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IN THIS ISSUE

Mindful Meat Eating 

Cultivating Climate Resilience 

Common Roots Grow Deep 

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Saving Seed Diversity, One Cabbage at a Time



A glorious Tancook Island Cabbage growing at Yonder Hill Farm. Photo: Chris Sanford

by **STEPHANIE HUGHES** /// EAC Volunteer

Many of us think about where our food comes from—in what region it was grown, what kind of farm produced it. However, we rarely think about the seeds: the small, yet mighty, origins of every plant with edible fruits, shoots, roots, or leaves that we savour at meal times. Even harder to keep in mind are the foods that *don't* end up on our dinner plates.

In the last century, we've lost 75 per cent of our global agricultural biodiversity. According to the Millennium Seed Bank Partnership, a further 60,000 to 100,000 plant species are at risk of extinction. This biodiversity crisis may be invisible to many of us thanks to our ready access to diverse and nutritious foods. Though we, as eaters, may be insulated from the shock of these statistics, farmers are all too familiar with the challenges of biodiversity loss. Perhaps not surprisingly, they're also at the centre of efforts to turn things around.

Chris Sanford is chief seed-grower at Yonder Hill Farm in Laconia, Nova Scotia, where she is working in partnership with Ross Farm Museum to bring back Nova Scotia's Tancook Island cabbage, a variety grown continuously on Big Tancook Island since the seeds were first brought there by German settlers in the 1700s. This robust, round, green head-cabbage is primarily known for its storage capability and for making sauerkraut. Tancook Island Sauerkraut is part of Slow Foods *Ark of Taste*, an international listing of endangered foods that highlights its Nova Scotia heritage and terroir. An aging population of seed-saving kraut crafters on the island, and a growing population of deer who feed on the cabbage, are the main reasons this variety is in danger of disappearing forever.

Sanford first planted the cabbage seed out of curiosity in 2016, not necessarily looking for a project to take on. As biennial plants, cabbages require a lot more of a farmer's time and labour as well as extra storage space to cultivate as a seed crop. Sanford was struck immediately by the uniqueness of this cabbage variety. "It's unlike any other green cabbage I've ever grown, stout and sturdy plants with dusky green large leaves and a tight, crisp head", Sanford says, "I realized how special Tancook Island Cabbage truly is, not just because it's a local variety, but because it represents a distinct lineage of cabbage genetics that could easily disappear with only a handful of people growing seeds for it." She is diligently tracking down other Tancook cabbage growers, such as the Ross Farm Museum, swapping seeds with them to refresh the genetics of her stock, and has her first major grow-out planned for this year. "If all goes well, the hope is to sell a larger seed company on the value of this variety so that we can get seed circulating for it once again.", she says.

If she's successful, it will be quite a feat: bringing this variety back from the brink. One down, 99,000 to go.



Ecology Action Centre



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The Ecology Action Centre is a member-based environmental charity in Nova Scotia. We take leadership on critical environmental issues from biodiversity protection to climate change to environmental justice. We are grounded in community, and a strong voice and watchdog for our environment. We work to catalyze change through policy advocacy, community development and building awareness. We take a holistic approach to the environment and our economy to create a just and sustainable society. Views expressed in *Ecology & Action* are those of the writers and do not necessarily represent the EAC or its supporters.

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Stephanie Hughes works with the Atlantic Canadian Organic Regional Network (ACORN) as the *Regional Coordinator for The Bauta Family Initiative on Canadian Seed Security*. Since 2013 this program has been supporting the development of sustainable regional seed systems by strengthening farmer networks, providing seed production training, seed banking services, and facilitating on-farm breeding projects. Learn more at: seedsecurity.ca / acornorganic.org/resources/seedsecurity.

Moving Past Meatless Mondays

by **WESLEY TOURANGEAU** /// EAC Volunteer

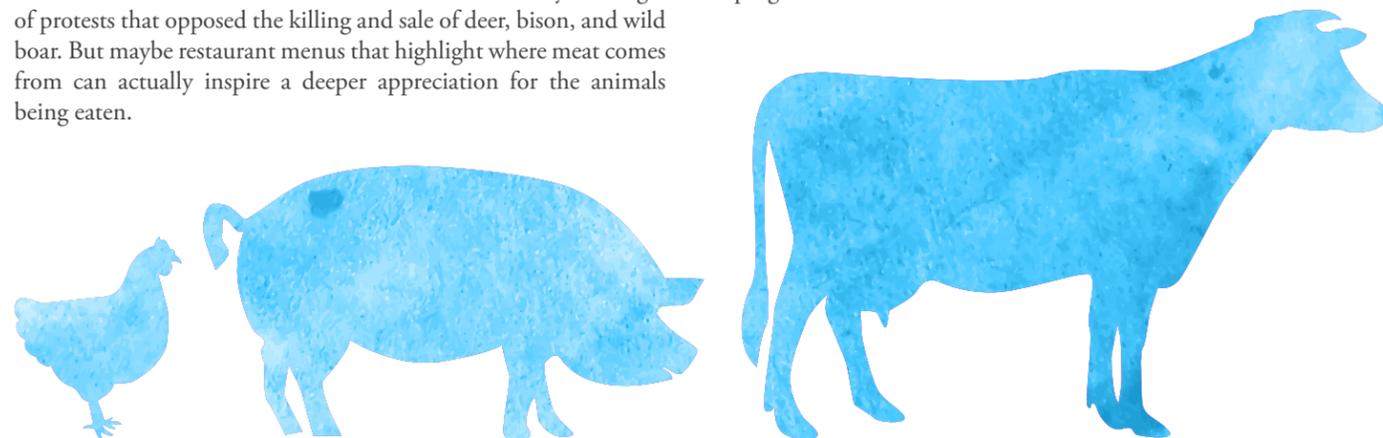
From social media to news coverage to restaurant menus, it is hard to overlook the rising popularity of plant-based diets. A recent survey from Dalhousie University found that Canadians aged 35 years and under are three times more likely to identify as vegetarian or vegan than those 49 or older.¹ Even among omnivores, the push for eating less meat is gaining momentum. “Meatless Mondays” has grown into a global campaign to get people eating meat-free for one day a week. And Canada’s next Food Guide is expected to promote the health and environmental benefits of a diet high in plant-based foods.²

While reducing our meat intake is essential to eating sustainably, it does not tell the whole story. Livestock production involves a complex combination of social, ecological, ethical, and human health concerns. It has been well-documented that meat-based diets demand more energy, land, and water resources than diets based on plants.³ High rates of meat consumption also contribute to human health problems, increased greenhouse gas emissions, air and water pollution, and deforestation.⁴ What is more, industrialized meat production has led to practices that compromise animal welfare and contribute to the physical and psychological distress of slaughterhouse workers.⁵ More mindful meat eating is needed, where we consider how and where meat is produced, as well as the values we attach to it.

