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Julie Kuchepatov [00:00:03] Three generations hit the road to explore key seafood producing regions across the US and hear from people working at the intersections of fisheries, aquaculture, seafood, and conservation but grappling with the effects of the global climate crisis. We may represent three generations, but we have a lot in common, namely, a love of seafood and a dedication to contribute to the community driven generational effort in movement towards climate justice.

Cameron Moore [00:00:37] The results of these travels? Welcome to In Hot Water, a Climate and Seafood podcast series. Join us.

Julie Kuchepatov [00:00:42] Julie Kuchepatov, Gen X.

Crystal Sanders-Alvarado [00:00:45] Crystal Sanders-Alvarado, Xennial

Cameron Moore [00:00:46] And Cameron Moore, Gen Z, as we travel the country and chat with people who share the challenges facing their regions and their personal stories. Along the way, we experience some moments that make us ask "What the fish?" as we try to understand why we are in hot water and what we can do about it.

Crystal Sanders-Alvarado [00:01:01] We started the series in the Lone Star State, Texas, with a visit to the Coastal Bend along the Gulf of Mexico. One of the most important offshore petroleum production regions in the world, making up one sixth of the United States total production and a critically important source of seafood, supplying more than 40% of the U.S. domestic seafood. In the second series, we traveled to Maine, where we crisscrossed the state, starting with the bustling hub of Portland, making our way Down East and ending with a visit to the Passamaquoddy tribal lands. Fishing in the Gulf of Maine generates nearly $4 billion annually and supports up to 100,000 jobs. And also, there's a growing aquaculture sector. Maine's identity is intricately tied to the lobster fishery and with the Gulf of Maine warming faster than 99% of the ocean, this way of life is in jeopardy.

Julie Kuchepatov [00:01:46] In previous episodes, we talked about the aquaculture industry in Maine and that some lobster harvesters are diversifying into kelp farming. Join us as we dive deeper into understanding the growth of Maine's seaweed sector, which includes both wild and farmed seaweeds, while asking are seaweed climate solution?

Jaclyn Robidoux [00:02:03] My name is Jaclyn Robidoux and I work for Maine Sea Grant and University of Maine Cooperative Extension. Maine Sea Grant is a university-based program under NOAA, and we do research extension and education. I work on the extension team and so what that looks like is kind of the boots on the ground for translating science to people and then also back again. My background is in marine biology, so I went to the University of New Hampshire for marine biology, and I always thought I was going to work with like octopus or sharks or something. But then I was really drawn to the people side of seafood and the oceans, which is kind of seafood, and did some work in aquaculture with seaweed and I was just really taken by it, seeing that it was this amazing resource that we had, that it was growing here. People were interested in farming it, but it wasn't at the time a very popular thing. We did not have many seaweed producers. This was probably seven years ago, so that was a bit of a new space. We had folks who have wild harvested it for many years, but the farming side was pretty new, so

saw kind of an opportunity there to a. Work with people and get out of the lab and then b. Work on something that was a new space for the state.

Julie Kuchepatov [00:03:21] How is that been evolving?

Jaclyn Robidoux [00:03:22] It has evolved so fast. I mean, like even in the time that I have been in this position, which is five years, we went from having 3 or 4 commercial seaweed farms to now 40, over 40. And we've seen developments across the supply chain too, so it's not just the farms. We've seen advancements in nurseries and then processing new products. So, there's this whole like blooming industry around seaweed in the state, which is really, really cool and has been happening like before our eyes.

Julie Kuchepatov [00:03:54] Are there models that you can look towards to support how that growth happens in a sustainable way, or are you just learning on the go?

Jaclyn Robidoux [00:04:03] A little bit of both. Our wild harvest seaweed industry here has existed for about 50 years commercially and even further back before it was a commercial product. And so, they, our wild harvesters have set a really good example of what a sustainable business and sustainable natural resource-based business looks like. And there's a lot of overlap there. Many of the early pioneers in the aquaculture, the kelp aquaculture, space were also seaweed, wild harvesters. So, there's a lot to be learned there and there's a lot to be learned from other countries when it comes to farming seaweed because we are, in some cases thousands of years, behind the rest of the world that has been farming and using and eating seaweed for years.

