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David Todd [00:00:02] Good afternoon. I'm David Todd, and I have the privilege of being here with Emma Hickerson. And with her permission, we plan on recording this interview for research and educational work on behalf of the Conservation History Association of Texas, and for a book and a website for Texas A&M University Press, and finally for an archive at the Briscoe Center for American History, which is at the University of Texas at Austin.

David Todd [00:00:32] And I want to stress that she would have all rights to use the recording as she sees it.

David Todd [00:00:37] And before we went any further, I wanted to make sure that that's okay with Ms Hickerson.

Emma Hickerson [00:00:44] Yes, completely. Thank you.

David Todd [00:00:45] Okay. Okay. Well, good. Good.

David Todd [00:00:47] Well, let's get started then.

David Todd [00:00:49] As I said, my name is David Todd. I am representing this small non-profit group called the Conservation History Association of Texas, and I am in Austin. And we are conducting a remote, very remote, interview with Emma Hickerson, who is based in the Sydney, Australia area.

David Todd [00:01:08] It is Tuesday, April 30th, 2024. It's, almost 5:00 Central Time here in Austin. And, it is May 1st, 2024, about 8:00A.M. in Sydney, Australia, where Ms Hickerson is.

David Todd [00:01:27] Ms Hickerson trained at Texas A&M, where she received her B.S. and M.S. in Zoology. She then worked for the National Oceanic and Atmospheric Administration, NOAA, at the Flower Garden Banks National Marine Sanctuary from April 1997 through December 2021.

David Todd [00:01:48] And in the time since then, she has served as project coordinator for National Seabed Mapping Oceans, Reefs, Coast and Antarctica for Geoscience Australia.

David Todd [00:02:01] Today we'll be talking about Ms Hickerson's life and career to date, and especially focus on what she can tell us about the Flower Gardens and the associated reefs that are nearby.

David Todd [00:02:12] I thought we might start by just asking you about your childhood and your early years, and if you might be able to point to any people or events in those early days that might have gotten you interested in animals, or the ocean, or scientific research.

Emma Hickerson [00:02:31] Thanks, David.

Emma Hickerson [00:02:33] I grew up in Sydney, Australia for my formative years, so through high school, in a suburb of Sydney called St. Ives. It's a very green, leafy suburb and our house backed into a National Wildlife Area. And so, as children, we spent our time pretty wild, running through the bushland, until the dinner bell rang each evening. And we spent a lot of time, as children with all of our neighborhood friends in that bushland.

Emma Hickerson [00:03:10] And that's really, I think, where my love for nature was instilled in my being, because I can't really point to anything beyond my experiences as a child. My parents were very outdoors-oriented, and on weekends would take us to go bushwalking and camping. And also out, for holidays, we went to farms. And it was all wild areas that we spent our childhood.

Emma Hickerson [00:03:47] So I, we didn't back then, we didn't have television. We spent a lot of time reading books. I remember a huge wall of encyclopedias. And, we would have games around that collection of encyclopedias. And so, we learned about the natural world around us, also, the world around us, through the encyclopedias about everything.

Emma Hickerson [00:04:17] It was not anything that we could, you know, watch on television. Movies were not something that we typically spent our time doing.

Emma Hickerson [00:04:29] We just had such a a different lifestyle than the young children of today. It's quite extraordinary to think back in those days that we didn't have the technology, but we were instilled in things that ended up being our careers. And that's, I think, really what pushed me into the, the world of nature. It really wasn't pushing me into nature. It was how I was brought up in that world.

David Todd [00:04:58] It sounds like it was, a routine, a habit, almost a whole lifestyle that took you outdoors. Can you remember any sort of outstanding, unusual, I think you called it a bush walk or a trip in the wilds in Australia as a child?

Emma Hickerson [00:05:24] Our family was a little unusual from a lot of our neighborhood, because our parents would take us into country areas and take us for drives several hours down the coast, back when the really the roads were not good for traveling, but they put us into nature through these weekend trips and holiday trips.

Emma Hickerson [00:05:53] Some of the areas that we spent a lot of time in is called the Blue Mountains, which is part of the Great Dividing Range that runs down the east coast of Australia. And, that was incredible, that still is: incredible scenery and bushwalking, hiking (the Australian forest is called the bush here). So, that's why it's called bush walking.

Emma Hickerson [00:06:16] And just the smells of the eucalypt and the birds, the parrots, and the wildflowers, are just a part of who I am. And that's what I grew up with. Some of the stunning areas of the Blue Mountains are quite iconic to Australia. Now, when tourists come to Australia, they go to the Blue Mountains and see the Three Sisters. Now, that was something that we did on a fairly regular basis as children, and probably not a lot of Sydney kids did those sort of things that we we were exposed to.

Emma Hickerson [00:06:55] I don't think I can put my finger on one particular thing, because it was just part of our lifestyle.

Emma Hickerson [00:07:01] And, something that I think our family was particularly well known for were the menagerie of animals that we had. As kids, we would bring home big pythons and cultivate large spiders in our curtains at home. And, we had, my father was a medical physiologist as his profession. And he had, I don't know actually why this came about, but he ended up bringing home a kangaroo, and we had that kangaroo living in our backyard for quite some time.

