

# Electronic Monitoring in the Gulf of Maine Scallop Fishery

## Ben Martens and Mary Hudson discuss an exciting new EM project

**Ben:** Welcome to Maine coast dock talk. It's a chilly day in Maine in January, and we are right in the middle of the Maine state water scallop season. So we thought it would be a great opportunity to talk with Mary Hudson. Mary works with me at the Maine Coast Fishermen's Association, and she's been involved in building out a project with some scallop boats in Maine using electronic monitoring to start to collect data and, basically replace human observers on scallop boats.

So, Mary, thanks for joining me and chatting about this project that you've been building over the past couple of years. And, I guess, you know, to start, I'm just going to give a brief overview of the scallop fishery in Maine, and then I'm hoping you can give us an overview of the project. How does that sound?

**Mary:** Sounds good. Thanks. Ben.

**Ben:** Scallops are one of the most valuable fisheries in the United States. Most scallops, though, come out of the George's Bank area and the mid-Atlantic area. But over the past few years, we've started to see scallops returning to the Gulf of Maine and the state waters of Maine as well.

And it's pretty small in terms of the pounds that are coming out of the ocean, but it's really impactful for the boats that are participating in that fishery. And so in the Northern Gulf of Maine, which is the federal waters, management area in the Gulf of Maine, it's been kind of a, a black hole of management for 10 to 15 years where it was overlooked.

There wasn't a lot of fishing taking place and, it just, it meant that it was kind of ignored. And one of the issues that popped up as the scallops started to return was not only that it was unclear how different types of vessels and different types of permits could access the area in a sustainable way and rebuild the stock and protect it and do all the good things that we care about, but it also became pretty clear that we had really bad data in the Gulf of Maine scallop fishery. And we had no observer coverage. It wasn't a requirement. despite the fact that the rest of the scallop fishery did have observer coverage.

So, we knew that once the management kind of caught up with the fishery in the Northern Gulf of Maine, that we were going to be required to have observers on our small boats coming out of Maine, but it also became pretty clear that we needed to be creating a better data stream to inform the stock assessments and help make sure that our fishermen and the managers knew what was going on. And that was the impetus for the fishermen that we work with to start building out this concept of a project, around electronic monitoring. And we had been working for a long time as the Maine Coast Fishermen's Association with groundfish boats in electronic monitoring.

And some of the scallop boats thought that this was a great opportunity. So, Mary, I'm going to turn it over to you now. Can you give a brief overview of where this project started from

when the fishermen first started discussing putting cameras on boats and what they wanted to be looking at with the, with the camera technology?

**Mary:** Yeah, for sure. So, you mentioned that this fleet does not right now require monitoring. And that, that was something we knew would be coming down the pipeline and the fishermen knew. So, they wanted to get ahead of the game, start testing out, using cameras for monitoring so that when the time came, they wouldn't have to have humans on their small boats.

So that's really where it started from, and also the knowledge that this was a data core fishery. And if we could get some data from electronic monitoring that would potentially help understand the stock better and the health of the resource. So yeah, we started with them, we applied for funding from the National Fish and Wildlife Foundation (NFWF) and worked with Team Fish, which is a monitoring company in Canada, New England Marine Monitoring, and Snap IT to put together a project, to start testing out what a monitoring program would look like in the Northern Gulf of Maine scallop fleet.

**Ben:** With the Northern Gulf of Maine boats, what does their federal fishery look like? What does a typical day on the water look like for those boats?

**Mary:** Yeah, so they have a very limited season. They start fishing in April and once the quota is caught for the year, the fishery ends and usually it lasts about four to six weeks. So, it's a very short, truncated fishery. They have a 200-pound limit per day. So, they'll do about five to six tows a day and then come in.

**Ben:** Early on, what were some of the pieces of data that the fishermen and the managers, wanted to figure out if they could collect using cameras?

**Mary:** We worked with a staff from the observer program at the Science Center, as well as, the new England Fishery Management Council staff to develop a program that would replicate what an observer program might be in the Northern Gulf of Maine. So, we kind of took it from the other scallop fleets as well.

