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Julie Kuchepatov [00:00:13] 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. While 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 and 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 [00:00:44] Crystal Sanders- Alvarado, Zennial.

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. And 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 [00:01:47] Here's Afton Vigue, who at the time of the recording was the communications and outreach manager at the Maine Aquaculture Association.

Afton Vigue [00:01:54] So we're a nonprofit trade association. We represent commercial aquatic farmers in Maine, everything from shellfish to finfish to seaweed farmers, land based and marine based operations. So it's a pretty diverse sector here in Maine. And we focus on three things primarily, those being advocacy and lobbying at the state and federal levels, business planning and support for growers to help them manage and start up sustainable businesses, and outreach and communications, which is my focus area.

Julie Kuchepatov [00:02:22] So you're born and raised in Maine?

Afton Vigue [00:02:24] Yeah.

Julie Kuchepatov [00:02:25] I'm hearing a lot of information and stuff about the lobster fishery and the whales and the wind farms. Is climate involved in this? How is climate playing a role in this?

Afton Vigue [00:02:38] Yeah, it's definitely involved. I think fishermen are out there. They see the changes that are happening. They see the weather pattern shifting. We're getting more windy days now than we ever used to. It's harder to get out when it's windy because the seas are rough. And it certainly is something that they're observing and they're very attuned to it. I don't think we have a lot of climate deniers in the fishery, and I think that might be one of the misconceptions that's out there that fishermen don't know about climate change or are in denial about it. They certainly, for the most part, I think, they know that the changes are happening. Fishing pressure has been changing. Where people are fishing is changing. Lobsters are definitely moving more towards the north, towards Canada. In the area where my family fishes in Zone D, used to be in the 90s, it was very profitable, very lucrative fishing. Those days are gone. It's not as easy to make money doing it in that area now.

Julie Kuchepatov [00:03:30] Because the lobsters have moved.

Afton Vigue [00:03:31] The fishing is not as good. The lobsters have moved.

Julie Kuchepatov [00:03:35] I never had the impression that, I mean, maybe others do, but I didn't have the impression that the fishers were climate deniers at all. Like I never even that never even crossed my mind. So I'm curious, how are they thinking about this? Like, how are they going to be resilient in the face of this?

Afton Vigue [00:03:50] I think there are some more immediate threats that have been top of mind. The whale issue in particular has, and I think the misconception that they're climate deniers has to do with fighting the offshore wind and the whale. It kind of I think it may to some people may paint them in a light of being not environmentally minded, not as a steward of the resource as opposed to. So I think that's where that misconception might come from but that might just be me imagining how somebody thinks about it from the outside. But sustainability and keeping the fishery going has been part of the lobster industry since it began. The whole regulatory scheme around fishing and what the requirements are to follow the law, those have been in place since the 1800s and they continue to evolve. So things like throwing back the egg-bearing females and having size limits, both small lobsters that are too small to bring in and lobsters that are too big, having vents in the traps, There are so many changes they've made to the gear to make it whale safe. Breakaway lines, weak links. The fishermen have constantly adapted their practices to try and ensure that this resource is going to be there for the next generation. And it's a huge part of their ethic and their culture. So I think they're extremely ecologically minded and very aware of the changes. But the fishery itself has seen a lot of growth in the last 50 years because of the decline of groundfish primarily. So one of the main predators of lobster is cod. And so when the cod fishery collapsed in the 90s, the lobsters spiked because cod eat juvenile lobster. So that's just one example of all the sort of ecological consequences of different fisheries and they have interactions with each other in that way. But since the 90s, the lobster has really become the primary species, the primary targeted species in Maine. And so we have a very strong reliance and any time that that is threatened, it's very scary not just for the fishermen, but for all the businesses and families and communities that rely on lobster. We have a huge tourism reliance which is very closely linked to lobster as well. People come to Maine in summer, they want to lobster roll, right? All the restaurants and inns and fish shacks along the coast that rely on that species and that resource, they all stand a lot to lose if that fishery gets closed. So we've seen the last couple of years, people are really rallying behind the fishermen. There's a lot of public support for them in Maine in particular, just because it's part of our state's identity. It's our economic support engine, but it's an issue because we do rely on it so much.

Julie Kuchepatov [00:06:26] Here's Jesse Baines, who at the time of this interview was the chief marketing officer at Atlantic Sea Farms, a woman-run, mission-driven seaweed aquaculture company based in Maine.

