In Hot Water Episode 2- Earth, Wind, and Fire (and Oil).mp3

Julie Kuchepatov [00:00:11] Three generations hit the road to explore key seafood producing regions across the U.S. 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 a community driven generational effort in movement towards climate justice. The result of these travels? Welcome to In Hot Water, a seafood and climate podcast series. Join me, Julie Kuchepatov, Gen X, along with my travel companions

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

Cameron Moore [00:00:46] Cameron Moore, Gen Z

Julie Kuchepatov [00:00:49] as we travel the country and chat with people who share the challenges facing their region and their personal stories. Along the way, we experienced the moments that make us ask "what the heck?" as we try to understand why we are in hot water and what we can do about it. We start this series in the Lone Star State, Texas, particularly 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 it 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 production. We travel from Aransas Pass, the self-proclaimed "Shrimp Capital of the World," to Corpus Christi, the "Birdiest City in America," and end up in Galveston, known in the 1800s as the "Playground of the South" and importantly, the birthplace of Juneteenth, where two and a half years after Abraham Lincoln issued the Emancipation Proclamation that legally freed 3.5 million enslaved people in Confederate States, the Juneteenth order was issued on June 19th, 1865, finally liberating the 250,000 enslaved Black people in Texas.

Jennifer Pollack [00:01:53] If you live along the coastline where there's a lot of oil and gas exploration, the higher, there's the higher probability if something happens, it's going to be along that coastline. But, you know, I think that each coastline, as, of the U.S. has an identity that's devoted to something and the Gulf of Mexico, you know, that's the place where there's a lot of, there's a there's an ability to support the nation's energy needs domestically and so, you know, that is whether or not you want that and you live along the Gulf Coast, it's sort of a necessity.

Julie Kuchepatov [00:02:23] It's what it is. That was Jennifer Pollack, the professor and endowed chair for Coastal Conservation and restoration at the Harte Research Institute at Texas A&M University, Corpus Christi. We can't have a podcast about seafood and the climate crisis called In Hot Water based in Texas, without drilling down, (get it?) into the Deepwater Horizon oil spill, one of the largest environmental disasters in history, which occurred in the Gulf of Mexico. The incident began on April 20th, 2010, when the Deepwater Horizon offshore drilling rig, operated by Transocean and leased by BP, suffered a blowout while drilling an exploratory well in the Macondo Prospect, located about 40 miles southeast of the Louisiana coast, and it put Texas, often discounted, on the map. Here's Suraida Nañez-James, CEO and founder of the Gulf Research Institute.

Suraida Nañez-James [00:03:11] They call us the gas station of the U.S. For a reason. They call us (unintelligible) say we're the gas station of the Gulf. We're the toilet of the Gulf and we're the sushi bar of the Gulf because we have that, and people did not come to see

that until when? The Deep Horizon spill, right? Nobody had noticed the Gulf and what the Gulf actually contributes to the U.S., in seafood, in gas, in everything, until we were affected by that incident. And then we got light shone on to us. We're often called the Third Coast or the Forgotten Coast. You know, you hear about the east and the west and everything else, but you have the South and that's, I know that's an opinion, but I think it's based on who lives here too. You know, you have a lot of people who are very wealthy, but you have a lot of, you also have a lot of people of color. You also have a lot of people who don't have a lot of money, who, a lot of Indigenous communities. And whether that's been published or not, I think it has. We see that as a reality here, and we've seen it over and over when hurricanes hit.