So, we decided the things that were most important to capture with the cameras were the species and numbers of ground fish that were caught as bycatch in the dredges, the volumetric, sample of both kept and discarded scallops, and a subset of, kept and discarded measured scallops. We also looked at the presence and absence of sand dollars and starfish, because that was something that managers were interested in seeing.

**Ben:** Interesting, so let's break that down into each of the pieces of that as to like, why it's important to understand that. So, let's start with the groundfish.

Why, why do we care? What's coming up in the dredges for groundfish. What are ground fish? What are the species that they're catching and why, why does it matter?

**Mary:** Groundfish are an aggregate of the fish that are generally caught together and they're a mixture of round and flat fish. So things like cod and pollock and hake and all different

types of flounders. What scallop fishermen generally catch as bycatch in their dredges are the flatfish, the flounders, like yellowtail and dabs and plaice and winter flounder.

And so, you know, it's very important to capture what those actual bycatch and discards are because there's a pretty low, sorry, high mortality rate, of the species when they're caught in a dredge, and managers want to make sure that we're not negatively impacting other species, in the scallop fishery.

And so definitely some segments of the fleet will have high catch of things like Yellowtail flounder. We've been able to show that in the Northern Gulf of Maine, there's a very low bycatch of, of groundfish, which is a great, great thing to be able to prove.

**Ben:** And there is a sub-ACL for the scallop fleet. So, once they catch what they are limited to, when it comes to that bycatch, they can actually get shut down. And so that's, that's why really understanding the data stream and what the bycatch looks like in a fishery that, that doesn't have observer coverage was one of the things that our fishermen wanted to show was that they weren't catching a lot of flat fish and it wasn't something that was a lot of concern for the manager at this point in time.

So that's, that's great. and so just while we're on that subject, I know that one of the things we dealt with was trying to figure out how we could use the cameras to identify the different species of fish. Can you walk us through what that process was like working with both Team Fish and New England Monitoring and, what you, what you guys had to work with with the fishermen?

**Mary:** So, we worked with the EM technicians to try to figure out the best way to identify and count the groundfish species that were being caught alongside the scallops. And so it turned out once the best, the best way to do it was once the scallops were cleaned off the deck, the fishermen would lay out the flat fish on their deck, white side up, so the bottom, which makes them more easily identifiable by species, put them, leave them there for about 15 seconds and then scoop them overboard. And that worked well with the reviewer as being able to identify and count all the groundfish species.

**Ben:** You mentioned the sand dollars and starfish as another piece of information that, that managers were interested in. Why, what, why do those things matter?

**Mary:** Those are important biological indicators on the health of the ecosystem. They're further towards the bottom of the food chain, they're often a food source for other species. So, managers like to see kind of the presence and abundance of those species to better understand what's going on with the ecosystem.

**Ben:** Now let's hit the scallop part of the equation. You, you mentioned that there was two pieces of information that we were looking for when, looking at scallops, there's some measuring, that's done, there's some volumetric stuff that's done, there's both kept and discarded. Can you walk through the importance of that data for, for managers and scientists?

**Mary:** Yeah, absolutely. as with most monitoring programs, the discards are really where people are focused on getting the most data from, because clearly with the kept catch, you have an onboard, you have dealer reports, you've got more data on that already.

So, it's what we really focus on is the discards or in the scallop fishery, we call it the smalls, where they're sub legal shelf size. So, what the fishermen do every haul is they pull out a subset. Of both the kept and the discarded scallops, and they pass them over a measuring board, that is under a camera.

And it's the same measuring board that the observer program uses to get the, shell height and length. We take the measurements from those kept and discarded scallops just to get a better sense of how the fishery is doing biologically resource wise, get a sense of the life cycle of the scallops, and then we also take a volumetric measurement of how many scallops are discarded. So, the volume of discarded scallops.

So those are put into a separate bin that we get a volumetric sample from, and then are tossed back overboard.