Emma Hickerson [00:07:44] My brother ended up working as a jackaroo on a farm in Australia. He ended up bringing home a little baby kangaroo, a joey, that lived with us for quite a while. And my mother very happily accepted all of these creatures that ended up in our home and around our house. And so, it was just, you know, it was our life, nature was our life growing up.

David Todd [00:08:13] Gosh, it sounds idyllic.

David Todd [00:08:18] So, I think you may have already answered this, but I hope you'll bear with me if I ask it again, just to make sure I didn't misunderstand. We often ask if folks had any sort of impressions from the general media. And it sounds like TV and movies were maybe not a good source, but it sounds like you're quite a reader. Is that right? Are there any books that you recall that might have been influential for you?

Emma Hickerson [00:08:51] You know, you're right there, as far as, you know, TV shows and movies. A lot of marine biologists (that's what my career has been), a lot of marine biologists talk about watching the movies and reading the books of Jacques Cousteau. I was not one of those people who read those books and watched the old Sea Hunt movies or anything like that, and said I had to be a marine biologist. That really wasn't my path at all.

Emma Hickerson [00:09:25] The suburb I grew up in was about half an hour from the beach, and we did go to the beach quite often. So, I spent a lot of time around the ocean. The beaches and areas around the coast are just stunning where I grew up. I spent a lot of time on top of the ocean, but not underneath the ocean.

Emma Hickerson [00:09:45] And that happened for me later in life. Actually, I didn't get certified as a diver until I was living in Texas, which is a bit odd for somebody who grew up through their teenage years in Australia.

Emma Hickerson [00:10:00] But, so, I don't know that I can really point to any particular book or TV show that specifically pushed me onto a pathway of what I'm doing here.

Emma Hickerson [00:10:17] You know this is a little odd, but I did think I wanted to study great apes at a young age.

Emma Hickerson [00:10:27] So, at some point, actually, it was probably in Texas when I was exposed to some researchers who were working with sea turtles, and the world I was starting to get interested in as a diver, that I switched to the marine biology thread. So, I'm not one of these people who at a young age, I was going to be a marine biologist. It was something that I grew into.

David Todd [00:11:01] Okay.

David Todd [00:11:03] So, you mentioned some of your experiences in Texas and I guess a good part of that was a pretty extensive training in school. And I was wondering if there were teachers or classmates when you were Texas A&M, or perhaps in grade school, when you were back in Australia, who might have been, you know, inspirational or influential for you in this interest in the natural world and oceans in particular?

Emma Hickerson [00:11:34] When I started college, actually, in Texas at Texas A&M University, I had been out of high school for about eight years. So, I had some time out of high school. I actually didn't finish high school. I finished, I had a school certificate from my high school in Australia, which is one stepping-off point that you could back then stop your education.

Emma Hickerson [00:12:08] So, I did my 10th grade school certificate in Australia, then went to secretarial college, and because I didn't really know what I was going to do. And I was a secretary, a legal secretary and other sort of office secretary for a few years, until I moved to Texas and then started working just in the office at the University at Texas A&M, TAMU Outdoors, and their recreational sports department, and was exposed to a lot of, you know, of course, a lot of students, a lot of opportunities.

Emma Hickerson [00:12:49] People were doing all sorts of different things. And I didn't believe that I was capable of being a student until I was exposed to a lot of people my age, who were pursuing all sorts of different careers.

Emma Hickerson [00:13:06] So, I think I was, my vision and scope of what my future could be was limited when I was living in Australia. And that view of what my life could be wasn't opened up until I moved to Texas. So, I think from a standpoint of what was, potentially, sort of not a great path to be leaving Australia, going to Texas, turned out to be the best path for me, personally and professionally.

Emma Hickerson [00:13:40] While I missed Australia, Texas gave me a lot of opportunities.

Emma Hickerson [00:13:43] So, while I was working at the university, I made that decision to go back to school. So I did a GED, was accepted into college at Texas A&M University. I honestly didn't look at other universities because I didn't know anything about any other universities. I just knew this one.

Emma Hickerson [00:14:05] And I was accepted into the Zoology program. And really, I went, I did Zoology because that's the recommendation and guidance that I got when I decided I wanted to do marine biology. I was advised to do a more broad degree because there were not that many jobs in marine biology, and getting a degree in zoology would give me more opportunities and options.

Emma Hickerson [00:14:39] But I was one of the lucky few who ended up in a position doing marine biology as a career, even though I have a Zoology degree that would have allowed me to do other things. So, I feel very fortunate in that way.

Emma Hickerson [00:15:01] And I, as an undergraduate, I met Dr. David Owens. He was in the Department of Biology and he was studying sea turtles. And that's really, that was very pivotal moment for me because I sort of wiggled my way into his lab. I had a professor of

marine biology who was identified as my advisor as an undergraduate. That professor, to be honest, she scared me. I was very intimidated by her.

Emma Hickerson [00:15:44] And, Dave Owens was a lot more open and kind. And, I sort of adopted him as my advisor, and then was able to start working in his lab just as an undergraduate on a feeding study of some Kemp's ridley sea turtles that he had in the lab.