Julie Kuchepatov [00:04:11] The blow out led to a catastrophic explosion and fire on the rig, resulting in the loss of 11 lives and the sinking of the Deepwater Horizon two days later. The uncapped wellhead began releasing massive amounts of oil into the Gulf of Mexico. Efforts to contain and stop the flow of oil were challenging. Four million barrels of oil flowed from the damaged Macondo well over an 87-day period, and it took nearly three months until July 15th, 2010, for BP to successfully cap the wellhead. The spill caused extensive damage to marine and coastal ecosystems, as well as economic harm to the fishing and tourism industries of the region. According to NOAA, between 4 and 8.3 billion adult oysters were lost in the marketplace because of the Deepwater Horizon explosion and spill. The tragedy prompted widespread concern about the safety and regulation of offshore drilling operations, and led to numerous lawsuits, fines, and regulatory changes within the oil and gas industry. The lawsuits were largely settled when a federal district judge approved the largest environmental damage settlement in the United States history, $20.8 billion dollars on April 4th, 2016. 80% of all administrative and civil penalties from the responsible parties went to ecological and economic recovery efforts in the Gulf. The effects of the catastrophic oil spill were felt by all Gulf states and countries like Cuba and Mexico and underscored the importance of safety measures in offshore drilling and raised awareness about the environmental risks associated with deep sea exploration for oil and gas. The Gulf of Mexico is full of unused oil and gas wells. Non-producing oil and gas wells in the Gulf will cost a staggering $30 billion to safely plug and abandon, according to a new study published in Nature Energy. It identified about 14,000 such wells, the majority of which have been idle for at least five years, making them unlikely to go back into production. Of these, about 7,300 wells are in federal waters, which will cost around $28.7 billion dollars to plug. The remaining wells are located in the state waters of Texas, Louisiana, Alabama, and Mississippi. From the National Resources Defense Council's website, by law, oil and gas companies must decommission offshore infrastructure and equipment, a process that includes permanently plugging wells and removing or otherwise securing platforms, pipelines, and other installations. If the companies fail to meet these obligations, as they frequently have in the past, taxpayers could be liable for billions of dollars in decommissioning. What's more, these unplugged wells pose an ongoing threat to Gulf communities and the ocean environment. Wells can leak into the environment and leaks from abandoned wells, in particular, can go undetected for a long time. Over years, corrosion and storms can damage abandoned infrastructure, making leaks increasingly likely. Oil is toxic to a variety of marine creatures, including fish and shrimp. By harming sea life, oil leaks also threaten the livelihoods of fishers and coastal communities, including those who fish commercially, for recreation, or for subsistence. And the leaked oil affects the marine ecosystem and coastal communities and other ways as well. For example, ocean currents carry oil to shore, where it pollutes beaches and smothers the plants of salt marshes. Unplugged wells can also release methane, a potent greenhouse gas, into the water column. Particularly in shallower waters, released methane travels up through the water column and reaches the atmosphere, where it can contribute to climate change.

Some oil platforms are being decommissioned, and while this sounds like a good thing, it has its own set of unintended consequences, and many Texans are against the decommissioning of the platforms because they have other uses that people have come to enjoy.

Jennifer Pollack [00:07:46] It's the opposite of leave no trace. There's also this concept in ecology that I really love though, called sort of happy accidents, where we know that humans have modified every environment on the planet at this point, and in a lot of cases, there are negative impacts of those human activities. But in some cases, they're actually these unexpected benefits. So, you know, you hear about and I'm going to stretch my you know, I'm a marine ecologist. I'm stretching myself a little bit here, but you hear about like, birds of prey, like falcons and things that are using the skyscrapers in New York City, for example, as habitat. And there's, there's some stories of, there's a marina in Europe somewhere where there's a, it turned out that there was this rare species that was actually utilizing this marina development, and it was more abundant there than it was anywhere in the world, because it was protected from people picking it for harvest, for example.

Julie Kuchepatov [00:08:38] So I read, I think it was on your website that you and your team conduct extensive field research in oyster reefs and salt marshes and offshore oil platform habitats. So, I'd like to learn more, hear a little bit more about offshore oil platform habitats. What, what is that?

Jennifer Pollack [00:08:54] Yeah. So, this was a project that a former PhD student of mine was interested in leading, and we developed when he was here as a student. And that was, you know, in, in, in most parts of the world, I would say, and most parts of the U.S., oil platforms are really thought of as this sort of like eyesore, nuisance like industry out on the water, sort of breaking up what looks so beautiful. But in the Gulf of Mexico, these are really, for a lot of groups, there are many benefits that come from those oil platforms besides oil extraction. So, the Gulf of Mexico in, in general is a pretty soft sediment, soft bottom environment. There's a few reefs like the flower garden banks is of course like a very beautiful reef location. There are some, I mean, there's actually a lot of undescribed reef area, but there's not a lot of hard structure, like it's not a rocky bottom environment. And there are a lot of organisms that depend on that really hard, structured habitat to attach and grow and enhance the biodiversity that we have in the Gulf. And so, what we've found is as these reefs, these offshore, offshore oil platforms, have developed, they've essentially become the largest sort of de facto artificial reef system in the world. And they have very robust communities of organisms that are growing in the legs of those rigs, and they have very unique communities of fish and larger transient species that utilize those rigs as habitat, either for feeding or for nursery function. And what we were looking at because of the work that that we do, where we're looking at sort of habitats more than the organisms that use the habitats and I'm a benthic ecologist, which means I usually work on things that are on the bottom, we wanted to look at what is actually, what organisms actually live on the legs of those oil platforms, and what happens when those oil platforms are decommissioned. So, once they've come to the end of their useful life, they, the oil companies, are required to pull them out of the water. And they can do that in different ways. But something that had become popular at the time was this Rigs to Reefs program, which is recognizing that those, those rigs actually have become this incredibly diverse habitat and are actually providing an ecological function and so can we keep it out there in some way. And so, there was some research looking at can you cut off the top of the platform and sort of remove the working portion, but leave the legs? Can you topple it and lay it on its side? Can you cut it off and tow it into a, into a location where lots of those oil platforms go at the end of their useful life? And so that was what the research was to

