

Stephanie Otts (00:00):

Good afternoon. Thanks for joining us here at the National Sea Grant Law Center for the July installment of our 2025 webinar series. My name is Stephanie Otts. I'm the director of the National Sea Grant Law Center, and I'm so excited to introduce our presenter for today, Dr. Bess Ruff, who's a postdoctoral researcher at the University of Sydney, who's going to be presenting her research on unlocking policy pathways, marine aquaculture pilot programs in focus. But before we do that, I just want to go through a few housekeeping items. So if you're new to the National Sea Grant Law Center, and you're not familiar with us, we are one of the 34 Sea grant programs around the country. We were established in 2002 and we're housed at the University of Mississippi School of Law. We're unique in the National Sea Grant Network in that we aren't a state-based program, but we were established to provide legal research, education, and outreach on a nationwide basis for sea grant programs and their stakeholders. So if you're curious about our aquaculture work or any of the other activities we do, I encourage you to check out our website.

(01:27):

Just a couple of housekeeping items. We have everyone on mute right now to minimize background noise, but please use the chat if you have questions as we go through. But then we will also have time at the end for questions as well. We are recording the webinar and we will be posting it on our website afterwards. So if you have colleagues or others that may have missed it and are interested in it, it will become available. And as I mentioned, you can place questions in the chat. Also if you're having technical issues, we can't always fix everything, but you can private chat Lauren for assistance if you need something.

(02:16):

Great. So before I turn it over to Bess, I just wanted to give a little bit of background on this overall project as this research was part of ongoing work that the National Sea Grant Law Center and our collaborators at Florida State University have been doing for several years. And so some of you may be familiar with the State Marine Aquaculture Policy Dashboard. This is a product that was funded by the Builders Initiative and it is intended to increase the accessibility transfer and kind of a loss for words, but accessibility of state marine aquaculture policy. And it is an interactive dashboard that allows the user to engage with state marine aquaculture policy on a lot of different interactive features in this dashboard. So if you're not familiar, please check out our website. We do have user guides and tutorials for how to use the dashboard. And so as part of this project, the team also did research on particular topical areas within state marine aquaculture policy, including right to farm laws and pilot programs.

(03:40):

And so that is part of the inspiration for the research today. And also wanted to share more about the FSU team, our wonderful collaborators on this work. And so it is Lester Lab at the Department of Biological Sciences at Florida State. So that's led by Dr. Sarah Lester. Currently Lillie Bradshaw is a PhD student in the lab, and Dr. Bess Ruff was a student in the lab and is now a collaborator. And they do research on global patterns related to aquaculture as well as aquaculture policy and social perceptions. So if you're interested in following them on social media, their information is there as well as their website link. So with that, I'm going to turn it over to Bess to get her slides started and I'm looking forward to it.

Bess Ruff (04:47):

Thanks, Steph. Let's see, is that the right screen?

Stephanie Otts (04:54):

You got it. Looks good.

Bess Ruff ([04:55](#)):

Perfect. All right. Hi everyone. So as Steph said, I'm a postdoctoral researcher at the University of Sydney in the Thriving Oceans Research Hub, which is a part of the School of Geosciences. And I was previously both a postdoc and a PhD student under Dr. Sarah Lester at Florida State University in the Lester lab. So today I'll be presenting some work that Sarah and I previously published in Marine Policy regarding the utility of pilot farming opportunities in addressing key aquaculture development hurdles. I'll preface a couple things first. So you'll hear me use mariculture aquaculture and marine aquaculture quite interchangeably. I apologize, it's six o'clock in the morning here in Sydney. So my brain is probably not fully turned on, but just know that I'm specifically referencing farming and marine spaces regardless of which term I'm using. And I'll also say that efforts have been made to make sure all the information presented here is up to date. But as a lot of you're probably familiar with, there's a lot of fluidity with marine aquaculture management and that can make keeping things up to date difficult. So please let us know if there's something that we've missed or something that's been updated and we will rectify that.

