Q: [0:00] So we'd like to start with how do you like to introduce yourself?

A: [0:05] My name is Madison Maier.

Q: [0:08] And what's your role? What do you do here?

A: [0:12] I manage an experimental aquaculture lease on Hurricane Island. Hurricane Island is a nonprofit that's just southwest of Vinylhaven Island. It's about 11 miles offshore from Rockland. And we have a 3.2 acre experimental lease site where we are growing all sorts of things, but primarily focusing on growing and studying sea scallops. And so I manage the farm and help run those research projects. And then we also do some education here. So I get to work with primarily middle school and high schoolers as well.

Q: [0:46] Wonderful. And we're going to come back more to asking you follow up questions about your role here, but to kind of go back first to your background. Can you tell me about where you were born and grew up?

A: [0:56] Yep, I grew up in Connecticut in a suburb of New York City, so right on Long Island Sound. And I came to Maine for college. I went to Colby College and then moved to Rockland after I graduated and have been here ever since.

Q: [1:17] What year did you graduate?

A: [1:18] In 2019.

Q: [1:21] Great. And what did your parents do and where were they from?

A: [1:25] So my dad is from New York City, born and raised. He worked in a bank. And my mom grew up primarily in Florida, but her family was also from the East Coast. And she was a homemaker. So she took care of me and my siblings.

Q: [1:47] And how many siblings do you have?

A: [1:48] I have two older siblings. So I'm the baby.

Q: [1:52] And where are they? And what do they do?

A: [1:56] Good question. So my older sister, Kaitlin, lives in New York City. I'm the only one in the family that's actually not living there. And she started her own company in woman's health. And so if you've ever heard of uterine prolapse, my sister has recreated the pessary so it is collapsible and self-removable. She's pretty smart.

And then my middle sibling, Kai, (sp?) also lives in New York and does marketing and like numbers side of marketing for Bloomingdales.

Q: [2:31] And do you have, you haven't mentioned it yet, but just to ask, do you have any history of fishing in your family? And that could be like nuclear family or like extended family or grandparents, great-grandparents.

A: [2:42] No. I definitely grew up going to the water, but no history of fishing in my family.
Definitely a little bit outside of the family norm.

Q: [2:57] And just to check, any history of anyone working in kind of supporting roles or industries such like fish processing, marketing, bait or gear?

A: [3:06] Nope.

Q: [3:08] Nope, none of it? Great. So you mentioned you went to Colby. Could you say a little bit more about your educational background – would be like your trajectory leading up to that and what you did at Colby?

A: [3:16] Yeah. So yeah, went through school, high school, not really sure what my grand plans for the future were, ended up at Colby where I studied environmental science and education. Always was really interested in the water and being on the water. Always more interested in like working with my hands than the computer side of all of that.

So I was able to have some cool experiences there. A pivotal part of my college experience was that I was on the women's rugby team. So that was a lot of really good friends and good times.

Q: [4:06] And within your kind of environment, your studies in environmental studies, environmental ed, did you have any exposure to marine systems or what kind of sparked that or started that for you?

A: [4:17] That probably started a lot younger. Was never like a lap swimmer or everything, but really loved to freak out lifeguards by seeing how long I could stay under water growing up. So when I was in high school, I got to do basically like the last month of my senior year. At my school, you could just go do an internship and so I worked at like a local marine nonprofit and I helped take care of all their tanks. And so that was really fun for me and I loved that. Loved feeding the horseshoe crabs especially. So I knew I was interested in that.

And then in school, my summer jobs were – worked at another aquarium, environmental ed. And then I actually started working at Hurricane Island when I was still in college as a summer intern. And that really clicked with me, the getting to be on the ocean all the time, working, doing fun things in a good community.

Q: [5:22] Are you married?

A: [5:24] Nope.

Q: [5:25] Do you have any children?

A: [5:26] No.

Q: [5:27] Do you – if you had children in the future, would you be interested in them going into fisheries or aquaculture?

A: [5:34] Yeah. Yeah, I have no plans to leave Midcoast or Rockland area. And – yeah.

Q: [5:44] So now kind of focusing more on your role here. So I know you told us a little bit about it through the background questions, but just maybe again, how do you describe your role in the fisheries or aquaculture industry in Maine?

A: [5:58] So I consider myself sort of like more of an aquaculture researcher than a fisheries researcher, even though some of our projects are pretty relevant to both industries.
And I think a part of that is because a big chunk of my job is just managing our farm. And so in order for us to have any sort of relevant information or data coming out of our farm, it needs to be run to some sort of standard. So even though we can't sell commercially, we still try and upkeep it to some commercial standards as well.
And so there's kind of the side of my job that is pretty research focused where I'm coming up with experimental designs and collecting data and setting up experiments.
And then there's kind of a part of it where I'm more just on the water working.
And then for a couple hours every week I get to hang out with students and talk to them as well, which is really fun for me.