It is a fickle philosophy, animals and us—some animals we kill for food, others we adore and adorn like honorary family members. Consider the topic of wild game; an arguably more humane and sustainable meat option than industrial livestock, but still socially divisive. Antler Kitchen and Bar in Toronto was recently the target of protests that opposed the killing and sale of deer, bison, and wild boar. But maybe restaurant menus that highlight where meat comes from can actually inspire a deeper appreciation for the animals being eaten.

The importance of wild meat is most evident when considering the traditional diets of Indigenous peoples in Canada. Often called “country food”, traditional foods such as wild meat offer more than just sustenance. They have symbolic and spiritual value, and the harvesting and consumption of these foods is a means of transmitting and maintaining cultural values, skills, and identities.⁶

There is a growing movement of smaller scale alternatives to industrial agriculture—farmers who champion sustainable and humane farming practices. They recognize that productivity, environmental health, and animal welfare are not mutually exclusive. By providing animals the freedom to roam or take shelter, express natural behaviours, eat appropriate foods and drink fresh water, and avoid pain and stress, the welfare needs of livestock animals can be integrated into farming practices.⁷ Farms using alternative systems like organic agriculture and agroecology are often sources of humane meat; typically smaller in scale, sold in local stores, markets, and CSA (community shared agriculture) programs.



Making sustainable food choices is not simple, and adding meat to your plate only makes things more complicated. Below are seven aspects about meat eating that are worth considering:

1. HOW MUCH MEAT?

Forgoing meat once a week can be an easy way to begin experimenting with plant-based meals and reducing your overall meat consumption. Plant-based meals are often less expensive, and some people choose to use these savings to purchase sustainable and humane meat options for other meals.

2. ANIMAL WELFARE

Ask questions about the animal treatment practices of your meat providers, and choose meats from more humanely raised and slaughtered animals. Look for cleaner, safer, and more natural environments, where workers are trained with high standards for animal care.

3. LOCAL

Buying local food is a powerful tool for taking responsibility for the impact of our diets. Meat from local farms requires less fuel for transportation, reduces transportation times for animals, and benefits the local economy.

4. ANTIBIOTICS

In intensive livestock production, animals are routinely given antibiotics to prevent infection and improve weight gain. Overuse can lead to antibiotic resistance and human health implications. Meat from animals raised without antibiotics are now widely available.

5. NATURAL ANIMAL FEED

Corn versus grass is a key example; corn is used as cattle feed in large scale industrial farms in order to quickly fatten the animals, but ruminants like cattle are unable to properly digest corn. This leads to a host of problems, such as liver damage.⁸ A more natural diet of organic grasses and legumes is better for the animals’ digestion. What’s more, grass-fed cows get to graze outside and enjoy a better quality of life.

6. FARM BIODIVERSITY

Smaller-scale, ecosystem-focused production systems can contribute to biodiversity, for example by recycling nutrients back into the soil through manure. The maintenance of grassland habitats for grazing can also help protect at-risk bird species.

7. SOCIAL DIMENSIONS

Many people and communities enjoy the lifestyles and livelihoods afforded by meat production systems that sustain the natural environment and respect the well-being of livestock animals. On the contrary, the high production speeds and scales of industrial farms and slaughterhouses can cause dangerous conditions for workers.

How often do we really think about the meat in our meals? Odds are, we do not spend a lot of time reflecting on all of the elements that go into it: soil, water, air, plants, farmers, truck drivers, factory workers, and of course, the animals themselves. These seven aspects of meat production are meant to highlight the complexity of raising animals for meat, and help expand the dialogue around plant-based diets to include more mindful meat eating.

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Cover crop of rye being roller crimped in order to no-till organically at Broadfork Farm. Photo: Shannon Jones

Cultivating Climate Resilience

by BRITANY MAGUIRE // EAC Volunteer

Producing and distributing food in our region is going to become more difficult as weather patterns become more erratic, extreme weather events become more frequent, and sea levels rise. The challenging effects of climate change are already being felt by farmers in the Maritimes. They are experiencing changing and less predictable growing conditions, along with altered weed and pest pressures. Strong storms and floods have put farmland and infrastructure at risk of damage.

The good news is growing food with organic and ecological farming practices can help farms, and our food system at large, adapt to climate change.

Shannon Jones, from Broadfork Farm in Nova Scotia, and Estelle Drisdelle, from Understory Farm & Design in New Brunswick, are just two of the many local farmers preparing for climate change and cultivating resilience on their farms. Both are using farming practices that protect and improve soil health. Jones is farming without disturbing the soil through tilling, a practice known as “no-till.” By not removing the plant residue left after the previous harvest, she is protecting the soil. Jones and Drisdelle are both planting cover crops after harvesting to add specific nutrients back into the soil. These cover crops also help to prevent soil erosion and leaching of nutrient that will make their soils more resilient to the impacts of stronger winds and rains associated with climate change.

Jones knows she is not alone in caring deeply for the long-term health of her soils. “I think organic farmers are always looking for new and better ways to manage soil as best as possible because we recognize that it’s our biggest asset,” she said. “Organic farming is all about healthy soil equalling healthy plants equalling healthy animals and people.”

Brittany Maguire is the Environmental Projects Coordinator for the Atlantic Canadian Organic Regional Network (ACORN) and is leading a new initiative *Cultivating Climate Resilience in Atlantic Canada*. Since 2013, ACORN has worked with farmers to grow and save regionally adapted seeds to create farm resilience and is now expanding this work to support climate adaptation planning on farms and in our food system.



Clover cover crop on unused land around a tunnel at Understory Farm & Design. The clover may also be harvested for teas.

TAKE ACTION

Support local organic and ecological farmers. If you are interested in learning more about ACORN, climate adaptation on farms, or organics in general, please get in touch! acornorganic.org

Not only do farmers have to plan for more frequent and extreme storms from climate change, they must also plan for periods of drought. Collecting and storing water on-farm and designing efficient irrigation systems that reduce water use can help prepare for times of water shortage. Drisdelle is doing just that by using solar energy to pump the water to the field and greenhouse. Healthy soils are also important for farm resilience in times of drought, as they are able to store more water.

Farmers in the Maritimes and beyond are implementing and experimenting with many different organic and ecological practices in order to adapt to climate change. Some farmers are also working to increase the amount of carbon stored in their soil, ultimately helping to mitigate climate change. By supporting local organic and ecological farmers, not only are consumers supporting the local economy and protecting our environment today, but if those farmers are implementing these types of practices, they are making our food systems and communities more resilient to climate change.

Beyond The Box

by TINA YEONJU OH // EAC Volunteer

According to a 2011 research study on Canadian household food insecurity, Nova Scotia has the highest rate of food insecurity of all Canadian provinces (excluding territories).¹ This means that many Nova Scotians do not have reliable access to affordable, healthy food. In rural areas of the province, a variety of factors such as limited transportation and number of food sources influence levels of food access. Additionally, few social programs exist for people facing food insecurity in rural areas.

