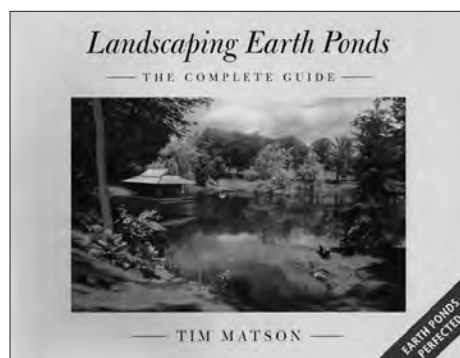
This is Tim Matson’s fourth book on ponds and perhaps the most beautiful yet. Showcasing a range of natural features that might enhance the aesthetic of a country pond, he nonetheless manages to include a lot of useless information for pond builders. Handsome color photos throughout illustrate stone embankments, edge vegetation, specimen trees, benches, and mountain backdrops, while including a few buildings, docks, and other bits of built infrastructure. A handful of nicely executed line drawings show design features, plans, bridge variations, underground connections, and other elements not easily photographed.

The style is understated but very informative. The author has made so many ponds he knows the full range of vagaries,

opportunities, and problems you may encounter in the process, and shares much of that insight. He explains excavated versus embankment ponds, and how to site the pond. There is a review of pond structure so that the reader understands safe and functional construction, plus discussion of water quality and sources.

As his earlier books dealt at greater length with the basic elements of pond construction, this one emphasizes the planting, though this section of the book also addresses environmental conditions, water flows, etc. An extensive list of suppliers, and a catalog of potential pond plants illustrated with color photos rounds out the offering.

One caveat—the ponds shown are all from New England, and while the



information is broadly applicable, special conditions not discussed may apply in other areas. As the title implies, only earth-sealed, not lined ponds are covered.

An optional DVD is available with the book, and I found it to be an unexpected gem. Visual quality was only so-so, but Matson narrates an excellent script and he does it well. The editing is crisp and the film shows great attention to detail. Pond building can be a messy business, but we get to see the machines and the builders at work unadorned. Pond building may be one of the best possible uses of fossil fuel we can make today.

The number of ponds shown is fantastic—representing a lifetime of learning. The DVD covers biology, construction, design, aquaculture, wildlife use, and virtually every aspect of a pond in an intelligent, matter-of-fact manner. Plus, the virtual tour of Vermont summer (plus a little ice skating...) is heady and enticing, the sound of peepers virtually erotic for a viewer cooped up at mid-winter.

Altogether, book and DVD represent a very attractive package, taking the reader and viewer from basics to sophisticated design concepts in short order. Highly recommended. Δ

Looking for a Road Map Review by Peter Bane

JOHN MICHAEL GREER
The EcoTechnic Future
Envisioning a post-peak world
New Society Publishers. 2009.
Gabriola Isl., BC. 269 pp. pap.

NOSTRADAMUS the Archdruid is not. This book, nevertheless, attempts to scry the shape of things to come. And Greer leans far into the winds of change to take his bearing. He suggests the future toward which the book points may be three centuries away.

As a student of history, the author helps us shift focus from the mundane to the epic by juxtaposing stories from the end times of other civilizations with events of recent decades. Of these, he has a keen sense of the moment of possibility presented by the first oil crises of the 1970s, and how its promise was denied. A refusal to heed the warnings of impending resource limits has left the institutions of industrial society with poor prospects for survival beyond 2030.

Greer describes industrial civilization as the first technic society, defined as drawing sustenance from non-food energy. Rome drew most of its energy from slaves and other animals; China from peasant labor. Industrial societies eat fossil fuels, and that will be their downfall, as supplies are limited and already declining. Collapse is a given. Only its shape and pace are in discussion. Future technic societies will run on renewable non-food energies.

Greer is short on examples of what this might mean. He points to organic agriculture, and makes some suggestions along the lines of appropriate technologies of the present era. He might, I think, have spoken of biomimicry or of attempts underway to grow organisms to generate electricity from the sun or to produce fuel from algae. Biotecture, or the growing of buildings, also comes to mind.

The task Greer has ostensibly set for himself is, of course, an impossible one, so he has to be forgiven for failing at it. No one can know or predict the future three centuries out. So we must judge this book on a different standard than the superficial one implied by its title.

The EcoTechnic Future does sketch the main lines of force shaping the world today, and suggest where they will take us over the coming decades. Greer's prime contention—and I concur—is that ecology

offers a model for the progress of human societies. He draws on ecological terms such as *sere*, a stage of succession, and the awkward but scientifically correct terms “R-selected” and “K-selected” to distinguish organisms, communities, and in his thesis, societies based on their relationship to resources and their rate of reproduction. Bacteria and insects are R-selected species. They reproduce copiously, die quickly, consume resources opportunistically, mutate furiously, and live in the mass. Humans and elephants, on the other hand, are K-selected. They develop slowly, live long lives, pass learning down the generations through culture, and spend a great deal of energy on social relations. Similarly, a weedy urban lot is an R-selected sere; a redwood grove a K-selected community of long-lived organisms. Industrial society—R-selected like weeds and insects, thrives on disturbance, thus its proclivity for war. Naomi Klein's writings on disaster capitalism expand on this analogy.

Applying the model to society, Greer argues that the present sere of abundance industrialism (that is, abundance of energy and resources) is ending, but will not immediately be succeeded by a world of scrabbling peasant agriculture or marauding gangs of barbarians sacking the cities. Instead, he predicts the next sere already emerging is that of scarcity industrialism, marked by severe competition for resources and a progressive jettisoning of capacities. Industrialism will try to reinvent itself as a K-selected culture (that is called Plan B), but that will fail because we're hooked on oil and it's too late.