Q: [7:00] Great. And so you told us how you kind of ended up coming to Hurricane, I guess initially, as a college student. How did you get into this work specifically like experimental aquaculture, like kind of yeah, can you tell us about that?

A: [7:12] A little bit of chance for sure. I knew that I wanted a job that let me be outside a lot, that let me work on the water that didn't require a lot of like computer time all day every day. And I was also interested in food systems and aquaculture kind of just made sense for all of that. And it definitely does feel like something that like I as a person who's not from Maine could get into and do myself independent of, you know, working for an organization who I manage the farm for.

Q: [7:54] And so did you sort of learn on the job or were you kind of apprentice to somebody –

A: [8:02] It's a lot of learning on the job. I came in at like a big transition time. And so for my first year, I just was figuring everything out by myself, which was wicked fun

and a great way to do it. Big learning curve to figure out what it takes to manage a farm and what it takes to manage especially a scallop farm and all the gear and maintenance. And so pretty much all of what I've learned has been on the job. And I mean, there's been some great, great things through that.

I came as a diver but like really like learned how to dive here, learned how to inspect moorings, do all of that underwater work, became a much better boat driver, which is huge. And then all of the, you know, general maintenance, what is important in like doing a research project on an aquaculture farm where you really can't control everything. So like what, what should you be putting effort into controlling versus what should you just kind of be letting go?

Q: [9:11] And can you tell us a little more about the farm itself, which, yeah, you've mentioned
a few things that sort of, what you're growing, how – the size and how the setup is.

A: [9:21] So it's a 3.2 acre experimental lease off the north end of our island. We're permitted to grow sea scallops, oysters, mussels and kelp. Pretty much like all of our time and space and research is focused on sea scallops. So when I started, they had just expanded from a limited purpose aquaculture site to this larger experimental lease. And so it's grown a lot in the time that I've been here. And so we have scallops in bottom cages because we're relatively shallow site. The site was chosen because it's kind of tucked in between two ledges. And so there's like not really a boat conflict. And it's not really a popular fishing ground.

So we keep them there because that brings them down a little bit, which is great. And we also have two long lines – horizontal long lines underneath the water. Ours are about 10 to 15 feet under the water just because our site is a little shallow. I installed that northern long line, but the more southern one was there when I started. And off those we have a lot of lantern nets where we keep our scallops. Also have some floating bags with oysters we'll grow crop in the winter and then also since my times here we've gotten aquaculture float with some solar on it and a mast and boom. And all that stuff was created on island by me and my co-workers.

Q: [10:55] And how long has aquaculture program been running? You said some of it was here when you got here, sounds like you developed a lot of it and it's expanded a lot. How far back does it go?

A: [11:04] So Hurricane started in 2013. And I started in 2018, I believe. And so it had been running for not since 2013, but pretty close to it. They actually started because they were doing a research project looking for changes in like scallop settlement in a voluntary fishery closure in the Muscle Ridge Channel. And so the idea was like if we close this really small area, will it increase the fishable scallops nearby? And so started setting out these larval collector bags and then you end up with larval scallops in those, so what are you going to do with them? Grow them out on a farm.

Q: [11:55] And you mentioned an experimental lease that's here. Do you have any other commercial fishing licenses or aquaculture licenses in your name?

A: [12:04] Spat license to collect the larval scallops and then big hopes of having my own farm one day.

Q: [12:12] Tell me about that one. What's your hope?

A: [12:17] Like to have my own farm one day. I think I've really, really developed a love for scallops and I understand them really well. And so I am very interested in growing scallops on a pretty, probably on a pretty small level. And it's definitely sort of like slow thing to get into between picking a site and getting at leased and going through that whole process and making sure you have all the gear. And so in some ways I feel like I'm at a little bit of advantage because I've made so many mistakes working for someone else that I feel a little more prepared to do it for myself. But I think it's a good – I don't think I'll maybe ever make a full living off of it, but I think that it's a good, a good way to make a partial living and it lets me do, it would let me do a lot of the things with my life that I want to do.

Q: [13:27] And for an experimental lease and what happens to the scallops you guys grow out, so you're doing experiments about growing methods, settlement – improving different things and reproduction, but yeah, what happens to the scallops?

A: [13:42] So we aren't allowed to sell commercially off our lease because we're a scientific experimental lease, not a commercial experimental lease. And so the difference there is that ours is renewable. And so some of our – a good chunk of our experiments require tissue condition checks, which basically means that post-experiment we need to dissect the scallops to see if it had any positive or negative or no effect on how they were growing in their health. So that's kind of a big way we get off of, we sort of get rid of scallops.

Q: [14:16] Could you comment it all on just the scallop industry, whether or not it's certainly not as big as other aspects of sort of shellfish aquaculture in Maine. It's newer. Yeah, could you just comment on sort of like where the industry is at in the state and
sort of, yeah.

