I'm Larch Hanson and I've been harvesting seaweeds for food, medicine, and fertilizer for over 50 years, working sustainably within a 5 mile radius of my home cove on Gouldsboro Bay, Steuben. My commercial website is www.theseaweedman.com and my noncommercial website for education purposes is www.maineseaweedharvesters.org

I manage to harvest a year's inventory within a ten week period beginning the last week of April and ending the first week in July. I take apprentices to the work, and they receive $15/hour plus room and board. I tell them that "what you are witnessing in me is an old man's economy of motion."

Why?

When I harvest rockweed for fertilizer, I'm working at the rate of $180/hour. When I harvest food and medicine types, my hourly rate is several times higher than that.

I build my own harvest boats. There's no floating mortgage in boats or gear. There's a good ratio between fuel expended and product delivered to the customer. This year, I managed to harvest 50,000 pounds of seaweed using less than 20 gallons of fuel.

During the pandemic, when it was discovered that fucoidan in kelp acts as a decoy molecule in the gut, binding Covid-19 so it can be excreted, thus lightening the viral burden on a body that's in recovery, I sold $262,000 of seaweed via 6,000 transactions with customers who were very happy to get well and stay well.

When the nuclear reactors at Fukushima melted down, many of our customers were people who wanted a nonradioactive form of iodine so that their thyroids wouldn't be exposed to radioactive iodine. We collaborated with the physics department at the University of Maine at Orono to make sure we were free and clear of those radionuclides being emitted at Fukushima, and then we continued to do business whereas some seaweed companies on the west coast had to shut down their businesses. Since the situation at Fukushima is still the same, and the radioactive pollution continues, this is still a factor in our business.

This past weekend, I sent out a Constant Contact sales letter to 4,000 customers, and the open rate was 60% within two days. The average open rate for such a letter is 30%, so I must be doing something right. That sales letter generated $7,000 and counting. When I was a young man, I taught language arts. I also helped start an alternative school that placed older students in apprenticeships and job shadows with entrepreneurs and professionals in the community.

The Maine statute governing the cutting height of rockweed is in error. This wouldn't have happened except for the fact that I was excluded from the rockweed advisory committee to Patrick Keliher. I've written two pieces on rockweed, and once you comprehend them, perhaps you will revise the statute so that harvesters come to respect the importance of protecting overarching canopy habitat in the rockweed zone which is estuary —- food and shelter —- for 150 other species that inhabit that zone.

The real test of sustainability is whether or not the harvester can return to the same places year after year. It takes an apprentice a couple of years, returning to the same places, to catch on to the knack of observing and keeping a map with a journal. Please don't assume that you can impose this upon us harvesters from the top down. Real education happens through the discovery process, with apprentices working along side experienced, settled harvesters.

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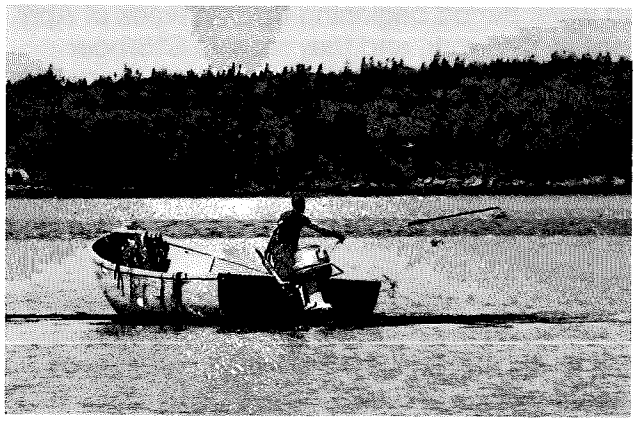
The Maine statute regulating cutting height of rockweed is *16" high and leave one side branch.*