sort of look at what would be the ecological impacts of the different reefing approaches. It was, it was pretty interesting. I know that was a, a long story to get to the point, which is that, you know, a lot of what we see, a lot of the diversity that we see on the ocean is in the portion of the water column where the light is most prevalent, so in the shallowest portion, and that is the same thing that you see on these rig platforms is there's a lot more diversity where there's sunlight so plant life can grow or corals can grow where they have symbiotic algae that need that light to help facilitate them as well. So, when you cut them off and when you put them deeper, you lose some of the essential functions that are present when they're in very shallow water, however, you still maintain pretty, good functionality at the same, you know, if it's cut off, it looks at that same level what it would look like on an active rig. You know, the truth is you can't really leave it any shallower. There, there are rules about navigation. I think they have to be cut off 80ft below the surface just so there's no navigation hazards. So, you lose some things, but you definitely still benefit if the rigs aren't totally pulled out of the water.

Julie Kuchepatov [00:12:36] Do commercial or not even commercial, but recreational fishery, fisheries, and fishers, do they take advantage of the teeming wildlife?

Jennifer Pollack [00:12:44] Absolutely.

Julie Kuchepatov [00:12:45] When they fish for it.

Jennifer Pollack [00:12:46] I mean, from here, from coastal Texas that we have some rigs are very close, like a couple miles out from the beach. So, people regularly on nice days will kayak out there. People dive out there, snorkel out there. People will go out there when the whale, you know, when whale sharks come into the Gulf of Mexico. Fish like crazy out there. So there, they are these really kind of unique, special places that are really used a lot by people who like to have that recreation on the water. But it's I think it's sort of a foreign concept. When I moved to Texas, I didn't understand that connection but now living here, there's sort of a fight to keep some of the benefits of those rigs when they're done.

Julie Kuchepatov [00:13:22] The need to divest from fossil fuels for climate secure futures is clear. And one way to do this is to develop and promote alternative energy sources like energy from wind farms. Texas is also exploring wind farming, and we were really surprised to see many wind turbines on land during our trip. There are also plans to build wind farms in the Gulf waters.

Jennifer Pollack [00:13:41] I have heard conversations of this, is there's so much interest right now in developing wind power, the wind power industry in the Gulf of Mexico. I think, if I'm not mistaken, the only wind installation offshore right now, I think is in the northeast, somewhere off the coast of the northeast U.S. but it's, you know, the having been here for however long you've been here, it's a very windy place. And of the Gulf of Mexico makes sense. And I think that that's actually something that maybe even is in some pilot phases, trying to look at those platforms that are established. Can we put wind installations on them instead?

Julie Kuchepatov [00:14:13] However, some Texans, like Alyssa Lopez, aren't thrilled with the idea.

Alyssa Lopez [00:14:17] So the government is basically pursuing a giant 100-acre wind farm out here in the Gulf. There's a bunch of different articles you can read on it, and that's ideally to help energy production is what the main goal of it is.

Julie Kuchepatov [00:14:36] What do you how do you feel about that?

Alyssa Lopez [00:14:39] I'm not thrilled, honestly.

Julie Kuchepatov [00:14:41] Why?