A: [14:31] Yeah, I don't think that the scallop fishery in Maine, the state fishery is going anywhere and I also don't think that scallop aquaculture is going to replace the fishery at all. We have a pretty healthy fishery. It collapsed in the '90s and has since kind of switched management strategies. And it's going like well, like I don't think that we should close our scallop fishery, need to close our scallop fishery anything like that. I just think that one of the things about scallop aquaculture is that it can't necessarily

compete with the wild fishery from like a output standard or anything like that, but it can offer different things in the fishery.

So the Dayboat Fishery in Maine is a winter fishery, so you can only get fresh scallops in the winter. They have a size requirement. Aquaculture scallops don't have a size requirement and there's also the possibility for you to sell the whole animal in aquaculture. So it's like a requirement in the fishery that you shuck them at sea and you only land the meat, which is what you, you know, we'll see on your plate or at the grocery store or anything like that, but it's a whole animal and the whole animal is edible.

But we have an issue with like toxins and closures in Maine. So things like paralytic shellfish poisoning or amnesic shellfish poisoning and scallops are considered to be really slow detoxifiers, so they hold on to all of that in their body tissues for a really long time, but not in the muscle that we eat. That's why they make them all the fishermen shuck them at sea, only land the meat and because they hold on to them for a long time and because scallops are really good swimmers – when you're fishing for them, you don't know where they were. So you never know whether they're safe to eat unless you test each individual scallop for those toxins, which is not really feasible.

In cultured scallops, you know exactly where they've been the whole time and you know that they've all been eating the same food. And so you can do testing with the Department of Marine Resources to see if they're safe to eat and if they are, you can sell the whole animal. Often you're selling them much smaller because if you're selling a wild scallop, that would be like a wild scallop size, that would be a really big mouthful. And so they're, you know, more like a two-ish, two-and-a-half-inch shell height and you can cook them up just like mussels, eat them, they're delicious. And you can also sell even just the meats year round. And so you can kind of differ in the product that you're offering from the wild fishery, which I also think is important.

Q: [17:21] Yeah, thank you, really interesting. A few more questions just about sort of your background and experience in fisheries or aquaculture in general. So obviously, you're managing the farm and so you may cover different roles here. So I'm just going to kind of prompt you and say whether you feel like that describes work you have done in the past. Do you have any experience in fisheries or aquaculture in relation to bookkeeping, bait, or gear preparation?

A: [17:50] Yes.

Q: [17:51] Yes, tell me about that.

A: [17:53] All sorts. So – yeah, all of it. I manage pretty much all of the gear on our farm and so that's, you know, building bags which are the same as oyster bags, repairing lantern nets when they rip. All that. We keep our lantern nets off of loops because if you put them on a single line, it will unlay (sp?) real bad. So, you know, splicing all

the loops and getting those ready and all of that. I kind of head up and it's also a lot of like maintaining the farm under water. So I'm a diver. And so inspecting all the gear, replacing it as needed, all the lines and chains and shackles and everything. It's actually a part of my job that I really love. It's really fun. And yeah, then maintaining the boat, keeping it up.

Aquaculture, like everything we know about scallop aquaculture pretty much has come from Japan. They have like very different boats, very different co-op style for aquaculture than we have here. And so it's a lot of like taking their technology and trying to transfer it to Maine and like what we need in these waters and how our boats work.

And so my work boat is a 24 foot Carolina Skiff. And that has come into creation since I have started. And so my end goal for the farm is to not have to lift anything heavy because when I started out, I was like hand hauling my cages, hand hauling my long line up to reach my lantern nets and it just – back breaking labor that is like in no way sustainable for anyone in the long term. And so I've worked on like making a lot of the systems and equipment we have, we have some specialized gear on our boat that was like custom made, I helped design. And then I had a coworker weld up. I just learned how to weld last winter. And so I'm going to make some new stuff for us of this winter, which I'm really excited for. We need a new stern davit just because our gears – we have more gear, it's heavier than it used to be as we continue to expand. And so I want to beef up some of that. Yeah, I really like the gear side of things.

Q: [20:30] Yeah, that's great, how about in terms of experience in post-harvest processing, marketing or trade.

A: [20:34] Not so much, because we're not a commercial farm. We don't market anything like that.

Q: [20:40] What about in terms of education, advocacy or community based organizations related to fisheries and agriculture.

A: [20:47] Yeah. So we have, we have like our own programs on Hurricane that I work with. And so a big, yeah, a part of my job is definitely showing people the farm, talking about our farm with them. We try and have our students engage in something interesting and hands on. And so the way that you collect sea scallops for a farm, because there's no hatchery is by setting out spat bags or like larval collector bags. Of course, they're just in the ocean for months on end. So it's not only scallops in there. And so we'll have like kids sort through them, see what they can find, count all the scallops. And that's like a fun, more fun, engaging way to kind of talk about our work and aquaculture and all of that.