Emma Hickerson [00:16:15] And, as an undergraduate, I was able to apply for a very small NSF grant, which I was successful in being awarded, which allowed me to join Dave Owens and some of his grad students on quite an amazing trip to Costa Rica to study the mass nesting beach and the sea turtles at Playa Nancite. That's an arribada beach for olive ridleys.

Emma Hickerson [00:16:52] And so that was something that really was a huge moment in my life that I was able to go to this very remote beach in Costa Rica, and help on this arribada beach studying the sea turtles.

Emma Hickerson [00:17:15] It was a very remote, very rustic research camp. We had electricity for about an hour or two a day, if we were lucky. We lived in a multi-room wooden building. I had my own room. It was tiny. I shared it with the bush mice and the scorpions and pythons. I slept in a tiny little bunk covered with mosquito netting. I slept with a huge flashlight because the bats would fly into my room in the middle of the night, and I'd have to shine the light on to them so that they wouldn't pee on me.

Emma Hickerson [00:18:02] But I loved every moment of it. We spent the research hours during the day studying the sea turtles (and night), doing things that I would never have considered I was brave enough to do.

Emma Hickerson [00:18:17] We spent hours by ourselves in four-hour shifts on the headlands. So, we had to hike to the headlands in the middle of the night sometimes and sit there for four hours tracking sea turtles with big antennas.

Emma Hickerson [00:18:36] We'd previously caught sea turtles on the beach and in the water and put radio transmitters on them, so that we could triangulate and identify where the animals were when they were swimming off the beach.

Emma Hickerson [00:18:57] But, yeah, just the fact that I was hiking down this beach and up through the jungle and onto the headlands in the middle of the night was, was, if I had thought about that ahead of time, I probably would not have gone down there because I wasn't too keen on the dark and things like that.

Emma Hickerson [00:19:17] But that experience locked into me that field work was what my life needed to be because it really fed a part of my soul that was very gratifying.

Emma Hickerson [00:19:33] And so, that was yet another sort of turning point for me, locking into who I am and what I ended up doing.

David Todd [00:19:45] So, I understand that another pivotal point for you, or one that was it was a good preparation, was this period of time that you spent as a dive master, at a dive shop? And I was wondering how that started and why you found it to be so influential for you.

Emma Hickerson [00:20:11] Yes. So, I ended up sort of picking jobs and pastimes in my personal life that really ended up supporting my professional life. So, looking back, I did end up working for quite a few years for a very dear friend of mine, Patsy Kott, who ran Texas A&M University's TAMU Outdoors.

Emma Hickerson [00:20:36] That was the program that taught students, and whoever wanted to sign up, how to kayak and canoe and ran weekend trips or ran hiking trips, camping trips, horseback trips, horseback-riding trips. And I not only sort of organized those trips, help set them up, collected all the paperwork, checked all the boxes for all the planning, getting equipment ready, and also led those trips.

Emma Hickerson [00:21:13] And some of those trips ended up being SCUBA diving trips. At that time, I was also introduced to some of the other staff in the P.E. Department who were SCUBA divers and a group of us, a group of friends, got together and decided we were going to do a class together and get SCUBA certified. So that was in 1990.

Emma Hickerson [00:21:40] And, one of the instructors we ended up having was associated with a dive store in town, "See You Underwater". And, I eventually fell in love with diving so much that I went straight from my open water certification into working for the dive store and starting my dive master course.

Emma Hickerson [00:22:08] And that's where I got a lot of experience leading dive trips. I already had the capabilities of organizing those type of trips from my work at Texas A&M University. And, I learned about the SCUBA gear. I was selling SCUBA gear, because it was a retail outlet as well for SCUBA gear.

Emma Hickerson [00:22:36] And that's where I was when I was recruited to go diving at the Flower Garden Banks to go count fish. And that's where that part of the story starts.

Emma Hickerson [00:22:50] That's fascinating. Well, let's talk a little bit about the Flower Gardens. And how did you get recruited there? What was the starting point for that?

Emma Hickerson [00:23:03] I had just started in grad school and I was working at the dive store. I was still doing a little bit of work at Texas A&M University. And really, I didn't have a project for my Master's. I came into grad school wanting to do sea turtle work. I was actually trying to get a project kicked off with turtles, black turtles in the Caribbean.

Emma Hickerson [00:23:39] But while I was waiting for things to sort of eventuate for that program, I started becoming aware of the Flower Garden Banks. Not really too keen about diving in the Gulf of Mexico. I guess I was a bit of a dive snob, having grown up in Australia and thinking, you know, the best places in the world are in the Pacific and in Australia, and thinking about the Gulf of Mexico, like a lot of people do, think of it more as a brown-water mud pit.

Emma Hickerson [00:24:23] And, when I was approached to go diving at the Flower Garden Banks, I, you know, grudgingly said, "Okay, I'll go try that".

Emma Hickerson [00:24:32] But I couldn't have been more wrong about the place. And I think this is the stigma that the Gulf of Mexico has to this day. It's an extraordinary place, and gets a really bad rap in general about what it does, what it is and what it can offer, both to recreational divers and to people who enjoy water in general.