Alyssa Lopez [00:14:42] Because there's industry and operation to put those wind farms in the Gulf is going to be a huge undertaking. There's going to be so many boats and the whales, you know, they just passed this bill about the larger tonnage ships can only go, you know, ten knots or something like that. You're doing that, but you're putting these wind farms with all of these giant ships that are going to have to go back and forth from land to sea, a hundred times over. What's the purpose of that? And there's, you know, a lot of, I feel like a lot of land that we can still use to build them here, whereas the secondary, the cost aspect of it. You're going to put a giant metal platform in the middle of the ocean. I mean, stainless steel, whatever you can and everything, everything rusts and it's going to go bad. You're going to have fires and pollution that are going to spill right down into the waters, and those wind farms are going to bring fish to them.

Julie Kuchepatov [00:15:46] In addition to the cost and environmental implications of siting wind farms in Gulf waters, there are questions about the potential of limiting access to public waters and who is actually developing these farms.

Jennifer Pollack [00:15:57] My guess, my guess. I would speculate that actually the oil and gas industry probably is quite involved in wind develop- in wind farms. I mean, it would make sense, I think, that they're already the energy provider for the world, that it would make sense for them to be looking really heavily at, like, what does a future of energy look like? I don't know that that would be true, but I would imagine that they're right in the mix. In terms of, you know, people not liking the wind farms, the offshore wind farms, and what my understanding would be of what happened when the offshore oil rigs started popping up in the Gulf of Mexico, nearshore and offshore, is some of it is what the restrictions are of the use of the water near to those structures. So, for example, if you're, if you want to fish or dive and really be able to experience the benefits of having that structure there, you really don't want to be told, okay, you can't tie off to it, and there's a certain buffer where you can't get very close to it. Yeah. So, I think my guess would be if those things are still in conversation, that would be the, the contention is don't take away from us something that we currently have access to and if you're telling us you're putting something in that is really going to be beneficial, then don't prevent us from accessing where the benefits would be.

Julie Kuchepatov [00:17:17] When it comes down to it, a lot of the discussion around decommissioning of oil rigs and wind farm siting in Gulf waters is a discussion around access to the Gulf - who has it and what is their responsibility to the Gulf and the coastal communities. There are other interested parties that enjoy the Gulf's resources like the other Gulf states, Louisiana, Alabama, Florida, Mississippi and the Gulf countries, Mexico, and Cuba.

Suraida Nañez-James [00:17:39] So I've had to look at what are the key issues, if you're looking at fisheries, is the fact that the management of it is hard to manage across the states, and we know that fish don't have borders or lines or anything like that, especially when you're working in the Gulf. We are one Gulf, right? That we're three countries.

Julie Kuchepatov [00:18:01] I asked Jennifer Pollack what the Heart Research Institute is doing transnationally.

Jennifer Pollack [00:18:06] Yes. Okay, so the Gulf of Mexico is this really, has a really unique model and really unique mission among marine labs, broadly, I would say. You know, the marine labs that I was trained in are mostly a bunch of natural and physical scientists who are interested in studying, you know, the natural and physical processes in the marine environment. There's not often the social science aspect, like, how does that affect the people who live on the coastline? What does that mean for resilience after a storm and recovery of the, the populations of people who live in these areas? What about the, the legal implications that underpin the policies that we are doing the science to help inform and also economically, like what are the benefits of these environments that are intangible, that are the non-market monetary values? So, bringing those perspectives to the table like HRI has, it just provides this new way of looking at problems and new ways of coming up with solutions to try to recover after disasters, for example. As you said, we are trinational in terms of our focus. We, we recognize that the Gulf of Mexico is not just a U.S. Gulf, but the U.S. is also partners with Mexico and Cuba in management of the Gulf of Mexico. So, in, in response to that, we actually have an HRI endowed chair who is located in Mérida at UNAM Sisal, and we have another HRI endowed chair who's at the University of Havana. And so that that may be unique in the U.S. among, among research facilities, I'm not sure, but we have, you know, really put investment in the people living in those places with the expertise to help with trinational management, governance, science decisions.

Julie Kuchepatov [00:19:49] Another group with powerful interests in the Gulf are recreational fisheries. I asked Roland Rodriguez from Aransas Pass about this. I'm curious about the importance of recreational fishing for the community also.

Roland Rodriguez [00:20:00] Yeah, this is our lifeline.

Julie Kuchepatov [00:20:01] And they recognize the need for conservation of resources.