And so I do a lot of work with primarily middle school and high schoolers. I've also started a program out here for adult workshops. And so we do – starting three years

ago we do like one day adult workshops. And some of them are like an intro to aquaculture thing of just if you want to come out and you want to learn about something, you're welcome too. And some of them are a little bit more like skill or workforce focused. And so a lot of those have guest speakers too, which is really fun. So we've had some about site selection. We've had some about like fabrication, like small scale aquaculture fabrication, a really wide variety of things. And they're all free, and open to anyone.

Q: [22:33] Great. What about in terms of research and development?

A: [22:37] Yes. So yeah, the whole kind of point of our farm is demonstration farm and then also research. And so we do a really wide variety of experiments on the farm. Some of them are like internal experiments and so that basically means that like Hurricane comes up with the idea and the funding. And we do it all. Some of them are like farmer collaborations and so we work with other aquaculture farmers to test out – often its gear. That's really great.

We're definitely a different site than a lot of places, especially oyster farms, which there are so many of in Maine. We're pretty far out into Pen Bay, pretty exposed, very cold, very salty. And a lot of the oyster farms are a lot more tucked into shore and rivers and coves all of that. And so it can be interesting to kind of see how different gear or growing methods interact in different spaces.

And then we do some like larger collaborative projects with like other nonprofits or research institutions. And so I was just kind of talking about spat bags to collect larval scallops and one of our projects is working with scallop fishermen to set spat bags up and down the coast of Maine to try and get a better understanding of like where scallops are settling, in what quantities because that's not really well understood, they're population dynamics. Because they spend a really long time in their larval phase in the water column and so they can travel really far.

Q: [24:24] Can I ask a specific one because another interview we did was with Ocean Farm Supply and I mentioned the experiment's going on here with using their beach, their compostable mesh bags. And yeah, could you say a little bit about that? They said they're putting them – it's about helping the biofouling impact.

A: [24:43] Yep. So we're working with Erin from Ocean Farm Supply. And she has basically like created this materic – net, like totally (inaudible) fibre material made out of beechwood. So it's like totally compostable. And we're using it to cover our lantern nets like a sock. And so they come in these big flat sheets and you tie it at the top of the bottom and then you sew it up, sew up the seam. And the idea behind it is basically as like a sacrificial component of the lantern net and so the most time intensive and gear intensive and everything intensive part of running a farm can often be cleaning off biofouling. And that's been changing a lot even since I've been here and things are way heavier than they used to be. So the idea behind this is that you put it out, things will

settle on to that compostable mesh instead of on the lantern net itself. And then it will basically just like fall off and decompose on the seafloor.

So first year testing that out looks like it's working, which is really great. And so the nets are looking cleaner. These haven't even been tested in saltwater yet. And so part of the experiment this year has also just been like how long do they last. So we've been setting them out for like about a month at a time and seeing what happens. And then we've had a few that we've had out for basically the whole summer to see how that changes. But going out, collecting biofouling data every week, you know, at the end we do the tissue conditions of the sample, see if it impacted water flow and made them grow slower or anything like that. .

Q: [26:29] That's really cool. And do you have any experience working in hatcheries? You don't need hatcheries for scallops.

A: [26:39] No, people are trying to figure out scallop hatchery. There's been like a research project going on for a few years where Mook Sea Farm, Darling Marine Center and Down East Institute are trying to basically figure out how they can have a scallop hatchery. And we give them adult scallops for that work, but I'm not involved in the hatchery side of it beyond oohing and aahing over, you know, little baby scallops.

Q: [27:08] And then in terms of seafood, do you have any experience in the food service, food preparation, customer interface side like shucking oysters, things like that? Great.

Could you describe for us like what does an average day – which might be hard and you can pock a couple different seasons if you want as it's helpful – what an average day and work looks like for you.

A: [27:29] Yeah. An average day is hard. I have more of average weeks, but I often spend a pretty good chunk of my time just on the farm doing whatever general maintenance needs to happen. And so that might look like me heading out, going out to our long line, bringing in some dirty nets. We bring those into our float to process them basically. And so emptying out all those nets, sorting through the scallops, making sure they're looking good, putting them into clean nets back out onto the long line and then cleaning the nets themselves.

Often we'll pressure wash them, we have like an electric pressure washer which actually works pretty well. But we've also done hot tanks and things like that. We have to bring out a propane stove for that because I'm on a little Carolina Skiff. So that's the bummer. But it works very well for like the days when we're really out there for a long time.

Often I have like a day of data collection in my week. That kind of depends a lot on what our projects are, but it's usually going out and a lot of our projects are gear based.

