Introduction

Permaculture is my passion and, as with all passions, it dominates my lifestyle here on this small island just east of Halifax, Nova Scotia. With the possibility of a food crisis looming in the near future I believe it is essential to produce as much of our own food as possible. On QuackaDoodle Farm we try to do this, making the best use of limited resources by employing the principles of permaculture.

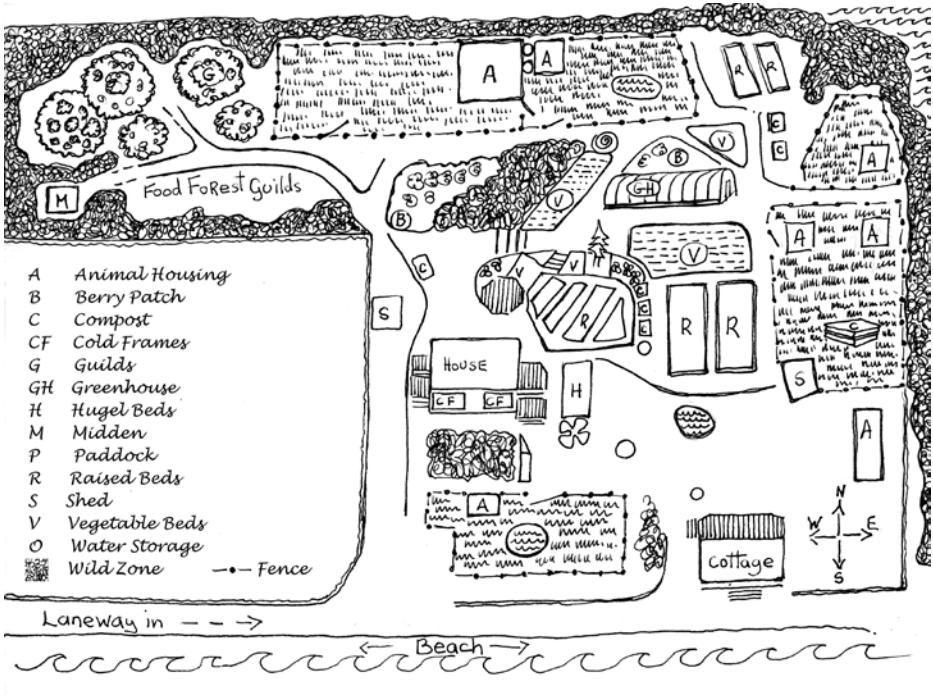
For those who may not be conversant with permaculture, it is a multi-faceted set of principles which were devised in Australia by Bill Mollison and David Holmgren. Although these principles can be applied to any system, large or small, they are especially suited to homesteading and living a fully sustainable lifestyle.

I don't think it's possible to script a single, succinct statement to adequately describe permaculture. Many have tried and indeed there are many wonderful words written about this sustainable system of living. However, an exaggerated brevity can engender vague, esoteric statements which might alienate rather than elucidate, making permaculture sound almost ethereal and not for those of us who like to call a spade a spade and to dig with one.

Alternately, a comprehensive description can seem equally overwhelming because of the apparent complexity inherent in all natural systems. In fact, permaculture is a paradoxical mix of complex simplicity. It employs naturally existing systems to produce maximum yield with minimum expenditure, more for less in other words. Minimum expenditure means using less resources which translates into less energy used, which in turn translates into

a reduced carbon footprint. Permaculture principles exemplify win-win and represent, I believe, our best hope to right many of the wrongs that have been done to our beautiful planet.

It's not my intention in this book to cover every detail of every aspect of permaculture. That would make for a very long book and besides, there are several exceptionally good books already written which do just that. They tend to describe the design process, starting from A and working through to Z, more often than not using techniques appropriate for locales far more fertile and hospitable than the places many of us have the privilege of calling home. I want to share my story with those who dwell in these less benign places, who can't really be blamed for feeling just a little envious, and perhaps downright discouraged, when reading descriptions of lush garden growth in climate zones eight or nine.