([06:16](#)):

So a little bit of a roadmap for today. First, I'll start with what piloting Mariculture looks like and where it's happening in the US. Then I'll go over some key industry development hurdles and then how pilot farming opportunities can address these hurdles and progress industry development. I'll also discuss key mechanisms that can optimize these pilot frameworks and then a couple of additional points to consider and then we'll end with questions and comments. Alright, so what am I talking about when I talk about pilot mariculture? So this is specifically the trialing of farming activities as a means of assessing whether more permanent commercial operations would be economically, environmentally and logistically viable. And some of the characteristics of pilot operations include them being authorized for a short amount of time. They tend to have a smaller spatial footprint than a commercial farm. There are possibly restrictions on which species can be farmed and which gear types can be used. And there's also possible limitations on the product sale and whether you can sell harvest from a pilot farm. And all of this adds up to pilot farms having shorter, simpler and cheaper application processes than their commercial counterparts.

([07:44](#)):

And what do these pilots look like in practice? So in the US only Maine and Rhode Island have formalized regulatory pathways for piloting mariculture activities with commercial potential. So I'm going to focus on those two. I will say that there are other states that have regulatory mechanisms that kind of defacto enabled the trialing of mariculture activities, and those include South Carolina and Virginia. And then other states like Florida and Maryland offer trial opportunities for research and education purposes only. Well, I'll start with Maine. So Maine has two types of pilot operations. The first is a limited purpose aquaculture license. This is for a max farm area of 400 square feet. For context that's less than a 10th of the area of a basketball court. They're available for a max term of a year. They have an application fee of a hundred dollars for in-state, \$400 for out of state.

([08:46](#)):

They have species restrictions and it's restricted to certain shellfish species, green urchins and algae. They also have some gear restrictions and then they don't have a requirement for a site visit or a public hearing. So it's a much shorter approval process for this license. And then they also have an experimental lease, which is a bit bigger, so that's four acres and a bit longer. So three years. Application fee is \$750 plus a hundred dollars per acre per year, and they can farm any species that's already being farmed. In Maine. There are no gear restrictions as long as they are suitable for the site. But compared to a license, they do require a site visit and a public hearing is required if five people request it. So if we compare that to a commercial lease in Maine, commercial leases in Maine can be up to a hundred acres for a time period of 20 years. And the application fee can range from \$1,500 to \$2,000 species or any species that are already produced in Maine. And there's an extensive approvals and public consultation process. So you can kind

of get the sense looking at Maine's pilot opportunities versus the commercial lease. There are quite some substantive differences between the two.

(10:12):

And then for Rhode Island, their pilot opportunities are called commercial viability permits. And these are for a max farm area of a thousand square feet that's less than half the size of a tennis court and their max term is for a year and a half. But you can get a year and a half extension pending council approval. Application fees are \$25 per site and the species are restricted to shellfish. And per the website or the marine council website, it has similar components to a commercial lease, but the process is simpler and less time consuming. So looking at commercial leases in Rhode Island, they tend to be max 10 acres. That's a caveat. So you can have larger than 10 acres, but it requires a public hearing for approval and not just a public notice period. These leases are available for up to 15 years. The application fee is prorated based on an estimated project cost and restricted to shellfish and algae and has an extensive approvals and public consultation process. So again, we're seeing these market differences between what a pilot looks like and how it operates and how a commercial lease operates.

(11:31):

So now I'll discuss some of these development hurdles. So mariculture has been slow to expand in the US largely due to regulatory, financial, social, and environmental barriers. Of course, every state is different, but similar development hurdles are shared across geographies. And I'll also note that there isn't a reason or a purpose for these hurdles, but I'm looking at them specifically in terms of how they are barriers to development. So industry accessibility will be first, so barriers to entry can make it difficult for individuals or smaller firms to participate in the marine aquaculture industry. So these administrative hurdles can be anything from complex regulatory frameworks to decentralized management systems. A farmer has to go to one agency for one approval, another agency for that permit, and then submit an application to another department. And that can be a major deterrent.

(12:33):

And this is on top of applications being quite extensive and having long waiting periods for approval. And then also applications and all the corresponding approvals and permits can cost a lot of money and thousands of dollars. And that can be prohibitive because the economies of scale necessary to participate in the industry can be a large financial burden. And then there's also operational logistics that can be challenging. So especially those that are new to farming or transitioning or diversifying from other activities such as fishing, if you're not familiar with how farms operate, but you're interested in it, it can be difficult to just jump in when there's a lot of logistical dynamics to operating a farm.

