



# TO MAR KET

FOOD • PEOPLE • POLICY

NO 3  
ON





# FROM SPORE TO SALAD

BY KATY KELLEHER  
PHOTOS GRETA RYBUS

Seaweed is being hailed as the next "super food," thanks to its nutritional value and naturally crave-able flavor. Meet two East Coast pioneers who are cultivating this great oceanic crop.





**THE LIFE CYCLE OF KELP, LIKE COWS AND chickens and people, begins with the purposeful stimulation of reproductive tissue.**

“It’s really easy to identify the stuff,” says Peter Fischer as we stand in the lab at the University of Maine’s Darling Marine Center in Walpole, where he and his business partner, Seth Barker, start the seaweed they will grow at their nearby Maine Fresh Sea Farms. “Wild sugar kelp that is ready to reproduce has spongy patches of sorus tissue—that’s what they call the reproductive cells.”

We’re surrounded by massive fish tanks filled with clear, mineral-fortified seawater, in which are suspended cylinders covered with fuzzy brown growth. Grow lights hum faintly around us as Fischer describes the process by which he and Barker collect their ribbons of edible kelp.

After identifying the ready-to-spawn kelp, Fischer and Barker bring it back to the lab, where they “encourage” it to begin going through its reproductive phase. “You get it to release spores into the water by putting it under a little bit of stress,” he explains. The reproductive portion of the sugar kelp is stored in a dark container at 50 degrees for 24 hours. Although the kelp stays wet, being out of water for this long causes it mild discomfort (as does keeping it away from sunlight), which makes it want to procreate. After a day has gone by, Barker

and Fischer add a small amount of seawater to the kelp container, which causes a nearly instantaneous release of spores. “Next, we take the spore-laden water, put it into a tube, and immerse a bare spool of twine in there,” Barker says. “If all goes right, in 24 hours, we’ll have spores [which are actually called meiospores] attached to the twine and the beginnings of seedlings.”

He reaches into the tank and pulls out one of the cylinders. Removed from the water, the spongy little tendrils of kelp lie flat on the white rope, like wet brown hair plastered to an arm. These, Barker says, are the beginnings of an edible kelp harvest.

I realize I’m not making edible seaweed sound particularly appetizing. Even later, when we’re all grouped together on their boat, out in the blustery cold of the outer reaches of the Damariscotta River and Barker hands me a sliver of raw seaweed, plucked fresh from the source, even as I eat the freshest vegetable I could ever imagine, crunchy and raw and bitter cold, it *still* isn’t terribly appetizing. It’s like chewing a tough piece of frozen, iodine-flavored kale. It’s interesting more than anything else. (Try telling that to Barker. When asked about why he chose to pursue a career in seaweed so late in life, he says, “I fell in love.”)

While my palate wasn’t immediately thrilled by seaweed, I keep returning to the crop.





To learn more, to read more, to get closer to its source. This sea vegetable, grown under the waves and pulled into the daylight by rubber-clad hands, strikes me as rather miraculous with its millions of spores, downy spools and the slippery abundance of its full-grown reach. It is futuristic and primitive at once, both a trendy new “super-food” and an ancient source of nutrients. And as I learn soon enough, seaweed can be insanely delicious, if you shift your expectations slightly.



“If you took nori away from us, we would just be floundering,” says Mike Wiley, chef and co-owner at Eventide Oyster Bar in downtown Portland, Maine. He smiles, a half-quirk that lifts one side of his face, before barreling on. “Nori is a huge part of what we do—especially our nori vinaigrette. We serve dashi constantly in one form or another. Seaweed makes its way into many of our broths. We also use seaweed sheets almost like a hot dog casing to hold together various parts of fish—we poach it and it tightens up as it cooks and hydrates. We joke a lot about taking really nice local

meat and vegetables and making it taste like gas station food. But we do that because we *want* that acidity, and a ton of salt and fat and richness.”

Wiley’s desire to junk-ify fine ingredients makes perfect sense to me. The body craves certain tastes, textures and flavors. Some scientists believe we’re hard-wired specifically to enjoy the tangy *umami* flavor found in MSG and many proteins. I pose this idea to Wiley, and he agrees.

“It’s delicious, it’s natural,” he says. “That flavor is in so many of the things we love—all the things that are really crave-able and savory have MSG: beef jerky, parmesan cheese, salami.” And, he adds, if you study the structure of certain vegetables, like tomato seeds and shiitake mushrooms, “You’ll find a ton of MSG in there, too.”

Not only will you find MSG in seaweed, but the edible waterweed also played a key role in the discovery and isolation of the chemical compound. In 1908 Japanese scientist Kikunae Ikeda decided to embark on a quest to figure out what made his wife’s dashi (a ubiquitous soup base made from

kelp) so delectable. He knew the flavor he tasted was “common to asparagus, tomatoes, cheese and meat but ... not one of the four well-known tastes,” as he wrote at the time. He was the first to label the elusive flavor *umami*—which has been translated from Japanese as “deliciousness,” “yummy” or “a pleasant savory taste”—and headed into the lab to begin looking for the underlying structure of this piquant sensation.

Within a year, he had isolated the compound and created a crystalline form of MSG that gave a kick of *umami* flavor to other foods. He called his creation “Ajinomoto,” which means “the essence of taste.” (Scientists call the compound L-glutamate, a more accurate, albeit less romantic, name.)

But even though kelp and its ilk have contributed so much to our modern food culture, we don’t often pause to consider the seaweed.