Julie Kuchepatov [00:04:48] What's an example of a country that's well advanced?

Jaclyn Robidoux [00:04:51] An example would be like South Korea, where they have really well-advanced seaweed farms and seaweed industries but other places around the Pacific, like Japan and China, have been farming seaweed for thousands of years.

Julie Kuchepatov [00:05:04] Do you have exchanges with farmers, international ones or.

Jaclyn Robidoux [00:05:08] We do a little bit, and it's definitely something that I would love to see more of because there is so much to be learned. We've had Maine farmers and businesses go over to South Korea pretty recently and go out to places in the Faroe Islands, other places around the globe to kind of learn and everywhere does it a bit different. Maine is still unique, but there's a lot we can learn from other countries.

Julie Kuchepatov [00:05:33] So the farmed seaweeds there, you mentioned nurseries, so are they native to the area? And there's nothing new that's introduced, right? Is that, that's kind of a best practice, I would assume.

Jaclyn Robidoux [00:05:45] Yeah. Right now, we have at least for Maine and every state is different. I should mention that Maine leads the U.S. In seaweed farming right now, so it's an additionally a really exciting space to work in here. And all of the seaweed that's farmed in Maine has a parent that is from Maine waters, usually pretty local to where the farm is going to be. The nurseries go through the process every year around August, September, October of getting that wild stock and then producing little seed spools which have thousands, millions even of kelp babies on them that then get returned out to the farms.

Julie Kuchepatov [00:06:22] There's also a strong wild seaweed industry in Maine.

Seraphina Erhart [00:06:26] My name is Serafina Erhart and I manage Maine Coast Sea Vegetables on behalf of its 20 employee owners at this point. But I am also the second generation of this company because my parents started it in our kitchen before I was ever born.

Julie Kuchepatov [00:06:42] So how long ago was that when they started it?

Seraphina Erhart [00:06:44] They started it in 1971, a little bit by accident. They had become macrobiotic eaters for health reasons in the 70s, which basically meant they were eating a lot of food that was seen as medicines, maybe too strong of a word, but a way of helping heal the body. Calibrating so that your body is functioning at its best. And seaweed was a big part of that because a lot of that thinking came from eastern cultures. So, they were spending more of their very limited dollar value on getting seaweed from Asia when they would go to Boston on occasion. But my mother is a huge gardener that came here as part of the Back to the Landers 70 movement. The Nearings, which a lot of people know were part of this community and a big part of why a lot of people moved here. That's why MOFGA exists in a lot of ways, if you dig all the way down or Johnny Select Seed or a lot of other really well known, unique culture of Maine. Anyway, she reads a lot. She gardens a lot. She's a little bit of a forager on her own and she had read that there were no macroalgaes, large seaweeds, that grew in the Gulf of Maine nor in cold Atlantic climates that were poisonous. So that's one piece. And they saw something that looked very similar to what they were already eating. So, the first seaweed that was harvested is what we sell is Alaria, which is the genetic cousin to wakame. It's a little bit different in that it's got a mid-rib, but nutritionally and flavor wise is pretty similar. And they were eating a lot of miso soup with wakame in it. So, it started there. They brought it home, dried it in their kitchen. Seaweeds, especially the big brown kelps, have like a 10 to 1 water to dry ratio. So, a lot of moisture to remove all the wallpaper peeled off their old farmhouse.

Julie Kuchepatov [00:08:43] When they were drying it.

Seraphina Erhart [00:08:44] When they were drying it in their kitchen because there's so much moisture in the air.

Julie Kuchepatov [00:08:48] That's hilarious.

Seraphina Erhart [00:08:50] It's spread from there that they my father was working at the local natural foods market. I'm sure that had a piece of it. They started sharing it with friends. We found it recently and I believe 1972, they put an ad in something called the East West Journal, which was a macrobiotic monthly newsletter that came out, and it said something along the lines of, you know, send us $5 and we'll send you a pound of seaweed.

Julie Kuchepatov [00:09:16] Wow.

Seraphina Erhart [00:09:17] And that included shipping.

Julie Kuchepatov [00:09:18] Wow. Well. Times have changed and the prices have changed. Yes. Amazing.