**Ben:** What did year one look like in terms of data collection? And how did, how did the fishermen feel about the project?

**Mary:** Year one was crazy. I mean, it was, it was great. The fishermen were super involved and enthusiastic and very easy to work with. The EM techs definitely had their work cut out for them because it was, it's such a short fishery. We had to do a lot of quick turnaround with feedback and adjusting camera angles and adjusting handling protocols to make sure we were getting the data we needed.

And those boats, when they're fishing that fishery, actually fish out of Gloucester. And so the techs based in Portland, were going down to Gloucester a few times a week to grab hard drives, to adjust camera angles, and to talk with the fishermen about what was working and what wasn't. And so, yeah, you know, there was a lot of work and it was a lot of back and forth, but it went really well because we, the three fishermen that we started the project with, are just great guys and very communicative and easy to work with.

**Ben:** And, so on our, on our website, we'll put it up on a blog. But, we have a video from Alex Todd's boat, who he was one of the, one of the three fishermen that was involved in year one. And we can put up a video of him actually measuring and moving some of the scallops across the board and showing some of what you see. That's one view, how many cameras do most of these boats have?

**Mary:** Three to four.

**Ben:** Three to four, depending upon the setup of the, of the camera. And, and can you walk me through it? I know it's a little bit hard conceptually to think of the boat, and the back of the fishing vessel, but where did the cameras mostly go and what are they trying to capture with the different views?

**Mary:** Yeah, so I can go off one boat in particular, as they have the frame towards the stern of the deck, that's over the dumping mat, and they have two cameras on that frame to get different angles of the deck so you can see the scallops coming aboard and then you have a better view where you can see things kind of flat.

So, when they're laying out the flat fish, and the sand dollars and the, and the starfish, you kind of get an overall picture of the deck. And then the third camera is usually, it depends on the boat, but usually kind of in the shucking house or near the shucking house, which is where they will measure the scallops.

So that camera has an angle of the measuring board.

**Ben:** What did we actually get for data? In year one?

**Mary:** In year one, we had 40 trips between the three boats. We were able to measure over 6,000 scallops and 500 groundfish.

**Ben:** That's pretty impressive for a short period of time. And where are we now? So we, we missed last spring because COVID reared its ugly head and we had to adjust some of the plans with, outfitting boats, with cameras again, and, and, you know, working directly with the fishermen.

How did we pivot? What are we looking at for year two slash three now?

**Mary:** Since we missed this April data collection, we switched our data collection period to the state fishery. Serendipitously, all three boats happened to be also fishing in the Maine State scallop fishery. So that fishery started in December and we have just started collecting data again.

We've had to adjust some of our protocols due to the state regulations, for instance, none of the state boats are allowed to hold any small scallops in any container on board. You know, if Marine Patrol were to see that, then they would get fined pretty heavily. So we had to get rid of that part of the handling protocol.

We're no longer getting a volumetric estimate of small scallops. But other than that, the handling protocols stayed pretty much the same. We've worked a bit with the State to see if there's any data, particularly that would be helpful for them and their scientists. So we're trekking along, and there'll be a quick turnaround because we'll finish data collection for this year in February.

And then it'll start right back up again in April for the 2021 scallop fishery. I can't believe it's already 2021.

**Ben:** The time just flew by, but also dragged on forever over the past year. So, yeah. And, and the Council, passed amendment 21, focused on the Northern Gulf of Maine and figuring out how you divide up the allocation and all these other things.

But one of the pieces of that was there is going to be a monitoring plan that's going to be coming out for the fleet, in the next year or two and we're trying to figure out what that

looks like. Where do you think we are in terms of this project and informing what future monitoring might look like in the Northern Gulf of Maine? Do we think that this is going to be an option for boats at some point in the near future, or do we think that this is going to end up more on the data and science side of the equation when it comes to what we're collecting and how the fishermen are involved?

**Mary:** I think it's absolutely an option for monitoring. My hope is that this year to start working even more closely with the observer program and with the Council and making this match what they envision that monitoring program will look like so that when that begins, we can have this operational or at the very least as an EFP. And that's an exempted fishing permit.