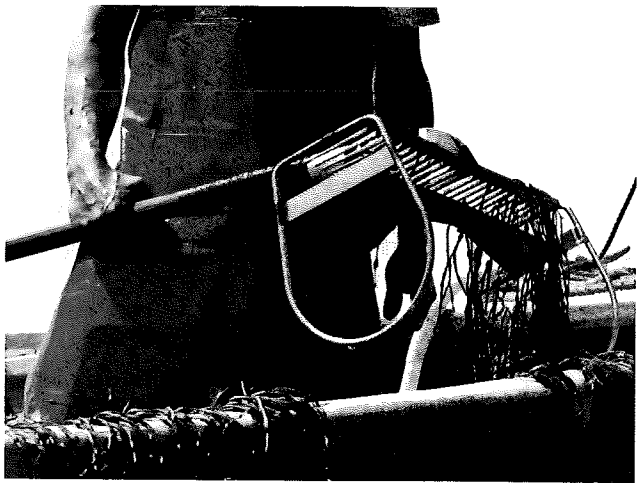
Now, just for fun, tell me what's wrong with these photos that document a rockweed harvester working for Acadia Seaplants Ltd. from Canada.



The harvester has removed the long handle extensions meant to give him depth control, and he has attached a rope instead. He is throwing the cutter rake at the rockweed beds, allowing the rake to settle to bottom, and then hauling back, effectively dragging bottom at whatever the guide on his cutter rake allows.

And what height does the cutter bar allow him to cut at? 5 inches!

"How much do you get paid?" we asked him. "$46/ton," he replied. "How many times do you have to lift it?" "Twice," he replied, "once into the boat and once out." "So that means," I said, "that you're getting paid $23 per ton of lifting." "Huh," he said, "never thought of it that way, but I guess you're right." "How many tons can you rake?" I asked, and he replied, "Two tons on average." "So that means you make $92 per day?" "Yep." "Do you know how much I make when I harvest, dry, mill and box up a ton of rockweed? Takes me 10 hours.""How much?" "Eighteen hundred dollars." "No way! You mean you make $180/hour?" "Yep. Come see me, and I'll show you how."



This fellow was an exploited worker. He drove two hours from Bangor to get to his work, spent six hours on the water, then drove two hours back to home where his wife and two children were living in poverty on food stamps. Ten hours of his time, $92 to show for it, minus mileage expenses which, this year, would be $84 according to IRS. Will he know enough to avoid paying IRS?

So what "educational requirement" would you impose on this man, if you could? Anything about "working smart"?

An Authentic Relationship to Rockweed (source: www.maineseaweedharvesters.org)

An Authentic Relationship to Rockweed at the Local Community Level

During my boyhood in Minnesota, my Grandma Betsy was a clear soul guiding my life. She had all of her original teeth, she lived to be 104, and she remained clear throughout her life. I once asked her, "What was it like, living on a farm during the Depression?" She replied, "Well, we could grow a cash crop, but there was no money in circulation, so it was difficult to sell a cash crop. If a farmer was mortgaged to the bank, he lost the farm. We weren't in debt, and we knew how to grow a garden, so we survived. Some farmers who weren't in debt nevertheless didn't know how to grow a garden. They had relied on cash crops, buying their food from the stores. They had to learn how to grow a garden and put by food for the winter. That's what it was all about, living in the country."

Grandma knew I was headed for college, but she also knew that college didn't offer much in the way of practical skills, so while I was in grade school, she taught me how to care for a garden. What a great gift that was! When I arrived in Maine in my mid-20's, I called her up. Grandma asked, "How is your garden?" I replied, "I've got stumps. I just cleared forest." "Oh," she said, "that's not good." "Grandma, I know that when you were a little girl, you went by covered wagon from a homestead in Iowa to a new homestead in Minnesota. That first winter on the open prairie on a new homestead, what did your dad do? He had to build shelter, right? He didn't have time to bust sod." "You're right," Grandma said, "my dad had to build shelter or we would have frozen to death. I had seven brothers and sisters. My dad didn't have time to bust sod. He cut prairie grasses and piled them fifteen inches deep on top of potatoes that we just laid on the ground, and the potato vines grew up through the grasses as the grasses settled to about three or four inches thick, just enough to keep the sunlight out. In the fall, we raked the grasses away from the vines, and we had the nicest crop of potatoes. We ate potatoes all through the winter. It wasn't much fun, looking at the wheat seed and knowing that we couldn't eat it. We had to wait until Dad could plant it in the spring and grow a crop. That's why we eat lefse made from potatoes at Christmas to remember and honor the pioneers for what they endured.....so that today you can be the spoiled brat that you ARE! (Lefse is like a Norwegian burrito wrapper made from 90% mashed potatoes and 10% wheat flour.....just enough gluten to make it hang together so that the pioneer could use it to wrap up whatever else s/he managed to hunt or forage.....and oftentimes lefse was simply buttered and sprinkled with a little sugar and cinnamon, making it a meal in itself.)