Jesse Baines [00:06:36] Climate is putting us all in a position to make some big choices and take action, a little sooner than I think any of us anticipated we would have to. I know I come from a fishing family. My dad is a lifelong fisherman. My cousins, uncles. We are based out of Spruce Head, Maine, which is a great community. I was proud to grow up there. I am proud to grow up there. I go home as often as possible. Amazing place to grow up. And you know, my mom is an incredibly strong person who ran her own businesses as well, and really, food was a central focal point in our family forever and still is. We gather around that. But she also created the first recycling program in the middle of nowhere, Maine, right. And my dad has worked on the sustainability of the fisheries that he participates in, which is lobster and scallops as well, for his whole career. So food and sustainability have always gone hand in hand for me. And I think for a lot of people where I grew up. They may not know that. They may not have it as a central tenet of their daily talking points like you might if you work in a food company. But I think it's something that's inherent in such a well-managed fishery. There's a reason why the fishery is still around. There's a reason why it's as strong as it is. Is it all based on the amazing measures that the lobster industry has taken to protect themselves in their fishery? No. But a heck of a lot of it is.

Julie Kuchepatov [00:08:06] Getting real time information from fisheries is critical when developing solutions to address climate related challenges. Here's Susie Arnold from the Island Institute.

Susie Arnold [00:08:15] We host an event called Fishermen's Climate Roundtables every year here at the Institute. We've been doing it for, this will be our 16th year. And we were talking about climate change with people who make a living off of the water well before that term was really used broadly along the coast. And what has been super interesting for me as a scientist is to look back on those. So I've been involved now for ten years in those conversations to look back and to see, they were talking about changes in ocean circulation and changes in the timing of the molt for lobsters well before the scientific community was talking about those things and now there's publications on those very topics. And so it's, I think it's really validating for the fishermen to hear, oh right, the science has finally caught up with what we were seeing five years ago. And it's really important for scientists to hear the fishers' observations about what they're seeing on the water because it points them in the direction of what's important really.

Julie Kuchepatov [00:09:14] It's validating, but it's probably also frustrating because they're like, Hey, we're seeing this and we need some science to back it up.

Susie Arnold [00:09:20] Right?

Julie Kuchepatov [00:09:21] Let's go.

Susie Arnold [00:09:22] Yep, yep. Right. I mean, probably seven years ago in these conversations, the event is very much an information exchange. So there's fishers at the table. There's scientists who are experts on a topic they have identified as important for them to learn about this year.

Julie Kuchepatov [00:09:39] According to the Island Institute. In 2021, Maine's lobster fishery supported nearly 18,000 jobs, producing $725 million in revenue. Here's Kanae Tokunaga from the Gulf of Maine Research Institute.

Kanae Tokunaga [00:09:54] I recently looked at the lobster fishery and how they might be adapting to climate change trying to understand how they're doing in terms of economically, how they might do under climate change. So that there are two things that we really looked at. One thing is that the diversity of fleet because the Maine's lobster fleet is diverse, the way they respond to that change would also, we suspect, would be diverse, too. And then that seems like a possibility.

Julie Kuchepatov [00:10:26] Can I ask what you mean by diversity?.

Kanae Tokunaga [00:10:27] Right. So that's a great question. So what we try to do is that we GMRI ran a survey back in 2011 to ask some economic and operational information from the harvesters. So that was a survey. And we use that survey data to characterize different ways of operating efficiencies. So business models of lobster fishing. Previously the way we characterize a fishery diversity was based on vessel length, the size of the vessel. But that was somewhat not satisfying. And we use that statistical method to kind of characterize it, quantify and characterize the differences in business models. And we identified five distinct business models. And then those took into consideration not just the vessels' technical characteristics, but also operational characteristics. So things like how often they go out in the water, how many traps they haul, you know, so time those operational day to date operational characteristics. And what we found was that the one thing that different lobster management zones in Maine. So Maine has seven zones, management zones. Each zone had different composition of those business model. What we also found was that the recent natural science or biological research that investigates climate change impacts on the lobster habitat, distribution and abundance of the climate change suggest that differences in different kind of resource availability patterns in the northeast, southwest of the state, and what we found was that even in the 2010, so we had a data from 2010, you may be categorized as the same business model, but the southwest was not doing as well as the northeast economically, so that was already kind of showing up in our data from 2010. What that might mean was that so 2010 was kind of pre-climate change in the Gulf of Maine, if you can say that, but the harvesters can make minor modifications without making large investment to adapt to climate change. So that our data also indicated that the soak time, if your resource condition is not as good, you know, longer soak time probably do better than others, right?