“It’s pretty strange,” Wiley muses, “that seaweed remains a tough nut to crack.” It is flavorful and nutritious, and when prepared right, it can transform a dish, bringing a unique vegetable flavor and vivid salinity to the plate. But seaweed suffers from the same fate as many organic foodstuffs. Wiley says, “The problem is, people don’t want to pay a lot of it, but a lot of labor goes into it.” Wait, it does?



As a child, I used to pick seaweed up off the beach and munch on it, pretending I was a marooned sailor or an indigenous rascal. I spent summers on Cape Cod, limbs tanned and hair blonde from salt and surf. Seaweed was a part of the scene, as expected as inner tubes and as uneventful as sand in my bathing suit. It’s hard to understand why a plentiful vegetable like this would be expensive. Shouldn’t it be as cheap as hay?

Unfortunately, seaweed farming is a labor-intensive practice. While wild harvesting seaweed is slightly cheaper, we run the risk of depleting seaweed beds and harming the ocean ecosystem. “When we first started, we got to know Shep Erhart, owner and founder of Maine Seacoast Vegetables [a certified-organic harvester, processor and aquaculture farm in Hancock, Maine],” recalls Fischer. “He said right away, ‘There’s a bigger market out there, but if we keep





"I CONSIDER THIS  
WHOLE SEAWEED THING  
JUST ANOTHER FORM  
OF FISHING...  
IT'S JUST A  
DIFFERENT SPECIES."





trying to satisfy the market with just wild stocks, we're going to overharvest.”

“We’re never going to be cheaper than wild stuff,” says Barker. “But the benefit is that we can produce a more sustainable product.” Farming also gives them more control over the product, since each harvest is grown in the same part of the water.

As of 2016, Maine Fresh Sea Farms is a certified organic aquaculture farm. “We had to meet a certain number of protocols,” Fischer says. “For instance, we had to be so many miles from a major harbor or from a sewage output.” According to the Maine Organic Farmers and Gardeners Association (MOFGA), which certified Maine Fresh Sea Farms last year, cultured sea vegetables also have to be grown 20 miles from any nuclear facility, three miles from commercial boating facilities, industrial wastewater discharge areas, city or town sewage discharge and major harbors. In addition to these “buffer” regulations, MOFGA prohibits the use of any fertility and crop

nutrient applications on outdoor growing areas (some can be used in the lab, but only specific types and in regulated amounts).

While there have been wild harvesters selling their seaweed on the East Coast for centuries, the move toward large-scale seaweed farming has begun to spread beyond Maine and into New England. David Blaney, of the Point Judith Kelp Company in Rhode Island, started out as a wild harvester before deciding to make the switch to aquaculture.

“My first crop will be coming in in just a few weeks,” he says, as we talk by phone in late December. He’s looking forward to transforming his business from a foraging operation to a more stable farm. “Farming will allow us more control over our product and to offer a bigger variety of species,” he says. “Wild harvesting is expensive, and it’s dangerous. The area I work is about a mile from the coast—it’s rocky, it’s slippery and it’s very cold, because the best seaweed grows in the wintertime.”

Before starting his seaweed business, Blaney spent decades working as a fisherman. “It’s my family trade,” he says. “I was born into fishing. My family was successful in the fishing industry, but it’s getting difficult. It’s becoming nearly impossible to make a living as a fisherman in the tradition I was brought up in.” However, he can’t imagine leaving his offshore office. “When the ocean isn’t trying to kill you, it’s so amazingly beautiful.”

Seaweed farming seems like a fresh new way to work on the water without worrying about overfishing. “I consider this whole seaweed thing just another form of fishing,” he says. “It’s just a different species. Fishermen are very innovative. They’re always looking for new markets, new species and new stuff that’s just lying around.”

Dan Martino of Cottage City Oysters in Oaks Bluff, Massachusetts, points out a benefit for consumers of local sea vegetables, even if they do come with a slightly higher price tag than the imported stuff. “The fact is, we import over 90% of our seaweed from China or Japan, and a lot of it is tainted by pollution. It’s not good stuff to ingest. We should be eating American seafood in general,” he argues. “We have the cleanest water on the planet.”

Furthermore, seaweed, like oysters, helps to naturally clean the water, pulling excess nutrients like nitrogen and phosphorous out of the ecosystem, thus helping to keep fish populations safe from harmful chemicals and fertilizer runoff. Scientists have also found that kelp can help serve as a “buffer against ocean acidification,” Martino says, “like how trees release oxygen into the air, the kelp is releasing a carbon base into the water that helps lower the pH.” This is a good thing for shellfish, since water with a high level of acidity can dissolve their shells, killing off biologically necessary (and damn tasty) species of mollusks and crustaceans.

For these reasons, and because sea vegetables are “really truly delicious,” Martino believes that “Seaweed will be the next kale. It will take off. Everyone will start to eat it.”



A few weeks after leaving the Darling Marine Center, I find myself in the kitchen with a package of dulse. The dried seaweed is the



same color as dried blood. It's intimidating and a little grotesque in its package. But after hearing such high praise for the plant, I'm determined to make something of it.

An hour later, I have a pot of hot, steaming dulce and miso soup. I throw in chunks of smoked tofu, chop fresh scallions and grate

ginger over the top. I sit down at my kitchen table, 20 miles from the sea, to eat this bowl of ocean bounty. As I lift the spoon to my mouth, I breathe in the scent—brine and spice, ocean and land. It tastes like a place, like the wild coast of New England. And then, I think, I finally get it; like so many others, I've been seduced by seaweed. **TM**

