

Care of Earth
Care of People
Two Permaculture tenets

Sustenance & Ecology on the Edge
A Permaculture View of One Plant Community

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This book had its beginning on the edge of the Pacific Ocean at the southwest corner of the Olympia Peninsula, just below the Quinault Indian Reservation. The ocean's thunder never ceases as the heavy surf releases tremendous amounts of energy - shifting sand, nutrients, logs and rocks. Here at the edge of the ocean, the wind is strong - and salty. The vegetation crowding down to the ocean's edge is shaped by the wind. To a permaculturist, each new plant community is a delight to explore and is filled with lessons. Here are a few observations and ideas garnered from exploring the plant communities in this windswept forest.

Sitka spruce (*Picea englemanii*) is the main conifer along with shore pine (*Pinus contorta*) and western hemlock (*Tsuga heterophylla*) in sheltered areas. Alder (*Alnus*) and willow (*Salix*) are the tallest deciduous trees. Smaller deciduous trees and shrubs include Twinberry honeysuckle (*Lonicera involucrata*), native crabapple (*Malus fusca*), elderberry (*Sambucus*) and salmonberry (*Rubus spectabilis*) thickets. The lower shrub understory is largely evergreen. Evergreen huckleberry (*Vaccinium ovatum*), and salal (*Gaultheria shallon*) are predominant. These are both very useful from a human viewpoint and large amounts are harvested for the ornamental foliage industry. Sword fern (*Polystichum munitum*) and/or deer fern (*Blechnum spicatum*) are common in some, but not all, of the local ecosystems. Both of these ferns are harvested for the ornamental foliage trade.

A common groundcover in open areas is the native beach strawberry. A most beautiful strawberry plant with glossy evergreen leaves, pink flowers and tasty berries. Ground story plants are relatively uncommon in the forest and even in many of the shrub thickets. In sunnier spots we find goldenrod (*Solidago*), Yarrow (*Achillea millefolium*) and butterbur (or western Coltsfoot) (*Petasites frigida palmatus*), and indian parsley. All of these species have medicinal and/or other uses. *Maianthemum dilatatum* is one of the commonest ground covers in the shady forest. There are more ground-story plants but December is decidedly not the best month for observing herbaceous plants at this location.

From the ocean beach you look up to steep bluffs with alternating ridges and small stream canyons. To the average tourist it presents a beautiful pattern of windswept trees and shrubs. A wild forest. Nothing remotely like a farm "field".

To a Quinault native who lived here 500 years ago and to me now, this "wild" bit of ground looks pretty promising. The plant communities in this area and the sea provided everything the humans of 500 years ago needed to survive. Even with my limited

knowledge I note that 80% of the species I see have medicinal properties, 40% produce food and only a couple don't have some use I know of. To my permaculture eyes it is an incredibly rich area. Many of its plants yield food and medicine I could use for subsistence or cash income. At the same time this plant assemblage is doing the incredibly important job of holding the land from sliding into the sea or from blowing away. Whatever I (human) do here, it must not compromise this plant cover. Clearcut logging is totally out of the question and even the carefulest, smallest selective cutting should not happen on foreshores. Some foliage clipping for ornamental brush or medicine might be acceptable with careful experimentation and monitoring. Berry and seed production are more acceptable forms of harvest, as long as trails and trompling do not compromise windfastness of stands.

Several pathways to utilize this Pacific Beach foreshore (seaside?) plant community.

1. Leave it alone.

2. Extract nothing, but reduce the amount of non-native plants. In this place, the non-natives are still few, except for the beachgrass zone (which is dominated by a non-native grass). Foxglove (*Digitalis purpurea*) are observable in disturbed areas. Hand pulling could keep it from spreading. A bit of ivy (*Hedera helix*) and holly (*Ilex aquifolium*) were observed which could also be taken out.

3. Do careful harvesting of berries and seeds without compromising vegetation. Huckleberry (*Vaccinium*) fruits are highly prized for food wherever they occur in the world. Fruit of red huckleberry and evergreen huckleberry are delicious and marketable. *Vaccinium* fruits (which includes cranberries) have been prized in the past and in modern times for its medicinal applications. The local plant communities also have harvestable amounts of salal and the native trailing blackberry (*Rubus ursinus*).