Julie Kuchepatov [00:13:14] What is a soak time?

Kanae Tokunaga [00:13:14] Soak time. So lobsters are caught by traps. So you bait the traps and then that's how we catch lobsters. Soak time is just simply how long you leave the traps in the water.

Julie Kuchepatov [00:13:28] Gotcha. That makes sense.

Kanae Tokunaga [00:13:32] So distinct business models that we found were kind of showing up that the differences in economic performance based on difference soak times. So one way to adapt to the climate change under like a low resource abundance might be just changing the soak time. So there are different ways of adapting to the climate change or the changes in the environmental conditions.

Julie Kuchepatov [00:13:58] And you're seeing them doing these things?

Kanae Tokunaga [00:14:00] Right, starting to see. And then we, of course, would like to have better data set. Economic data is not always available. I mean, in the case of lobster fishery, we don't have longitudinal data on operation and economics so it's really hard to understand how economic performance would change over time. But what I'm trying to say is that we need to pay attention to those diversity that already exist and how they're adapting and then that might also show that certain business models do better under climate change, and that might be the strategy for the fishery. Shifting the business model. Shifting the way they run their lobster fishery at the individual level. So autonomous adaptation is something that we shouldn't be really forgetting about.

Julie Kuchepatov [00:14:53] That's a good point and I think but we don't have that data, right, that longitudinal. So how do you convince someone to change their business model?

Kanae Tokunaga [00:15:01] That's probably not something that you convince, maybe we can as a researcher, we can show certain patterns, certain strategies like that. I guess the option of strategies is ultimately individual harvesters' decisions, right? Because they would also have better understanding of their operations. So but I guess, again, often academic research or economic research, we tend to focus on the average mean like average behavior. But when you have a diverse fishery, average might not apply to anyone. An average. Providing information for the average fisherman might not be really helpful. But so just really important to kind of start really investigating that type of question.

Julie Kuchepatov [00:15:53] Another effect of climate change is that the lobsters are moving to colder waters.

Susie Arnold [00:15:58] If you look at the hotspots of landings over the last three decades of or decades of lobster. Yeah. And you looked at a chart. You would see in the 1970s, a lot of lobsters being caught south of Cape Cod. And then if you would like every ten years, if you look at that same chart showing kind of hotspots of biomass or landings, you would see those hotspots moving to the north and even more so recently offshore to cooler waters. So if you looked at landings and you looked at water temperature, it's highly correlated that as the lobsters are shifting to the north and offshore, it is directly correlated with that shift to higher temperatures. So because of their thermal preference, they are doing better in waters that are not so hot so basically the biomass or the landings are increasing in Downeast Maine and in the offshore of the Gulf of Maine. So that's one factor that's a climate factor. It's a little bit less clear how they're being impacted by ocean acidification but the way multiple climate impacts are affecting lobsters is definitely not a positive thing. So that's some of the climate story. And then as far as landings and kind of the bottom line for what fishermen are making, that's very much impacted by forces like cost of fuel and cost of bait. Herring is one of the most common sources of bait for the lobster fishery. And herring regulations have really tightened dramatically and so the cost of bait as a result has skyrocketed. As we know, the cost of fuel is very volatile and it goes up and down. Last year, it was quite high. And even though we landed a lot of lobsters, if you're paying double for fuel, even if you're making more money on your catch, you're not making as much money as it might appear based on landings value. Other climate impacts that are indirectly impacting the fishery have to do with endangered right whales and their interactions with the lobster fishery. Climate change is a huge driver in the distribution and abundance of right whales, and so in my opinion, it's the biggest driving force in that regulatory situation that's largely being ignored. So we've known for quite some time that changes in ocean circulation are causing the Gulf of Maine to warm more rapidly than