* A basic "floor plan" of QuackaDoodle Farm.

I strive towards sustainability on a windswept island, surrounded by the North Atlantic. The soil is poor, drainage is worse and I have never once considered growing bamboo to stake my plants. The principles of permaculture were devised in Australia, where tropical plants are the norm, but I promise I will not once mention growing banana palms to thatch a shade-room! This book is about permaculture northern-style, with a few additional challenges thrown in.

My purpose here is to write an encouragement manual, an *if we can do it then for certain you can* kind of book, a book that might save others from getting bogged down by the same mistakes we made and which simplifies and elevates permaculture methodology to its rightful status. I'd also like it to be an interesting and inspiring read…and if it can elucidate some of those tricky verses from the Book of Revelation, well…just kidding! I know my limitations. The more we strive to live in harmony with the natural world the more I realize that everything requires a fine balance, including a book such as this. While not wanting it to read like a text book, I do want to supply enough concrete information to facilitate success. Much of this information will be condensed into sidebars, the "executive notes" for those who might want to skip through the anecdotal, more scenic route and parachute right into the facts. The photographs were all taken here on QuackaDoodle Farm and who knows, perhaps for some these might be inspiration enough. Whether it's a speed read during the first heady days of spring planting or leisurely dreaming on a cold winter's afternoon, read on. And enjoy!

— Jenni Blackmore
QuackaDoodle Farm
Seaforth, Nova Scotia

Slug Wars or How it All Began

Our pathway to permaculture was not planned. We were more like accidental tourists wandering into unknown territory, spurred on by nothing more auspicious than slugs. I'll get back to them in a minute but first I want to lead you back to the very beginning of the path. Fortunately some of the groundwork, let's call it the brush cutting, had been done years earlier when, as a single parent, I built the house I now share with my husband Calum. My budget was very tight and getting the project off the ground required living onsite in what, to be kind, we'll call a cottage. My sons and I lived there through the coldest Nova Scotia winter in seventy years, with no plumbing and no insulation.

Over time the roof developed a demonic system of leaks that were unstoppable. Melting snow around the uninsulated stove pipe created a deluge that required full sized garbage cans, not merely cooking pots or dish pans, to prevent an indoor ice rink from forming on the cottage floor. Technically there was no indoor plumbing despite the ample supply of running water!

Digging the well cover out of a snow drift so that it was possible to chop a bucket-sized hole in the ice lost its appeal after day one and the garbage can collection system soon became our water source of choice. It didn't take much figuring to realize that rainfall

* This is what winter looks like in Nova Scotia.

purposely directed into an appropriate storage tank could easily supply an average household, or so I thought. However, I still felt a little embarrassed explaining my requirements to the form builder who was preparing for the footings and basement to be poured. He didn't seem the least surprised. "So you want a cistern, Lady? Years ago all the old places had them."

A cistern! It was the first time I'd heard the word and it sounded so sweet to my ears. It validated what I feared might prove to be a crazy and unworkable scheme, one that I was hoping would help us avoid the potential hazards of depending on a shallow well that gathered only very poor quality water. The 18' × 10' × 5' cistern is built into one corner of the basement and holds six thousand, six hundred and fifty gallons of good clean water. With typical rainfall it tends to remain at least half full most of the time. Actually seeing and being able to gauge the availability and usage of water caused a subtle shift in perception and gave me a clearer insight into the effective management of resources. Step One along the permaculture path! I just didn't realize it at the time.

The ground here is very poor, pretty much solid clay topped with an inch or two of highly acidic top soil. It's enough to support stunted spruce growth, which isn't saying much as it is not unusual

to see a ragged spruce anchored to the side of a rock face. In its natural state the soil certainly wasn't up to nourishing my illusive dreams of growing vegetables. After a couple of dismally disappointing growing seasons I embarked on some half-hearted and poorly informed attempts to build soil. Poorly informed? Well, for instance, I didn't understand that the stinking piles some gardeners raved about were not giant fly and vermin lures but in fact represented one of the essentials my soil lacked: *compost!* It was a word I barely knew the meaning of, never mind its importance.