Jennifer Pollack [00:20:06] in Texas, some of the biggest conservationists are the recreational fishermen and the, the people that hunt on the, you know, there's a lot of private land in Texas and a little bit of public land where you can hunt on as well. But, it may be to some people and that makes sense that those are the people who are the big conservationists, but those are the people who are out and recognize the value of habitats for taking their kids to go fishing, or they may be the catch and release people who just, you know, want to be out there and experience the beauty of nature but don't need to take anything home, you know, sort of leave, leave no trace. So those folks have been, those are, that's a community that I interact with a lot professionally because of that shared value system of wanting to maintain the environmental benefits that we have right now, and to replace the ones that we've seen lost over the short arc of our own lifetimes, and try to get that back for, you know, for our children.

Suraida Nañez-James [00:20:59] If we're looking at the economy, there's money in taking people out to do fishing trips, right? People want to catch things. So, it's a, it's a benefit to them to make sure that there's fish out there to catch, right, and they're healthy fish and it's a healthy ecosystem. I would like to think that they would have an invested interest and a lot of people, a lot of these folks that we talked to through our graduate degrees, because my husband did recreational fisheries as well, is that they grew up fishing and so they can actually see some of those changes that have occurred. He did a lot of stuff with catch and

release and looking at if that actually works. And he found that it was, you know, so people can enjoy that. But, but again, throw it back so that you have that generational fisheries coming back so somebody else can enjoy that same sport. They, they do have a lot of influence. You have some pretty connected folks that are in this fishing industry that want to see it thrive.

Julie Kuchepatov [00:22:00] Sometimes there's conflict between interested parties. There's beef between the commercial fishery and the recreational fishery in the Gulf. So, what's the issue? Here's Alyssa commercial and recreational fisher and founder of Gulf of Mexico Ike Jime.

Alyssa Lopez [00:22:12] Well, that's a good question. So, I'm a firm believer that the recreational and the commercial side have to come together, and there's tons of articles you can read that right now it's, they're completely against each other. They're fighting against each other and the Gulf Council in various ways.

Julie Kuchepatov [00:22:30] About, about what? Sorry.

Alyssa Lopez [00:22:32] The commercial fishermen, they feel like that the recreational fishermen shouldn't catch as much fish as they do because they're not using the product for the benefit of the greater good, for, you know,

Julie Kuchepatov [00:22:45] The community.

Alyssa Lopez [00:22:45] The community and the recreational fishermen, they obviously feel like they don't get enough fish because they only get like 30 days out of the year to harvest red snapper. It's mainly over the red snapper. And I think that if they would work better together, that, than fighting against each other, they would probably get a lot further. So, I think for us, it's really important to offer people the experience so they can learn about what's out there and what it feels like to catch a fish and what it tastes like to eat one and you can only do that by offering charters and recreational fishing. So that's why we do it.

Julie Kuchepatov [00:23:30] And yet another interested party that significantly affects the health of the Gulf are farmers and regional and national agricultural production.

Jennifer Pollack [00:23:38] Climate change really is impacting the Gulf of Mexico because we're in the South, like in in a lot of the Gulf of Mexico, we're talking about very hot areas, warm areas where there's already a lot of evaporation. The bay systems that depend on river water flowing to them to really maintain their ecological balance are having increased, their being increasingly taxed by the need for, you know, agricultural use of that river water and cities, you know, human populations that depend on that water as well. So, the, the environmental conditions needed to sort of sustain what's needed in, in the coastal regions are really becoming stressed and more difficult to maintain. So, I was just listening to the radio yesterday on my way home from work, and they were talking about the Colorado River, right, and what's happening with those states and trying to manage the limited water resources. I mean, that's going to be happening more and more and affecting the Gulf of Mexico for sure. And these are difficult challenges, right? When you're thinking about allocation of water that's going to the agricultural industry that feeds everyone in the United States. It incorporates tribal rights. It incorporates, you know, what about feeding a city, you know, municipal waters and things like that as well. And then the environment, typically in the past often was the last sort of person, so to speak, at the

table. But now it's much more a part of the conversation, but it doesn't make it any easier. You know, water. It's water.

Julie Kuchepatov [00:25:10] But fisheries and especially water are more than resources to be exploited.