Seraphina Erhart [00:09:25] And it you know; a lot of things happen from there. I think the next really big benchmark in their evolution was that in 1975, there was an international or maybe it was a world vegetarian festival at the University of Maine, Orono, which is only about 50 minutes from here. And they took a blanket and a bunch of product and sold out. And people were like, oh I can buy this here. This comes from close to where I live. I think that was a turning point in their awareness of people's interest as well.

Julie Kuchepatov [00:09:58] So they just started the business.

Seraphina Erhart [00:09:59] Effectively? Yes. There's a lot to starting a business, of course. Yeah, of course.

Julie Kuchepatov [00:10:05] But then were they nervous? Like your mom was like, Hey, these are kind of similar, the Alaria to the wakame. Was anyone scared?

Seraphina Erhart [00:10:12] That's not really in their genetics.

Julie Kuchepatov [00:10:14] To be scared. They're just going for it.

Seraphina Erhart [00:10:16] You know, I mean, I'm a forager in my own right, too. I think you get to a point where you know enough to be comfortable to try it. Maybe you're not going to eat a lot of it as a whole meal. But we'd never recommend that for seaweed anyway because it's such a highly nutritious food. You can make yourself sick with just too much iodine or it's a unique protein and some people can't digest it. So, you don't want to eat a full pound of anything that you've never tried before?

Julie Kuchepatov [00:10:44] Sure. So, there is the thing is eating too much seaweed.

Seraphina Erhart [00:10:47] For some people. Yes. Yeah. I've had no employees really excited. It tastes so good to them. Their bodies are clearly craving it. Then I have to send them home halfway through the day because they feel nauseous and have overdone it. And so, we always suggest to people to start slow. If for no other reason than it really is a unique protein and not everybody in the U.S. in particular has the enzymes to digest that.

Julie Kuchepatov [00:11:10] Interesting. That's an interesting characteristic, I guess. Yeah. So back to your parents, they essentially sold out that first farmers market and then decided to, of course, invest time and energy into building a business.

Seraphina Erhart [00:11:23] Yeah, it was I think fits and starts, right? So, seaweeds are a seasonal, I'm going to use the word plant, but that's not scientifically accurate but for the sake of conversation, it's the best way to talk about them. So, like your garden and so many other things that we eat, they have a seasonality and there's a seasonality in which they're best to be harvested. So, in some of those early years, they were trying to go out in February in Maine and harvest to place in order. That's not realistic.

Julie Kuchepatov [00:11:52] That sounds cold.

Seraphina Erhart [00:11:53] Yes, course, inhospitable, hard to dry. So many reasons. So, there was learning curves around stuff like that. They eventually got to the reality of needing the harvest during the season, which for each species varies a little bit, but roughly between May and October you're going to get all of them and each one has maybe a three-month best season and then figured out how to have sales all year round.

And to this day, 50, we're on our 53rd harvest season this year, we're still working out the kinks on the balance between harvesting in a short season and then figuring out how to adjust our sales to whatever the season brought us. Demand has really nothing to do with how we sell or because we can't necessarily generate more, right, just because somebody wants more of it, right?

Julie Kuchepatov [00:12:51] Well, so first of all, what are your products and then how do you sell them?