And so seeing whether biofouling is growing and what's growing, checking to see if there's any damage to gear, things like that. And then the experiment setup and take down is definitely more of a time intensive project because people often need scallops of a certain size or scallops of a certain sex and so I'll do like a lot of prep work for to find everything we would need for that. The underwater farm maintenance is definitely not an everyday task. That's a little bit more rare. And then I often do a few lessons a week with visitors. And so that might be sorting through a spat bag. A lot of times we'll do farm tours. So they'll come out and hang out on our float and like get to actually see the farm itself. It's real fun.

Q: [29:42] Thank you. How do you feel your background or identity shapes your work in the fishing and aquaculture sector including how others perceive or treat you?

A: [29:56] Definitely think there's a big component of being from away. So I've have seen that a lot in how I interact with other people. Kind of the longer I've been here – impact I've make the less it's impacted me. You still hear it a lot of what are you doing here? Doesn't really bother me too much. And I think that there's definitely been – there's in some ways I think that there's some benefits of being a woman in aquaculture in other ways I think it's made my job a little harder. I definitely like see the stereotype of lady scientist a lot which is an interesting one that I like didn't really know existed until I got into the like aquaculture and the like little bit fisheries research work in Maine, which I definitely do a lot of research work but I don't always consider myself a scientist.

So it's interesting to see how other people see me. And within my work itself we often hire between one and three other people to help out with the research team on Hurricane. Some of them are more focused on the farm. Some of them are more focused on education. Some of them are more focused on like research and data and all of that. We almost only get female applicants so I end up working on – like pretty much every year I've been here, this is my seventh summer, I have worked on a predominantly female team which is great. Strong communication out on the farm – works out well.

Q: [32:01] And how does your role in the fishing and aquaculture sector work with any family or caregiving responsibilities you might have?

A: [32:10] One of the harder components of like this specific job is that I'm living out on an island
for half the year. So this is my first year working here where I've had a year round rental because of course housing in Midcoast is always a fun time to try and figure out so in the past I've always done just winter rentals and that was especially really hard in any sort of interaction with anyone off island because I didn't really have a place to stay. So I would just end up spending most of my time living out on Hurricane. Now that I have a year round place that balance has gotten a bit easier which is really great.

And so for me it's like a little bit less. Any struggles that I have are a little less about working on the water with the exception of large weather events which just consume your life until they're over. And a little more like just my job is remote.

Q: [33:23] What about any like future plans in terms of like the family or work life balance? How do you see that working out in the future?

A: [33:32] Definitely have had that question. I think that it would be really hard for me to do my job pregnant. You know part of my job is underwater, can't dive. So need to find someone else to do that. Lot of my, you know, I've come up with a lot of the systems to decrease the heavy labor but you really can't get rid of it all. Because I've been here so long I am able to do a lot of the work by myself which like not all my coworkers can do just because I like kind of get the systems really well – would definitely not be able to do that pregnant. And then just with like caregiving too that's definitely a big question of like, yeah, I don't want to toddler on a float with moving heavy things overhead.

And so that's a question that I've had for myself and I don't know the answer for. I think that it wouldn't stop me from, it wouldn't force me to leave aquaculture forever and it working in aquaculture wouldn't stop me from having a family but it adds, it adds a lot of logistics.

Q: [34:50] Yeah and I just realized I skipped actually from way back, let's go back for a second, what year were you born?

A: [34:56] It's born in 1997.

Q: [34:57] OK, wonderful, thank you. OK, so shifting to kind of environmental changes you've observed – experienced in your time out here, yeah, can you describe any of those changes you notice in the marine environment since you've been working in the industry?

A: [35:13] A big one is biofouling so like I was saying a really time consuming part of my job is clearing all of our gear. And what we've had growing on the gear has just the timing –just the volume and I have only been doing this for seven years. Really so not even that long and really the grand scheme of things but we've definitely been seeing a lot more tunicates or like sea squirts, all sorts of them both the like sea squirt singular ones and the like spreading colonial mats. (sp?) Those are really heavy so that's fun. And that's probably one of the bigger differences and then in talking with other farmers they've kind of been seeing a lot of new things as well.

More hydroids so like the little hairs with like the little colorful dots on the end of them and all sorts. And that has definitely had to change how I also do my job so I used to kind of be able to like do a couple big cleans a year and that's it and now it's just like

we're cleaning every week. And part of that is like we've you know changed kind of to do that we no longer take a dedicated huge chunk of time and only clean, but yeah I can I can barely keep up with it. Also it kind of impacts like how the farm is run just because the gear gets that much heavier that much quicker and so I need to either continue to add buoyancy so like add more gear to my farm which I like to try and not to do that whenever I can. I think simpler solutions are usually the best like the least amount of gear you can have means that the least amount of things can break or I need to decrease the amount of gear I have on my lines.

Q: [37:22] And removal looks like hauling up putting it on the boat or a float. And you said power washing or a heat tank. So it's not like oysters where they air (inaudible).