most bodies of water on the planet. And as a result, with that warming, we're seeing changes in distribution of abundance of species. We talked about how that's impacting lobsters. It's causing them to follow what their thermal preference is. And so they're they're becoming more common in Downeast waters and offshore where the waters are cooler or remaining cooler. And it's also impacting the distribution and abundance of the copepod that forms the base of the food web in the Gulf of Maine. It's called the Calanus finmarchicus. It's a zooplankton species. It's highly lipid rich and I used to call it the potato chip of the food web. I was recently told that that is not a good analogy because potato chips are unhealthy food. So I'm going to start calling it the avocado. So it's very fat dense. So it provides a lot of energy for the things that eat it. Lobster larvae eat it, but importantly, endangered species like right whales eat it. And so, what we have seen is that the distribution in abundance of Calanus finmarchicus is changing and, as a result, right whales distribution in abundance is changing. They are looking for food and they are stressed because they are not finding food. And so they're having fewer calves. They are emaciated because they are hungry. They are just less successful in general. And importantly, they're showing up in areas where they didn't used to show up because they're looking for that dense food source that they used to find pretty regularly in certain areas like the Bay of Fundy and the Roseway Basin. And now they're showing up in areas like the Gulf of Saint Lawrence where they didn't used to have to go. And therefore, they're interacting with fisheries in ways that they didn't use to interact with. And so regulations haven't been in place to protect those whales. And as a result, many of them were either entangled in fishing gear or hit by ships. Now we know that their distribution in abundance is changing and we have protections in place where there weren't previously protections. The Maine lobster fishery has been protecting right whales and other species of whales for decades. They've been making changes in the thickness of their lines. The floating lines have to be sinking lines. They've been complying with the regulations for decades to protect right whales. It doesn't mean that further regulations aren't going to be necessary but what we do have to figure out is how to factor in the climate factor. It's very much a climate story. Things are changing because of climate change that can't be ignored because. We may be able to shut down the entire fishery and the right whale would still go extinct because it's a climate problem. It's not just a fishing gear problem or a ship strike problem. It's very multifaceted.

Julie Kuchepatov [00:21:26] If you think about the whales, what are some of the solutions there? You can't just supplement their food source in the wild. I mean.

Susie Arnold [00:21:35] You can't supplement their food source. They can eat other species of copepods that are less lipid rich. And they, there's another or Arctic species of copepod that they may be able to do well eating. What we're doing here in the Gulf of Maine is increasing our acoustic monitoring stations so we're listening more for right whales. We could be doing more aerial surveys, more boat surveys, just collecting better data to understand where right whales are. I mean, we can also do better zooplankton surveys to understand where their food is and where it might be going and that could be a predictor of where right whales will be. That's really hard. I mean, there's.

Julie Kuchepatov [00:22:12] Doesn't sound easy.

Susie Arnold [00:22:13] No, it's not. It's definitely not easy. It's there's no way to simplify it. It's kind of an in-your-face, classic example of how climate change is a contributor to the global biodiversity crisis. So, unfortunately, humans are killing tons of species. Right whales happen to be a charismatic megafauna that people really care about, as we should care about every species that we are contributing to the decline of. So it's a really tricky

situation to figure out how to help save an endangered species without putting an extremely important fishing industry out of business.

Julie Kuchepatov [00:22:50] Yeah, I mean, that's the task. What are people thinking about? I honestly don't know. It's really interesting.

Susie Arnold [00:22:58] It's really, it's, well, I mean, they're thinking kind of like a lot of the United States is thinking right now it's really polarized. It's like you're either for the whales or you're for the lobsters. And I think, something that we have noticed in the last, almost year since we've really been talking about this issue at the Island Institute and really talking about the link to climate change, is that pointing out that climate link kind of takes the blame off of any one person and puts the blame on all of us and gives everyone an opportunity to take action. If we can get that message out that climate change is what is at the root of contributing to the decline of endangered species, it may motivate more people to reduce their carbon footprint and to take action and to do something that's within their means to decrease climate change. And it takes some of the responsibility and onus and blame off of people who are trying to make a living off of the water and catch a sustainably harvested species and puts the blame on everybody. Everyone likes their Amazon products shipped from overseas at a fast pace. They don't want to wait for that container ship to slow down to five knots because they want their products from China. Everybody, not everybody, but a lot of people want to eat lobster and they want to be able to feel good about it. We have to do better. We have to do better. The MLA just won a lawsuit against the National Marine Fisheries Service.

Julie Kuchepatov [00:24:32] That's the Maine Lobstermen Association.