The false-flag operation of 9/11 launched a full-scale American embrace of this new era, and we all felt it. The war in Iraq was a naked grab for the largest remaining cheap oil deposits on the planet—nothing else. It was a recognition by Dick Cheney and his gang of neoconservatives that resources were in fact a zero-sum game. If America got the oil, then no one else could. Other forms that scarcity industrialism is taking include doing more with less, cutting public services, and sacrificing whole classes of society and nations. Forget the Maldives, Haiti, and Somalia; never mind the homeless and the permanently unemployed. Like frost-bitten toes, they're being starved of blood to keep the core organs functioning.

This sere or stage of collapse will prepare and give way for the next, which Greer calls salvage industrialism.

Nine-eleven too foreshadowed this, inasmuch as the Twin Towers were not only demolished but the steel beams hauled off to China in a few short weeks. In the future, skyscraper dismantlings will be more of a cottage industry than a piece of political theater. Think of it as the junkyard phase of industrialism. People are already living in school buses; dumpster diving is a new competition sport. We're getting ready.

And only after most of the juicy bits have been sliced off the carcass of industrial society, and the remainder reduced to rubble, says Greer, will anything like an ecotechnic future have a chance to take hold. For a long time it will be easier and more rewarding to salvage the embedded energy of industrialism



than to invent and establish new systems for gathering the diffuse but renewable energies of nature. In another way of seeing this problem, it doesn't pay to do small-scale farming today because it mostly involves handwork, and fuel is still cheap enough (for a little while) to run tractors. So even though industrial-ag is bankrupt, it goes on taking up the space of food production, and most people can't see how to shift over to homegrown.

This is a good demonstration of that little demon of Peak Oil: EROEI (rhymes with 'Joey'), and of the related concept EMERGY, or Embedded Energy. Energy Return On Energy Invested is critical to the transition now underway. Humans have an acute sense of it: that fruit is worth picking; the one above it is not. EMERGY suggests we'll go on eating oil as long as we can because of the sunk costs of our infrastructure, even if that

eventually means eating its scraps (metals, timber, stone) because that's all that's left of oil. Put EROEI and EMERGY together and you can see where we were headed—a kind of Lilliputian future in which the Leviathans of the Oil Age (The Queen Mary, the Empire State Bldg., Chevron's refineries) are knackered by humans with drawknives and hammers once we no longer have the oil to make them run.

Greer is interested in helping his readers think how to preserve the knowledge, technologies, and resources that would potentially be of use to a future society with low levels of available energy. He might be said to be doing an EROEI analysis on the future scrapheap of industrialism. Except that, for the most part, he puts that work onto his readers. The strategy for sorting out what to carry forward, he proclaims, is dissensus. And that's not those guys and gals descending on the 'hood next April with clipboards, but a concept of disagreement, or in the words of Chairman Mao, "Let a hundred flowers blossom..." In short, it's hard to know, and we should spread our bets. Let everyone do what he or she is called to do—just save something. Passionate hobbyists, whether of ham radio or old cars or canal boats, or collectors and breeders of odd vegetable seeds should all be encouraged to keep at it.

Greer is right that the household economy will be the future locus of production, and that building capacity in the home is a way to weather the changes coming at us. This has always been a fundamental precept of permaculture, an important conceptual toolset and social movement of which Greer takes passing note. In this regard, he has made some progress since writing *The Long Descent*, but still lacks a handle on the import and breadth of permaculture understanding. He last revised his reading list with the publication of Graham Bell's little lifestyle book, *The Permaculture Way*, in 1993.

I like this book more than the author's last one. It draws more deeply on history. His scheme of successional stages makes sense of a chaotic contemporary scene. He's right on the household economy and appropriate technologies, and he has good insights about the future of science. The second half of the book—in which he looks at sectors of society: home, work, energy, culture, community, and science, and how they might devolve over the coming years—is full of gems, but a bit uneven and in many places simply too shallow. For example, he's right to assert that cities will fare better in the

coming decades than popular culture gives them credit for. As Toby Hemenway argued several years ago in the pages of this magazine, rural areas are already in some advanced stages of social collapse, and may go further down, while cities are likely to organize the defense of democratic and humane values far longer into the future. Hell...Starhawk argued the same in *Fifth Sacred Thing*. But Greer sets up a rather foolish straw-man to make his point. He argues for fixing up cities by mocking the concept of lifeboat ecovillages (which, he claims, will need to build 2,000 homes each at a cost a billion dollars per village). This is based, it would appear, primarily on what he's read online.

Yes, urban areas need a whole set of reinhabitation strategies, but that truth doesn't rest on the silly notion that new communities are unbuildable. Indeed, the problems of Earthaven Ecovillage, where I lived in North Carolina, had as much to do with attempting to reach too far into the future as with any failures of technology or lack of imagination, or even of finance. Greer and others would do well to pay attention to these experiments in reality and not merely in the blogosphere.

J.M. Greer writes well, even stylishly, and has read widely in the literature of what we are these days calling "Transition." His theories of collapse, succession, and dissensus do, I think, contribute to our understanding of what lies ahead. His call for cultural conservers is important and goes to the heart of our historic opportunity. I'm left with a nagging dissatisfaction, however, that he waves his hand too lightly over important current developments that actually bring the EcoTechnic closer than he imagines it to be. And, I have to wonder where he has tested his ideas.

His experience as a Master Conserver in Seattle (learning to retrofit buildings for energy conservation) was doubtless forward thinking in 1979, but there's nothing mysterious or novel about that stuff anymore, as with so many of his examples: composting, humanure, organic agriculture. In the aggregate these practices amount to eleven or twelve figures of economic impact worldwide. I'm a little exasperated that the author can write so blithely about some of the real fruits of his and my generation's work, while failing to update his knowledge of its evolution.

By analogy, Master Gardeners are now commonplace and the program falls so far below the standard of work permaculture or even USDA's SARE program has

identified and achieved, as to be laughable. The only point of those programs was to mass produce the knowledge for incremental change, a perfectly legitimate strategy for an industrial society, but scarcely adequate to the demands of decline, or of today's leadership, even at the community level. As Greer points out, we lost university departments and extension support for home economics at the beginning of the Reagan era. What we got to replace them were the Master Gardener and similar programs—a kind of dumbing down. This is not what people should hope to preserve through the coming Dark Ages.