Seraphina Erhart [00:12:55] We sell eight species of seaweed, primarily from the Gulf of Maine, although we do sell a couple of things that are coming from Iceland. So, we talk about it as the North Atlantic, so-called clean waters, right? Actually, not all that far away geographically. We started with four and we were just selling dulse, which here in Maine is Palmaria palmata; Alaria, which in Latin is Alaria esculenta. What's now being called sugar kelp. It has changed Latin names in its last, in the last decade, actually. It used to be Laminaria longicruris and now it's Saccharina latissima. Saccharina being the sugar aspect of it, which is what's been mostly farmed here in the States. And then laver or Wild Atlantic Nori, which is a Porphyra species. So, as a whole plant, they're big and beautiful, but for a lot of people intimidating in terms of knowing how to use that in their kitchen. It's kind of a I'm realizing it's where I have realized that it creates a little more specificity about who your customer is when you're just trying to sell it that way. So, in the 80s, they moved to grinding some of that and making a seasoning shaker, which is a way of adding flavor to a lot of foods, a little bit of nutrition and getting that seaweed taste. I think as we've evolved as a company and we're trying to share our love of seaweed with more and more people who are maybe not as curious or super skeptical even, thinking about it more like an herb from the sea is an approachable way of handling seaweed in your kitchen and recognizing that you maybe wouldn't use basil in everything that you eat, even though it might be your favorite flavor. You can look at all the seaweeds in the same way. We get asked you all the time, What's your favorite? What's the best flavor? What's. It's a personal preference. They all taste different. You're going to appreciate them for different reasons. Maybe because your body knows that the particular nutritional profile of that is what you need more of. Maybe it's just your how your palate is. Who knows? We also have a lot of customers who choose to eat seaweeds for their nutritional profile. And we get a lot of questions that we can't legitimately answer that are treating seaweeds more like medicine, which I understand and if you do a lot of reading and even in our own history of how we got started makes sense. But at the end of the day, we sell food and part of the idea of macrobiotic eating is that this whole plant brings a lot more than any one nutritional part of its aspect that you might have tested for and say, I'm eating this because of the potassium content. Well, you're getting a whole bunch more things, right? So, we dance around that a little bit. We know it's an important part of why people are eating seaweed. It is an important part of how it's going to be key to our future because a little bit of product has a lot of nutritional value for a growing population. But it's a food at the end of the day for us, Yeah, it's being used for lots of other things obviously, but we have expanded over the years into also selling the one green seaweed, which is sea lettuce, Irish moss, which is another red seaweed that's a little bit like a Brillo pad. Most of us know it for its characteristic of carrageenan, which is what's in a lot of ice creams, nut milks, toothpaste. Most of us come in contact with carrageenan every day in some format in our lives, whether we know it or not. We did talk about rockweed, but not as something that we sell right. So, Ascophyllum. And then there's something else called Bladderwrack or fucus and that again is, what we consider a less culinary seaweed, but it's got a lot of great nutritional value, and it has a heritage in things like thalassotherapy, so using both seaweed in baths

and really good for your skin or hair. I know customers who really enjoy making a tea with it.

Julie Kuchepatov [00:17:08] So when your mom and dad went and started foraging for seaweed, were there any regulations or was it just the Wild West and then that kind of caught up? I'm assuming there's regulations now about what you can take, where you can take it. And I actually don't know, so I would love to hear a little bit about that and kind of the evolution of the policies and regulations about going out and foraging and then selling it. What kind of license do you need?

Seraphina Erhart [00:17:34] So you do need a license here in the state of Maine. If you're Maine resident, you can harvest up to 50 wet pounds a day for yourself.

Julie Kuchepatov [00:17:41] 50 wet pounds a day. What does that mean? What's a wet pound.

Seraphina Erhart [00:17:46] So, I sell dry pounds.

Julie Kuchepatov [00:17:49] Okay. I see. Okay.

Seraphina Erhart [00:17:51] And when it comes out of the water, it's a wet pound, right? So, like I said before, the sugar kelp, for example, has an average of a 10 to 1 ratio. That's about five dry pounds of product.

Julie Kuchepatov [00:18:01] Gotcha. Okay.

Seraphina Erhart [00:18:02] Which could be a really good years' worth of supply for somebody.

Julie Kuchepatov [00:18:06] Right.

Seraphina Erhart [00:18:07] I'm sure there are people, I know people who do that, but that is obviously not a way to make a living here. So, if you harvest in the state of Maine through the Department of Marine Resources, you buy a license. And I believe it's still $50 with the state but I would be remiss in being sure of that since I have owned a license in my lifetime. But I don't.

Julie Kuchepatov [00:18:28] We can confirm that. We can fact check that later.