In the summer of 2017, I worked with the Ecology Action Centre as a student researcher to evaluate its Cost-Share Local Food Box Programs in Nova Scotia. The program provides subsidized local food boxes to communities in Cumberland County and Cape Breton. Limited incomes make it hard for people to afford healthy, local and sustainable food. The cost-share program is designed to make it easier for low-income families to access fresh food from local farms. By sharing the cost of the local food boxes with the community through collective fundraising (like the annual *Musicians for Local Food* benefit concert held in Amherst, N.S.) solutions to food insecurity are being championed as community issues. The program is entering its sixth year in Cumberland County and second year in Cape Breton. They operate through the ongoing partnerships with farmers like Wysmykal Farm in Cumberland County and community organizations like the Pan-Cape Breton Food Hub.

Through my research, I found that subsidizing the cost of a local food box is having significant impacts in Cumberland and Cape Breton, especially when it comes to community building.

- In Cumberland, 73 per cent of participants who responded to our survey reported feeling closer to their community through interacting with other participants and the farmers.
- Almost 100 per cent of the local food box participants who responded reported eating more vegetables each week.
- One participant often shared extra vegetables and fruits with neighbours in their low-income housing complex.



Photos: Wysmykal Farm

For Cape Breton participants, free cooking classes were offered throughout the food box season to encourage cooking skills and community through shared meals. An overwhelming majority (92 per cent reported an increase in fruit and vegetable consumption and 83 per cent reported an increase in their cooking confidence because of the program. In addition to the commitment to building strong and healthy communities, the program demonstrates that alternative food systems are, and can be, very successful. A more localized food system also helps to retain money within our rural communities, further strengthening the local economy and community self-sufficiency.

The Cost-Share Local Food Box program is a transformative model that challenges the conventional charitable food box system that often includes low-quality produce that travels long distances to reach low-income participants. The program demonstrates the importance of engaging in a long-term, localized solution to food insecurity that is empowering, environmentally sustainable, and economically stimulating to the local community. Since its inception, the Cost-Share Local Food Box Program aims to continue to build communities that are more food secure and resilient.

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Tina Yeonju Oh is a Master's candidate in environmental studies at Dalhousie University living on unceded Mi'kmaq territory. She is also the Sackville Community Garden coordinator, a beekeeper-in-training, and a Research Assistant with Ecology Action Centre funded by a SSHRC research project out of the Laurier Centre for Sustainable Food Systems called **Food: Locally Embedded, Globally Engaged (FLEdGE)** (Atlantic Node).



Common Roots Grow Deep

by **EMMA DRUDGE** /// EAC Volunteer

It's early in the season at Common Roots Urban Farm. Feathery white row covers blanket the raised beds of the market garden, protecting newly planted seeds from birds and weeds.

This year it's been a slow start with low temperatures and little rain. Farmers wander through their rows, taking turns with a tangle of hoses to water the rows where the first tender sprouts are pressing through the soil.

With the whirr of the Robie Street bus and the buzz of traffic on Bell Road, the farm doesn't quite have the ring of rural life. Spend a little time there, though, and you'll feel a sense of connection often lost in city life. Common Roots is a rare part of town where nature's every change—the sun, the rain, the high and low temperatures—dictates daily decisions and activities.

It's Wednesday, and the eight farmers in the Deep Roots program are all tending to their plots. Deep Roots is a partnership between Common Roots and Immigrant Services Association of Nova Scotia (ISANS). Starting this spring, the program has been set up as a farm incubator. Each participant gets their own "tiny farm:" a 250 foot row of garden bed to prepare, plant and tend. They'll take some of their produce home to their families and friends, and the

rest will be available at the Common Roots market stand located on-site each Wednesday starting with the first harvest in mid-June.

The Deep Roots tiny farms make up a quarter of an acre of Common Roots. The rest is a mixture of private garden plots and common areas filled with flowers, fruits trees, and vegetable plants, tended by volunteers and available to anyone who strolls through to snack on.

Everyone who's spent time at Common Roots says some version of the same thing; meeting new people, spending time together, learning and connecting in a community are what this place is about. Even with all the benefits of urban farming—nourishing food, regenerative land stewardship, and a heartening step toward food security in a changing climate—the agriculture itself feels more like a means for building a vibrant community than the end goal.

One stroll through the farm and it's clear that Common Roots is growing a whole lot more than food.

Nowhere is this more true than in the Deep Roots program. Participants are cultivating a sense of belonging, building a community, and growing networks of support, all while adapting what they know of farming to the Nova Scotia climate. Here, some of the Deep Roots farmers share what they gain from their time at Common Roots:



Muhannad Alghajar

When Alghajar moved to Canada in 2016, there was no question in his mind that he'd continue farming as he had in Syria. "It's just what I do," he says. At first this took him to the Annapolis Valley, and though he learned a lot about farming in this climate during his time there, there were significant downsides to the job. With his wife, parents and two brothers living in Halifax, plus the inconvenience and expense of getting around in a rural area without a car, Alghajar is grateful to join the Deep Roots program this year. Common Roots removes the barriers of farming in a rural area, allowing him to continue his craft and be close to his family at the same time.



Chandra Bahadur Pradhan

"When I was spending all my time at home, I was lonely. When I come here I know I'll see Sara (the farm coordinator) and we'll start to talk. Data Ram will join us, and then more people will come over and we'll all be together. There's always someone to talk to here."



Data Ram Humagai

Humagai has been involved at Common Roots since 2014 and is a fixture on the farm. He greets new gardeners with a smile, telling them which of the sprouts in their garden are weeds, and which are worth saving. By early May he's harvesting cilantro and mustard he planted last October in a raised bed, protected all winter by a greenhouse-style cover he built. "I thought about how cold it gets, and adapted what I knew about farming to work better here," he says. Humagai was a Bhutanese refugee in Nepal for more than 20 years before moving to Canada in 2010. For the first few years he was here, Humagai was so focused on meeting basic needs that the thought of returning to farming didn't even cross his mind. "I was just thinking that I wanted to go back to Nepal," he says. Now, though, he's happy. He says the farm is a place where he knows he can come and see familiar faces, to know people and be known in his community. He's well known for helping new participants across all areas of Common Roots and for making everyone that passes through feel welcome on the farm.



Sharaf Alrashed

"This is my first opportunity to farm in Canada. I like it so much. The soil and plants are completely different than in Syria, and I'm learning so much."



Ahmad Alnasaan & Maysoun Alatrash



New to Common Roots this year, Alnasaan and his wife Alatrash are learning to farm from the other Deep Roots participants. Both are from farming families in Syria, but had never worked in agriculture themselves. Alnasaan says, "I like to meet new people, help them in their plots, and have them help me in mine." The couple have six children between the ages of one and 16. "I'll be taking what I grow home to my family,"

Alatrash says. "I brought all my kids here, and they loved running around the farm. They weren't very helpful in the plot, though," she adds with a laugh. "That was the first and last time I bring them all at once!"



Mohamad Al Jaber

"I am happy when I grow vegetables for my family. My kids are happy to come here—they tell me every day to take them to Common Roots."