In any case, we've leapfrogged beyond that stage. Master Conserving may endure as a dusty manual in Greer's library and elsewhere, but energy-efficient building will survive, not as a deciphered manuscript, but as a living cultural art, for it has thousands of practitioners. Their work is not dependent on industrial systems; it uses them but can succeed them. So it is with permaculture, which is not clever gardening or tree crops but the actual empirical practice of applied ecological science, arguably the base layer of any future ecotechnic society.

Nor do I think we should be fearful about the possible loss of the practice of science, about which Greer cautions. Not only are permaculturists doing it, but a man in Malawi, one of the world's poorest nations, has apparently reinvented the scientific method recently and pulled himself and his community from the distant backwaters of the industrial era into the ecotechnic in a very short time. He taught himself how to make lights run from the wind from the very idea of it and by talking to people around him—none of whom were scientists or technicians. He discovered by trial and error that old auto generators will make electricity, and now he's to the point of organizing village-scale production. This is Ben Franklin meets "The Gods Must Be Crazy," and if it can happen in a place where starvation stalked the land only a few years ago, and which doesn't even have a seacoast, then we should let ourselves sleep a little more soundly tonight knowing that humanity has the same inventive abilities today that it had 10,000 years ago, and a great deal more going for it to boot.

I appreciate Greer's scholarship, but I want a more acute vision. The collapse of industrial civilization is ripe with opportunities—for those willing to keep their eyes open. The ecotechnic future may be closer than you think. △

EVENTS

Three courses in 2010:

Permaculture Design Courses Northern California

Dates: March 20-April 2, 2010 OR
July 17-30, 2010 OR
September 18-October 1

Location: Occidental, CA

Description: These are two-week courses in land-use design based on the sustainable living philosophy of permaculture. Topics to be covered include permaculture theory, food diversity, soil enrichment, water use, forest farming, and much, much more. Come and explore the Occidental Arts and Ecology Center and all it has to offer!

Instructors: Brock Dolman and guests.

Cost: \$1,500 incl. meals & lodging,
\$1,400 if registered two weeks in advance.

Contact: Philip Tymon
707-874-1557
oaec@oaec.org
www.oaec.org

Teacher Training for Permaculture Arizona

Dates: March 13-19, 2010

Location: Arcosanti, AZ

Description: Empower yourself to advocate for change through whole systems design and teaching. In this dynamic and interactive course, you will learn significant techniques to communicate permaculture principles and strategies in a wide variety of settings. This teacher training unfolds as a design methodology and advocates the permaculture design course curriculum.

We are committed to encouraging and inspiring your unique strengths and talents by demonstrating diverse teaching modalities such as lecture, facilitating class discussions, storytelling, interactive activities, and using visual aids. In this setting of active learning, you will experience essential hands-on practice by preparing and co-teaching several presentations. As a final course project, the class will organize, promote, and present a workshop to the public. Prerequisite: Permaculture Design Certificate.

Instructors: Jude Hobbs
& Andrew Millison

Cost: \$715-\$775. Includes course materials, dorms, and meals.
Limited to 20 students.

Contact: Andrew Millison
permasanti@gmail.com
www.cascadiapermaculture.org

Permaculture Design Course British Columbia

Dates: May 30-June 12,

Location: Winlaw, BC

Description: This is a traditional design course. This intensive course combines theory with practical hands-on learning. Topics include: techniques and principles, site analysis, soil fertility, organic gardening techniques, herbs and medicinal plants, fruit and nut trees, water uses, and ecological buildings.

Instructors: Gregoire Lamoureux and guests

Cost: Cdn. \$975

Contact: Gregoire Lamoureux
Kootenay Permaculture Institute
spiralfarm@yahoo.com
www3.telus.net/permaculture

Permaculture Design Course Kootenay Mountains, BC

Dates: August 15-28

Location: Winlaw, BC

Description: This is the traditional design course. This intensive combines theory with practical hands-on learning. Topics include: techniques and principles, site analysis, soil fertility, organic gardening techniques, herbs and medicinal plants, fruit and nut trees, water uses, and ecological buildings.

Instructors: Gregoire Lamoureux & guests

Cost: Cdn. \$900 by July 8.
Cdn. \$975 after July 8.

Contact: Gregoire Lamoureux
Kootenay Permaculture Inst.
spiralfarm@yahoo.com
www3.telus.net/permaculture

Permaculture Design Course Western Washington

Dates: June 26-July 10

Location: Bellingham, WA

Description: Two weeks that can change your life and change the world! Earth Activist Training with a special emphasis on social permaculture. This is a design course with a grounding in earth-based spirituality, and a focus on organizing, activism, and social permaculture as well as urban and rural land-based systems.

Learn how to heal soil and cleanse water, how to design human systems that mimic natural systems, using a minimum of energy and resources and creating real abundance and social justice. Explore the strategies and organizing tools we need to make our visions real, and the daily practice, magic, and rituals that can sustain our spirits. Participatory, hands-on teaching with lots of ritual, games, projects, songs, and laughs along with an intensive curriculum in ecological design.

Instructors: Co-taught by Starhawk and friends, with guest teachers Bill Aal and Margo Adair of Tools for Change.

Cost: \$1,400-\$1,800, sliding scale.
Work trade and scholarships available, apply early!

Contact: 800-381-7940
earthactivisttraining@gmail.com
www.earthactivisttraining.org

Permaculture Design Course Interior Northwest

Dates: July 12-25

Location: Methow Valley, WA

Description: This course will be held at the Skagitide Retreat Center in Methow Valley in north central Washington. The main focus is learning permaculture principles and design methodology. These, once learned, can be applied and adapted to any site, bearing in mind that each site and each client is unique. No cookie-cutter solutions will be found here!