Seraphina Erhart [00:18:32] The regulation is minimal for seaweed. We are still seen as, and you may want me to correct what I'm about to say. I often refer to us as the bastard child of the fisheries in the state of Maine. We are not, well, it's not to say we're not well respected. I think as an industry we are well respected, but we are a tiny, tiny, tiny, tiny drop in the bucket of our fisheries industry here. We don't make enough money to be worth much. So, we have been ignored a lot of fronts. Just last month, the Maine Seaweed Council, which is a group of volunteer organizations, mostly businesses, educators, artists, scientists, interested parties because Sea Vegetables was a one of the five founding members. We celebrated 30 years of collaborating and before the state really bothered with any kind of regulation at all, the Seaweed Council realized that as part of the fishery and watching what was happening to a lot of the other fisheries in the state, we needed to talk to each other. We needed to understand what was happening up and down the coast. We needed to not be stepping on each other's toes and harvesting in the same place. The

majority of the biomass that comes out of the state of Maine waters that's under the umbrella of seaweed is rockweed or Ascophyllum, that's being used primarily for plant fertilizer and animal feed, but some for human consumption as well. And that has more regulation than the sea vegetables that we sell. But also, by volume, we're like, of the less than 10% of the whole amount. That's shifting is aquaculture is coming online in the state and growing. But there are also some parallels for regulatory needs between aquaculture and wild harvest, some massive differences. We all have the same access problem, right? We need to be able to get to the water. We need to be able to get our stuff off the water into some sort of processing facility consistently without being yelled at, or worse, much worse. We all are facing the same problems around what the ocean is doing or in this case this year, the weather pattern of, we are in like six weeks straight of a southern wind that's blowing all this rain and storm, and nobody can get on the water. Most of June, it was between the fog and the storms and the thunder and the lightning and all the things, couldn't get out there. So that's a big barrier on a lot of fronts.

Julie Kuchepatov [00:21:20] Yeah, that's a, I want to talk about access more in a second, but before that, I want to clarify. So, you do not harvest yourself. People harvest for you. Can you explain how that.

Seraphina Erhart [00:21:30] Yeah. So, in the early days, obviously my parents were doing the harvesting and they brought on some people and taught them and then they shifted along the way to having a year round staff who were packaging and selling and harvesting being a separate set. There were some people who would shift in the summer season and go harvest and then come back in the winter. These days that is not at all who we are, and it's been that way for quite a while. Actually, the latest update of our website that we launched in 2020, we worked really hard to remove the language that talked about "we" as the harvesters because that was really just not true anymore. And what we recognized as the industry has been growing and evolving and with our hopes and dreams of how aquacultured seaweeds will become part of who we are as a business, is that our best asset is our history in this industry and our brand, and our knowledge and we can continue to support the harvesters, but they're not our employees. Actually, when I leave you, I am going to an inspection for one of our harvester's organic inspection because he has some new equipment to add this year and so I want to be there to understand what might change because I still help them manage a lot of that reality because their quality is my quality so we have to work very closely together, but legally we are entirely separate.

Julie Kuchepatov [00:23:01] So how do I become a harvester for you? How does that work? It's, it's through connections and community, I think.

Seraphina Erhart [00:23:09] It's interesting as the lobster fishery changes so dramatically here in the state, we're getting more and more queries about that, probably also mixed with just general more awareness of the seaweed industry here. So, you know, it used to be maybe once or twice a spring, I'd get somebody asking and I think I'm probably close to a dozen this year.

Julie Kuchepatov [00:23:28] How does a climate in crisis affect wild seaweed production?

Seraphina Erhart [00:23:32] Under that umbrella, there are things that we see regularly, like some species will, I would say, have a pretty normal rhythm of a big boom year and then they won't have, there'll be very little harvest the next year and maybe it's every 2 to 3 years. There's two species in particular that that seems to be a pretty regular cycle. When I look at my buying patterns over decades, which is a lovely privilege to have, you start to

see things like that. I actually started adding in notes about weather patterns about five years ago as they related to the ability to dry. This season, no ability to dry as it's been raining constantly, and the humidity level is 90% pretty much all the time. Or they just can't get out on the water because of the fog and the turbulent water out there. It's not safe. We are seeing the season end earlier for some species, probably because the temperatures are getting warmer quicker. So not so sure how much of that is actually about the ocean temperature as much as it is the rainwater warming up and bringing in more fresh water in a year like this. Seems to allow some of the microalgae to grow on the surface so we call it biofouling. It gets this gray, furry, looks terrible. Not, not helpful. Not, the I mean, it's legally, it's food grade, nothing wrong with it, but esthetics go a long way for us. Nobody noticed?

Julie Kuchepatov [00:25:08] It's not a good look.