4. Allow clipping harvest of "brush" or medicine. Huckleberry twigs/leaves for medicine fetch a higher price than for ornamental foliage trade. The twig ends and/or leaves are an important herbal medicine and demand is increasing. Up till now, the *Vaccinium* specie most used in the medicinal trade is *Vaccinium myrtillus* which is native to Europe and parts of Canada. The Northwest's *Vaccinium* species are only now being tested for their medicinal constituents. Already we know that a number of Northwest *Vaccinium* are higher in constituents than *V. myrtillus*. How *Vaccinium ovatum* and *V. parviflorum* stack up to its relatives we do not know yet, but it is likely they have medicinal applications.

Clipping twigs might sound like a harmful thing to do to shrubs. However, native indigenous people and modern-day horticulturists like me, know that judicious pruning of shrubs causes them to grow denser foliage and more berries. Pruning, clipping or burning are common methods of shrub management to keep berry production up. Pruning can greatly increase yields of saleable foliage in a stand.

5. Manipulate the upper story. Understory foliage and berry production is dependent on amounts of sun/shade. Amount of sun/shade optimal varies between different species.

Sword fern and salal foliage in full sun are too burned for good foliage production and quality goes up with some shade. Too much shade and berry production goes down. Shadier still and foliage production falls off also. Shadier stands cannot support this type of production, though they might be fine for mushrooms, mosses or certain shade tolerant medicinals. Selective thinning of trees can keep more light in the system. Tree thinning can be practiced where ecological integrity will not be compromised. Thinning is not appropriate in foreshore stands. Sustainable forestry practices of thinning can improve quality of timber from a stand. Understory crops change depending on shade. Berry production needs close to full sun. Foliage production benefits from light shade. Deeper shade crops can include ferns and mosses.

6. We can use this plant community as a model for planting new permaculture systems on deforested or farm land. Replant local deforested land with a similar plant assemblage. I could use the same species in similar admixtures and amounts or I could change amounts of species to increase production potential. I could, for instance, increase the amount of Pacific wax-myrtle in the landscape for harvesting for the herbal market. Perhaps wax-myrtle's nitrogen-fixing capabilities might make it a good interplant for boosting overstory tree growth. Indigenous people increase the amounts of favored plants in the environment. We can do it today.

7. I could bring just some elements of this system into my back yard or farm. Rather than just planting one species as an ornamental, grow it along with its companions as a landscape element. This can solely be for ornamental and conservation interest and/or for useful production or function. Evergreen huckleberry and Pacific wax-myrtle are high quality ornamentals for hedgerows in the maritime Northwest. Evergreens provide winter wind protection and visual screening where deciduous species would be less effective.

Nitrogen fixation in this ecosystem. The ocean shore is an incredible brew of nutrients and some of it blows ashore. It rains a lot here and the rain brings nutrients. We spotted at least four species of nitrogen-fixing flowering plants. Alders are the most common (and biggest) nitrogen fixer. The Pacific wax-myrtle (*Myrica californica*) is a nitrogen-fixer and a gorgeous evergreen shrub which deserves far greater use. There are beach peas and at least one other pea specie.

Each species of trees has certain relationships with particular species of lichens, mosses and epiphytic plants. How can we benefit the forest by encouraging these species and at the same time obtain useful products? There is a high lichen load in the trees and they provide one of the major sources of nitrogen to this forest. Usnea lichen, a medicinal antibiotic, is relatively common. Two species of licorice fern with medicinal rhizomes grow on the trees. *Polypodium glycyrrhiza* and *P. .* We even saw both species growing on the same tree. Careful wildcrafting is possible in forests away from the edge, but I don't want to mess with the delicate balance here in the foreshore forests. But if I was planting this guild somewhere, I could inoculate the trees with usnea lichen, and plant licorice ferns on trees and appropriate rock faces, stumps, etc. In managed stands one could stand some of the forests fallen debris on end and create more "snags" and colonize them with licorice ferns which could be periodically harvested. In a sense we start "farming" the overstory.

Here in this wild place, I am surrounded by abundance. If we can learn all the uses of the wild plants around us, we can reduce our need to clear land for farms. We can learn to live in harmony with the places we live. We can surround ourselves with wild and semi-wild ecosystems. Like the indigenous people of long ago, we can learn to live from the resources in our area. We can become reinhabitatory. We can become native again. It is a matter of time - and a matter of heart. The Earth asks that we live our life as if we were going to live at this place for the next hundred generations.