Emma Hickerson [00:25:05] Because after all, the Caribbean is a two-hour flight away from Texas. So, people, I guess, will make decisions about whether they want to go to the Gulf of Mexico or to the Caribbean.

Emma Hickerson [00:25:20] It's just a matter of not knowing what awaits them at the Gulf of Mexico. It's extraordinary.

Emma Hickerson [00:25:30] So anyway, I was working at the dive store, and Christy Pattengill came into the dive store wanting to recruit divers. She just needed divers to go help her at the Flower Garden Banks to count fish. And that was the topic of her graduate work.

Emma Hickerson [00:25:54] And well, I told her I don't know anything about the fish in this part of the world, but I'm certainly willing to help.

Emma Hickerson [00:26:03] She just was very, very keen to recruit divers who were capable underwater. The Flower Garden Banks is not a beginning dive. You needed to be able to dive, efficiently and safely, in order to do anything underwater besides just dive. So she wanted to get the best team put together who had the ability to dive first, but also were willing to learn how to identify fish.

Emma Hickerson [00:26:38] And that's how my days diving at the Flower Garden Banks started. So, it started with counting fish and learning the fish. I learned one fish at a time for a while, just because I had no idea about identifying fish. And when you become exposed to a whole lot of different fish, it's really important to focus in on one, first, to be able to just add to that.

Emma Hickerson [00:27:04] And eventually, I was starting to dive on other projects for the long-term monitoring of the coral reefs there with the various groups, and just became one of the regular research divers over time.

Emma Hickerson [00:27:22] And then that's when I was exposed to, "Does anyone know about the sea turtles here?" "And yeah, we have sea turtles. They're usually loggerheads, but we don't know anything about them."

Emma Hickerson [00:27:33] So, that's really why I ended up studying the sea turtles at the Flower Garden Banks, because I had access to them, and we didn't have answers as to what, anything about those turtles.

Emma Hickerson [00:27:51] So, that's what I proposed to my professor, and we went with that.

David Todd [00:28:00] Okay. This may be a moment just to introduce those who might be listening to this recording, and tell them a little bit about the Flower Gardens, this place that you have mentioned a few times now. Can you talk to us a little bit about the background of the Flower Gardens: what they are, why they exist, and maybe how they were first explored and understood?

Emma Hickerson [00:28:33] Yeah. So, the Flower Garden Banks National Marine Sanctuary is a sanctuary in the Gulf of Mexico, located about 100 miles south of the Texas / Louisiana

border. It is part of National Oceanic and Atmospheric Administration's National Marine Sanctuary Program.

Emma Hickerson [00:28:58] And the Sanctuary was designated in 1992 just as the East and West Flower Garden Banks. Those two sites were the Sanctuary.

Emma Hickerson [00:29:14] Stetson Bank, which is a third bank, was added in 1996. And then 14 additional banks were added in 2021.

Emma Hickerson [00:29:28] So, all of these banks are on the outer continental shelf of the Gulf of Mexico. And are a part of a series of dozens and dozens of topographic features, which are little underwater mountains called salt domes. And so, that's the dominant underlying geology of the outer continental shelf of the Gulf of Mexico.

Emma Hickerson [00:29:59] So, salt domes, to understand them, we have to think back about 190 million years ago, when the Gulf of Mexico was a very shallow sea. And the climate was very hot and dry at the time, and it caused a lot of evaporation of that salt water, which resulted in the laying down or deposition of a really thick layer of salt over a long period of time. And that that layer of salt was about, you know, in areas, 1 to 2 kilometers thick.

Emma Hickerson [00:30:36] And as the Gulf of Mexico deepened and the rivers began to flow over time, the silt, the sand and the mud that came out of the rivers were deposited on top of the salt.

Emma Hickerson [00:30:50] So, you've got this stratified layering of salt, and on top of that was the sediment. And so, they're very different in density. So the salt is less dense than the overlying sediment. So, there's an opposing force of the sediment pushing down on top of the less dense or more buoyant salt.

Emma Hickerson [00:31:19] So, you've got opposing forces. And in weak spots, you would have the salt pushing the sediment up into ridges and into these salt domes. And so, movement of the salt causes the faults and cracks in the overlying siltstone and clay.

Emma Hickerson [00:31:46] And where these fault lines are, you've got pathways for trapped oil and gas, the hydrocarbons, to collect in these reservoirs. So, you've got these domes that have pockets, sort of pockets in them where the salt is being pushed up and you've got the reservoirs of the hydrocarbons.

Emma Hickerson [00:32:09] And that's really why the Gulf of Mexico is such a hot spot for oil and gas exploration and extraction, because you've got just dozens and dozens of these salt domes scattered across the outer continental shelf of the Gulf of Mexico, which is where the hydrocarbons are.

Emma Hickerson [00:32:33] In some places, the salt may be 10,000 feet down. But in some places that salt may be right at the surface. And there are places, several places, not too many, where that salt is exposed and actually dissolving into the salt water, the surrounding salt water. So, it's come to the surface and it's really interesting places to see with an ROV or a submersible because, you've got incredibly dense brine coming out of the sea floor. It could be 200 parts per thousand, whereas the surrounding sea water is about 35 parts per thousand in salinity.