(13:23):

So social license is also one of the big development hurdles. So given that most states require some form of public comment or consultation during the standard commercial application process, having support for marine aquaculture can be a key component of industry development. However, it also can be a quite polarizing topic, whether it's coastal property owners who are concerned about the visual appeal of aquaculture infrastructure in their backyards or commercial fishers who are worried about their livelihoods or just broad public unease about the potential ecological impacts of farming operations, as well as how farms might disrupt other uses of the space, such as for recreational activities. And these apprehensions aren't entirely unfounded, but they tend to be leveled at the industry as a whole, and that's without considering the scale and the type mariculture that are being produced. So there is a little bit of misinformation that affects this social license to operate.

(14:29):

And this social license can also be constrained by a general lack of familiarity with mariculture likely due or partially due to limited participation in the industry, which is a result of some of the industry accessibility issues I previously addressed. So what this means is that people have fewer touchstones or

points of connection to seafood farming, and so they don't have that familiarity of knowing someone who's participating in it and kind of having a more nuanced perspective of how the industry operates. And then I'll also discuss some sustainability hurdles. So here I'm talking about sustainability both from an environmental perspective as well as an industry perspective. So on the environmental sustainability side, there are concerns about the impacts of marine aquaculture on the ecosystems in which it operates. And this is despite mariculture being one of the more efficient forms of protein production. And then on the industry side, there's a lack of species diversity that can be susceptible to environmental and economic shocks. And there's also a lack of opportunity for innovations in farming practices that can create operational efficiencies or reduce environmental impacts. And also having these opportunities to develop farming best practices on a smaller scale before scaling up to commercial operations.

(15:57):

Well, let's talk about how pilot frameworks have the potential to address these development hurdles. I'll start by looking at barriers to entry and industry accessibility. So as I showed earlier with the main and Rhode Island examples, the application and approvals process for pilot operations tend to be more streamlined. They aren't given sort of a carte blanche to do whatever, but the space time and production restrictions that are placed on them tend to reduce the risk, both the ecological and social impact risks that tend to be a bigger concern with commercial operations. And so this reduces regulatory complexity. There can be fewer approvals required or less involved public consultation processes, and it also simplifies agency and permits and approvals. So if you need fewer approvals, there tend to be fewer agencies involved for those approvals. And then all of that adds up to these shorter, less cumbersome application processes and times.

(16:59):

And so it kind of reduces this friction in terms of applying and getting approved and starting a farm. Also relevant to accessibility are financial barriers. So pilot applications have lower fees, smaller farm sizes associated with pilot operations means they're lower startup costs, but they tend to have a lower financial burden than a traditional commercial farm. And what this does is it provides farmers the time and opportunity to evaluate the logistics and the economics of operating a farm with much less financial risks. So we have reduced financial barriers, and in doing so, we can increase opportunities for individuals and small local farms to participate in the industry, not just larger commercial firms.

(17:49):

So pilot permits can also provide beneficial capacity building with respect to issues of social license. So pilot farms can generate opportunities for more people from local communities to participate in the industry. And this greater participation can create more points of social connection for the public, whether it's knowing a farmer personally or purchasing locally grown mariculture products at a farmer's market or at a seafood market. This also creates opportunities for education and engagement between the industry and the public. So research shows that the more familiar people are with mariculture, the more positively they view the industry as well as learning about the industry, which can persuade people towards more positive opinions.

(18:38):

So lastly, shorter time periods will lower the stakes of potential social environmental issues. If a farm is somewhere where people are not pleased about it, you can kind of assuage concerns by saying, if it becomes a problem, it'll be out in a year, 18 months. And so what this does, and all of these elements kind of contribute to an improved social license. So one thing you might be wondering is whether people would feel differently about a small number of large commercial operations versus a large number of small pilot farms. But there's evidence from somewhat analogous industries such as renewable energy that suggests that small scale developments that are locally owned and are therefore accruing benefits at the local level tend to be more widely supported by local communities than larger scale industrial operations.

So pilot farms could be a very strategic method for addressing the developmental hurdle that is public opinion.