Dorcas Nkobwa

Nkobwa moved to Canada from Burundi four years ago. She loves that she can grow and harvest what she likes at Common Roots, including bean leaves, a cultural food unavailable in grocery stores here. You never see Nkobwa without Imelde at her side.

They help in each other's plots and laugh together through the hard work of preparing their raised garden beds for planting.



Imelde Nduwimana

"I liked working on a farm in Tanzania, so when I came here I already knew how to do it. Being on the farm is good exercise, and I like taking food home to family and friends."



Common Roots Urban Farm has one more growing season at its current interim Halifax location at Bell and Robie, and then it has to move. The community is now asking "Where Can Our Garden Grow?" and is actively searching for a new home! If you have ideas please contact farm coordinator Sara Burgess through commonrootsurbanfarm.ca.

Edible Opportunities: FOOD FOREST IN NOVA SCOTIA

by MEGAN MACLEOD /// EAC Volunteer

From growing nuts and fruit trees to other types of hardy perennial plants, the food forest method is one that (after a few initial years of planning and planting) is relatively hands off. Can designing our gardens in a way that replicates natural forest settings be the key to ensuring food security?

What are Food Forests?

Food forests are an approach to growing a diverse number of species in patterns that support self-maintenance. The methodology calls for rethinking our regular landscaping, forests, and gardens to contain more edible species and to add biodiversity to our communities. While more often called “forest gardening” in temperate climates, food forests mainly produce fruit, berries, nuts, and green leafy vegetables and herbs. Their yields may also include a wide variety of other products like timber, fungi, honey, flowers, roots, seeds, bark, animal products, and uncultivated wild species.

The term food forest was introduced to Bill Mollison, the Australian co-founder of Permaculture (which can be defined as permanent culture or permanent agriculture, but often encompasses more than just farming) in 1990 when he visited Robert Hart, a farmer who was among the first that coined the term forest garden. Mollison’s first demo site was on a small 0.12 acre (500 m²) plot of land.

Food forests have been a way of planting for thousands of years in communities around the world, perhaps more common in tropical climates. Global pressures now strengthen our need to learn from the traditional ways that Indigenous people live and thrive among forests. With proper design and planning, they can benefit human and ecosystem health, as well as foster new streams of economic sustainability through management of highly diverse growing

Permaculture Food Forest Guidelines

Planting in ways that replicate the efficiency of natural systems can benefit both the backyard and community gardener. Moving from monoculture systems (single crops) to diverse polyculture systems foster a range of microclimates. Microclimates are niches in an ecosystem that have varying levels of sunlight, water, wind, and organic matter composition. Every microclimate that a gardener creates in their plan invites different species to live and thrive. This creates resilience in your growing system, and well-designed gardens become self-protected from predators and shifts in climate.

After water, sun, and soil type and condition are considered, the next step for the forest gardener is to determine the appropriate layers to plant for the site (See Box 2). Every site and garden plot is different and there is no one-size-fits-all solution. Thinking about how energy flows through our growing sites forms the basis for understanding the best way to plan these perennial gardens.

systems. This must be done in a way that allows regenerative long-term use. Jessica Fogarty, wildcrafting herbalist and farmer at *Fog Tree Forest* in Cape Breton says “We need to learn how to use our forests to grow our own medicine and food. Importing for our needs is not sustainable.”

The key to creating a self-regulating productive ecosystem lies in considering the wide scope of needs and functions of each element in a forest plan. An apple tree, for example, not only gives nutritious fruit for human consumption, it provides shade, flowers and habitat for insects and other small animals. Additionally, its leaves add mulch and fertility to the ground when they fall, and tree wood fixes carbon from the atmosphere.

Creating aesthetically pleasing environments for people to enjoy is just one of the many benefits of food forests. Increasing diversity in local food choices is another. As dietitian Nicole Marchand of Eatwell Halifax puts it, “The nutritional value of local, seasonal foods is higher than imported foods because as soon as vegetables and fruits are harvested, they begin to lose their nutritional content through breakdown of vitamins. Locally grown foods are harvested when ripe and they are more flavourful as well.” Adding to the overall harvest and diversity of what we produce or forage locally improves the health of our communities.

Perennials are plants that grow again, year after year, surviving the winter. Perennials cut down on the amount work that you have to do to get your garden ready each spring. Trees are perennials, as are bushes and shrubs, and a variety of other flowers, herbs, and vegetables.

Guild, or companion, planting is one of the basic techniques of permaculture gardening. It taps into permaculture ideas such as self-sufficient systems, plants providing multiple functions, and maximizing the productivity of a plot. Guilds are typically set up around a central fruit tree in a forest gardening system. Each plant species in an ecosystem performs one or more functions that benefit others in the vicinity as well as interacting with animal species and soil microorganisms to create an ecosystem. Plants are placed at a given spacing and orientation, can be introduced in a predetermined sequence, and many are pruned during their growth period at regular intervals.

Long-Term Community Led Solutions

Andy Pedley, co-owner at *Patchwood Farm* in Southwest Margaree is currently developing a community orchard with others in his area. “Annual gardens are high maintenance. An orchard based garden is harder work to get established, but you don’t require as many volunteers in the long term. An intergenerational approach makes more sense.” Most nut trees take a long time to get established but can be productive for hundreds of years. Pedley also stresses the importance of establishing hedgerows or a ‘living fence’ of hardy, fast-growing, wind-blocking trees before investing in other plants that need a more sheltered microclimate.

“Hazelnuts and sweet chestnuts are hugely underutilized species in our province,” Pedley notes. “We need a lot more experimentation to determine what works best. Pawpaws are a great option for maritime backyard growing because they don’t travel well, but they do need a bit of extra care in creating the proper microclimate.” Mersey Tobetic Research Institute initiated a project in Queen’s County that planted a mix of 14 varieties of fruit, nut, and berry trees and bushes including many that are native to Nova Scotia. They note that “This project provides a snapshot of the edible opportunities we have in our own native forests and wetlands.” There is certainly more room to explore the possibilities of what we can grow in our own backyards and communities in the province.

Quebecois permaculture food forest pioneer Stefan Sobkowiak urges us to learn to work with nature and move toward abundance. His philosophy toward growing, outlined in his recent documentary, *Permaculture Orchard* is work less, yield more, have fun. Dennis Laffan, owner of *North River Organics*, a small mixed farm in North River, Cape Breton sums up his approach to food security quite simply: “Plant things you can eat, things that enhance the food producing environment, and things that will provide food for many generations.”