Emma Hickerson [00:33:25] And where you have little depressions, you can end up with a brine lake. And you've got a brine seep at the East Flower Garden Banks, which is fascinating because, looking at it with an ROV, you're in the water looking at a lake, what looks like a lake. It's just, it's incredibly dense brine.

Emma Hickerson [00:33:53] So, it's fascinating to see. You can go onto the Flower Garden Banks website and see photos of this. It really is quite fascinating. Even, when you're driving an ROV and you disturb that surface of that lake, it literally looks like you're looking at a lake through air, because you can see that the waves over the top of the brine lake, but your ROV is in water. So, it's liquid within the liquid. It's fascinating.

Emma Hickerson [00:34:25] And I will say that these uplifted rocks and structures that are pushed up through these dynamics of the salt domes, so they're pushing the sea floor from surrounding areas of about 400 to 500 feet up into shallower depths where you've got more light, so into the photic and mesophotic zones.

Emma Hickerson [00:34:56] And that structure provides somewhere for the sessile marine organisms to grow - the corals and the algaes and the sponges. And then they in turn provide habitat for things like fish and crustaceans and other invertebrates and all sorts of things.

Emma Hickerson [00:35:17] So, that's why you have these hotspots of diversity on top of these salt domes.

David Todd [00:35:29] That's really helpful. Thank you.

David Todd [00:35:33] So, tell me just briefly ... this place seems just wonderful, but it's 100 miles offshore and, I guess, maybe 60 or 70 feet underwater, maybe much, much more. How was it first discovered and explored?

Emma Hickerson [00:35:58] The story goes that snapper and a grouper fishermen discovered the Flower Garden Banks in the early 1900s. But they weren't explored until the 1930s. That's when the first scientific study of the area took place. It was surveyed hydrographically by what was the US Coast and Geodetic Survey. It's now the National Ocean Service. So, that was in 1936.

Emma Hickerson [00:36:39] And then, in the 1950s, a man by the name of Henry Stetson, who was a geological oceanographer from Woods Hole, first identified the existence of corals at the Flower Garden Banks. So, you know, if you look back, that's not very long ago.

Emma Hickerson [00:37:04] In 1960, a group of divers led by, Dr. Thomas Pulley, who was the director of the Houston Museum of Natural Science, conducted some of the first dives and saw for the first time the coral reefs of the Flower Garden Banks.

Emma Hickerson [00:37:19] Robert Alderdice and James Covington established an organization called the Flower Gardens Ocean Research Center. And that really kicked off and initiated a period of intense investigation and multi-disciplinary research.

Emma Hickerson [00:37:43] Dr. Tom Bright, who has a bank named after him - Bright Bank - was at Texas A&M Department of Oceanography at the time. And he played a really big role in researching and studying not only Flower Garden Banks, but the northwest Gulf of Mexico reefs and banks, along with colleagues, in the Department of Oceanography - McGrail and

Rezac - some of those names of the oceanographers in the Department of Oceanography. And they also have banks named after them, which are now part of the sanctuary.

Emma Hickerson [00:38:30] So, it's come full circle.

Emma Hickerson [00:38:34] A lot of the early studies that were well-funded were due to the interest in oil and gas exploration in the Gulf of Mexico. So, the Bureau of Land Management, that's what the regulatory agency for oil and gas was named back in the '70s and '80s, funded a series of studies using submersibles and oceanographic equipment to look at the areas on the continental shelf in order to protect them ahead of the oil and gas exploration activities.

Emma Hickerson [00:39:32] So, Dr. Tom Bright was one of the key researchers on all of those projects. And through those investigations, they developed the first protective measures for the areas, directly for protection from oil and gas activities. So the no-activity zones which are still in place today were developed from those activities. And the work that they conducted back then really was the base for all of our activities since then.

Emma Hickerson [00:40:21] So, I can't give them enough credit for what they first did back then, with very limited sort of technologies and resources, to be honest. But you can read their descriptions of some of those places after just being there once and you know exactly what they're seeing and talking about. And we've just stood on their shoulders and continued work from there, to learn, to continue exploring and characterizing the reefs and banks in the northwest Gulf of Mexico.

David Todd [00:41:01] Well, this might be a good place to understand more about this work of exploring and characterizing those banks, including the Flower Gardens, because I understand that you were the Research Coordinator at Flower Gardens National Marine Sanctuary from about 1997 through 2021. Tell us a little bit about how you came to work there. It sounds like you did some research on counting fish, but that that evolved into much more.

Emma Hickerson [00:41:37] Yeah. David, if you don't mind, I might step back a little bit further just to talk about the designation of the sanctuary, because that is really important to understand how we got here...

David Todd [00:41:53] Yes please.

Emma Hickerson [00:41:56] To what the sanctuary is today.

Emma Hickerson [00:41:58] So, you know, the pathway to the Sanctuary status was really long and winding. And, as I said, the Sanctuary wasn't designated until 1992 originally, but the National Marine Sanctuary Act was passed in 1972. And that's when the researchers really began discussing the Flower Garden Banks as a candidate for National Marine Sanctuary status.