The course covers the traditional Mollison permaculture curriculum as well as lots of local knowledge. The species and techniques will be oriented to the interior Pacific Northwest which includes Washington east of the Cascades, eastern Oregon, Idaho, western Montana, and southern interior British Columbia.

Instructors: Michael Pilarski and guests.

Cost: \$700 by April 1.

Contact: Michael Pilarski
509-486-2672
michael@friendsofthetrees.net
www.friendsofthetrees.net

**Send your Letter
to the
Permaculture Activist**

Write Rhonda Baird at
pcaeditor@comcast.net

Send Event and Calendar Listings for Issue #76

Soil Fertility

for the March 1st deadline to:

Address: pcaeditor@comcast.net

Permaculture Design Course

Southern Colorado

Dates: July 26-August 7, 2010

Location: Westcliffe, CO

Description: This two week residential course covers the core topics of permaculture and sustainable design. There will be an emphasis on hands-on techniques and participants can expect to leave the course with specific skills to help them create their own sustainable habitats.

This group of instructors brings decades of experience of practicing permaculture in mountain environments and brings their passion for mountain permaculture to you!

Instructors: Marco Chung-Shu Lam, Sandy Cruz, Becky Elder, Jerome Osentowski, and guests.

Cost: \$1,100 if registered by April 15; \$1,200 by June 30; \$1,250 after July 1.

Contact: Ayesha McDanel
719-783-0188
ayeshamcd@gmail.com

Advanced Design Course

Colorado Front Range

Dates: Febr. 23-May 18 (Tues. evgs.)

Location: Boulder, CO

Description: A unique, locally-based certification course offered by seasoned instructors. Opportunities for in-depth design of physical sites and invisible structures. Case studies and design charettes bring course material to life. Projects range from broad conceptual design to nitty gritty detail, as students work individually and on teams. Local nature of the course will facilitate implementation of designs, as well as evolution of teams over time. Participants are asked to commit four hours per week outside of class for readings, site observation, research, design work, and other assignments. Course size is limited.

Instructors: Sandy Cruz, Marco Chung-Shu Lam, and Alison Peck.

Cost: \$800

Contact: Sandy Cruz, 303-459-3494, www.hialtpc.org

Permaculture Design Course

Colorado Front Range

Dates: July 30-August 12

Location: Sedalia, CO

Description: Join us for a two-week intensive certificate course in the foothills of the Rocky Mtns. Learn how to design sustainable and regenerative systems in balance with the natural world. Based on the traditional permaculture Design Course curriculum, this residential course will include permaculture ethics and principles, patterns and design, soil building, food forests, water harvesting, natural building, zero waste systems, community design, aquaculture, medicinal plants, mycology, alternative economics, watershed management, sustainable forestry, and more. The course will use diverse formats, including lecture, discussions, hands-on activities, field trips, and team design projects. Incorporating Woodbine's commitment to indigenous values and sustainable communities, the course will also include sessions on traditional ecological knowledge, social and environmental justice, and indigenous permaculture. Students may choose to stay for the first Indigenous Permaculture convergence which will follow this course.

Instructors: Andrew Goodheart Borwn, Shannon Francis, Pavlos Stavropoulos & guests.

Cost: \$1,100 registered by Apr. 30; \$1,200 registered by June 30; \$1,300 registered after July 1. Limited scholarship and work exchange opportunities available.

Contact: Woodbine Ecology Center, PO Box 1253, Littleton, CO
pdc @woodbinecenter.org, www.woodbinecenter.org/pdc2010

4th Annual Weekend Design Course

Colorado Front Range

Dates: March 13-October 2010,
2nd weekend of each month

Location: Boulder, CO

Description: Observe the seasons unfold in Front Range cities, high plains, and mountains through the lens of permaculture, giving depth and perspective to design work. Participants will tour sites, engage in hands-on seasonal projects, create designs for resilient local systems, explore "permanent culture," and take tangible steps towards sustainable food, shelter, energy, and community. The 8-month duration of the course allows time to digest permaculture concepts and creates a foundation for permaculture projects.

Instructors: Sandy Cruz, Barbara Mueser, Jason Gerhardt, Becky Elder, Marco Chung-Shu Lam

Cost: \$1,050 by Feb. 13; \$1,200 after
Some work study available.

Contact: Sandy Cruz
303-459-3494
flyer@hialtpc.org

24th Annual Permaculture Design Course

Central Rocky Mountains

Dates: September 13-25

Location: Basalt, CO

Description: The longest-running annual permaculture course in North America offers immersion in a mature forest garden at 7200' elevation. CRMPI's history of continuous innovation is reflected in the renewal of greenhouse systems following 2007's catastrophic fire. A new, state-of-the-art greenhouse with subterranean heating system takes perennial tropical plants through the Colorado winter with minimal energy inputs other than the sun. Community projects include public school gardens, agroforestry designs, and a CSA farm school. Faculty bring the best of local and international experience together with this superlative setting.

Instructors: Peter Bane, Jerome Osentowski, and guests.

Cost: \$1,295 includes camping, materials, and organic meals.
Discount for couples.

Contact: Jerome Osentowski
PO Box 631
Basalt, CO 81621
970-927-4158
jerome@crmpi.org
www.crmpi.org

Permaculture Design Course

Northern Colorado

Dates: Weekends: May 29-July 17

Location: Fort Collins, CO

Description: Front Range Permaculture Institute will host a Northern Colorado Design Course spanning six weekends. Participants will learn the basics in design elements, principles, and ethics, and will then demonstrate these through practical application on a design project.

Like a rainbow that spans its breadth between earth and sky, the curriculum will cover a broad range of topics—from soil and water to economics and community. The lead instructors are seasoned permaculturesses and their unique skill set and energy will guarantee to inspire, motivate, and enlighten! Plan ahead... register early!

Instructors: Sandy Cruz, Becky Elder, Kelly Simmons, and guests.

Cost: \$900 if paid in full by March 1;
\$1,180 if paid by May 1;
\$1,280 after May 1.