Seraphina Erhart [00:25:09] Not a good look. Exactly. And there's some other things that happen sometimes. The predators, the periwinkles, will spawn earlier, have a boom year, and take something out and it'll look like Swiss cheese. The good news is, if it's something like periwinkle, then it looks like Swiss cheese. We just put it through the middle and make a milk product. Yeah. So, climate change and things changing. If you've lived here all or most of your life, it's hard to not notice that the summers are very different environment here. And so, I think, it's hard to imagine that this is not impacting even the things under the ocean in some way. Whether you, however you want to talk about it and what I can say is it's feels like this point it's not a steady line of change. It's more of a up and down fluctuation of we'll have a couple of really off years for various reasons and run a bunch of theories and then things will seem okay again for a while. And it's different sets of situations for different species that we work with seem to be what's happening.

Julie Kuchepatov [00:26:18] Do you see the potential for fishers to diversify into harvesting wild seaweeds like some are diversifying into farming seaweeds?

Seraphina Erhart [00:26:25] At this point it's really challenging. You need to be responsible for your own drying. Responsible for your own organic certification process, and you are delivering dried organic product to our back door.

Julie Kuchepatov [00:26:39] Gotcha.

Seraphina Erhart [00:26:40] And unloading it here. And we will help you if you are wanting to go through all of that and grow enough to make that happen, we'll help you with quality and understanding things. But in the wild world where we are in Downeast Maine, I'm not so sure that there's a whole lot more room for more harvesters in areas that are going to be super successful for us. That's not to say that there isn't more seaweed out there. Things may change, but today I think that's more unlikely. I would love to find an aquaculture partner in our area who I can work with on advancing, that makes it sound like it's negative, that's not what I mean. Making different choices on the water to potentially have a slightly different end product. Right now, one of the biggest challenges for us may be the fact that wild seaweeds in some cases we aren't necessarily able to feel confident in our sustainability and harvest significantly more and or a year like this, Mother Nature is saying, tough luck. But aquaculture has the potential to diversify what we have access to on any given year. Has some of the same sets of problems. It's out there and exposed to nature, but it has some other factors that may give us more control. But what's being farmed at the moment primarily is genetically the same exact species and looks, tastes and feels nothing like what we already sell. So, I can't replace what's being grown with what's been in our packages for the last 50 plus years.

Julie Kuchepatov [00:28:21] And can you explain why that is? Do you know?

Seraphina Erhart [00:28:24] I have theories. I am not a scientist. So, here's what I know. I know enough that even in the wild world, from day to day, seaweeds have an ability to modify themselves and morph to an environment. So just a couple of days ago, I was answering a customer question about why the particular bag of dulse that they got, the fronds were short and not long and they had bought somebody else's, and they were long. Well, I don't know where that other product came from. I know it was the same species. Roughly know what general large area it came from based on what they told us. But I think at the end of the day, nutritionally it was probably very similar, but it looked different enough and it tasted different enough just because it was grown in a slightly different environment. Sorry, that implies that we farmed it. It chose to grow and was harvested in an environment. So if you apply that same information of knowing how much some, the same genetic species with a very similar nutritional profile and taste and look and feel different from pretty similar bio regions, all in the Gulf of Maine or the Bay of Fundy, depending on how you look at it, up to Nova Scotia, it makes sense that something you grow on a line is going to be different than something that grows in the wild. So, some of my theories are in the wild, this is specific to sugar kelp because that's pretty much all that's being successfully aquacultured here in the state of Maine, there is some alaria and something else called skinny kelp, which is actually just a morph of sugar kelp without the frilly edges. When it's seeded on, it's tiny, as spores on the line and then put out into the ocean, it's like seeding a lettuce row, right? And then you'd go back in and thin it. Well, not a lot of thinning is successfully happening or possibly even feasible because of when that may need to be done in the middle of the winter. Generally, you're putting your seeds out in late fall and then harvesting in early spring. So, it's very possible that part of the problem is a lack of access during its growth cycle. It also is not getting wide range of sunlight exposure. It's being kept at the same level underneath the water and the tides are moving around it, but it's not moving. Whereas something that's its hold fast is fastened to the bottom is getting a lot of different exposures to light and these are plants in that they do need chlorophyl in order to do their jobs, right. So that makes a big difference. And I think they also are not getting the incredible turbulent water flow that causes them to be big and strong and thick and just be a really different plant. So, the aquaculture stuff is beautiful. It has its own uses, but it's not the same from a experiential standpoint. Right. But when it has the same name and so far, seemingly a similar enough nutritional profile, it's pretty hard to figure out how you're going to work those two things under the same brand name and umbrella.