Suraida Nañez-James [00:25:13] And I think that's thinking, again, it's that mentality of thinking always as fisheries and the environment as a resource and not as anything else but a resource, right. If you, if you think of water in general, like water is a living thing, but we don't think of it as a living thing. It gives life. And there's, it's different, right, if you're going to protect it. There's been folks that we've talked to you as well, a good friend of mine in Canada who, who has an entire Ted talk on it, as if water should be protected like any other species, right, because it is such an important part. And, and again, that's just a different way to think about living things and even non-living things again and the connection to that.

Julie Kuchepatov [00:25:57] A big issue related to agricultural runoff is the proliferation of sargassum, a type of brown seaweed that typically floats in large mats on the surface of the ocean. In recent years, there's been an increase in the amount of sargassum in the Gulf of Mexico, and this phenomenon has been attributed to various environmental factors, namely agricultural runoff from the Mississippi River and other sources that carry excess nutrients such as nitrogen and phosphorus into the Gulf of Mexico, which act as fertilizers and promote the growth of sargassum and warming sea surface temperatures. Sargassum tends to thrive in warmer waters. The Gulf of Mexico has experienced elevated sea surface temperatures, which create favorable conditions for the growth of Sargassum.

Alyssa Lopez [00:26:37] So sargassum right now is a big hot topic that we're all talking about. You know, there's acres of it out there. It's, it's for some smaller boats, it's hard to get through, like, you can't just run your boat straight through it because you'll suck it up into your many systems and no bueno there. Other ways that that doesn't help us is, obviously, when we're trying to troll for fish, you're catching weeds all the time, and that's just a lot of work for the crew and you're not productive fish wise, harvesting wise.

Julie Kuchepatov [00:27:08] Here's Tiffany Farrell, an award-winning winemaker at Haak Winery in Santa Fe, Texas, which is between Galveston and Houston.

Cameron Moore [00:27:17] What the fish? Why are we talking with a winemaker in a podcast about seafood and climate?

Julie Kuchepatov [00:27:21] Well, Tiffany is also a hydrological scientist, which is someone who studies the movement of water through different systems and, as a winemaker, also has a vineyard so she's also a farmer. And what goes better with seafood than wine? So, your vineyards are under 20 miles from Galveston Bay. So how does the marine environment influence the grapes grown in your vineyard and the wines you produce?

Tiffany Farrell [00:27:44] I would say it influences more in terms of a culture perspective. We are so fortunate to be right here at the Gulf Coast. We grow. I work with a grape variety called blanc du bois. This is a hybrid grape variety that we can grow here in the Gulf Coast. It was bred by University of Florida, and we can grow it here because it is tolerant to what we have as Pierce's disease. So, Pierce's disease is caused by a bacteria called Xylella fastidiosa and there is the glassy wing sharpshooter is the host for this bacteria.

And it loves to suck on the sap of, like, grape vines and oleanders. And so, when it sucks on, it exchanges the bacteria and blanc du bois is a grape that can live with this bacteria and still produce just delicious grapes. Just fabulous wines. If we were growing something like chardonnay or sauvignon blanc, it would, this bacteria would completely kill it, hence the name Xylella. So, it affects the ability of the vine to uptake water, so they suffocate to death. And how I would relate to the blanc de bois, back to your question, it's a white wine and it's, kind of has some similar notes, like to sauvignon blanc or a pinot grig, something like that, but it is delicious with oysters and so it really enhances, culturally speaking, our, our food that we enjoy here on the coast.

Julie Kuchepatov [00:29:17] That's what I was going to ask about, you know, wine and oysters go together like nothing else. It's a match made in heaven. So, tell us about the importance of oysters in this region, if maybe to you personally, to your winery, to the wine itself, growing up.

Tiffany Farrell [00:29:32] Well, I, I personally cannot enjoy oysters without a glass of wine, particularly a white wine. Just a really nice, crisp and dry, just bright, acidic wine.

Julie Kuchepatov [00:29:45] Here in Texas, we've seen some extreme climate events over the last several years. Again, harsh freezes and increasing intensity of hurricanes and Gulf storms. So how has this impacted your work and what do you think changing climate means for the Gulf Coast and your work specifically?