So yeah, I'm pretty optimistic, collecting good data and research is definitely important for this project, but the primary goal is to have an operational EM program for the Northern Gulf of Maine scallop fleet.

It's been really nice to be able to develop this program and pilot it before regulations were enacted. You know, we're coming off a lot of years of experience of developing electronic monitoring in the groundfish fishery, which obviously already has monitoring requirements.

And that's, that's been a big struggle working back and forth with, with the Science Center and the regional office and all the federal agencies to make the program work under existing regulations. So being able to test out, and be flexible with our fishermen before we're actually required to do anything has been great and made the program run a lot more smoothly and hopefully, we can have a smooth transition as well.

**Ben:** Yeah. I mean, just from, from the outside perspective of, you know, watching what you and the fishermen have had to go through, you know, when we built out the electronic monitoring program in Maine, I guess seven years ago, at this point, you know, we had to account for 10 different species that guys land on the regular and another five that might come up at different times.

And, you know, that's a complex airplane that you're building that also has to fit in with what the observer program has defined are the parameters. And so going from that project to one where like, "Oh, what are we focused on? We're focused on just scallops?" It's, it has been a nice change of pace to, really focus in on that.

And kind of give the fishermen the opportunity to build something that can work for their boats. And so, it will be interesting to see how we can, transition into, you know, an operational program as it starts to expand into the, into the Gulf of Maine. I think the other piece of this that's, that's really interesting is, you know, we, we have been seeing an increase in scallop biomass outside of, some of the near shore fishing grounds that are close to Gloucester and putting humans on boats that are in an Island communities in Downeast Maine. A bunch of the fishermen that we work with are really far Downeast. And if you've got an observer that has to travel from Gloucester to Stonington or Cutler, that's not an easy trip. And so that really does start to be cost savings as well when it comes to human time and the flexibility that, that fishermen and fishing businesses may have, if they're required to

have observer coverage. So, you know, Maine's a very rural place and it's a big place when you start tracking the coastline and, we have a lot of great small boats that are involved in the scallop fishery, both in State and federal waters in some of the most remote ports in the state.

So, this is a real opportunity to make sure that we're collecting data and getting observer coverage on boats throughout the entire fishery.

**Mary:** Absolutely.

**Ben:** As we transition from the State waters fishery that we're working in right now, and we start thinking about April 2021, which is the beginning of the new scallop fishing season, what are some other things that we're going to be exploring, and changing about the program for the next, you know, I guess year three, technically, of the project.

**Mary:** Yeah, well, a big part of making an EM program operational is making sure it's scalable. So, the biggest change that we'll be conducting in 2021 is that we're going to be expanding to six boats instead of three.

So, we'll be getting a lot more data, a lot more feedback from fishermen on what works with their deck operations. So, it'll be great.

**Ben:** Yeah. I mean, that's, that's always the interesting thing with these types of programs and we've been trying and focusing on making it pretty flexible, but every one of these vessels is set up differently to, you know, catch scallops or lobsters or groundfish or whatever they're catching and working on.

And so, the, the flexibility of, of building stuff that fits for the individual boats has been a challenge, but it's also one of the more rewarding pieces of this, because it does show the opportunity that, that cameras and electronic technology can bring when you're, when you're thinking about these small boats that, that exist in the Gulf of Maine.

**Mary:** Absolutely. And the other interesting thing with projects like this, or piloting EM is that the first handful of boats that you start working with are generally the fishermen that are a lot more willing to try things out and change up their operations and be flexible. So, you got to keep that in mind, as you're designing these programs, that the first, the first handful of fishermen you're working with aren't necessarily representative of the work that the entire fleet is willing to do.

**Ben:** Mary, thank you so much for taking some time today. And as I said, previously, like we're going to put up some photos, we're going to put up some, some video and you can see what this looks like, on our blog. So, take a look at that.

**Mary:** Thanks, Ben.