FURTHER READING

- **The Original 7 Layers of a Temperate Forest Garden** chelseagreen.com/2014/05/21/designing-a-forest-garden-the-seven-story-garden
- **Expanded 9 Layers of a Forest Garden & Plant List** tpermaculture.com/site/plant-index
- **Our Atlantic Woods: A Photo Guide to Non-Timber Forest Products** fundymodelforest.net/images/pdfs/publications/education/NTFP1.pdf
- **Temperate Permaculture** holzerpermaculture.us
- **The Permaculture Orchard: Beyond Organic. Based in Quebec** miracle.farm/en
- **Agroforestry & Permaculture Explained** agforinsight.com/?p=118
- **The Permaculture Handbook** permaculturehandbook.com
- **Seattle Community Food Forest** ecorazzi.com/2013/08/29/seattle-has-plans-for-nations-largest-community-food-forest

ETHICS OF PERMACULTURE

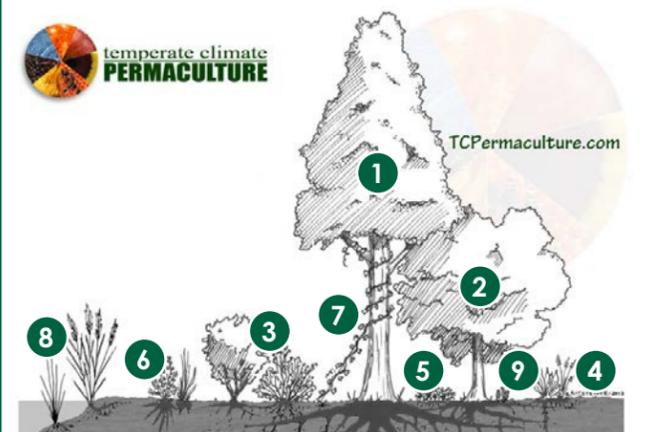
The ethics of earth care, people care and fair share form the foundation for permaculture design and are also found in most traditional societies.

Earth Care: The state of the soil is often the best measure of the health and well-being of society.

People Care: Asks that our basic needs for food, shelter, education, employment and healthy social relationships are met.

Fair Share: The last ethic synthesises the first two. It acknowledges that we only have one earth and we have to share it with all living things and future generations.

LAYERS OF A FOREST GARDEN



Nine Layers of the Edible Forest Garden

1. Canopy/Tall Tree Layer
2. Sub-Canopy/Large Shrub Layer
3. Shrub Layer
4. Herbaceous Layer
5. Groundcover/Creeper Layer
6. Underground Layer
7. Vertical/Climber Layer
8. Aquatic/Wetland Layer
9. Mycelial/Fungal Layer

Credit: John Kitsteiner, **Temperate Climate Permaculture**

REFERENCES

- Edible Trees & Shrubs merseytobetic.ca/projects-edible-trees.php
- 7 Parts of An Apple Tree guildregenerative.com/magazine/seven-parts-apple-tree-guild
- 7 Benefits of Eating Local Foods msue.anr.msu.edu/news/7_benefits_of_eating_local_foods
- Syntropic Farming livingnow.com.au/syntropic-farming-tropics/

Megan MacLeod has been working to establish tropical food forests to restore ecosystems and create additional livelihood streams in Andhra Pradesh, India, for the past 2 years. You can follow her on Instagram at [@eatlocalsocial](https://www.instagram.com/eatlocalsocial) and on Facebook at [Wild Forest Permaculture](https://www.facebook.com/WildForestPermaculture).



Hydrostone

In their own personal ways, Richard Nickerson's clients work hard to leave the world a better place than they found it. For many clients, this means investment decisions that support companies which act in accordance to that client's values. Richard is a socially responsible investor and he supports his clients in choosing high quality investments that align with their values.

LEARN MORE AT: assante.com/advisors/richardnickerson



We operate our business with the belief that industry should be able to operate without having a negative effect on the environment. We use local manufacturers and suppliers wherever possible and offer refill program in various health food stores. Our retail cleaning products are also VOC free and are non-scented in consideration of people with allergies and sensitivities.

LEARN MORE AT: downeastclean.com



Bullfrog Power, Canada's leading green energy provider, offers renewable energy solutions that enable individuals and businesses to reduce their environmental impact, support community-based green energy projects across the country and help create a cleaner, healthier world.

LEARN MORE AT: bullfrogpower.com



As we build a community of active outdoor enthusiasts, we share and teach responsible outdoor recreation practices, stewarding a nation-wide appreciation and respect for the environment and increasing our access to wild forests, wetlands, mountains, urban parks, rivers, lakes and oceans where we pursue outdoor activities. We commit to conserving the ecologically and recreationally important places where we adventure and that sustain us.

FOR MORE INFO: mec.ca/community



Ecology Action Centre

SUSTAINABILITY ALLIES



Founded in 1995 as Canada's first Fair Trade coffee roaster, Just Us! is a worker co-operative exclusively roasting specialty grade, certified fair trade and organic coffee. We work hard to preserve the integrity of our supply chain, from seed to cup.

LEARN MORE AT: justuscoffee.com



We support the Ecology Action Centre because they have successfully demonstrated the connection between environmental issues, local communities and the local economy. That is why we donate \$ 500 every time an EAC member buys or sells a property using our services, helping to strengthen EAC's voice and impact. We're thankful to partner with EAC to help make this a better a world.

LEARN MORE AT: innovativerealestate.ca

LEARN MORE AT

ecologyaction.ca/sustainabilityallies



Fairtrade & organic micro batch coffee roasters. We have the first heat recycling roaster in Canada, contribute to the Carbon, Climate & Coffee Initiative, member of 5 Farmers' Markets and donate .25/per retail bag to EAC since 2007.

LEARN MORE AT: laughingwhalecoffee.com



Helping Nature Heal
ECOLOGICAL RESTORATION

Focusing on ecological restoration and sustainable landscaping for public and private spaces using native species to strengthen our soils, forests and shorelines. Fostering a love for and connection to the planet that supports us all.

LEARN MORE AT: helpingnatureheal.com



Scotia Metal Products is a local manufacturer of steel roofing and siding. Located in the Burnside Industrial Park, we manufacture a 100% recyclable product that also helps eliminate waste from local landfills and can help cut home heating and cooling costs,

while making little to no manufacturing waste through our extensive in-house recycling process. We are committed to helping our customers and serving our community through the strengths of our employees.

LEARN MORE AT: scotiametal.ca



Since 1997, Garrison has strived to create exceptional craft beer – real beer made with passion, hard work, and East Coast pride. Garrison beers are premium, distinctive, and always full of flavour, with an exceptional range – crafted in the historic and vibrant Halifax Seaport.

LEARN MORE AT: garrisonbrewing.com

Ecological Agriculture

When we think of local agriculture, we often think of fresh produce and meats, but did you know that ecological farming can also play an important role in creating a greener Nova Scotia?

The agriculture industry in Canada contributes about 10% [see stats below] to our overall greenhouse gas emissions in Canada. We have many different types of agriculture in Canada, and emissions vary depending on type.

Greenhouse gas emissions drive climate change, which can impact our farmers. There is an interesting cycle of ecologically sound farming practices making it less risky to farm in the future.

Farming is a risky business and getting riskier due to climate change, and conventional farming practices are adding to the problem. Climate change contributes to shifts in weather patterns and unpredictable weather that pose a range of risks to food production. Farmers face droughts, floods, damaging storms, changes in pest cycles, and seasonal variability, like the late killing frost experienced in crops such as apples and blueberries this spring.