After that conversation with Grandma Betsy, I went down to the shore. It was May, and the sun was warming the soil around the stumps in my soon-to-be-garden. I decided to plant a potato garden atop the forest floor, covered with rockweed, in honor of Grandma Betsy. It worked! Next year, I yanked out the stumps, and I was able to work the rockweed into the soil and plant coarse seeds like peas and beans. By the third year, I had adjusted the pH with lime, and I had fine enough soil for greens and root crops. I discovered that bedrock was just a foot below the surface. There was no way to go but up. Today I have a fine raised bed garden, the result of hauling rockweed up the hill away from the water for over 40 years. Later I recognized my soul brothers and sisters living on the ledges of the Aran Islands off to the westward of Galway, Ireland. For centuries they have hauled rockweed to create the soil of their islands.

Grandma Betsy had taught me how to make contact with nourishing plants and make thrifty use of them, and now I continued in that tradition. Since that time, I've learned how to integrate rockweed into the garden by making compost. A compost pile made with rockweed requires aeration. Otherwise the process

will bog down. At the end of June, I have a lot of comfrey plants. They have bloomed and attracted the pollinators, and now it's time, while summer heat is upon us, to make compost. We cut the comfrey and interlayer it with rockweed. The fibrous stalks help to create channels to introduce air into the compost pile. Later in the season, the stalks of jerusalem artichokes and sunflowers can serve the same purpose. I've discovered that when I make compost in this way, I don't have to turn the pile to aerate it. I can simply come back to the pile a year or two later, and it will have matured and finished into dark black compost.

What is the function of rockweed in the ecology of coastal soils used for growing gardens?

Let's take a circuitous approach and consider a farming system that has survived for over 40 centuries, a terrace system in China. Somewhere in a terrace system, there is a pond that collects nutrients at bottom. The pond has carp and waterfowl, and sometimes there's a hog shed with a slatted floor atop pilings driven into the pond. "Nutrient dense muck" doesn't begin to describe what's at the bottom of the pond! Every ten years or so, the farmer drains the pond, composts most of the pond plants, and hauls the muck to the top terrace. Over the course of the next decade, the nutrients are washed back downhill by the rainfall. One day it occurred to me that the muck pond I work with is Gouldsboro Bay, and the nutrients I haul uphill are trapped in the rockweed at the edge of the pond. In Maine where there is a lot of rainfall, there is also a lot of leaching of minerals from the topsoil. The need for replenishment of trace minerals is very high. Therefore public policy should encourage the local use of rockweed on gardens. The shortest hauling path might very well be cooperative harvesting and composting at locations just above the high tide line. Since 15% of the adults and 27% of the children in Washington County where I live experience food insecurity and malnutrition, the right thing to do would be for the community to collaborate with upland owners to make rockweed available to all gardeners in the town as compost or dried/milled product. When that need is met, then harvesters can collaborate with upland owners to market rockweed fertilizer more widely. (Incidentally, a tabletop hammermill is available from a local machine shop for approximately $3,000 and a seaweed dryer can be built for approximately $2,000. I built a scowbox for harvesting for $1500. A co-op of harvesters could share community tools and barter with gardeners for vegetables or market on the internet for cash.)

I'm in the position to haul nutrients to my compost pile, ship dried rockweed to fertilize your garden, or I can supply you with dried seaweeds for your kitchen. The choice is yours: you can place dried rockweed in the furrow when you sow seeds, or you can place it underneath transplants. It will stimulate healthy root systems; it will accelerate a compost pile. You can also take the most direct path and use various Soup Mix blends of kelp, alaria, digitata, and dulse in the kitchen to provide iodine, trace minerals and fucoidan (an anticancer compound found in kelp, alaria, digitata) directly to your body.