Julie Kuchepatov [00:31:37] Yeah, so currently you do not source farmed seaweeds. Or seaweed. And you would like to maybe in the future to explore that, but you need to figure out how to prepare it, package it and market it as something that's a sea vegetable, but it's different from what people may have been used to.

Seraphina Erhart [00:31:55] So are we spinning off another brand name? Are we just creating an entirely separate product that's using that as the ingredient and the ingredients panel can say the same thing and that's fine. Or are we separating farmed from wild and the wild becomes more of a seasonal sort of CSA type sales world and the rest of the business is dependent upon the aquacultured seaweeds over time because there's more stability there? All possibilities and knows where the future. Ten years ago, I would have told you we were going to be in a totally different place than we are now, so I know enough not to assume.

Julie Kuchepatov [00:32:35] A fantastic climate solution is educating the public about seaweeds and sea vegetables so that they learn to enjoy this bounty. So, I read that seaweeds in the wild have provided food, medicinal products, and ecosystem services to coastal and marine environments for millennia. But seaweed farming is relatively new in the U.S., in fact, a recent study found that 1 in 4 people in the United States have never heard of seaweed farming. So, do you educate the public about the benefits of seaweed? How come nobody knows about it? I don't get it.

Jaclyn Robidoux [00:33:06] And it's funny. Nobody knows about seaweed. But then when you start educating them about it, they're totally hooked. One of the best examples that we have here is Seaweed Week and it's a week-long food and drink festival. So, it's kind of it is educational because we try and talk to folks about why you should eat seaweed, why you should support this industry, what this means for the people that live and farm this product. But it's kind of fun. So, you know, folks can go out and get like seaweed pizzas and seaweed cocktails and engage with it in a way that isn't, you know, like attend a, you know, like a university talk but is kind of meeting them where they're at their favorite restaurant or establishment.

Julie Kuchepatov [00:33:49] So how else do you educate the public? Do you have like, I mean, I don't know. This podcast is a good example of a way to do that, but I mean, what other things are you doing?

Jaclyn Robidoux [00:33:58] I, especially in the summer, get a lot of requests for seaweed identification workshops. And so, I'll host those and, usually, I mean, those are all public and free. So always funny because sometimes you end up with ten people and sometimes you end up screaming on a beach to 70 people about what the seaweed looks like. But people are generally really excited to learn, especially when they learn that there are, I mean, we have over 200 species of seaweed in Maine alone and about ten of them that I will regularly teach people to identify. But it's a pretty exciting way to see people learn, especially like right there out on the coast. So that's something that I do a lot in the summer and then in the winter or other season, stuff like Science Cafe talks or cooking classes is another big one, workshops.

Julie Kuchepatov [00:34:43] Are seaweeds a climate solution?

Jaclyn Robidoux [00:34:46] Seaweeds are the silver bullet, and seaweeds play a role in the climate solution, but they are not the only climate solution. So, I think one of the things that is worth mentioning is that we hear a lot about seaweed. They don't use fresh water, there's no pesticides, no fertilizers involved. And so, they're, in some ways, a natural solution to some of the classic agricultural challenges that we've seen. So, by nature of how they grow, they are really low input and high impact. That said, they're not going to like single handedly reverse climate change. And it is a combination of wild beds which continue to change and move depending with water. And it's important to keep in mind that wild beds are also contributing to healthy water conditions and as we see more folks farming, that's something that also is exciting. But again, kelp farms are not going to save the world, but they might help a little bit.

Seraphina Erhart [00:35:47] They're definitely not part of the problem. I think I said this to you guys earlier, I'm not much of a hype girl. I grew up in a slow growth business. I like to learn and be sure and test out ideas. And I think that they can be part of the solution. They are certainly not the solution. I read recently maybe a 200,000 at the whole world types of seaweed out there and some crazy large number. Not sure that's right.

Julie Kuchepatov [00:36:17] We'll fact check it.