The Nova Scotia Government has set a target to reduce greenhouse gas emissions by up to 80% below 2009 levels by 2050. While that's an ambitious step forward, we could get there sooner, with further investments in the green economy, including investing in ecological agricultural practices.

ECOLOGICAL FARMING PRACTICES
can store up to
320 million tonnes
of carbon in our soil every year¹

AGRICULTURE
accounts for
72 megatonnes of CO₂
equivalent representing
10% of Canada's GHG
emissions² (2016 data)

Ecological agriculture practices help to reduce carbon emissions and contribute to climate resiliency, and offer economic benefits.

Food production would also be higher, without requiring more land. Forty-seven million more jobs would be created over the next 40 years.³

The green investments would lead to improved soil quality, less water use, lower greenhouse gas emissions and 19% lower energy consumption than business as usual.⁴



FARMLAND is connected with all of the living systems surrounding it.

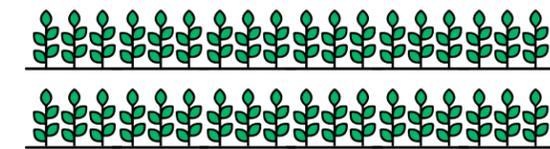
there are currently
3478 farms &
5225 farm operators
in NOVA SCOTIA



CAP & TRADE SYSTEM



NOVA SCOTIA will introduce a cap and trade system in 2019. If this system awards carbon credits to farms that keep carbon in the ground, it could encourage more growth of ecological farming in Nova Scotia



According to the UNEP model, the **TOTAL ECONOMIC VALUE-ADD** of agriculture and fisheries would be **\$293 billion/year higher** under the 'green agriculture' scenario.⁵
(An 11% increase)

FURTHER READING

- What Price Resilience? Towards sustainable and Secure Food Systems pcfisu.org/wp-content/uploads/pdfs/TPC0632_Resilience_report_WEB11_07_SMALLER.pdf



when you support **LOCAL & SUSTAINABLE** food systems, you help **NOVA SCOTIAN** farmers earn a living wage

while limiting **GREENHOUSE GAS** emissions



AGRICULTURE is one of the rare industries that can quite easily be turned from a carbon source, to a carbon sink

1. The Carbon Farming Solution carbonfarmingsolution.com
2. Government of Canada canada.ca/en/environment-climate-change/services/environmental-indicators/greenhouse-gas-emissions.html
3. International Sustainability Unit pcfisu.org/wp-content/uploads/pdfs/TPC0632_Resilience_report_WEB11_07_SMALLER.pdf
4. Ibid.
5. Ibid.

This project was undertaken with the financial support of:
Ce projet a été réalisé avec l'appui financier de:
 Environment and Climate Change Canada / Environnement et Changement climatique Canada

A look back at the Ecology Action Centre's food work: 2002 – 2017

OUR FOOD PROJECT

Under this program our work expanded to include a 'pickles to policy' approach, with the goal of building positive food environments in Nova Scotia and New Brunswick. During this period, our staff grew to seven, plus a sister project with United Way Moncton in New Brunswick. Here are a few highlights:

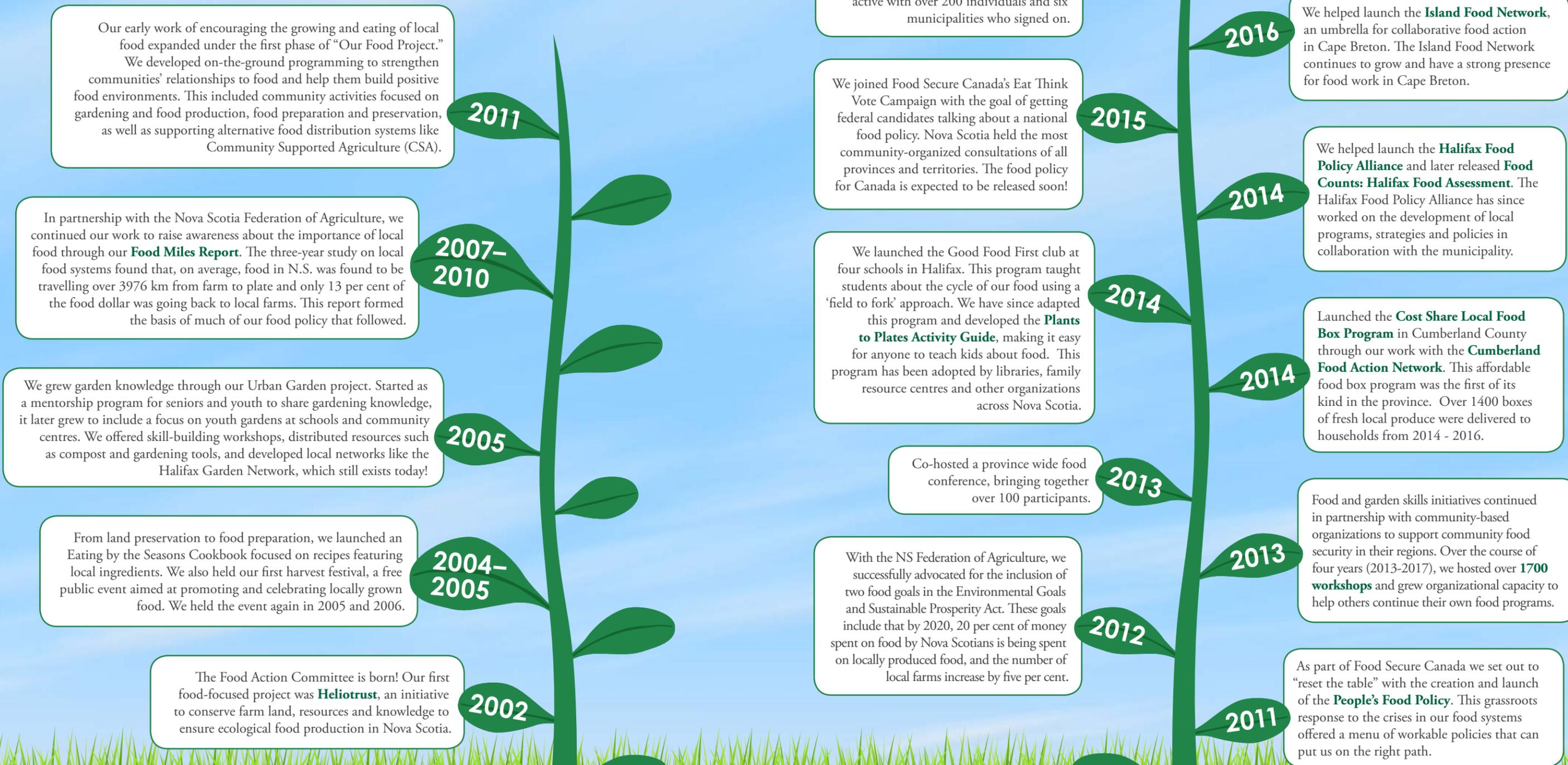


Photo: Jody Nelson

Once Upon A Restaurant

by **STEPHANIE JOHNSTONE-LAURETTE** /// EAC Staff

Everyone has a favourite restaurant, but what about a favorite food experience?