Emma Hickerson [00:42:31] There was an adventurous group of recreational divers that were interested in the site. And in 1979, the Houston Underwater Club, which was a group of recreational divers and photographers, submitted a formal letter of nomination. In 1979, NOAA published proposed regulations and DEIS [Draft Environmental Impact Statement], on the designation of the East and West Flower Garden Bank. And the site was listed on to the list

of recommended areas, which is a process that had to be adhered to in order to get to sanctuary status under the National Marine Sanctuary Program regulations.

Emma Hickerson [00:43:18] The proposal went through consultations and public comments, and there was some to-and-froing surrounding oil and gas regulations. But the action on the proposal was suspended in late 1980. And the site was removed from the list of recommended areas in '82.

Emma Hickerson [00:43:46] And one reason being that anchoring was the only outstanding issue that was elevated as a reason for Sanctuary status. But the Coral Fishery Management Plan for the Gulf of Mexico was about to be implemented, and it was assumed that that would take care of the anchoring issue. That Management Plan was finalized, but didn't include any no-anchor provisions for the Banks. So, that brought the whole conversation back to the table to propose the Sanctuary as a protected area through the National Marine Sanctuary Program once again.

David Todd [00:44:44] Can I interrupt there? Emma, I'm curious why the anchoring provisions were not included, given that these coral reefs at the Flower Gardens were close to shipping lanes and were, you know, quite shallow and delicate.

Emma Hickerson [00:45:02] You know, I don't have an answer to that. So, it was possibly lack of awareness by the people who are writing that Coral Management Plan of all the details of the Sanctuary - lack of coordination. I can't really tell you what that story was. I'm sorry about that.

David Todd [00:45:29] No, that's fine. So sorry to distract you. Go ahead with your explanation.

Emma Hickerson [00:45:34] So, you know, being the machinations of government, NOAA changed its list of recommended areas with a new requirement, the Site Evaluation List, and required identifications of sites for placement on the SEL by Regional Resource Evaluation Teams. So there were some more hurdles to go through.

Emma Hickerson [00:46:00] The Flower Garden Banks was recommended for placement on the Site Evaluation List in 1983, and was evaluated by a Gulf of Mexico Regional Resource Evaluation Team. And on that Team was Dr. Tom Bright (once again, his name comes up) from Texas A&M University, a Dr. McIntire from LSU and Dr. Gettleson from CSA [Continental Shelf Associates], and then Jim Ray from Shell Oil.

Emma Hickerson [00:46:34] So, one thing - I would just make the statement is, as you hear me talking about the Flower Garden Banks, intertwined in that whole conversation is oil and gas, if you haven't already caught on to that.

Emma Hickerson [00:46:49] So, after another round of public comments, a second EIS was published in 1989, and that was ten years after the initial DEIS was filed.

Emma Hickerson [00:47:06] So, Dr. Tom Bright, who I've mentioned (we affectionately call him the Father of the Flower Garden Banks), he and his colleagues and grad students studied the reefs and banks of the northwest Gulf of Mexico, including the Flower Garden Banks, and he took an active role in seeking protected status for the Flower Garden Banks.

Emma Hickerson [00:47:25] And an illegal anchoring event, and documentation of the damage to the coral reef by him and his students, ultimately pushed the designation and protected the protection of the Flower Garden Banks. So, it took physical damage and documentation to really push the designation of the sanctuary over that finishing line.

Emma Hickerson [00:47:48] And so in, in 1992, the Flower Garden Banks was granted designation as a National Marine Sanctuary, just for the East and West Flower Garden Banks.

Emma Hickerson [00:47:59] And then Stetson Bank was strongly supported by recreational divers, who a lot of them worked under the auspices of a group named GREAT, Gulf Reef Environmental Action Team. They installed the first mooring buoys at Stetson, which provided a lot of protection for the siltstone / claystone structure. And GREAT also started the first long-term monitoring efforts at Stetson.

Emma Hickerson [00:48:29] And Stetson Bank was added to the Sanctuary in 1996 when Congress reauthorized the National Marine Sanctuary Act. So, GREAT was also already doing quite a lot of work for protection, for putting protection measures in place at Stetson and starting the monitoring program, years before Sanctuary designation.

Emma Hickerson [00:48:57] So, that's sort of how the Sanctuary was brought into the National Marine Sanctuary program.

Emma Hickerson [00:49:11] And I did my first dive at the Flower Garden Banks in 1993. So, it was the year after designation, and before Stetson Bank was added. So, that's when I started going out as a grad student, but not doing my research program just yet. I was working on other research programs, studying the fish and helping with the long-term monitoring, and documenting coral spawning, and things like that.

Emma Hickerson [00:49:42] And that's when the idea was formulated for my Master's degree, which was the satellite and radio tracking of the loggerhead sea turtles at the Flower Garden Banks National Marine Sanctuary. So, that kicked off in about 1994. And, I finished my Master's degree in 2000.

David Todd [00:50:17] Okay. That is very helpful.