Contact: Lisa Olivas
970-672-4722
lisaregina@frii.com
fronrangepermaculture.org

Permaculture Design Course Central Iowa

Dates: May 29-June 12
or July 24-August 7

Location: Fairfield, IA

Description: Classes are held in a sun- and wind-powered strawbale building with rain-water catchment on the 12-acre SLC Fairfield Eco-Design Center Campus. The course is enriched by many sustainable living initiatives in greater Jefferson County, including Radiance Organic Dairy, Abundance Ecovillage, Cypress Village, Abundance Permaculture Nursery, examples of urban permaculture, and Mahari-shi University of Management's Sustainable Living program. Leave equipped to implement permaculture in your home and community.

Instructors: Doug Bullock, Lonnie Gamble, Grover Stock & local experts.

Cost: \$1,300-1,700 sliding scale incl. camping and local, organic meals. Internships available.

Contact: Briggs Shore, 641-430-1089
briggs@sustainablelivingcoalition.org
www.sustainablelivingcoalition.org

Permaculture Design Course Grand Prairie Illinois

Dates: February 13-20

Location: Stelle, IL

Description: Too busy to take a course in the growing months? We scheduled this course for you. In addition to the full curriculum, students in this design course will meet different farmers, growers, and business people, and learn of their successes and challenges. This training explores creative ways to get more done with less while leaving the environment, the local community, and especially the grower/farmer in better stead than when they started.

Instructors: Bill Wilson
Wayne Weiseman,
and others.

Cost: \$1,295

Contact: Becky Wilson
815-256-2215
www.midwestpermaculture.org

8th Annual Permaculture Design Course Lower Ohio Valley

Dates: June 6-20, 2010

Location: Paoli, IN

Description: This certificate course, enriched by social design, is offered in conjunction with Indiana University (undergraduate credit available), and takes place in the Hoosier Natl. Forest, surrounded by rural and eclectic sensibilities and scenes on a 200-acre farm and retreat center. Passionate, experienced teachers combining decades of design practice, social justice organizing, and community building animate a liberating curriculum. From wildlife to wild life, the experience is steeped in a rich community soup flavored with permaculture builders, farmers, and other practitioners who have percolated throughout the Hoosier Hills region and into the Bluegrass Country.

Instructors: Peter Bane, Keith Johnson, Rhonda Baird, and guests.

Cost: \$1,200, incl. camping & meals

Contact: Andy Mahler, 812-723-2430
andy@blueriver.net

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| V,3 Aug. '89 Rainforest Conservation in Ecuador, Gaia, Weed Gardens | | #49 Dec. '02 Where is Permaculture? Land-Rent Reform, 10 N. Amer. Sites, Cuban Ag, Rainbow Vall. NZ, Cacti/Succulents, Animal Self-Meds, Challenge to Pc |
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| VI,1 Feb. '90 Household Greywater Systems, Soil Imprinting (\$5 each to here) | | #51 Jan '04 Trad'l. Knowledge & Regeneration: Cataclysm & Collective Memory Genome Wisdom, Waru Waru, Biosculpture, Inuit Medc, Ferment'd Stimulants |
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| #29/30* Jul. '93 Networks: Media Revw, Rural Reconstruction, Leaf Concentrate, Comm'ty Food Inits, Palestine Pc, Do-Nothing Educ, Feng Shui, Pc Academy | | |
| #31*May '94 Forest Gdng: Energy & Pc, Mushrm Cultvn, Robt.Hart's F.G., Spp for No. Cal., Alders, Agroforestry in Belize & China, Honeylocust, N-fixers | | |
| #32*Apr. '95 Animals & Aquaculture: Animal Polyculture, Small-scale Cattle, Goat Dairy, Keyline, Feral chickens, Bee Plants, Constructed Wetlands | | |
| #33 Dec. '95 Cities & Their Regions: Green Cities, L.A. Ecovillage, MAGIC Gdns, CoHousing, Micro-Enterprise Lending, Suburban Conversion | | |
| #34 June '96 Useful Plants: Bamboo Polyculture, Medicinals, Pest Control, Root Crops, Oaks, R. Hart's F.G., Russian Plants, Regl. Plants, Sources | | |
| #35 Nov. '96 Village Design: Pattern Language, Consensus Democracy, Conflict, Historic & New Villages, Planning for Tribe, Village Economics | | |
| #36*Mar. '97 Climate & Microclimate: Climate Change, Windbreaks, Low-Tech Sun Locator, Drylands, Cool Slopes, Straw-Clay Bldg, Round Beehive, Water Catch. | | |
| #37 Sept. '97 Tools & Appropriate Technology: Dowsing, Workbikes, Scythes, Japanese Saws, Nursery, Ferrocement, Greywater, A-frame & | | |

Permaculture Design Course Georgia Coastal Plain

Dates: February 8-19, 2010

Location: Americus, GA

Description: Unique 72-hour design course including basic concepts of permaculture, located at Koinonia Farm. Koinonia is a 67-year old intentional community and working farm, where members are active in Peace and Justice work, and many permaculture systems are in place or being designed, such as rotational grazing, organic pecan trials, village living, organic gardens, swaling and other water harvesting, and more.

The course will include extra events pertinent to the area, such as a visit to Habitat for Humanity's Global Village, an optional trip to Plains, GA, panel discussions, and films and information about the area and its rich history.

Instructors: Chuck Marsh, Patricia Allison, Bob Burns, and guests.

Cost: \$900 includes dorm-style rooms and meals. Discounts available.

Contact: Sarah Prendergast
229-924-0391
sarah@koinoniapartners.org
www.georgiapermaculture.org

Permaculture Design Course Atlanta Region

Dates: One Weekend per Month,
April to October, 2010

Location: Decatur, GA

Description: Permaculture finally comes to the Big Peach! A 72-hour design course will be held one weekend per month from April to October. The course includes basics of permaculture design and implementation. The course will include extra events pertinent to the area, such as a visit to the Atlanta Botanical Gardens, guest speakers, etc...