Although Cape Breton is known for its seafood chowder and a healthy love of pork pies, there's a growing desire for something different. So, what makes dinner evolve from ordinary to extraordinary? A few things to consider: the setting, the source of the food, and unique culinary themes. Cape Breton has some gems for food experiences. Here is just one example of an eatery and a farm that collectively provide some flavourful moments you won't forget.

"Feasting" and "frolicking" are some of the playful words that entice folks down the backroads of Middle River to the rustic home of George Smith and Cora-Lee Eisses-Smith, owners of the Dancing River Sprite. The Dancing River Sprite is a unique eatery hosted in its owner's farmhouse since 2006. Once a month, Eisses-Smith and Smith open their doors to a diverse group of foodies and neophytes alike who gather to share grub along a lengthy communal table. Each month offers new literary works to which the food provided is linked: a classic novel, a play, or something textually juicy you may have once read. Smith, a trained chef, offers a detailed account of each of the six courses along with eclectic stories of his own history and how it may (or may not) relate to each portion of your evening. Eisses-Smith, with a theatrical background and a wealth of knowledge in literary classics, dresses as one of the book's main characters to narrate a section, delivering a summary of the novel in six segments, or one for each course. Amidst this exceptional food experience there is also time to get to know your fellow foodies.

"With these feasts we are able to combine our passions and share them with a beautifully broad spectrum of people. We have met so many wonderful people over the years!" says Eisses-Smith.

Another detail making this a unique evening is knowledge of where your meal comes from. Unlike many restaurants, the Dancing River Sprite provides details of food sourcing for each of its courses. Smith and Eisses-Smith acquire some of their ingredients from their gardens, others through wildcrafting and from local farms.



Photo: Lakeside Photography

"We have met so many wonderful people over the years!"

TAKE ACTION

For more details on the upcoming dining delights at the Dancing River Sprite you can reach out to Cora-Lee via email at ceisses@ns.sympatico.ca to book your space at the table.

You can find LocalMotive Farms at the Baddeck Farmers Market, Wednesdays 11am-2pm, starting mid-June.

One of the farm suppliers for the Dancing River Sprite is only a few kilometres down the road. LocalMotive Farm, located on Hunters Mountain along the Cabot Trail, is owned and farmed by Jody Nelson, who is also the EAC Community Food Coordinator for Cape Breton. She specializes in colourful, interesting produce that is sold at the Baddeck Farmers Market and to area restaurants. LocalMotive Farm has been supplying Dancing River Sprite for a number of years, providing delicious, fresh produce with a quality and whimsy to match that of the restaurant.

"George and Cora-Lee love my weird and wonderful vegetables," shares Nelson. "They are first in line for my rainbow of cherry tomatoes or my fairy tale eggplants!"

Knowing where their food has come from allows Eisses-Smith and Smith to provide a history of each meal—to share its story. Supporting local food initiatives like this can lead to a sensational culinary experience.

So where will you decide to feast and frolic next?

Stephanie Johnstone-Laurette is the Youth Active Transportation Coordinator for Eastern NS with the Ecology Action Centre and she's willing to bike and walk that extra mile to experience great food in Cape Breton!

The Seasonal Gourmet

by **STEPHANIE OGILVIE** /// EAC Volunteer

Tomato Chilli Jam

INGREDIENTS

- 3 Garlic Cloves
- 4 Red Chillies, seeds removed
- 2 oz. Ginger Peeled & Grated
- 1 bunch Cilantro Picked and Chopped
- 1 Onion, finely chopped
- 3 oz. Brown Sugar
- 4 oz. Olive oil
- 8 Plum Tomatoes
- 1 Tbs. Fish Sauce
- 1 Lime, Juiced
- Salt & Pepper to taste
- 2lb. Mussels cleaned
- ½ Cup. White Wine

DIRECTIONS

- 1 Chop garlic and chillies together. Place in food processor with ginger and cilantro. Pulse until a paste has formed
- 2 Heat a medium saucepan over medium high heat. Add 2oz. olive oil and spice paste until warmed and fragrant, about 3 minutes. Add the onions and sugar cooking slowly. Chop tomatoes and add to the mixture continuing to stir and let reduce.
- 3 Add fish sauce to pan and cook mixture for 20-25 minutes until the puree is syrupy and most of the liquid has reduced. Add the lime juice and season well with salt and pepper. Remove from heat and let cool.
- 4 In a large heavy bottom pan heat 2oz. olive oil over medium-low. Add cleaned mussels to pan, turn heat on medium-high, add white wine and desired amount of tomato chilli jam (½ Cup. suggested). Cover pan and allow mussels to cook.
- 5 When mussels have all opened remove the pan from the heat. Be sure to taste the broth and check for seasoning and it's ready to serve! Enjoy!



Photo: Prestonbot (CC BY 2.0)

Stephanie Ogilvie has been the head chef at Brooklyn Warehouse for the past four years. The daily changing menu at Brooklyn Warehouse has given Stephanie the platform to explore and celebrate the abundance of local, sustainable fare in an elegant and imaginative way to represent Nova Scotian Cuisine.

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WHAT WILL YOUR LEGACY BE?

Leave a gift to the EAC in your will to ensure a healthy future for generations to come. Please call us at 902-442-0300 or email us at ryan@ecologyaction.ca



"As long time proud supporters with passionate concerns for the environment, it was easy for us to decide to leave a gift to the EAC in our wills. We have long respected the work EAC does for the environment and know that its strong voice must continue into the future." - Karen Hollett & Fred Harrington

Action is our Middle Name

FOOD

Up!Skilling Food Festival to Regional Food Strategies

In Cape Breton, the Island Food Network organized a second Farmer to Farmer event with Perennia, hosted the fourth Up!Skilling Food Festival, and had the pleasure of facilitating a food asset mapping session in Eskasoni. In Cumberland, a newly formed *Small scale Agriculture Working Group* comprised of local farmers, chambers of commerce, and local government representatives are looking at ways to attract more sustainable local farms to the county. The Halifax Food Policy Alliance is working to inform a staff report that will be presented to the Community Planning & Economic Development Committee in July to explore municipal support for the development of a city-wide food strategy. Building on our work with the Coalition for Healthy School Food, we're exploring opportunities to engage our networks in activating their support for a universal healthy school food program. Finally, Our Food Southeast New Brunswick (SENB) launched a new website that houses the Food Pledge and associated Action Guide (ourfoodsenb.ca or nosalimentsenb.ca)!

ENERGY

Lights... Camera... Energy Action!