Seaweed harvesting, done right, is a community activity, and the overall guiding motto is that "it all turns on affection". If this is missing, it's time to have a talk about the Four Promises of Love:

1. I will be a dependable person for you.
2. I will support your individual growth and differentiation apart from me.
3. We will remain immersed in the realm of affectionate talk and sensuous touch.
4. We will transcend gender differences and focus our relationship in the realm of the heart.

Larch Hanson www.theseaweedman.com email: hanson.larch@gmail.com

Everything You Need to Know About Rockweed (source: www.maineseaweedharvesters.org)

The true value of rockweed (ascophyllum nodosum): Rockweed is an overarching protective canopy habitat for 150+ other species that rely on it for food and shelter. 90% of the plants in the intertidal zone are rockweed. Here's what you need to understand about the morphological changes in rockweed: The distance between vesicle swellings on the stems of rockweed is the distance that it grew in a year. In most places, that distance is 3-4" per year. In other words, rockweed grows very slowly. The only time it grows more rapidly is if a plant is cut down to bottom, leaving the holdfast. The plant has a response to trauma, and it may grow a number of shoots, 7-8" long, in the first year. After that, it settles back to its normal growth rate of 3-4" per year. It takes a decade for the plant to reach three feet tall, and when the plant is in this form, half of its biomass is below midline, half of its biomass is above midline. In other words, it's "bushy" in appearance. In the second decade of its growth, rockweed grows six feet tall, and its appearance is similar to a mature maple tree, that is, half of its biomass is in the upper third of the plant, up there in the sunshine, and the lower two thirds of the plant is not bushy but rather appears to taper downward to become just a few anchoring stems at the holdfast. At this stage of its growth, rockweed is like a climax forest habitat with an overarching protective canopy.

When humans utilize rockweed, its main use is fertilizer. No traditional seafaring culture has ever developed a recipe for human consumption because it contains bitter alkaloids (to ward off snail grazers) that signal anyone with primitive common sense to avoid it. However, there are unethical seaweed companies that continue to throw rockweed into the food mill, making "hot dogs of the sea" that are sometimes labeled as "kelp blend" or not labelled at all. They do this because rockweed is plentiful and cheap, and by calling rockweed "kelp" they can get a larger market share on the internet. The best way to avoid this food adulteration is to buy products that are whole leaf or at least large enough pieces so that you can verify the identity of the plant. In my business, I make Soup Mix blends using a hammer mill screen with ¾" holes and nothing finer. That way, customers who have already purchased 6" lengths of whole fronds from me in the past can identify the fragments and judge the quality.

Rockweed grows in the intertidal zone between the high tide line and the low tide line. The Law Court is the highest court in Maine, and this court has awarded ownership of rockweed to the upland owner. This is a good decision because now the person who lives with the plants can be educated to carefully observe and protect the plants as overarching canopy habitat and also harvest them sustainably for fertilizer. My method for judging the presence of healthy overarching canopy habitat in a rockweed bed is to paddle through the bed when there's three feet of water covering the bed. If I see a lot of plants splayed out on the surface, that's an indication of healthy climax habitat. Working with the same shoreline for 50 years, I've discovered that I can harvest one wet ton of rockweed (50 bushels) per 150 feet of shoreline per year and still retain healthy overarching rockweed canopy habitat. Since my town of Steuben has 20 miles of shoreline, that means the town has a resource of 700+ wet tons. In my business, I'm able to harvest, hang, dry, and mill a wet ton of seaweed in ten hours, and the end result is that I will realize a gross income of $1,800+, selling it in ten pound boxes to gardeners on the internet. In other words, the upland owners of my town now hold title to a sustainable resource that's worth $1,000,000+ if they can educate a generation of gardeners and entrepreneurs who understand that people don't just buy a product.....they buy a story. For the residents of Steuben which is in Washington County, what is that story? Well, for starters, 15% of the adults and 27% of the children in Washington County are described as "experiencing food insecurity". Translation: from time to time, they're not sure where their next meal is coming from. Rockweed builds soil for gardeners!