Fortunately I am within a hundred feet of a constant supply of seaweed—one of the advantages of living along the seashore. The bags of leaves left curbside in the city also provided "easy pickin's" and over time these organic additions began to work their wonders in my vegetable plot. I wasn't fully conversant with the term "organic material," I just knew these freebies were in line with my very limited budget and the need to bulk-up my soil. Did I consider myself to be an organic gardener back then? Absolutely not. I was just a low-income mom being ruled by necessity.

Similarly, budgetary restraints—or encouragements, depending on your perspective—dictated the size of house I built. By current standards it might be described as modest, although I prefer to think of it as more-than-adequate. The living room, kitchen and dining nook are open plan, allowing for excellent air flow from the centrally located wood stove. The heat also rises up the open stairwell to the upstairs bedrooms, keeping them at perfect sleeping temperature. If I hadn't spent that bitterly cold winter in an uninsulated, one room cottage prior to building, I doubt that I would have designed this house as effectively, considering efficient heat distribution to be of primary importance.

The fact that the house is oriented towards the south and takes full advantage of passive solar heat was pure luck, dictated by the uninterrupted ocean view. "Solar" was another unfamiliar word back then and while it certainly didn't feel like I was starting to live a "Permie's dream" I realize now that I was, in fact, assembling the foundation blocks for just such an experience.

* Passive solar heating in the house is a fortunate happenstance of this view to the South.

Around the time my veggie plot was grudgingly pushing up the occasional taster of spinach leaves, and pea shoots that actually produced pods, I met my dear husband-to-be, Calum. As a biologist he was light years ahead of me when it came to gardening. He even produced compost that was light and fluffy and more importantly, didn't smell! With our combined efforts the garden finally began to flourish…and so did the slugs. They were a plague of biblical proportions. Halved grapefruit skins, copper mesh, crushed clam shells and beer enough to drown in; we tried them all, and all with a certain measure of success, but never enough. Then we heard about the sure fire silver bullet, chickens. Some chickens maybe, but the heritage breeds we opted for gave us the malevolent eye and the "Cluck-cluck! You expect us to eat what?"

By the time we realized that our slug elimination plan number six (or was that seven?) was definitely not working we had already consumed our first fresh laid egg. There was no going back. The chickens had arrived to stay. Thanks to them and their prodigious output of manure, the veggie plots are now edible jungles by early August and they supply us with most of the fresh produce we need from late May through to December. This in itself is quite an impressive feat, because we really do like our vegetables.

* "Eat what? We don't do slugs!"

There is another less concrete, but equally important benefit to keeping chickens, which is more difficult to define as it speaks to the soul, to our intrinsic need to be integrated more fully with the natural world. How do chickens do this? I don't quite understand, but on a blustery winter's morning, when the last thing I feel like doing is trudging out to the chicken coop, their passive cooing as they peck at their breakfast nurtures something primal within me and reaching under warm feathers to retrieve a fresh laid breakfast gift satisfies places other than the stomach.

Calum's way of approaching a new project is to read up on all the available information first. This methodology provides an excellent counterpoint to my more impetuous way of plunging in with both untutored feet and hopefully learning from my

A successful permaculture plan encourages multi-functionality. Elements are chosen and positioned to perform more than one primary purpose in a self-sustaining way, while at the same time integrating fully with other elements. Chickens exemplify this principle perfectly. Because of their multi-tasking potential, they are iconic to permaculture. Their primary purpose is to supply eggs and perhaps meat, but in a garden situation they also aerate and fertilize the soil while consuming harmful bugs and plucking out the odd weed. Given the opportunity (i.e., with a rooster present) they complete their self-sustaining cycle by hatching their eggs to produce the subsequent generation of egg layers and garden helpers. To elaborate further, fresh free-range eggs and young chicks, especially heritage breeds, are an easy sell and this "egg money" provides an external cash flow. A simple *hen-poster* (a box containing organic waste that allows easy access for chickens) and a regular supply of kitchen scraps is all chickens need to very quickly produce great compost with their constant scratching and manuring. The best thing is that they do all this for, yes, you guessed it…chicken feed.