The Energy Action Team has been working on projects that can support the justice-based transition to a fossil-fuel free future. This spring we released four videos and infographics highlighting the existing successes and emerging opportunities in Nova Scotia's green economy. The videos explore how many jobs could be created, and how many tons of greenhouse gasses could be saved, by investing in green economic sectors including sustainable agriculture, energy efficiency, public transportation, and community and Indigenous-owned renewable electricity. Nova Scotia has a rare opportunity to grow our green economy. With the *Environmental Goals and Sustainable Prosperity Act* renewal process and the development of a cap and trade system, Nova Scotia has a chance to set ambitious greenhouse gas targets and strengthen our green economy. The Energy Action Team is excited to share stories that showcase the emerging green economy and advocate for sustainable energy and economic policy in Nova Scotia.

COASTAL & WATER

Summertime in Canada's Ocean Playground

The Coastal & Water Team has been focusing on two specific areas of coastal work: Educating Coastal Communities on Sea-level Rise (ECoAS Project) and support for a Coastal Protection Act for Nova Scotia.

Sea-level Rise: Through the ECoAS Project, we've conducted sea-level rise workshops in Yarmouth and Upper Nappan and have three more sea-level rise information sessions taking place this summer in Annapolis Royal, Lockeport and Eskasoni. We have continued our work with three Atlantic Canadian partners (Conservation Corps of Newfoundland, UPEI Climate Lab and NB Environmental Network) to host sea-level rise information sessions and workshops across the Atlantic region. We have also recently formed a new partnership with Living Oceans Society in BC for several BC workshops. Please check out our sealevelrise.ca website. We have also been working closely with CLEAN Foundation in their efforts to strengthen their resilience of seven NS municipalities to the effects of climate change.

Coastal Protection Act: We are excited that the provincial government is following through on their election commitment to create a Coastal Protection Act for Nova Scotia. Our team has begun hosting community conversations about coastal protection and we will post information about these sessions on our website over the coming months, along with any information from the government about their consultation plans.

WILDERNESS

Clearcutting for Biomass & Friends of Blue Mountain Birch Cove Lakes launch

Damning evidence of clear-cutting old growth hardwood forests on Crown land for the NS Power biomass plant in Port Hawkesbury dominated headlines this spring. EAC again called on the government to remove biomass from the Renewable Electricity Regulations and on Nova Scotia Power to shut down their biomass generating plants that are driving harvesting practices in Nova Scotia to new lows. Meanwhile, EAC helped give birth to a new citizen's group dedicated to the development and wise management of the yet-to-be-created Blue Mountain Birch Cove Lakes Regional Park. In April we co-hosted a packed-house meeting attended by over 200 citizens to launch the Friends of Blue Mountain Birch Cove Lakes. Since then the Friends have elected an inaugural board of directors co-chaired by Mark Young & the Honourable Diana Whalen and have registered the new non-profit organization to increase public involvement in the future of the eventual park.

TRANSPORTATION

Walking, Rolling, and Wheeling Into Summer

With cycling season well underway, the dedicated volunteers at Bike Again (our community bike space) have been busy hosting open hours and the Women&Trans only nights for people to come fix their bicycles. We continue to advocate for equitable access to active transportation. Through our partnership with the TryDo council, we are working to increase opportunities for walking and cycling in the rural community of East Preston, one of the largest African Nova Scotian communities. We are also piloting the Age-Friendly Walking School Bus, that looks to enhance inter-generational connections, while strengthening physical activity in seniors and increasing the number of children who walk to and from school. Welcoming Wheels has already gifted 65 bicycles and safe cycling training this year. The program's goal is to gift a total of 150 bikes in 2018. Making Tracks is in action with over 12 leader training and direct delivery programs offered this spring to help children ride safely.

MARINE

Collaborating for Healthy Oceans and Sustainable Fisheries

On Oceans Day, we celebrated the launch of SeaBlue Canada, a national coalition with EAC, CPAWS, Oceans North, David Suzuki Foundation, and West Coast Environmental Law. SeaBlue is a movement of Canadians holding government accountable for protecting our oceans and the fragile sea life that lives there. We've also been working with our local and national allies to create national standards for MPAs and keep harmful industrial activities, such as oil and gas drilling, out of our waters. Across the Atlantic, EAC Marine continues to work closely with the Icelandic government and researchers to establish management measures for the Greenland shark. With a lifespan of over 400 years, the Greenland shark was recently identified as the oldest living vertebrate in the world! Canada and Iceland have two of the highest catches of this long-lived arctic shark, and robust management measures are essential for the sustainability of the species.

BUILT ENVIRONMENT

We Come Alive in Spring for Land Use Planning!

With the help of four volunteers, we put together a **response report** to the latest draft of the Centre Plan that makes 27 recommendations for how the Centre Plan can be improved to make Halifax the most sustainable and liveable city possible. Meanwhile our Greenbelt Campaign will be back in high gear this spring and summer with the expected arrival of the Green Network Plan in late June. We'll be asking HRM to make some bold moves to protect all the key ecological and recreational areas to create our very own Greenbelt. You can follow along with this work at ourhrmalliance.ca/take-action or by joining the mailing list. Meanwhile we're working on other ongoing projects that make our city a better place to live, like the Cogswell Redevelopment and the Spring Garden Streetscaping Pilot Project, and we're planning lots of great partnerships for hikes around the future Greenbelt areas this summer.

Recent Successes

- In collaboration with four volunteers, our Sustainable Cities Coordinator put together a **30-page response to the Centre Plan** with recommendations for HRM to improve the Plan to make our regional centre more sustainable and more liveable for everyone.
- The EAC's Transportation Team recently shared successes from their work at the **Atlantic Active Transportation Summit**, a 2-day event held in Halifax this May. The Summit drew in speakers and participants from across Canada to generate discussion and foster connectivity between over 140 active transportation professionals in the Atlantic Region.
- EAC co-hosted a packed-house meeting in April attended by over 200 citizens and helped launch a new **"Friends of" citizen's group** dedicated to the creation and wise management of the eventual Blue Mountain Birch Cove Lakes Regional Park.
- EAC participated vigorously in the **provincial Independent Review of Forestry Practices** process this spring, advocating for a significant reduction in clearcutting, greater non-industry stakeholder involvement in Crown land management and an end to primary forest harvesting of biomass for electricity generation.
- We were presented with the **Canada Green Building Award** for a small commercial building from Sustainable Architecture and Building Magazine (SAB)! Our office renovation increased our space by 50 per cent and reduced our energy consumption by 65 per cent. As of 2017, it is considered to be the most energy-efficient commercial office retrofit in Canada.

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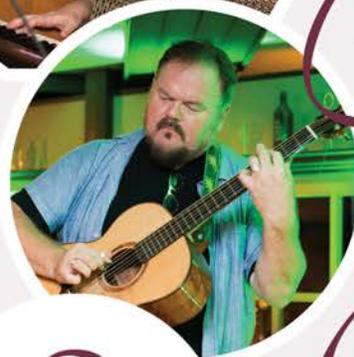
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