Instructors: Chuck Marsh, Patricia Allison, Bob Burns, and guests.

Cost: TBD. Will include tuition and materials. Limited work-trade positions are available.

Contact: Isabel Crabtree
478-932-8175 or
828-252-4930
cegapi1@gmail.com
www.georgiapermaculture.com

Permaculture Design Course Northern New England

Dates: July 17-31, 2010

Location: Marshfield, VT

Description: This is a design course with a grounding in earth-based spirituality, and a focus on organizing, activism, and social permaculture as well as urban and rural land-based systems. Learn how to heal soil and cleanse water, how to design human systems that mimic natural systems, using a minimum of energy and resources and creating real abundance and social justice. Explore the strategies and organizing tools we need to make our visions real, and the daily practice of magic and ritual that can sustain our spirits. Participatory, hands-on teaching with lots of games, projects, songs, and laughs along with an intensive curriculum in ecological design.

Instructors: Starhawk and Charles Williams

Cost: \$1,400-\$1,800, sliding scale.
Workshops and scholarships available, apply early!
Childcare option available.

Contact: 800-381-7940
earthactivisttraining@gmail.com
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#76 Soil Fertility
#77 Economics • #78 Water

Back Issues of *The Permaculture Activist* (continued)

- #53 Aug. '04 **Education:** Lifelong Learning, Edge-ucation, Albany Free School, Indigenous Ed. & Ecology, Ecocentric Pedagogy, School Gardens & Dances, Ecology of Learning, Brain Gym
- #54 Nov. '04 **Fire & Catastrophe:** Design Beyond Disaster; New Opportunities; Globalization; Invasion Biology; Street Orchards; Community Food Security, Floodwaters Rising, Disrupted Climates
- #55 Feb. '05 **Learning from Our Mistakes:** Petrol Dependency, Village Design, Austral. Lessons, RTFM!, Trial&Error, Forestry Expts, Owner-Bldr, 10 Mistaken Ideas in Pc
- #56 May '05 **Tree Crops & Guilds:** Pine Nuts, Tree Vege, Acorns, Am. Chestnut, Honeylocust Silvopasture, Broadscale AgroFor, Bamboo, Willow, Socl. For.
- #57 Aug. '05 **20th Anniv.:** Challenges & Changes, USA Pc, Hawai'i Retrospect; Permaculture; Pc's Soft Edge; Gaia U; PINC; Oil Depl; IPC-7; Retrofit Suburbs
- #58 Nov. '05 **Urban Pc:** Urban/Rural Futures; City Zones & Sectors; Growing Food; Detroit Visionaries; Reblgd. New Orleans & Everywhere; Transforming a Military Base; Workers Co-op; Energy Descent.
- #59 Feb. '06 **Peak Oil:** Eco-Collapse & Trauma; Thom Hartmann; Pathways for Energy Descent; How Cuba Survived; Oil & Food; Biofuels; Algae for Fuel; Relocalize!
- #60 May '06 **Land Use Past & Present:** Sust.Ag an Oxymoron?, Negev Bedouin, East. Woodlands AgroForestry, Pc Heals in India, Arocanti Land Plan, Pop. Growth/Land Hunger, Mex. Reforestation, Rocky Mtns.
- #61 Aug. '06 **Unseen Kin-doms:** Observation as Design Tool; Soil Food Web, Bees, Mycelial Internet, D-I-Y Mycorrhizal Inoculum, Cover Crops as Bee Forage, Earth Energies, Local Currencies, Dead Zones, Birds at Risk
- #62 Nov. '06 **Art of Permaculture:** Painting, Writing & Pc; Ecoartists; Art, Activism & Cmty; Street Theatre; Art & Bioremediation; Living Willow, Body as Zone 0; Art of the Found; Water Magic; Pc in Pop Culture
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- #67 Feb. '08 **Kids in Pc:** School as Ecosystem, Pc Education, Pc to H.S. Students, Tlaxcalan Kids Make Seedballs, Gardening Kids, Fostering Research Skills, Bottled Water Boycotts, Feeding 8 Billion
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- #72 May '09 **The View from Abroad:** War, Oil & Snails in Nigeria; Green Tech Future, Ethiopian Water Mgmt.; Shrinking Forests; Food Exploration in Caucasus; Maya Agroforestry/Biochar; Pc to Trinidad; Bridging Cultures in Brazil & India, Pc Schools in Africa; BuggerBug in Liberia
- #73 Aug. '09 **Bioregionalism:** New Paradigm; Rocky Mtn. Wildlands; Wild Elephants; Organizing Houston; Heirloom Seeds; L.A. Gdns; Reclaiming Commons; Transition Hohenwald, Tenn.; BioCongress Saga; Diversity at Home
- #74 Nov. '09 **Energy Descent:** In the Home; Transition Communities; Pc in Mexico; Biochar; US Consumption Dropping; Making Fuel Alco hol; No More Throwaway Economy.; EcoTechnic Future

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*except the following: Vol. I, I-1-VI,2 & #33-35 -\$5 each; #26-32 & 36, 38, 41 -\$8 ea; #40, 43, 48 -\$10 each. ^^Can/Mex. +\$45, Overseas +\$75.

Permaculture Teacher Training Upper Great Lakes

Dates: March 19-28

Location: Sandstone, MN

Description: Events make the best teachers; our role as educators is to design learning events. In this course, we will explore how to create events that teach permaculture, applying ecological principles and processes to the design of permaculture workshops, courses, and other experiences.

Learn how to create effective learning environments, based on quick assessments of students and their learning modalities, eight intelligences, and other niche characteristics. Each student in this course will design and run short classes and exercises, speak in public, plan and budget for an event, and co-teach a one day permaculture workshop at course end.

What do whole learning systems look, feel, and sound like? Come find out! Limited to 27 certified permaculture design course graduates; pre-course preparation required.