mistakes—eventually. Through this combined approach, and the acquisition of several of the excellent books available, we have become quite savvy in several areas of sustainable living. It often seems that one step along the permaculture way leads quite logically to a couple of more steps, but not necessarily in a straight line. As with keyhole perimeters that help expand the accessible area of a garden, so too this meandering learning curve further expands the breadth of knowledge that it is possible to gain.

Keyhole gardens have become an icon of permaculture because they provide a clearly visual example of efficient use of space. They also maximize on the positive dynamic of edges. Edges, areas where two distinct entities meet, are dynamic because the attributes of each entity are able to intermingle. For example, geographically, a

border town will be influenced by the cultural aspects of its neighbour such that, while still maintaining its own cultural identity it will form a vibrant mix of cuisine, music, architecture, etc. Similarly, in the garden, edges draw from both sides. A path alongside a garden bed allows for additional sunlight to reach plants. It might also direct run-off into the garden and certainly it provides easy access for care and harvesting. A scalloped, meandering line is of course much longer than a straight line and so provides more edge dynamic, while the quintessential central pathway gives maximum access with a minimum loss of growing area.

The elimination of slugs, as another for instance, led us to the acquisition of chickens which in turn developed our interest in heritage breeds, which lured us into a breeding program for critically endangered Pilgrim geese which have, in true permaculture fashion, eliminated our need for lawnmower and grass trimmer. At the time of this writing we have a profusion of goose eggs in incubators, as well as in the nests outside, which are being proudly protected by parents that, this time last year, were pecking their way out of carefully tended eggs. At this rate they won't be on the endangered list for long!

We also raise Khaki Campbell and Runner ducks, both noted for their phenomenal egg laying capacity. Better yet, they love to eat slugs! As well, we have started raising Beltsville White turkeys, which are worth keeping for their entertainment value alone. As an added bonus they dress down to make the best Christmas dinners ever, without a doubt.

And while on the subject of tasty dinners I mustn't forget the Californian meat rabbits who share the duck barn along with the geese. After harvesting our first litter recently, we realized that we are moving ever closer to our target of becoming at least 60 percent self-supporting.

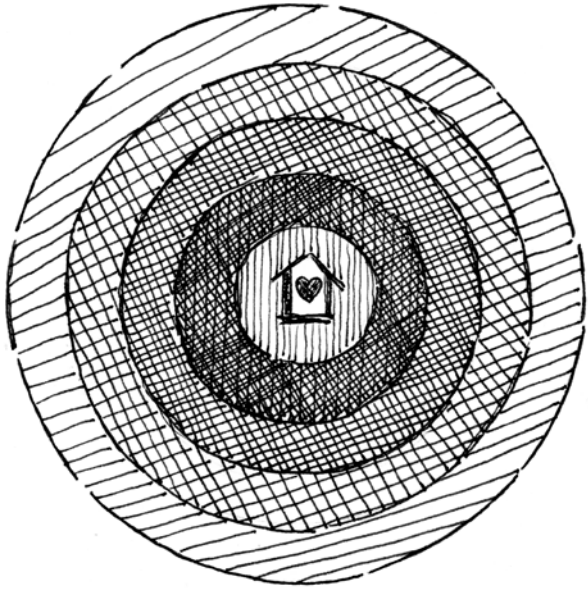
I guess you could say that we are gradually retrofitting our lives to align with permaculture ideals. No doubt it would be easier to start from square one, with a perfectly positioned piece of virgin territory, but I doubt that many ever have that luxury. And

* Ignore the cuteness and never, ever call them "Bunnies."

besides, every natural environment surely has its own particular challenges which will dictate the "zones and guilds" an aspiring permaculturist needs to establish.