Tiffany Farrell [00:30:00] That's a great question. You know, short answer, most certainly. I started here at Haak Winery in 2017. That was my first harvest here. I started in February. September, we had like right in the smack dab middle of harvest. That's the thing. So, every year, harvest here can be wonderful. It can also be stressful time because it's hurricane season. So, Texas has the what I consider the longest harvest. It usually starts in July for us because of our hybrids. Our hybrids are harvested early. And so that's the height of harvest. The height of harvest is also the height of hurricane season. So, July through November is our harvest. And my first year here was Hurricane Harvey. That was intense. We had luckily already, already had received our hybrids, and we already had most of them in bottle. That's the best place to have your wine just to be protected, just like finished and bottled. But I had just received our first vinifera harvested off the high plains. It was going to be a rosé of Cinsault, and I had literally put it in the tank and started the fermentation when we got the threat of this being a possibility. We lost power for five days. Having a fermentation with no power, it's just, it's impossible. Basically, the fermentation just goes awry really quick. You can't maintain the heat and it just that's a super quick fermentation. There's so many like off aromas that can come of it. It was a total loss. So that was a big investment that was a loss at that one. That was one thing that happened. With that also we, we got 56"of rain in three days. And so, you know, our, our vineyards were totally flooded. The room that we're standing in, which is, I would say probably 10 to 12ft deep, this was completely underwater. We had wine and barrel down here that was aging, you know, from past vintages, completely just devastated all of that. So, it's financially, devastation, not to mention just I live in this community, too. So, you know, things are happening at home. So, it's like having to come back to work and dealing with the aftershock of, of the hurricane mess at work. And also trying to structure your home back home, back up again. You know you got the to the two stresses. It's all just coming at every angle. So, our storms are becoming more intense. So, the Hurricane Harvey was in 2017. We had winter Storm Uri, which that was 20. It was February 15th, 2021, I believe. Yeah. And that devastated a lot of our vines. So down here it's so hot most of the time, we don't have these diurnal shifts like other like, you know, say Oregon or Washington or

California. Our, our grapes aren't attuned to, let's say, going into hibernation, we'll call it. They just don't have that in their memory. So that was a really big shock on their system. So, it pretty much it killed our, our vineyard, which was we were growing blanc du bois at the time. We also work with seven different growers in, what I call the greater Seeley area. This is like Brenham, Texas. Fayetteville, Texas. Sealy, Texas, Cat Springs, Texas. And even though they were two hours north of here, the storm was just massive. It was just enough. People are calling it the snow apocalypse. It was just something that we've haven't seen before. We were without water, power for a week, just really intense. And so, of our growers that we work with, we are probably usually accustomed to getting like 50 tons, let's say, in a given year, blanc du bois. and because of the death of the vines, this year we'll be getting 12 tons. So, it's a significant loss. Blanc du bois like I said, for our culture here in the Gulf Coast is really significant to us. We've built quite the following. We have this particular wine in, not only is it sold here at the winery, but it's sold in HEB, Spec's, Total Wine and More, Kroger. We have all over the state of Texas. We have placements of it, and we're having to, like, take it out of distribution. And when you're talking about like distribution and strategy, it's devastating to lose a placement on a, on a shelf. And so, it's hard to recover that once you take a bottle off the shelf. Meanwhile, we're having to replant vines. We probably won't be able to get a crop from those for another two, three, four years in that time frame. Having to recover, getting those placements back in the market is, it's a, it's tough. It's a really tough.

Julie Kuchepatov [00:34:39] So how do you plan. Because I mean we see that these storms are going to increase. They're happening more often. They're intensity is increasing. Then there's just other things that are happening. Climactic events. How do you prepare for those? Or can you?

Tiffany Farrell [00:34:54] You really can't. I mean, that's the thing, I think for us here, you know, they say that climate change is going to affect everybody differently. Temperatures are rising, you know, but what does that actually look like, you know, when we're boots on the ground? For us, it just it's looking like more variability, more intense variability. Are we going to have extreme summers for the next three years and then following that it's going to be, you know, these super crazy winters? And so, it's just going to be these shifts that we can't really predict. Very erratic, erratic weather patterns that are hard to predict. So, a lot of our other grapes we get are from the Texas high plains. This is like up in the panhandle, so we're talking like a 8 to 10 hour drive from where we're at now. But they're getting more events of random hailstorms, windstorms. The hail damage is, is pretty significant. We lost, there was a, October 31st, 2019, one of our vineyards received a kind of irrational hailstorm event that we lost our Touriga Nacional. And so how do we prepare for them? It's, it's, it's nearly impossible, just having a plan in place for whatever, like the hurricane preparedness plan and just making sure that things are, you know, buckled up and tightened down but it's, it's, it's almost impossible.