Susie Arnold [00:24:34] Yes, the Maine Lobstermen Association and a bunch of other groups that worked with them just won this lawsuit. And basically it required NMFS to use the best available science in their next biological opinion. And so we have this window of time where better data can be incorporated into the models that inform the regulations.

Julie Kuchepatov [00:24:58] Okay, let's back up for a second and get up to speed on the history of the endangered right whales, the Maine lobster fishery and this lawsuit. The following is paraphrased from an article in Food Tank. According to the Center of Biological Diversity, quote, "the North Atlantic right whale population is declining with 340 individuals left and fewer than 70 breeding females. And the Center finds fishing gear to be the leading cause in the species spiraled towards extinction, unquote. According to Ben Grundy, associate campaigner at the Center, the debate around the federal fishing regulations comes down to one key question about National Oceanic and Atmospheric Administration, NOAA for short, Fisheries: Are they adhering to the responsibilities to protect North Atlantic right whales as mandated by the Endangered Species Act and Marine Mammal protection Act? In 2022, a federal court ruled in favor of the Center and other groups, finding that NOAA had violated the Endangered Species Act and Marine Mammal Protection Act and was not doing enough to reduce the lobster fisheries threat to right whales. But later, in 2022, Maine's congressional delegation inserted a six year delay on new federal lobster fishing regulations into a U.S. $1.7 trillion spending bill passed by Congress. This delay will avoid closures that could destroy the industry while allowing for more research into how often whales enter prime fishing areas. In 2023, Monterey Bay Aquarium's Seafood Watch program downgraded all fixed gear fisheries in the Northeast Atlantic Ocean, including lobster fisheries in both the United States and Canada, to red or avoid. And the lobster fisheries' Marine Stewardship Council MSC certification was suspended. Both actions, as you can imagine, caused an uproar. That same year, a

federal appeals court sided with the lobster industry, ordering NOAA and the National Marine Fisheries Service to rework the most recent federal regulations to protect the right whales. Susie, what does the next 5 or 6 years look like?

Susie Arnold [00:26:58] So we know in 2028 more regulations will come to the Maine fishery in order to protect the right whale. And so we have this window of time now to improve the data that's going into those regulations. So collecting more information about where right whales are through acoustics, through aerial surveys, through other ways of monitoring where they are and better understanding of where their food sources are and are not. And so by getting better science in the next five years, actually more like in the next 2 to 3 years so that can then be built into the models that form the regulations.

Julie Kuchepatov [00:27:32] Let's bring back Dr. Tora Johnson, professor of environmental studies and geography at University of Maine, Machias. In 2005, she published her book called Entanglements: The Intertwined Fates of Whales and Fishermen, which is noted as a, quote, thoughtful discussion of the plight of fishermen and whales and of the frustrations between fishing communities and conservationists, and presents an authentic microcosm of the global conflict between human demands on the environment and nature's finite capacity for supporting these demands, unquote.

Tora Johnson [00:28:02] So I've done a great deal of research on getting dragged back into it on the whale entanglement issue, and I can speak pretty, pretty readily about that. And climate plays a significant role there in a lot of really interesting dimensions. So all of the whale species and they're all different because they eat different things and they have different sort of lifestyles and and ways of operating. Every single one of them is changing their behavior. And, you know, right whales, which are critically endangered, were under 400 in the population there now. It's really, really dire. They are now, actually, they're not utilizing the Gulf of Maine to the degree that they used to. They still are and they wander a lot like right whales wander a ton. And so it's hard for the fisheries management people that even like every time they devise a management strategy, it's like too late and like it's old news in terms of what the whales are doing. And to some degree, what we've seen in the last 5 or 10 years is right whales are moving further out of the Gulf of Maine and spending less time in it but humpback whales are spending more time here and they're following fish further inshore to get them. They eat fish mostly and krill, but mostly fish when they are in here. And whereas, the right whales eat copepods, little tiny crustaceans. And so they need the copepods to be big enough to be sifted out by their baleen, the sort of fuzzy stuff in their mouths, and so they're traveling further and further out where the water is the right sort of balance of temperature and nutrients for them. And I outlined that in my book. That was something that they had predicted would happen, and it has come to pass since I published the book.

Julie Kuchepatov [00:29:58] How were the regulations affecting the harvesters?