When I first developed an interest in permaculture and started amassing a library of the great books available I'd gobble up the first few chapters but begin to lose my appetite when it came to zones and guilds, in part because the diagrams looked a little overwhelming in their apparent complexity. I was tempted to—okay, I did—hurriedly scan through those chapters so I could get back to the growing and harvesting parts that interested me the most. My abject fear of all things mathematical was rekindled by any mention of degrees of slope, angle of sunlight, or exactitude of compass points. In actual fact, the concepts of zones and sectors are based in common sense and are essential to any successful permaculture plan.

Zones range from one to five, from the most often to the least often visited. For example, I don't want to have to charge to the far end of the garden for some fresh basil, with my sauce already bubbling and company due to arrive in five minutes. Therefore zone one includes herb pots on the deck by the kitchen door. Potatoes, once planted, require almost no attention until harvest time, so they will be best placed in zone three.



Zones:
0 – house or heart zone radiating out to zone 5 the "wild" zone.

Intensity of cultivation and visitation lessens in each zone.

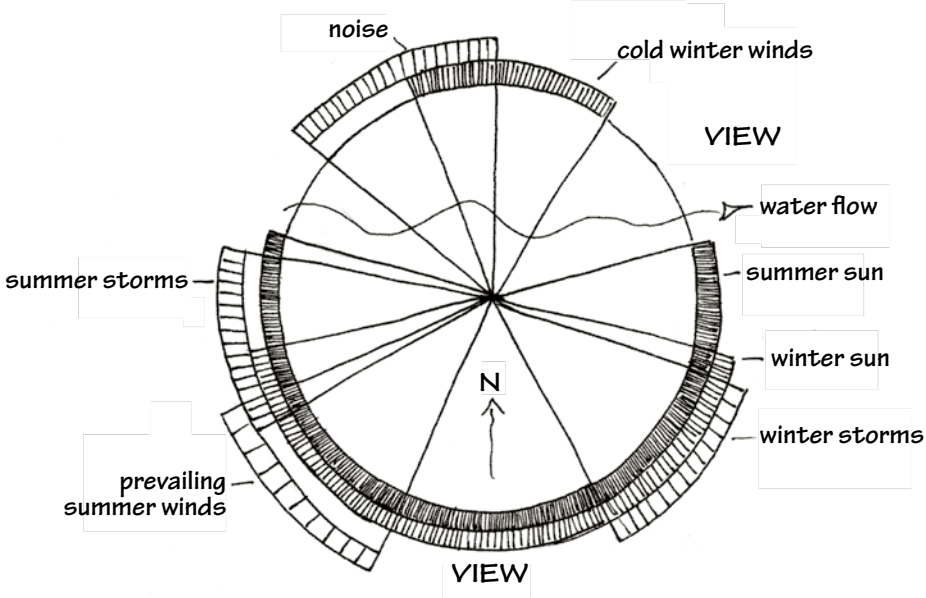
* This is a theoretic diagram. In actuality zones spread and flow more like broken egg yolks in a fry pan as they are influenced by their topographic environment.

Sectors are like slices of a pie-chart that clearly define the sunniest spots, the wind tunnels, any natural water courses and so on. Once these characteristics have been itemized it's much simpler to take full advantages of their attributes and take steps to minimize any negative effects. Having them drawn out on paper helps solidify the existence of these invisible boundaries.

Every homestead, regardless of size, will be unique when laid out to incorporate permaculture ideals. This is one of the many wonderfully satisfying aspects of living in harmony with the natural world although, as with any retrofit, things don't happen overnight. Patience is a virtue that doesn't get mentioned often enough as a necessary requirement in many of the informative books already written on attaining the dream-state of sustainable living. On the other hand, even though things might not always zoom along on the permaculture way, they often seem to have a knack of integrating and developing very smoothly.