David Todd [00:50:21] So, we could go, I guess, in several different directions from here. We could talk about how your graduate research, and some of your volunteer diving before that, led into being a Research Coordinator at the National Marine Sanctuaries. Would that be a useful next step?

Emma Hickerson [00:50:46] So, yeah, I can start there. So, I was working on other people's research and my own research. And I will say that we had sort of a cohort of grad students who were conducting research at the Flower Garden Banks on different projects - the fish counting, documenting the manta rays, and sharks, and banks in general, and my sea turtle work and coral spawning and things like that.

Emma Hickerson [00:51:16] There were a cohort of quite a few grad students all working at Flower Garden Banks. We we coordinated together on helping each other on our projects. And the Flower Garden Banks being 100 miles offshore, we all worked together on every cruise. And we worked together on funding, and worked directly with Steve Gittings, who, Dr. Steve Gittings, who was the Sanctuary manager at the time of the Flower Garden Banks.

Emma Hickerson [00:51:53] The office of the Flower Garden Banks, being a very new Sanctuary, had hardly any funding. So, the office space was actually donated by Texas Sea Grant. And, I think the funding covered Steve Gittings' salary and a vehicle. And that was about it.

Emma Hickerson [00:52:19] And we relied on funding, actually through the Gulf of Mexico Foundation, the Flower Gardens Fund, to help us get out to the Flower Garden Banks and do our research. And donations that went to the Flower Garden Fund came quite often from oil and gas companies. So, there is a very tight connection between the research at the Flower Garden Banks, the designation of the Flower Garden Banks, because we had to work ... well, we had to be supported by oil and gas in order to get a Sanctuary designation.

Emma Hickerson [00:53:11] But they were also very helpful in the early years in funding some of the grad work that we were doing, the research that we were doing.

Emma Hickerson [00:53:21] The reason that the original research was conducted by Tom Bright and his colleagues in the '70s and '80s was due to the need for protection of these areas and understanding of these areas, in front of all of the oil and gas exploration and characterization.

Emma Hickerson [00:53:41] So, there's a very strong link intertwined with oil and gas and the Flower Garden Banks.

Emma Hickerson [00:53:48] So, as a grad student, I was doing the work at the Flower Garden Banks and being around the other researchers, and also Steve Gittings. He did, at one point, have a little bit of funding for a Research Coordinator, but it wasn't a steady stream of funding. And when that funding went away, it was Steve Gittings who was sort of picking up and doing all the coordination of the research cruises and a lot of paperwork and licking stamps to send notices out and things like that.

Emma Hickerson [00:54:29] And it was just a natural, process that I offered to help coordinate, because I had the skill sets and the time to do it, I guess. And, I saw there was a need to pick up some of the workload from him when he lost his Research Coordinator. And so, I was just going in there, on a very casual basis, to help get things ready for cruises and do the paperwork and just offered to do any other things and pick up things that that would be helpful to the Sanctuary. It really wasn't a, you know, a planned thing to say, "Okay, I'm going to be the Research Coordinator of the Sanctuary one day, and this is how I'm going to do it." It just naturally evolved. It was put in front of me, or I was put in front of it, I don't know.

Emma Hickerson [00:55:24] And so, that very casual arrangement became a sort of a part-time contract position. I was volunteering for probably 18 months before I actually was being paid for it, during which time I had, gave birth to my daughter. So, I was actually paying a babysitter for a while so I could go volunteer at the Sanctuary office. But I really never saw it as a hardship. It was just part of my pathway. And I was getting a lot of benefit from it. And it was getting a lot of benefit from me being able to help out at the Sanctuary. So it was a mutual arrangement.

Emma Hickerson [00:56:10] But then it became a position, part-time. And then Steve Gittings ended up taking the position of the Science Director in the headquarters at the National Marine Sanctuary Program. And at that point, when they were doing the search, a search for

the new Sanctuary Manager, he asked me to come on full-time. It was at the very end of my graduate career. So, I didn't have that many obligations for school, and it just fit in that I could become a full-time research coordinator, on a contract. And then, in 2000, I was successful in applying for the federal position as Research Coordinator.

Emma Hickerson [00:57:05] So, what started as a very casual volunteer position ended up being a 25-year career.

David Todd [00:57:15] That's alway interesting, how people ... it's just between intention and luck and just strange coincidences. I was wondering why you cared so much about the Glower Garden, that you were so patient about finding that position.

Emma Hickerson [00:57:46] You know, I don't think there was any ... that patience was, I don't know that that's the right, correct word, because it wasn't like I was waiting for something to happen. It just happened. And it was just a natural progression of order. In many ways, I tend to plan. I have long-range plans for big things in my life, but where I'm going to work next was really not in that conversation for me. It was, "Okay, now I'm going to grad school", and then I ended up sort of on this pathway of getting exposure to the Flower Garden Banks and "Oh, look, they need help over there to do this, and then they need more help, and then there's a position there, and then they're paying me."

Emma Hickerson [00:58:50] So, it wasn't, I wasn't, it wasn't directed by me, I don't think, not intentionally. I was not driving a bus down that road, but I ended up on that bus anyway, if that makes any sense at all.