A: [37:34] Yeah, yeah scallops are pretty dramatic little creatures so they really hate to be crowded so you also can't really put them very full so you need more gear than you would if you're comparatively growing something like a oyster. They like typically cover only like 20 to 30% of the bottom of the gear, which is not that much. And they're really sensitive to being left out in the sun to too warm of water. They don't even like fog so like a foggy day you have to be careful how long (inaudible). So it's a lot of moving gear back and forth.

Q: [38:15] A lot of labor.

A: [38:16] A lot of labor.

Q: [38:17] In terms of things you've tried in response to cope with or adapt to the increase in
biofouling you've mentioned changes to the process like often shifting from a few big cleans to just more regular. And I guess going back earlier to the research and development side you're researching the potential of sort of sacrificial biodegradable bag. Is there anything else that you're trying or anything else you've done in response to the biofouling?

A: [38:44] Those are all the big ones. Yeah. I mean in addition I guess the other thing to know with all of that stuff is that in order to not have all of our little critters out somewhere unhappy we've also like just had to buy more gear so we can do that swapping in and out more re efficiently.

Q: [39:10] And how do those things that you've tried in response been helping? Like you feel like they're working?

A: [39:17] I think they are working. I just don't really see, I just think that this is going to keep happening and I don't think that they're going to work forever. Like I think we're just going to need to keep coming up with more ideas and I don't think that the most sustainable solution is going to be to just throw more people at it. Because that costs

money, a lot of time resource and so trying to think of other ways to keep this gear cleaner for longer. Like these experimental covers would be great.

Q: [39:58] Yeah, because that's not necessarily more labor intensive.

A: [40:03] Yeah.

Q: [40:04] Yeah. Great. And what has made it possible for you to kind of make those changes on your farm to kind of adapt to the increase in biofouling, for example, are there any resources, relationships, knowledge, training, or organizations that you've drawn kind of figuring out how to respond?

A: [40:20] Yeah. Marsden Brewer and his son Bobby are scallop farmers over in Stonington.
He has been so incredibly helpful in learning everything I need to learn. He was like a collaborator so we would go to his farm every week to get scallops for an experiment. I learned driving over in the fog. But he has been incredibly helpful in like figuring out ideas, what to do, anything like that. So he has been a huge resource. And I mean, I think that one of the other things that makes it so possible is that we're not a commercial farm.

So how much money I make is not based on like what end product I have and how much I'm selling and how much I'm selling it for. I just like have a steady paycheck. And so that has really helped. And it also means that I can try and get additional people to help. When I first started out here it was me and one other person for just the summer. And now we have me, two full season people and then someone, in intern, who is here for just the summer. So part of that is because we were like a really young organization and all of our work has expanded so we have more work to do. But part of it is that managing the farm is a lot more work than it was. When I started there wasn't a farm manager, which is what my role is.

Q: [42:02] And what about – I guess I'm thinking again of the Ocean Farm Supply kind of connection, kind of what precipitated, what made that possible to kind of get that out here and to be testing it on the farm?

A: [42:16] I don't know who formed that connection originally. But I mean, that's kind of like what our goal is to do for some of our experiments. We have this experimental farm.
We have staff who are trained to do data collection. We have boats. We have resources. We have scallops. And so it worked out real well of like this is a project that we're really interested in because if it works, it'll help us. If it works, it's like a more sustainable option to some of our cleaning alternatives. And we were able to get a grant from the Nature Conservancy to fund some of that work.

Q: [43:10] And so biofouling is the biggest one – the one you brought right away easily. Are there – kind of going back to that question can you describe changes in the marine environment you've noticed anything else come up in addition to the biofouling for you?

A: [43:23] I think storms definitely are part of it. So like bad winter storms, but also kind of bad full year round storms now. To put our farm away for the winter, basically we sink all of our floating oysters and we move our float to – tucked into a cove over by Greens Island. And it stays in the water year round. And so there's still a worry of like we've tucked away everything we can. But what will that look like when we come back?

And so after the January storms this year I came out to check on the farm. Other hard thing is that there's only so much I can do in the middle of winter, you know, we are 11 miles offshore. You could live out on this island in the winter, but you're bringing out all of your water, bringing out all of your food, heating with a wood stove in an un-insulated cabin, so doable, but just not doable, super long term. And so luckily this time we really didn't have any damage, but how much is there that I can do in the winter.

And so that's definitely like a worry that I have. And we definitely have now started considering replacing things that before we were like, oh, they're fine. The last, we're not at the end of their life cycle. I still do think that, but I'm also like kind of considering it up against continued forces as long as I thought. And then it just changes kind of the infrastructure we have here. So our pier washed away. And so just means that, you know, we're loading everything by carrying down the ramp to our float. So doable, just a little more time, a little more labor.

Q: [45:25] Is there much you can or have tried to kind of adapt to the increase in storms in terms of and process or gear?