(19:43):

So in addition to temporary operations, size restrictions can also help reassure the public that the industry isn't just going to take over the coastal space and that there is a strategic plan for how the industry is developing. And a smaller spatial footprint also means fewer spatial conflicts, which could also foster greater public openness towards trialing farms if it's not going to conflict with someone's fishing spot or someone's recreational spot or someone's swimming spot. So lastly, I'll talk about how pilot frameworks have the potential to bolster both environmental and industry sustainability. So first, they can create opportunities for farmers to explore innovative culture methods. These methods can be ones that improve production efficiencies or reduce environmental impacts from farming. So this could include trialing things like integrated multi trophic aquaculture or restorative aquaculture. And in that same vein, pilot permits can allow farmers to explore farming of different species.

(20:54):

So maybe species that aren't currently on the market or aren't currently being grown by commercial farms. So testing out new species and creating diversity in products that are provided. And then additionally, with smaller scale operations and lower capital investment needed to start a pilot farm, farmers have a little bit more freedom and flexibility to learn operational best practices on a small scale without the pressure of large production targets or having to make back big returns on their investment. And so in this way, pilot farms can encourage culture and species diversification, which can bolster industry resiliency to environmental and economic shocks. And they can also offer farmers practical experience dealing with some of these operational environmental logistics of operating a farm. And the hope is that if and when they scale up to commercial operations, they're able to translate what they've learned at the small scale to this larger scale.

(22:01):

So now how do we make the most out of the potential benefits of pilot frameworks? So there's a couple of key points that I'll touch on. The first is that there should be pathways for pilot permits to be converted into commercial leases or licenses. Some of the financial and administrative benefits of pilot operations are lost if converting to a commercial lease or a license requires an entirely new application and submission process. There needs to be some sort of incentive to participate in these programs so that farmers get the practice and they go through the process at small scale. And you're hoping that learning best practices and learning the operational logistics helps them scale up to a successful commercial farm. But yeah, so having sort of this pathway that lets people move from the benefits of a pilot permit into a commercial lease. So an example of that is in the state of South Australia, they have pilot leases that can be converted to commercial production leases pending an agency review. So this ensures that the applicant has met the necessary performance conditions on their pilot lease as well as considering whether their operations are suitable at a commercial scale. So in that way, farmers can benefit from taking part in a pilot program, but there are still sort of these checks and balances to ensure that the conversion to commercial production meets both necessary operational requirements as well as environmental standards.

(23:38):

So another thing is having provisions for trialing new species culture methods and farming infrastructure. So innovation is going to be quite key to industry sustainability. However, biosecurity and environmental protection should be high priorities within any state's mariculture or regulatory framework. But that should be balanced with policy that encourages innovation and production, whether that's in terms of species or culture methods that can facilitate industry diversification and sustainability. So an example is, this is actually already in Rhode Island, so it's separate from Rhode Island's commercial viability permit that I talked about earlier. But Rhode Island actually offers an experimental permit that is explicitly for

developing and testing new gear or techniques for aquaculture production. So incorporating this type of mechanism into a pilot framework could be pretty advantageous in optimizing the benefits of a pilot operation.

(24:39):

So mechanisms to encourage broad participation and support pilot farm success such as offering financial incentives or grants for pilot farms, possibly providing professional development opportunities. So this could include operational and business courses for farmers who have been issued a pilot lease in Maine, for example, their limited purpose aquaculture license, which I highlighted earlier. Anyone who holds one of those licenses has to attend or is required to attend annual training in aquaculture production and public health. Another component that states might think about is encouraging collaborative opportunities between pilot farmers and commercial farmers. So creating opportunities for pilot farmers to kind of shadow an established operation. And this could have really substantive benefits to both knowledge sharing as well as developing really valuable personal relationships within the industry. And lastly, residency restrictions on pilot permits or leases to encourage local participation. So reserving opportunity pilot opportunities for local residents can ensure that these benefits and these programs are accrued at the community level and also help further leverage potential points of social connection with the public, which can contribute to a social license to operate. And these restrictions don't necessarily need to exclude outside participants entirely, but they should prioritize local participation, possibly just by limiting the number of pilot permits or leases that are issued to non-residents.

(26:29):

So while the potential for pilot frameworks to support industry development is exciting, there are a couple additional considerations to their implementation. First, that pilot opportunities have the potential to address development hurdles, but consideration should be given to potential implementation risks and challenges. So this can include things like biosecurity threats from trialing new culture species or the monopolization of available pilot permits, whether that's from out of state people or just a handful of local people, really making sure that those opportunities are being made widely available to people who are interested and people who want to participate.