A few years ago hurricane Juan ripped through Nova Scotia. If I was a paranoid type I'd believe it specifically targeted our property, leaving in its wake a gnarly, impassable wreck of fractured and uprooted trees. For a while we tried the *"I can't see you"* and the *"If we ignore it, it will go away"* approaches, which were as successful as might be expected. Finally we began the painstaking (read *aching muscles*) job of first removing the debris and then attempting to reclaim the land.

After weeks, then months, of exhausting and dispiriting work it seemed that progress was virtually a non-happening. Because progress was so gradual any proof that it actually was happening tended to jump out unexpectedly; sudden realizations at the sight of brilliant orange pumpkins flourishing on what had been ravaged forest floor or awakening moments ignited by the strike of sunlight on mammoth sunflowers towering above broken tree stumps. It was at times like this that we forgot all the discouragement and



* This particular sectors diagram is a very basic analysis of some of the prevailing elements which influence QuackaDoodle farm. It does not take into account the microclimates and other deviations which are created by trees and buildings.

* Cleaning up after the hurricane was a daunting task.

instead allowed ourselves to be amazed at how well everything was coming together. As time progressed these moments became more frequent and now, looking around our fertile little haven, it's sometimes hard to remember how broken and barren it was back then.

The sunflowers mentioned above were planted in used feed sacks interspersed around the berry patch. The ground was so root riddled and virtually impenetrable in places that it was much easier to "plant up" and mulch heavily rather than try to dig down. The roots left in the ground gradually rotted and now help to maintain moisture while also creating an explosion of beneficial microbes and bacterial action. Over the past couple of years this piece of ravaged ground has become amazingly fertile and supplies liters of lush berries. It also exemplifies one of the mainstays of permaculture philosophy: there are no problems in permaculture, only creative solutions.

The location of pathways surrounding the various plots was dictated to quite a degree by the location of larger immovable stumps that will obviously take more than a couple of years to rot away. As it happens, this seemingly random layout has created a pleasing yet efficient organization of space. The position of the greenhouse, for example, was determined by the location of a rel-

* Squash, beans and sunflowers thriving on reclaimed forest floor.

atively unobstructed space. It now effectively blocks the prevailing ocean breeze while still allowing the sunlight to pass through and has provided a snug microclimate for the berry patch to the north of it.

As well as blackcurrants and blueberries I planted a couple of Northern Kiwis and a couple of grape vines. My plan is to create an arbor type of setting that will disguise the netting used to protect the blackcurrants and blue berries from the birds. They don't share very well when it comes to berries!

There are several Indian Pear trees on the property. These never did much when competing with the spruce trees but are now re-

* The perimeter of the berry patch is dictated by immovable stumps.

sponding well to our nurturing and hopefully will help satisfy the birds' needs. Maintaining enough wild area to support the needs of wildlife is one of the rules of permaculture and we have left several pockets of wild growth which have regenerated with an amazing diversity of native species.

The ducks and geese also benefited from the devastation of Hurricane Juan (it's an ill wind etc.) as they now have a large open corral with their own 10' by 15' barn, which they share with the rabbits. Rainfall runs off the metal roof, down the eaves-trough and is collected in 45 gallon barrels which gravity feed the duck pond. Very simple, very effective. This brings up another permaculture aim, which is to generate maximum gain from minimum expenditure. As an example, the non-permaculture way to fill the duck pond might be to use an electric pump and well water. The effect would be the same but the water used might have been better conserved for other use and the electric pump would obviously add to our carbon footprint.