Instructors: Dave Jacke, Kay Cafasso, Mai Frank, Chris Jackson, and Ethan Roland.

Cost: \$1,700-\$1,300, sliding scale.

Contact: Evelyn
comcoord@pricoldclimate.org
www.pricoldclimate.org

Permaculture in Action Series Forest Garden Immersion Hudson Valley

Dates: February 26-28, April 16-18,
May 28-30, June 18-20

Location: Ashokan Center
& Camp Epworth, NY

Description: Imagine a forest where every single tree is dripping with fresh fruit and ripening nuts. Every layer of the forest is productive and contributing to the resilience of the whole system.

During the series of two-day courses, participants immerse themselves in the design, establishment, maintenance, and harvest of these Edible Forest Gardens of Eden. Scheduled with the seasons and conveniently on the weekends, we will combine evening talks with hands-on skills and participatory forest garden experiences. Join us!

Instructors: Ethan Roland, Krista Oarcea, Dyani Nason-Regan, Yusuf Azar, Dina Falconi & Dave Jacke.

Cost: TBD, Partial worktrade avail.

Contact: Ethan Roland
ethan@appleseedpermaculture.org
appleseedpermaculture.org

Fundamentals of Permaculture Niagara Escarpment

Dates: July 17-24

Location: Orangeville, ON

Description: This traditional design course is located at the Ecology Retreat Centre. This intensive course combines theory with practical hands-on learning. Topics include: techniques and principles, site analysis, soil fertility, organic gardening techniques, herbs and medicinal plants, fruit and nut trees, water uses, and ecological buildings.

Instructors: Gregoire Lamoureux,
Richard Griffith, and guests

Cost: Cdn. \$975

Contact: Russell Scott
True Source Seminars
519-942-8339
info@truesourceseminars.com
www.truesourceseminars.com

Permaculture Practicum Southern Ontario

Dates: July 25-August 1

Location: Orangeville, ON

Description: This course focuses on design exercises while integrating hands-on activities. Taken with a Fundamentals course, this completes the requirements for a certification. Pre-requisite: Fundamentals of Permaculture.

Instructors: Gregoire Lamoureux and guests

Contact: Russell Scott
True Source Seminars
519-942-8339
info@truesourceseminars.com
www.truesourceseminars.com

Permaculture Design Course Eastern Pennsylvania

Dates: August 19-29, 2010

Location: Wallingford, PA

Description: Pendle Hill, a Quaker retreat center in Wallingford, Pennsylvania, just thirty minutes southwest of Philadelphia, will host its first permaculture design course. This course includes field trips to local organic farms, teachings in nearby Swarthmore Woods, and guest speakers such as Phil Forsythe of the Philadelphia Orchard Project. This course is co-sponsored by Greener Partners, a Philadelphia area non-profit dedicated to jump-starting local agriculture in the region.

Instructors: Andrew Goodheart Brown, Benjamin Weiss, and Joel Fath.

Cost: \$1,500 for commuters (includes breakfast and lunch),
\$2,000 for a shared room,
\$2,500 for a private suite.

Contact: bazzrad@yahoo.com
www.pendlehill.org

Calendar

February 8-19. Americus, GA. Permaculture Design Course. Sara Prendergast, Koinonia Farm. 229-924-0391. sarah@koinoniapartners.org. www.georgiapermaculture.com.

February 13-20. Stelle, IL. Permaculture Design Course. Becky. 815-256-2215. www.midwestpermaculture.org.

February 18-May 6 (Thurs. evgs.). Ithaca, NY. Community Training in Ecological Design. 607-227-0316. www.fingerlakespermaculture.org.

February 23, March 2, 6, 9, 16, 20, 23, April 6, 13, 20, 27, May 4, 11, 18. Boulder, CO. Advanced Permaculture Design Course. Sandy Cruz. 303-459-3494. hialtpc.org.

February 26-27, April 16-18, May 28-30, June 18-20. Forest Garden Immersion Series. Hudson River Valley, NY. Ethan Roland. ethan@appleseedpermaculture.com. www.appleseedpermaculture.com.

March 13-14, April 10-11, May 8-9, June 12-13, July 10-11, August 14-15, Sept. 11-12, Oct. 9-10, 2010. Boulder, CO. Permaculture Design Course Through the Seasons. Sandy Cruz. 303-459-3494. www.hialtpc.org.

March 13-19. Acrocanti, AZ. Advanced Permaculture Course in Teaching. permasanti@gmail.com. www.cascadiapermaculture.com.

March 19-28. Sandstone, MN. Permaculture Teacher Training. Evelyn. comcoord@pricoldclimate.org.

March 30-April 2. Occidental, CA. Permaculture Design Course. Philip Tymon. 707-874-1557. oaec@oaec.org.

April 10-20. Patillas, PR. Earthbag Dome Intensive. scott@earthenhand.com. www.earthenhand.com.

Apr. 12-16. Occidental, CA. Intentional Communities Course. Philip Tymon. 707-874-1557 phil@oaec.org.

April 17-26. FRANCE. Cours Certifie Permaculture (yoga integre). Isabelle. yunusemrefarm@yahoo.com. www.permaculturefrance.org.

April 24-October 17 (one weekend/month). Decatur, GA. Permaculture Design Course.