(27:12):

Another consideration is management frameworks will not only need to regulate pilot to commercial transitions, but also enable upscaling or enable scaling up through supportive policy mechanisms. So this can look like things like low interest loans to further reduce financial burdens of starting a marine aquaculture farm or subsidies for ecosystem service provisions. So farms that are prioritizing ecosystem services can have some sort of a payoff for providing those in addition to the value they get from the harvest of the farm. And lastly, pilot farms are not the only pathway to support development within the marine aquaculture industry, but they could be a really important growth opportunity that shouldn't be overlooked. And so with that, I'll say thank you and we'll move on to questions, but just real quick, I have a QR code here for the paper that this research comes from, or please feel free to email me and I'd be happy to share a copy and I'll pass it back over to Steph.

Stephanie Otts (28:24):

Great, thanks Bess. We do have some questions coming in. I would also share that we do have a link to the journal article on the website for the state marine aquaculture policy dashboard. So you can also get through it. There's a couple different ways you can find the article. So yeah, going back through the chat a little bit. Thanks everyone for sharing. So if you have questions, continue to put them in the chat. So there was Missy Good from Alaska Sea Grant shared that Alaska does have an aquatic resource permit that can be used to assess site selection. So that might be one to add to our list to look into.

Bess Ruff (29:10):

Yeah, I'm going to pull my notes up.

Stephanie Otts ([29:14](#)):

And then Katie Hill in Georgia shared that regarding social license, they did a professional survey of registered boat owners in Georgia regarding their views on oyster farming and state waters. And they saw an increase in positive views concerning oyster farms when people had seen an oyster farm and even more if they had seen a farm in the South Atlantic because they look different. So I think that was reinforcing what you were saying about having farms in the area can add to that. And then we have one question so far from Amalia Almada, I think it's USC sea grant. Do farmers find that even with really small plots like the 400 square feet in Maine, that they are able to answer or sort out the operational logistical challenges before they can decide whether to scale? Do you know if there's been any studies about how often or successfully farmers transition from pilots to larger farms?

Bess Ruff ([30:16](#)):

Yeah, that's a great question. Unfortunately, we didn't do any onsite work and delving into that. So that would definitely be a next step for this kind of work is actually looking into whether people find the proposed benefits particularly advantageous. And what was the second part of the question? Sorry.

Stephanie Otts ([30:39](#)):

Oh, if there's been studies about how many farmers are able to successfully transition from a pilot to a commercial farm.

Bess Ruff ([30:50](#)):

So not that I've come across, and I definitely did a lot of digging in Maine and Rhode Island for those. So if they do exist, I wasn't able to find them. But if they don't exist, that is also something that would be really important to look into is how many times people actually transition or upscale.

Stephanie Otts ([31:11](#)):

Yeah, great. And I think this is connected to another comment in the chat about applying lessons learned from pilots to larger farms can be complicated because extrapolation doesn't always work

Bess Ruff ([31:24](#)):

Totally

Stephanie Otts ([31:24](#)):

That operation. So then Marcy Cockrell asks, how do you see farmers rectifying those type of issues? What happens if and when a small scale pilot can't scale to a real world commercial success?

Bess Ruff ([31:41](#)):

So that is definitely one of the potential challenges, and I think that's where, especially having those collaborative opportunities with existing commercial farms can be quite important. And sort of physically envisioning how your pilot operation might be scaled up and being able to have those conversations before you're scaling up and being able to kind of think through how I operate at a pilot scale versus a commercial scale and kind of delve into what some of those challenges is before you're actually doing the scaling up. But again, I think that's where, especially sort of those networking opportunities for people piloting are quite important to kind of find a way to navigate those challenges and understand what they are while you're still in a pilot phase and start thinking through those more strategically.

Stephanie Otts ([32:35](#)):

Great, thanks. Another comment, Dana Morse is with Maine Sea Grant. For states that have transferability, it's also useful to develop a vision or a plan. The risk here is that even though we have opportunities and access now, both opportunities and access can decrease over time. So access to good lease sites surviving in the market price of entry can place heavy pressure on smaller operators over time. So maybe there's lots of different forces potentially at play.

Bess Ruff ([33:05](#)):

Yeah, definitely.