As already mentioned, the layout of our design was definitely influenced by the immovable stumps and the need to construct pathways around them. As it happens, I don't believe we could have done it half so well sitting at a desk with a blank sheet of

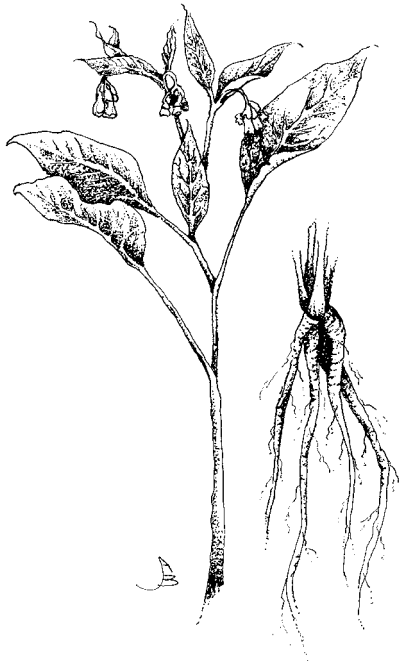
* This Indian Pear tree graces the wild zone every spring.

paper and no restraints. This exemplifies another law of permaculture which outlines the necessity of an intimate knowledge of the land you intend to unite with. It is essential to be aware of every bump and undulation, every wild flower, every shrub. Walking and working on the land, even in the early stages of clean-up, certainly created in us a much better understanding of what we had to work with.

One of the few plants that really seemed to thrive in those early days was comfrey. It is a terrific source of nitrogen, whether as compost or simply cut and laid between rows as a green "manure" mulch, but at the time I saw it only as a weed that needed to be removed. More about comfrey and other naturally occurring plants later, but for now I must just mention how glad I am that all my early attempts to eradicate it failed. If I had been successful I would have lost many benefits and certainly would have been

in conflict with another permaculture practice—encouraging the preservation and diversity of nature.

Similarly, yellow irises thrive here to a height of nine or ten feet and in the spring several kinds of wild ferns grace the property with their elegance. I have purposely encouraged clumps of them in various spots where they originally chose to grow. Ferns don't much like being moved but will accept being relocated as long as it is done as early in spring as possible, with the least amount of root damage. Hosta lilies, although not naturally occurring, were one of the few perennials willing to stick around during my early gardening days and they make great natural retaining walls on sloping banks. Learning to work with what we have has made life so much easier. *Encourage what wants to stay—let the rest go away*. That has been my motto for a while now.



* This slender young comfrey shoot might look innocent enough but comfrey grows in dense, tenacious clumps that can be several feet high. Even so, no Permie Plan should be without these plants, because of their superior performance as soil enhancers.

I don't believe that any knowledgeable person in their right mind would have chosen this location to start up a micro-farm or even a serious garden. The North and South boundaries of the property merge into shore line and such close proximity to the ocean means that temperatures in the growing season are always cooler than on the mainland and more often than not a wind of some description will be blowing. The existing soil can only be described as being poor to terrible and the solid clay substrata creates its own set of drainage problems. And, it's not like we have "acreage." We have just about one acre, that we are successfully turning into a micro-farm which,

if all goes according to plan, will eventually make us around sixty per cent self-sufficient.

Other than the view and the tranquillity it has to offer, this place could not be described as the optimum choice for a self-sufficient lifestyle, but it has led us and taught us how to discover what is possible and that of course is half the thrill. And yes, life is a thrill, in strange unexpected ways. Just as the land itself dictates how it will be used, a permaculture plan will direct, at least to a certain extent, how the lives of those who practise it will be lived. We try not impose our will but rather to integrate our living as just another dimension of the great and glorious cycle we all participate in.

If this pathway into permaculture seems somewhat circuitous and meandering so far, well, that's a good thing, because in fact the natural world is not structured in straight lines. Each healthy system rolls back on itself, forming its own sustainable circle while also connecting to many other circular systems, which in turn connect.… This intricate interconnectedness makes it difficult, near impossible, to stay on a linear path while also stating the actual facts. And besides, I don't think the amazing beauty of natural design should be sliced and diced too finely. Attempts to isolate specific elements to the detriment of others are greatly responsible for the devastating imbalance that is presently endemic to most of the world's agriculture. Having said all that, I do intend to keep subsequent chapters more focussed on the particular topics under discussion. I promise.