Tora Johnson [00:30:00] Yeah. So again, this is a really it's another situation where there are and I think it's true to say for many fishing operations, not for the entire fishery, but for many fishing operations, there is an existential threat to the fishery. The regulations, this frustrated a lot of people, but there's now a moratorium on them for, you know, we get a couple of years to sort of figure this out. As they were written, they were definitely going to put thousands of fishing operations out of business, and most especially the small operations and the smaller communities and inshore fisheries and the younger fishermen, were not going to be able to weather that. So there is a real threat to the fishery, and it also has the potential to impact the fishery in ways that would make it unrecognizable in terms

of, and we've seen it in other fisheries, in terms of the scale of the fisheries, the kinds of communities we can have, the number of people who can be employed in the fishery would radically be decreased if it were implemented in the way it was envisioned. However, fishermen will also tell you there are no right whales in the Gulf of Maine. They've never seen a right whale. It just doesn't happen. Blah, blah, blah. None of that is true. I have seen. Not only have I seen right whales in the Gulf of Maine, I've seen right whales in the Gulf of Maine with entanglement scars. I've worked and interviewed with people who have disentangled whales in the Gulf of Maine. Right whales. There's also the fact that the Marine Mammal Protection Act and the Endangered Species Act also protect other species of whales. Humpback whales are listed as threatened and they bear, 90% of them, bear entanglement scars. So this is not a problem that we can pretend isn't real and we also can't. I myself have seen whales swimming through and around and within lobster gear in Maine. And so it's a sort of magical thinking approach that a lot of harvesters have. They've just glommed on to and won't let go. This narrative that the whales aren't here. However, you know where the whales aren't is inshore. They really aren't. It's not not ever but the risk reduction of, you know, doing wholesale changes to the fishing practices near really close to shore within 3 or 4 miles, it's ludicrous. Right? Like there are, I don't know, 3 or 4 instances where one right whale wandered in and 20, 30 years of research. I don't remember the details, but like, I'm aware of like a couple. right. It doesn't really happen very often. There are certain places so, Passamaquoddy Bay, Bay of Fundy, we will get them more, you know, closer to shore. But most of Maine. Nah, no. Why would you bring those regulations? Those, like, really like could be catastrophic regulations all the way to the shore. Makes no sense at all. And, you know, the feds have received that input and have not responded. And that is, you know, I haven't had a chance to read the opinion, the court opinion that came out last week, but I wouldn't be surprised if that was a piece of it, is it's verifiable. The data is right there. You can see there's hardly any risk reduction to those kinds of draconian impacts on the fishery. And, and with what we're seeing in terms of the change of behavior of the whales with climate change that is less and less impactful as a solution.

Julie Kuchepatov [00:33:52] You mean, the near-shore near-shore interactions are going to be less and less and they're already almost minimal.

Tora Johnson [00:33:58] And that's where most of the vertical lines are like that. And there just is almost no risk to right whales. Minke whales, which are not endangered, not threatened. They're very, very common. They're far more frequently killed. They do come in. I've seen them just literally just weaving in and out of inshore lobster gear. So, you know, I hope that the impact on them never becomes significant to actually threaten them because that would become an issue again. But the truth is, for five, six miles and miles, maybe 12. Why? Why would you do that? It doesn't make any sense. And the harvesters know that. One of the things that is a major factor in the work that I do is trying to help regulators understand that there is value in making decisions that make sense beyond just their sort of conservation value because harvesters who see regulations going into place for reasons that they know are verifiably wrong will no longer trust the regulators and they'll be more likely. We have very solid science to show they're less likely to comply. They're more likely to be mistrustful when they engage in public conversations. They're more likely to come up with these imaginary ideas about whales, right. There's so many reasons that, you know, solving the problem right in ways that harvesters can really observe and understand to be impactful are more likely to work. One of the things that has happened recently, because I wrote this book and it came out in 2005, we had a revision and a paperback version later but, you know, it's been many years, right? And it was regarded as an important input to the conversation at the time. So several people have come up to me

since, just in the last few years and said, you have to write another book. You got to you got to do this again. And I'm like, why? Literally, nothing has changed. Nothing has changed. Some of the predictions about what climate change would do have come to pass. So we're like, that's real, right? But the truth is nothing substantive in terms of the regulation and terms the attitudes of the fishermen, the conflict, that intractability of the issue, the court involvement, all of it is identical to what it was when I was researching it.

Julie Kuchepatov [00:36:33] Does that make you feel bad?