Stephanie Otts ([33:09](#)):

Good. Oh, so can we share the email again? Article link?

Bess Ruff ([33:15](#)):

Oh yeah, sorry.

Stephanie Otts ([33:16](#)):

Sorry. We can also put it the chat. Oh, there we go. Sarah just dropped the article link into the chat. Lauren also dropped in. There's a companion policy brief on pilot programs that best authored as part of the project that has similar information but presented in a slightly different format if you'd prefer the policy brief. And okay, now we got another question. Bess, do you know if Maine or Rhode Island has a way to handle liability protection if a pilot negatively impacts a commercial operation or other public trust resource?

Bess Ruff ([34:01](#)):

That is a great question. I didn't see anything in all of the policy information I sifted through for this, but that is a great question that I will follow up on. I'm actually interested in that.

Stephanie Otts ([34:17](#)):

Yeah. And Nicole, I would also be interested if some states do have bonding requirements or other maybe general things that touch on that, what would you say viability or liability issues that might apply that?

Yeah, that's a good question. Some other comments someone asked, has there been any efforts by governments to identify sites for pilot or commercial farms or even pre permit those sites? And yes, I think there's been some responses in the chat that some states do pre-identify sites for selection that helps as well.

Bess Ruff ([35:02](#)):

And are those pre-identified sites specifically for pilot farms?

Stephanie Otts ([35:08](#)):

Oh, I think the answers were for commercial leases.

Bess Ruff ([35:11](#)):

Commercial, yeah.

Stephanie Otts ([35:12](#)):

Yeah.

Bess Ruff ([35:15](#)):

I know here in Australia, south Australia does that. They actually do presiding for pilot locations.

Stephanie Otts ([35:23](#)):

Yeah,

([35:32](#)):

Just realized I hadn't put up our little q and a for the thing. Yeah. So keep those questions coming. Might've lost my place. Okay. Someone said in regard to innovation needs for aquaculture pilots, isn't this a little counter to the need for agencies to be able to understand the risks of an activity? And so in the case of Maine, the limited access licenses aren't designed for new culture gear or practices.

Bess Ruff ([36:09](#)):

Can you say that one more time?

Stephanie Otts ([36:10](#)):

Yeah. So in regard to innovation needs for aquaculture pilots, does that encounter to the needs for the agencies to be able to understand the risk of the activity?

Bess Ruff ([36:24](#)):

Yeah, so I definitely think it's a balance, right? You wouldn't just let someone do something that has maybe never been done before, but if it's been done in another state or in another area that has similar ecological dynamics, being able to trial things in that way. Yeah, I mean that's kind of what I wanted to emphasize at the end was it needs to be a balance and having ways for people to test things in a very contained low risk way, but also keeping in mind that innovation is going to be quite important for the industry moving forward.

Stephanie Otts ([37:07](#)):

Great. Thanks. Then we got one question about whether it would, so would it be best to start as a pilot project first then commercial? Do you have a better recommendation? This is pertaining to beginners.

Bess Ruff ([37:24](#)):

I mean, I don't know if I have the authority to make a recommendation, but I think it depends, right, if some of the hurdles that I went over aren't issues where you are, if the financial and operational logistics aren't particularly, especially cumbersome or prohibitive, if you're in a place where the local community is pretty familiar with aquaculture and so you're not worried or you don't have the issues with a lot of public pushback during the consultation periods. If some of those hurdles aren't applicable to someone, then it might be sufficient to go for a commercial lease and maybe just go for a small commercial lease. But yeah, I think it is highly dependent on what some of those hurdles and what those dynamics are where you would be thinking about starting a farm.

Stephanie Otts ([38:27](#)):

Great. Thanks. All right. More questions. So how are the risk of bad loss of gear unsustainable or poor management practices mitigated by coastal managers once the pilot lease is given?

Bess Ruff ([38:45](#)):

Yeah, so it's overseen by the same sort of regulatory agencies that oversee regular operations. And so they're subject to similar sort of checks as other farms. It's just the actual process that is a bit more streamlined. So sort of the same regulatory frameworks that apply to commercial farms also apply to the pilot operations. As far as I'm aware, I haven't seen anything where they have sort of a separate set of rules for inspections and making sure their gear is removed after the end of the operation.