A: [45:35] Not much. We are now more prepared to move everything or really like before we used to just basically put things away and move them when we were done for the season out here. So October-ish, now I have some more contingency plans and phone numbers and all of that of, you know, can I leave my, can I push my float and leave it on your mooring for the next three days during the storm? Where we keep it tucked into Greens is really tidal so it's like not a great last minute emergency spot. So kind of had to build up the, what are our more temporaries? There's not really a whole bunch you can do. We're pretty exposed, we are between two ledges, but we're also way out in Pen Bay. So.

Q: [46:32] And so in addition to biofouling, storms, any other environmental changes you want to tell us about the impacting the farm?

A: [46:47] I can't think of any right now. I'll probably think of some later.

Q: [46:51] And what about, we talked a lot of – I mean, I know probably these changes impact the whole farm, but we talked a lot about the scallops. Anything I guess that comes up differently for like the oyster, mussel or kelp farming aspect of the farm?

A: [47:03] Oysters are mostly just making sure that they're tucked away for all of our storms.
Because we don't sell our eats I don't have all of the same worries as a lot of other farmers do. So there's been a lot of closures this summer. But again, because I just have a city paycheck regardless of what I'm selling, it's like less of a worry for me personally. But I mean, I see it and I still stress out. And so whether it's a rainfall event or like closures for toxins and like different harmful algal blooms and all that, that's definitely been kind of on the rise.

And honestly, our kelp is always a little bit sad because we often do it as a classroom kind of lesson. And so students will set it out in the fall and harvest it in the spring. It's pretty delicate, because you really can't touch it. But telling middle schoolers to not touch something doesn't always go that well. So we've definitely had some poor kelp harvests, but I think that's a little bit more to do with the deployment than climate change.

But we have tried to find sorus tissue to spawn our own kelp because that's also – it doesn't always make the most sense for a commercial farmer to do because it's pretty gear intensive. It's like kind of hard to do. It's really particular and if you mess up, what's your plan? But it's really fun to do the kids in a classroom and we have been having – like finding the sorus tissue, like the reproductive tissue of the kelp. The timing has been all wonky and we've had a really hard time with that in recent years.

Q: [48:54] And do you think is that linked to ocean temperature?

A: [48:57] It's temperature, yeah.

Q: [48:59] Yeah. And then in terms of, we told us some things you've tried, you've changed and been able to adapt to you, but are there things you would like to try to adapt to the changes you're experiencing that you haven't been able to yet?

A: [49:14] Yeah. I would love to see some more – how can I think about this? Yeah. I'd love to see like keep trying out new things like Erin Adams biodegradable covers, to mitigate biofouling, like I'd love to try and see more sort of like one-time labor efforts. That will decrease the amount that you need to clean on the farm and I would also love to like continue to have our farm keep getting organized and more streamlined because all of that also saves us time and effort. And kind of – we have a solar cube out there. And so it would be great to continue to see some like gear adapt to electric because luckily we're way out here, I don't really have an issue getting

permission to use a pressure washer on our farm. Often people do, because they're too noisy. So continuing to see like all that stuff, continue – continue to adapt.

Q: [50:42] What is your biggest concern about the marine environment for the future of Maine's fisheries and aquaculture industries?

A: [50:50] Just that will change so much and people won't be ready to adapt. I think that it's going to look different and it already looks so different than what it used to be and I think it will continue to look so different than what it was. And I think that timing is going to change and so like fisheries will change, like aquaculture will change when you're going to be allowed to harvest things and sell things will change as human health impacts change and growth areas change and reproduction habits change. And I worry that the management isn't going to adapt fast enough. I think that people are really clever. I think that there's a lot of people have a lot ideas of like what they can do now and what they could do in the future and that like, especially people who work on the water are pretty, pretty adaptive.

But I worry that we as the management won't be able to keep up with everything that happened so quickly.

Q: [52:09] If you could tell policymakers in Maine what the biggest priority should be, just sort
to help people adapt to these changes, what would you tell them?

A: [52:24] I think that adaptive management fisheries make sense and I think that cultured species and I think that there's like some very good and strong intentions for there to be adaptive management strategies. But I think that's staffing and input and all of that is like not there and that that process should be reassessed and given more resources.

Q: [52:54] Have you participated in any climate resilience or adaptation training programs for fisheries or aquaculture?

A: [53:07] Like what? I was like, no, I don't think so.

Q: [53:14] It's been an over (multiple conversations; inaudible).

A: [53:16] Interesting.

Q: [53:17] What strategies do you think would be effective in terms of kind of maybe trainings to help build resilience against climate-related impacts in fisheries or aquaculture?

A: [53:29] I think you need more people and I think you need different people. Not to get rid of the people that are currently in it but just to expand. I think that there's a really, I think that breaking into the Maine waterfront as someone from away is real hard but I

also am not planning on leaving. And I think that there's a lot of people who feel pretty similar to me and I think that like just ideas and people are kind of going to be what's needed to figure it out in the future.