Tora Johnson [00:36:36] Yes. Yeah. I mean, there you know, I stopped studying that issue for a reason and I was looking at it when I finished writing the book and did book tours and sort of put that study to bed. One of the things that I was left with is, there's got to be a better way. I had a sense that we were really screwing this up, and we were and the book is a lot about how we were really screwing it up. And so I spent the rest of the career I've had since figuring out how we do things better. And there are many, many interventions and ways that it can be handled better. One is simply how it is facilitated, how the conversations are managed. You know, I observed again and again harvesters coming up with, you know, in the Take Reduction Team meetings, these big meetings where they're debating how to how to save the whales from entanglement. And the harvesters would go, why should I trust this process. Saying to NOAA fisheries, why should I trust you? You know, you screwed up. You know, my family made a good living in groundfish and all of that is gone. Blah, blah, blah. I was working in fisheries during the crash and they're not wrong. That was an epic fail on the part of both Canadian and U.S. Federal Fisheries policy and again and again they would bring this up and the facilitator in TRT meeting would say, this is a professional trained facilitator, "that's not relevant. We're not talking about that here." Sometimes they would be a little more sensitive and go, I feel your pain, or, you know, I'm really sorry about your experience and it sounds really hard and I understand why you would feel that way, but that's not the topic of conversation. And what they're not realizing and I had to train myself up. I literally got trained as a facilitator so I could understand why this was so screwed up. And I've delved more deeply into how you effectively engage communities in decision making and problem solving and grappling with these difficult problems. What I came to understand is, oh no, that is very relevant. It's very relevant. It's very present for them and their engagement and creative problem solving and their willingness and their ability to even imagine complying with regulations that emerge from this process are predicated on them buying in. And if NOAA Fisheries is like that's past history and not saying here's what we're doing differently, we hear you and here's why we understand that that's true. Here's why we're just simply sorry, right. Like all of those things and also understanding that the stakes are high, right. They're, those are high stakes. That's what that fisherman is saying when they get up and start shouting in these meetings, right. And the regulators themselves are so traumatized by it that being shouted at and over all of that, they're just, it's literal trauma that they can't sort of step up and meet the harvesters where they are and it means a broken process and none of that is different. I mean, I started studying it 20 years ago, right.

Julie Kuchepatov [00:40:15] What are some solutions in your mind?

Tora Johnson [00:40:17] The solutions aren't just laying around to be picked up. We have to invent solutions. There are a couple of major, I guess, hurdles. I talked about this in the book all those years ago, and I continue when I'm asked to speak about this, to bring it up. The truth of the matter is that to some degree the Marine Mammal Protection Act, but definitely the Endangered Species Act, needs to be revised. And that's because the standards set out both in the law itself and the way the regulations have been promulgated

don't work in the actual world, right? There, as far as I can tell, there is not actual will to completely just say, all right, everybody, no more lobster fishery, right? I don't believe that there is that will for us collectively as a country. I do think individuals and I think there are many of them say, I mean, there are bumper stickers that say literally say "save a fisherman, kill a whale," right. Yeah, which is so stupid and wrong headed. Like, oh my God, really? That's not helping. But on the other hand, there are also, well, advocates who would be like, yeah, shut them all down. But the truth is those are on the margins that it's virtually no one, right? It's a fraction of a percent of the people who are paying any attention to this issue. Everyone wants a solution. And the fact of the matter is that wherever we get some fishing operations will probably need to close and all the others will have to change significantly in order to kind of bounce forward instead of trying to bounce back all the time. At the same time, if we're going to have any fixed gear fisheries, some whales will die. And we need to find the sort of sweet spot where we still have the fisheries and we're protecting the whales to the degree that they can continue to exist. And that's not going to be easy, but it absolutely won't happen if we can't get on the same page and choose change. And that means changing on all sides, not just the fishermen. Changing, it means the ESA. There is no amount of changing gear. There is no amount of changing gear that will allow you to continue to have a fixed gear fishery of any kind and not entangle whales. Ever. Right. We can do a lot better. We definitely can improve it significantly. But the ESA doesn't have room for any, right? I mean, currently, in terms of right whales, it's not any, right. It's, I think a fraction of a whale we can kill every year, right. So effectively zero. And so we need to find a better way of doing it and a more nuanced approach and an approach that actually recognizes the role of trust and the role of meaningful discourse and shared problem solving that there's just not ever been NOAA Fisheries strong suit. I should say one more thing just by way of solutions. So over the last going on ten years, I've been working on a new approach to helping communities solve problems and agencies and regulators and so forth, sort of engage with communities. And it's a dignity centered approach. It's drawing on the work of Donna Hicks, who is a conflict resolution expert and has really provided some really helpful guidance on how to safeguard dignity in public discourse. So I've taken that incorporated into my research practice and also in the work that I do helping communities solve problems. And over the past year, NOAA, the National Oceanic and Atmospheric Administration, has come to me and said, All right, we're ready to learn. And so we've begun to develop and we've already given a series of two workshops for NOAA staff, and we're expanding that nationwide. So they're starting to come to the table. You know, I guess it had they had to wait 20 years after I had written a really, a book that called them on the carpet for their lack of effectiveness. They're starting to see that there might be other ways to do it. You know, I have, I can't guarantee that they'll implement it, but we're working on the training to how to do this better, how to gain traction, how to grapple with these problems more effectively.