Julie Kuchepatov [00:36:14] The Gulf of Mexico dead zone is a hypoxic or low dissolved oxygen area that forms each summer in the Gulf of Mexico over the Louisiana/Texas continental shelf, originating at the mouth of the Mississippi River and into the Gulf. It is the second largest dead zone in the world, containing more than 2 million acres of habitat potentially unavailable to fish and bottom species. Larger than the land area of Rhode Island and Delaware combined. Human-created nutrient pollution, including agricultural runoff, is the primary cause of dead zones. The dead zone area in the Gulf of Mexico contains almost half of the nation's coastal wetlands and supports fisheries generating $1 billion a year. So how do you balance growing a healthy and productive agricultural crop

on the coast, with potential for agricultural runoff along the Gulf and adjacent to the Gulf of Mexico dead zone?

Tiffany Farrell [00:37:09] We have a three-acre vineyard. Finally, finally, it's back online.

Julie Kuchepatov [00:37:14] Yay.

Tiffany Farrell [00:37:15] I know, so. And we haven't been fertilizing. We just don't fertilize, right? I mean, it's, is it my choice? Not necessarily. It's mostly by, like, just conflict of other things that we have to do to get jobs done around here. We're just shorthanded and, you know, that kind of thing. But certain things we can do each year. We can test like the petioles of our vines and seeing what, what are the concentration of nutrients that are, like this gives me an idea of like, what the vine is up taking out of the soil. How healthy is the vine? Is it lacking any nitrogen or phosphorus or any combination of what it might need? And then, you know, making amendments based on their actual need. I can do more soil samples and seeing what is already in my soils. Here we have clay. That's, that's a thing. It's. Another thing about it is like the soil type and like, clay just holds on to everything. Doesn't really want to give up much. The cations, you know, there's not very mobile here in the clay, right, so you may need to amend with more nutrients in that sense. But testing your soil samples and giving the soil, giving the earth what you need opposed to just like guessing like, this is my protocol. This is what I've done. This is what I'm going to go do because it's Monday and it's on my agenda. This is what I do every Monday. This is the amount this is, you know, here's my plot. Load up the tractor with the spray, you know, or whatever it is you're amending with, your irrigation lines. However, you amend your, your crop. Just knowing more. Just might take a little more time to, you know, a. you're going to spend some time going to get the samples, b. if you're not doing them yourself, you're sending them in. Having a more educated approach to making the appropriate am-, you know, amending your soil appropriately.

Julie Kuchepatov [00:39:09] So what is the advice that you would give to that farmer in Iowa who might not understand what's happening up there comes down here and could affect, you know, not only the critters and all the, the teeming life within the Gulf, but also around it.

Tiffany Farrell [00:39:27] I have, I would have a hard time believing that if I went to the farmer in Iowa, that he would flat out tell me that he didn't know that. Like I would imagine 100% this farmer, he, or she, definitely knows that that is a thing, like 100%. I think it would go, the question would go back, is how to get this farmer to quit doing

Julie Kuchepatov [00:39:50] To care.

Tiffany Farrell [00:39:51] Well, a. to care, and then b. to quit doing it. Well, that's just the way I've always done it, to care, right? To, to make the changes, right? So maybe going back to the question you had earlier, like, some kind of incentives, you know, for these farmers to, to track their changes, like, you know, how many samples a year are you sending in for testing based on the results of your samples? Are you able to reduce your application of X, Y, and Z? And those can all be tracked and proven right and like records and stuff. And maybe starting with like an incentive program, this is something that comes to my mind, right?

Julie Kuchepatov [00:40:30] For a climate secure future, we must divest from fossil fuels, oil, and gas, and ultimately solutions should come from those most affected by the

catastrophic effects of the climate crisis. We must engage with all interested parties and hold ourselves and each other accountable towards building a climate just future. A future that works for everyone. In the next episode of the special Texas edition of In Hot Water, we will hear from world class experts on oyster farming, blue crabs, and the endangered and endemic whooping crane and their interconnected existence, fate, and future under the threat of the global climate emergency.

Crystal Sanders-Alvarado [00:41:03] 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. This season of In Hot Water is generously funded by the Walton Family Foundation.