Stephanie Otts ([39:28](#)):

Great, thanks. We have one. There are a range of pilots you could test gear testing of techniques, testing of species, or just a general testing of whether it's viable to ramp up commercially at a particular site. Did you see in your research whether any type of pilots were more successful than others in practice?

Bess Ruff ([39:54](#)):

I didn't. I didn't because it's really hard to get, you can look at sort of the applications, but actually getting information of what those applications have done now that they're in the water is really difficult. I will note that there are a couple, where is it? I think it's in Maine that has some pilot farms for restorative, seaweed, aquaculture. So that's kind of exciting that some of those restorative practices are being trialed in these pilot opportunities. But yeah, it's hard to get kind of the once it's in the water information about a pilot farm.

Stephanie Otts ([40:37](#)):

Great. Good. Thanks, Bess. Well, it looks like we might have reached the end of the questions while people are giving it one more thought. I'll just transition to our last slide, which provides the contact information for myself, for Sarah Lester. If you're curious about the work that her lab is doing or the data that is part of the state marine aquaculture policy dashboard, that's really their contribution overview of the part of the project as well as Bess' contact information. So we'll give it maybe, oh, we do have another question for Bess. Do you have thoughts on frameworks for national aquaculture policy in federal waters?

Bess Ruff ([41:30](#)):

Oh, so many thoughts. Yeah, I wouldn't even know where to start with that, to be honest. It's interesting. So I'm in Australia and they have a very, actually quite similar dynamic to their aquaculture industry. It is very much managed at the state level here. And they're also trying to develop this national policy or national strategic plan for marine aquaculture in federal waters. But they're almost like in the exact same place as the US where they have had a lot of thought put into it and have these strategic plans similar to the aquaculture Act that's been proposed by Senator Wicker. But yeah, so I don't really have specific thoughts. I have very broad thoughts, but it is very interesting being here and kind of experiencing very similar dynamics with aquaculture and how the policy is being pushed. I think Marcy had a comment or has a hand raised.

Stephanie Otts ([42:40](#)):

Yeah, Marcy, you should be able to come off of mute. Yeah, great. Hopefully we can hear me. Can you hear me? Yeah, it's okay. It's a bit echoy, but we got, yeah, that's why

Bess Ruff ([42:56](#)):

Marcy, we lost you. Oh, Marcy. Yeah, you cut out. Can you hear me now? No, you keep cutting in and out.

Stephanie Otts ([43:07](#)):

Yeah.

([43:09](#)):

Can you put it in the chat? Oh, we might have. Let me get back. I'm sorry. I lost my place. Great. Thanks for your patience. Yeah, yeah. So there's another, additionally, some model programs for other types of pilots like energy infrastructure, have additional assistance or financial support that the government provides to pilots. Was that something you saw? What about support for gathering data on aspects of possible environmental impacts of scaled projects?

Bess Ruff ([43:52](#)):

Yeah, that's a great note. Not that I saw, but that is really important and interesting info to know because aquaculture often gets likened to these kinds of emerging industries such as renewable energy. And so that can be a key touch point when thinking about policies, providing an example from those analogous industries.

Stephanie Otts ([44:21](#)):

Great, thanks. I think we have time for one last question that's in the chat. Is the results of the various pilots considered public domain, or do the operators hold that experience close to their chest? And I think you might have answered that a little earlier when you mentioned you can see the permit applications, but maybe not what's happening in the water,

Bess Ruff ([44:43](#)):

Right? Yeah, I don't know if the states collect that information and hold it close to their chest, I would imagine. But in terms of it being publicly available, not that I came across.

Stephanie Otts ([44:59](#)):

Yep. Great.

([45:06](#)):

Great. Okay. Yeah, so thanks. Yeah. And so the noted that the gathering of environmental data has been a big point federally for the US policy consideration of pilot programs, demonstration projects. So yeah, lots to think about. Thanks so much for everyone, for all of your wonderful discussion in the chat, generated a lot of conversation, which was great to see. Thank you, Bess, so much for getting up at the crack of dawn to give this presentation today and to share the results of your work. We have dropped in the chat links to the articles, and we can also share that afterwards when we send out the recording for today's webinar once it gets posted. So really appreciate it. And Lauren, I think you can go ahead and stop share and we'll start to wrap up. Stop recording.

([45:06](#)):