Julie Kuchepatov [00:45:11] Changing the approach of how regulatory agencies and fishing communities work together is one solution. But how regulations are set and by whom can be problematic and creates a myriad of challenges, including extreme stress for harvesters, fishing families, and communities. You said in an interview once that, quote, one major challenge facing seafood harvesters and fishers is that regulations are set by separate regional, state and federal bodies who don't always communicate super well with each other. So that's one problem, right? But what comes out of that is that in some cases, each agency has jurisdiction over totally different species which complicates matters even further and this leads to a lot of distrust of the harvesters and increased stress. So I'm interested in the increased stress because something that I think we don't talk about enough is the mental health and well, physical and mental health specifically of harvesters.

And so can you tell us what you know about the health, both mental and physical of fishers, and what can be done to help them?

Susie Arnold [00:46:12] I'll tell you what I know based on my experience working with fisheries and aquaculture. And for sure, what I mentioned in that quote that you stated, I think that the regulatory environment does cause a ton of stress, and I think I'll use the example that we're talking about earlier and we're dealing with now in Maine is the stress that I have seen in coastal communities over the right whale regulations is it can't be understated. It is impacting not just fishing families, but entire communities. When we talk about some of the possible scenarios of what could happen with the fishery because of regulations to preserve the right whale. We had someone in tears at a meeting the other day because she was so concerned and distraught about how climate change is impacting their community. And with a specific focus on this particular link to climate that we talked about earlier, how climate is kind of a driving force behind the changes in distribution and abundance of the whales and how that is then impacting the fishery and how that is impacting communities. So it's not just about regulatory issues. I think it's also about climate change and the whole package. So fishermen and women may no longer have access to a diversity of fishery. So, so if lobstering is cut because of regulations, they don't have much to fall back on. And so then if they're the sole provider for their family, that puts stress on their partner, that puts stress on their kids, that may cause them to leave the island, and they may have been the volunteer firefighter on the island or their partner may have been the town manager. And so it's just the people who contribute to the community may have to leave that community because there's no other economic opportunity for them. So I think that that, like, just all of it is contributing to a ton of stress out there, especially on island communities, right? You can't just drive down the road and work at the grocery store because there isn't one.

Julie Kuchepatov [00:48:22] Are there support services for specifically for these fishers and their families?

Susie Arnold [00:48:28] Yeah. I mean, that's not my area of expertise, but we have been working at the Island Institute to heighten the awareness of this potential crisis that's coming to the Maine coast and just to raise the awareness of social service agencies, of banks who are giving loans to people who are buying these very expensive boats, churches, of substance abuse, mental health, all of these social service agencies should be aware that there's a lot of changes happening,.

Julie Kuchepatov [00:49:00] Things are happening.

Susie Arnold [00:49:01] And we need to prepare ourselves for that because when you're 15 miles offshore on an island and maybe there is a health center that's open and staffed a couple of days a week, that's not going to cut it for communities that are dependent upon a fishery that's being heavily impacted by regulations.

Julie Kuchepatov [00:49:19] In the next episode of the special edition of Hot Water, a Climate and Seafood podcast featuring the state of Maine. We will learn more about the history of the state's aquaculture, kelp farming as a means to diversify income, social license, and the increasing effects of NIMBY or, Not in My Backyard, which is becoming more pervasive across the Vacationland state.

Crystal Sanders-Alvarado [00:49:40] 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

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