Seraphina Erhart [00:36:20] They are not all delicious, but that doesn't mean they're not doing good in their ecosystem. But I'm a little worried about them getting that reputation because if they get that reputation before the industry is ready to meet whatever ask there may be, we run the real risk of the seaweed fishery becoming like so many other fisheries at the international level and being taken advantage of without a whole lot of thought to its future or its ability to function.

Julie Kuchepatov [00:36:56] Even its applicability to do what people are hyping it up to do, like you said. Yes.

Seraphina Erhart [00:37:02] So here's an example. We got a request from some research grant funded something in the middle of the country. I don't remember what university. There were focused on one particular species, and they were frustrated that they had bought a couple of pounds off our website, which anybody could have done. Right. I can't keep track of that. Sure. Done some testing and found a particular compound in this seaweed that they thought was going to be the saving grace to whatever their particular project was. It may have been a bioplastic; it may have been a textile. There's a lot of that kind of project happening. And they didn't like it when I said nobody's aquaculturing that and doesn't grow by the hundreds of millions of pounds. There's just a lack of potential, knowledge seems rude, but people are making research queries and they're scientists and they're curious and I love that, and we grow and evolve because of that. But they're not ground truthing necessarily the ability for whatever it is that they're finding to grow at the rate that the industry they're trying to put something into market would need to grow to function. And so, there's tons of investment money out there, which is great. I don't want to come across like I'm super negative. I just. I look at all of this as like a broader ecosystem, right. We have to look at the whole picture. We as a culture, I think, are what I was saying before about the nutrition of seaweed, right. If you focus on one part, you're forgetting all the other value that you're getting. If you focus on one part when you're innovating, you run the real risk of accidentally, well-intended, create sabotaging something else somewhere else in the whole picture. So, you know, I feel this way about how we manage the fisheries, that we are looking at them all myopically and not as a whole environment and I feel like a similar story sort of applies to how we're looking at all the many, many exciting potentials that seaweed holds for us as a culture, for us as humans surviving and this planet surviving. Absolutely. But we also could continue to screw it up, actually.

Julie Kuchepatov [00:39:23] Here's Afton, formerly of the Maine Aquaculture Association.

Afton Vigue [00:39:27] So, you know, my interest in getting into aquaculture is just adding something into the mix. It's not a panacea. It's not going to solve the world's problems, but it's something else to get into. It's another option for young people who maybe are on a waiting list to get a license. Maybe they've been waiting for 6 or 7 years.

Julie Kuchepatov [00:39:44] Have they been receptive to that? Like the ones that are waiting for licenses. Like I'm going to be 40 years old by the time I get a license, maybe I should do something else and that this might be an opportunity to farm something. Yeah.

Afton Vigue [00:39:56] Yeah. I know of several people who are in that exact scenario, and they've looked into aquaculture and in some cases even taken the leap and started their own business. We, we sent some outreach materials to the people on the waiting list this

year to advertise the Aquaculture in Shared Waters training program that we run with Sea Grant and CEI and Maine Aquaculture Innovation Center. So that program specifically targets commercial fishermen and people from working waterfront backgrounds to get them the resources they need and tools to to start aquaculture farms. I don't think everybody wants to get into aquaculture. I would, that would be something I wouldn't want people to take away from this podcast because it's very different from commercial fishing.

Julie Kuchepatov [00:40:36] In the next episode of the special edition of In Hot Water, a Climate and Seafood podcast featuring the state of Maine. We meet with Plansowes Dana, a member of the Passamaquoddy Tribe and the Indigenous Communities Partnership Manager at the Gulf of Maine Research Institute. Her goal is to build relationships between the Wabanaki communities and GMRI to incorporate Indigenous knowledge with Western science.

Crystal Sanders-Alvarado [00:40:57] Thank you for joining us for In Hot Water, a Climate and Seafood podcast by Seaworthy and SAGE. Let us know what you think by leaving us a review on your favorite podcast platforms. And don't forget to share with your seafaring friends. In Hot Water is a production of Seaworthy and Seafood and Gender Equality, or SAGE. Soundtrack generously provided by Mia Pixley. Audio production, editing, and sound design by Crystal Sanders-Alvarado and the team at Seaworthy.