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Isabel Crabtree. 478-932-8175. cegapi1@gmail.com. www.georgiapermaculture.com.
May 15-26. Lens St. Remy, FRANCE. Cours de design 72hrs. Permaculture en Belgique francophone. upp@permaculturefrance.org
May 29-June 12. Fairfield, IA. Permaculture Design Course. Briggs Shore. 641-430-1089. brigssshore@gmail.com.
May 29-30, June 5-6, 12-13, 26-27, July 10-11, 17-18. Fort Collins, CO. Permaculture Design Course. Lisa Olivas. 970-672-4722. lisaregina@frii.com. www.frontrangepermaculture.org.
May 30-June 12. Winlaw, BC, Canada. Permaculture Design Course. spiralfarm@yahoo.com.
June 6-20. Paoli, IN. Permaculture Design Course. Andy Mahler. 812-723-2430. andy@blueriver.net.
June 26-Jul. 7. Plufur, FRANCE. Permaculture Design Course. upp@permaculturefrance.org.
Jun. 26-Jul. 10. Bellingham, WA. Earth Activist Training. 800-381-7940. earthactivist-

training@gmail.com. www.earthactivisttraining.org.
July 12-25. Methow Valley, WA. Permaculture Design Course. Michael Pilarski. 509-486-2672. michael@friendsofthetrees.net.
July 17-24. Orangeville, ON. Fundamentals of Permaculture. Russell Scott. 519-942-8339. info@truesourceseminars.com.
July 17-30. Occidental, CA. Permaculture Design Course. Philip Tymon. 707-874-1557. oaec@oaec.org.
July 17-31. Marshfield, VT. Earth Activist Training. 800-381-7940. earthactivisttraining@gmail.com. www.earthactivisttraining.org.
July 24-August 7. Fairfield, IA. Permaculture Design Course. Briggs Shore. 641-430-1089. brigssshore@gmail.com.
July 25-August 1. Orangeville, ON. Permaculture Practicum. Russell Scott. 519-942-8339. info@truesourceseminars.com.
July 26-August 7. Westcliffe, CO. Permaculture Design Course. Ayesha McDanel. 719-783-0188. ayeshamcd@gmail.com.
July 30-August 12. Sedalia, CO. Permaculture Design Course. Woodbine Ecology Center. pdc@woodbinecenter.org. www.woodbinecenter.org/pdc2010.
August 13-15. Sedalia, CO. Indigenous Permaculture Convergence. Woodbine Ecology Center. ipc@woodbinecenter.org. www.woodbinecenter.org/ipc2010.

August 15-28. Winlaw, BC. Permaculture Design Course. Kootenay Permaculture. Institute. spiralfarm@yahoo.com. www3.telus.net/permaculture.
August 19-29. Wallingford, PA. Permaculture Design Course. bazzrad@yahoo.com. www.pendlehill.org.
August 23-28. Seoul, KOREA. Intl. Union of Forest Research Organizations. XXIII World Congress. www.iufro2010.com.
September 4-10. Hohenwald, TN. Gaia University Orientation program. Valerie Seitz. 931-442-1770. valerie@gaiainiversity.org.
September 13-25. Basalt, CO. Permaculture Design Course. CRMPI. 970-927-4158. www.crmipi.org.
September 18-25. Hohenwald, TN. Gaia University Permaculture Content Session. Valerie Seitz. 931-442-1770. valerie@gaiainiversity.org.
September 18-October 1. Occidental, CA. Permaculture Design Course. Philip Tymon. 707-874-1557. oaec@oaec.org.
October 14-16, 29-31, November 12-16, 2010; February 18-20, March 6-8, 2011. Bloomington, IN. Permaculture Design Course. Rhonda Baird. 812-323-1058. rk.baird@yahoo.com.
November 8-12. Occidental, CA. Intentional Communities Course. Philip Tymon. 707-874-1557. phil@oaec.org.

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LETTERBOX



Peak-Resources Demands Lower Population

Dear Permaculture Activist,

I have been a subscriber since I took a basic permaculture class in Santa Cruz, California three years ago. I have noticed reluctance on the part of permaculturists to address the huge problem of human overpopulation.

Humans are starving to death now, and billions have no access to potable water or sanitation. Yet, we still have "green" personalities like Lester Brown of the Worldwatch Institute writing about feeding eight billion well, in his book, *Plan B: Mobilizing to Save Civilization*. Meanwhile, food riots are occurring as more land is being used to create biofuels.

One of the issues raised in my permaculture class was—"How do we as a human species sustain ourselves, provide for our needs and the needs of the environment for an indefinite time?"

I was disappointed to discover after reading the article in the Winter *Permaculture Activist* titled "A Personal Story: Practical Home Energy Descent," that the author and his wife had brought six children into the world.

There are already more humans on Earth than the ecosystem can provide for along with

all the other beings on the planet. It won't matter if we produce millions of Priuses, energy-saving refrigerators, solar panels, and compact florescent light bulbs if the population keeps increasing at the rate it is now.

It's not just about energy either. We are at peak oil, phosphorus, potassium, water, topsoil, and other necessary minerals and resources that come from our environment. Additionally, humans are destroying and appropriating the habitats of other creatures for human purposes only. The other living creatures on Earth are extremely important for maintaining the web of life on this planet.

I would like to see some articles in the *Permaculture Activist* and other environmental

magazines that examine how we could lower the human population on the Earth before the Earth does it for us. Having six children is not practicing permaculture.

We must limit the reproduction of our species to live within the bioregions we find ourselves in and keep our numbers within the limits of the natural world order to allow life on Earth to continue.

Ed Oberweiser
Ft. Bragg, California

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Erratum

The article, "From Kansas to Oz and Back Again" by Caryn Miriam Goldberg which was published in *PcA* #73, led with a two-paragraph editorial introduction that was not properly distinguished from the author's original text. We regret any confusion.

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May 28 - Jun 6

City Repair

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**Village Building
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cityrepair.org/vbc

City Repair's VBC is a 10-day community placemaking celebration. You are invited to help neighborhoods creatively transform their public spaces to be more beautiful, meaningful, and ecological places. For our 10th year, we're offering a Village Building Design Course to empower you to organize a VBC in your own city. This course also functions as a Gaia University pathway.



Jun 11 - 27

**Tryon Life
Community Farm**

**Permaculture
Design Course**

tryonfarm.org

Tryon Life Community Farm is a 7-acre sustainability education and demonstration center surrounded by Tryon Creek State Park. Learn about the principles and patterns of nature as they relate to physical and social structures and dynamics. TLC Farm will also host a Sustainable Community Immersion Program from July 31 - August 20!

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