Q: [54:12] New ideas and new people. Great, thank you. Now in terms of not only environmental change but just kind of other changes, are there other types of changes that are impacting your work on the farm that you want to tell us about?

A: [54:32] I don't think so.

Q: [54:38] Can you tell me about any opportunities or maybe positive changes you've experienced
in the industry during your time?

A: [54:47] Lots. I've learned so much from so many different people and that's been really awesome. I've made some really strong friendships and strong relationships throughout. It definitely was in a bit of a go-forth and figure it out situation and like I said at the beginning, I've made a lot of mistakes working for someone else. I would have made way more mistakes if I didn't have the help I had. Other farmers, like the Brewers out of Stonington were really key. A couple of fishermen out of Vinalhaven really helped me out and figuring out what I needed getting me in any instances where I did have gear issues like getting me phone numbers so I could just call people and talk to them. And that was really essential for the success of this experimental farm.

Q: [55:57] What is your hopeful vision for the future of Maine's coastal fisheries and aquaculture industries?

A: [56:10] That we still have all of our fisheries so everything that we have now, I want it to stay. Fisheries that we've had in the past that have closed I would love to see re-open. Of course all of these animals are moving and doing new things and different things and we've had population collapses and so I also hope that as new species come to Maine, which we're already starting to see, we can turn those into valuable fishery and culture operations.

Q: [56:45] What are some of those new species you thinking of?

A: [56:48] (inaudible) we got blue crab, now, are they going to keep coming.
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Q: [56:51] (inaudible)?

A: [56:52] I haven't seen one yet. But I've gotten sent some pictures of them. Are they going to keep coming? What's going to happen? People are seeing different new fish, different amounts of fish. I hope that those turn into strong fisheries for people. I also hope that aquaculture stays kind of more on the owner operator. A lot of the aquaculture in Maine I hope stays in the more owner operator level because I think that

that is kind of what makes sense with Maine's heritage and Maine's coastal heritage. I think that that's a really big part of Maine's working waterfront identity is the owner operator model and I hope that aquaculture can kind of stay within that.

Q: [57:57] Have you noticed changes in women's presence, participation or status in fisheries or aquaculture over time?

A: [58:08] I'm not sure if I've noticed changes but I definitely – myself – and have talked to others
as a woman, have felt like aquaculture is easier to break into than a fishery. So I see more women in aquaculture.

Q: [58:30] Can you say why you or others feel like it's easier?

A: [58:35] Yeah. I mean part of it of course is like I'm from away. I don't have – will get my lobster license. Good Stern. (sp?) There's definitely like both me and some of my girlfriends who've sterned (sp?) before are a little bit more careful of like who do I want to work for, all of that. I still think there's the same interest in like working for yourself and I think that it just feels more achievable. It feels like more acceptable also. And I think that it helps too that there's a push for workforce development because I often find that I really like to know things before I do them. I'll try – mess up whatever, but also if there's an option to try and learn something first, I'll go for it and I often have gone to both related to aquaculture and totally unrelated to whatever else to like different trainings and free opportunities and stuff like that. And I definitely feel like it's almost all women.

Q: [1:00:04] You mentioned sterning. I just wanted to clarify. Have you sterned in the past?

A: [1:00:07] No.

Q: [1:00:08] OK. But you know people.

A: [1:00:09] Some of my friends.

Q: [1:00:11] Do they have observations, you said something about being careful which boats they go on – what the barriers can be like or how it could be different in aquaculture to working and capture fishing?

A: [1:00:24] Can you say that again?

Q: [1:00:27] I was – start thinking about being careful about which boats they go on.

A: [1:00:32] Yeah, just in conversation, like casual conversations, it's just a little bit more of like trying to make sure that you know someone in common who you can be like out

there, they're all good. There'll be a fine person to work for which I do not hear that happening as much amongst my guy friends that are fishing. Yeah. That concerns a little bit more like how much of a hard ass are they from the guys.

Q: [1:01:11] One last other kind of newer species I was just curious – you mentioned blue crabs made me think of it – do green crabs pose any problems on your farm or –

A: [1:01:23] Not really. So our gears in – like all of our scallops are in gear and so they're definitely vulnerable when they're like itty bitty tiny. We keep them off the bottom in bags basically and so we haven't had huge issues with green crabs predation like other culture where they're like actually seeding into the mud or anything like that. We haven't really had that but I definitely see the green crabs on my gear and I've definitely found dead scallops but often by the time that they're small enough to get into the gear they're not a huge threat and if the gear is big enough for them to get into the animals inside are pretty large and so they're hard to kill.

Q: [1:02:14] So they're in there sometimes but they're not posing a big predation issue? Is there anything else you wanted to share with us in this interview?

A: [1:02:16] I don’t think so.

Q: [1:02:19] (inaudible) did you want to add anything (inaudible)? OK, wonderful.

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