Sharing the Abundance: A Resource Guide to Bioregional Self-Reliance in the Maritime Pacific Northwest.

A marriage of permaculture, organic farming and Native American resource management.

Once upon a time, there were no humans in the land we now call Washington, Oregon and British Columbia. Before the humans, the plants, the animals and all the other life forms worked it out on their own. Changing climates and lands emerging and submerging meant that plant and animals ebbed and flowed across the landscape. Subtropical, temperate, ice ages, hypsithermal period, etc. Plant communities changed slowly.

Humans arrived at some point and there is a debate how far back we go. Certainly at least during the last ice age. Humans had to learn this new place and its resources. Their effects on the landscape must have been small at first. Humans interacted with natural processes and vegetation/life patterns in various ways. Especially through the use of fire, humans changed ecosystems and relative plant/animal amounts. Indigenous people who live in an area for long periods of time (multiple generations) generally learn to make the landscape more abundant for them. For instance, in Puget Sound after the last ice age, there was a warm dry period where oaks and many more "southern" flora migrated north into the Puget Sound. Then a wetter, cooler climate forced this "warm" plant assemblage back south, except where the humans used fire to keep the douglas fir and wet forests out of the oak prairies. These human-fire maintained oak prairies were full of food, medicine and useful plants for the humans. For thousands of years the Indians kept the moist forest at bay with the use of fire. When white settlers arrived a whole new era began.

European settlers brought their livestock which grew fat on the camas and the food plant "gardens" that the native people had maintained over centuries. And the native peoples were not allowed to continue with their burning. The oak prairies were either plowed up for agriculture or development or the lack of burning led to invasion by douglas fir and moist forest flora. Today, the fire-maintained oak prairies are but a mere shadow of their former self.

Logging, agriculture, clearing, and development led to greater and greater changes in the landscape. Plant communities were pushed back to early stages of succession. Cleared

land became dominated by non-native plants. Agriculture led to an abundance of human food, but based almost totally on non-native plants. Over the decades, horsedrawn agriculture became mechanized farming and farms got bigger and bigger. Less farmers, larger farms, more monocultures, and more inputs from outside. Modern agriculture produces lots of food; but at a greater and greater price. Soils are depleted, ecosystems are poisoned; food becomes less nutritious, and people become estranged from the land and from each other.

Enter organic agriculture. Some people became aware of the problems of modern agriculture. There is a return of back-to-the-landers. Organic farming is young. Farms are small, adherents are idealistic. Tilth is born out of the movement for a sustainable agriculture. Gradually the organic movement matures. It becomes more acceptable. More money is involved. The numbers of organic farmers grow. Acreages increase. Some farms get big, others get out. Some farmers go organic for the money. Larger organic farms can still be based on monocropping, still rely on exploitation of labor; still be using mechanization and be reliant on energy and fertility inputs from around the globe.

One offshoot of organic agriculture is the permaculture movement. Permaculture is about setting up production systems that rely on on-farm inputs. Local food systems and self-reliant communities based on wise use of local natural resources which enable ecosystems to become more biodiverse and ecologically sound. Permaculture bases it self more and more on native plants. A goal is to set up self-perpetuating ecosystems which fulfill natural ecological functions as well as meets human needs. Sustainable self-reliance.

Two other movements which converge at this time are 1) the ecosystem restoration movements which aims to restore native plant (and animal) species diversity and abundance in the landscape; and 2) a cultural resurgence among native indigenous people (combined with an increased interest in ethnobotany and indigenous land management practices by non-indigenous people. These convergences allows us for the first time to begin designing systems which are based largely on native plants which give high productivity and ecological integrity. This new synthesis draws on the best practices of Native American land management, organic agriculture and restoration ecology. Our goal is fully-functioning ecosystems which are ecologically sustainable plus productive for humans. These systems are based on perennial plants to a high degree. They look wild for the most part. Humans once again can obtain a large part of their sustenance from hunter/gathering activities in a landscape full of food. This synthesis provide for humans, but at the same time meets the need of the native web of life. We can create a synthesis of old and new. Sharing the Abundance offers a peek at this process of change. It offers a peek at where all these movements are coming together to create a synthesis. It offers a look at the history of how we got where we are today and where we could go. The future can be abundant. If you are reading this book, you are likely working on being part of the solution.

May all be fed!

May all be free!

May the Earth be healed!

Ah Hoh.