Emma Hickerson [00:59:11] But so, I feel very fortunate that I was in the right place at the right time with the right skill sets. But, I also understand that it took effort on my part to be where I was. So, it may have not been intentionally orchestrated, but I was doing things that lined up to be in the right place at the right time, with the right skill set and the right interests.

Emma Hickerson [00:59:41] The Flower Garden Banks is just such a special place. It was obviously a surprise to me at how amazing and beautiful and special it is, having thought nothing was going to really wow me in the Gulf of Mexico. But it blew my socks off. So, and it is... Yeah, sorry.

David Todd [01:00:10] No, I was going to ask about the whole process of blowing your socks off. As a research coordinator, you find yourself in that position, as you say, sort of evolved into it. What sort of research did you find yourself coordinating? And I'd be particularly curious, also, aside from the sort of topics that you were looking at, the technology of visiting these places, which you can't just sort of walk up to, you know. There's pretty sophisticated SCUBA diving, and then there are these different vehicles - the submersibles, ROVs and so on. Maybe you can talk to us about that.

Emma Hickerson [01:00:58] Right. So, there's science for the sake of science, and then there's science for management, which are very different things.

Emma Hickerson [01:01:12] So, when I first started studying sea turtles, I kind of thought it was just science to learn about these animals and why they're there. But it ended up being a project that really was science for management.

Emma Hickerson [01:01:33] So, my master's project was tracking of sea turtles by using satellite and radio telemetry. And so, I ended up capturing five loggerhead sea turtles, at depth, which, for sea turtle studies at the time, and it still is, is quite a unique sort of studying of sea turtles. Because a lot of sea turtle work is conducted at the beach, where you've got thousands of sea turtles walking up to the beach and nesting. So, you've got lots of sea turtles to study. But they are only one six, primarily, there. There are some areas in the world, including Hawaii, where the males do come up to the shore to thermoregulate, but that's not typical.

Emma Hickerson [01:02:32] So, instead of waiting for the animals to come up to shore, I went to the animals in their feeding habitat, which was the Flower Garden Bank for this project. So, you don't get huge numbers of sea turtles. But we did have sea turtles there.

Emma Hickerson [01:02:52] And so I started catching them, which in itself was quite tricky because, of course, it's quite deep at the Flower Garden Banks, though I haven't told you about that. But, the top of the banks are about 54 feet. That's the shallowest. So, you have to go through a lot of water to get to something on the bottom of the coral. And then the coral goes down to about 150 feet. As divers, it's, we're typically certified to go to 130 feet.

Emma Hickerson [01:03:27] But once you get deeper, you have less time that you can spend underwater. So, there's sort of a depth that is safe for you to be able to think that you can get anything done underwater. So, it's about 100 feet or so. We go deeper to do a few things, but you can't spend that much time there.

Emma Hickerson [01:03:47] But the sea turtles, turns out, we had the best opportunities to catch them at night, not during the day. After the tracking, we figured out why that was, I figured out why that was. So, we would go on turtle hunts at night, armed with a net that I'd designed, after some other researchers had come up with a similar design. I came up with one that we could carry underwater, that was basically a big metal opening, like a purse, with some trawling net sewed onto it, that would accommodate quite a large turtle that had a meter-long carapace. So, these were not small turtles.

Emma Hickerson [01:04:42] And so, the turtles would often be seen resting under the water with theie heads tucked under a coral head, on sand flats. So, we'd jump in the water in teams and look for the sea turtles. And if we were lucky ... We didn't really, I didn't have very many subjects: I had five animals that I tracked. But, one of those animals was a male. And I caught him three times over the period of 20 months. And he was at the exact same place, on the exact same sand flat, each time I caught him.

Emma Hickerson [01:05:22] And he ended up being quite a star of my project, and to the sea turtle world, because he was going through puberty. And so, I could measure his testosterone levels, the elongation of his claws on his flippers, and the softening of his plastron, which is the underside of his shell, during this 20-month period.

Emma Hickerson [01:05:49] As I say, he was my star, and he ended up in the sea turtle biology books.

Emma Hickerson [01:05:54] But it was a challenging project, just for the pure fact that you're 100 miles offshore. You had to catch them at night, safely. So, the technique of capturing them was that, once we'd found them, we'd tilt them forward, so that they couldn't get those front

flippers out in front of them, and swim up, because they're incredibly powerful animals. They also have very strong jaws, so we had to protect ourselves from being bitten.

Emma Hickerson [01:06:31] So, once we pivoted the turtle forward, we just turned them to the opening of the net and slid them into the net. And then I had a rope system to close the opening of the net. And to protect the divers, so I had loop systems where you could quickly close off the mouth of the net, and then handles for the divers to do a safe ascent to the surface.

Emma Hickerson [01:07:02] So ... just a regular sense. So, sea turtles are air-breathing reptiles. But they can stay down for about an hour.

David Todd [01:07:12] And can they get the bends?

Emma Hickerson [01:07:15] No. No. So, not that I'm aware of. Hmm. Yeah, that's a good question. Because they're breathing. No, because, yeah, no, they're breathing, just getting a breath from air and diving down. So, the bends is associated with compressed air. So, you're taking the air down with you, and you're breathing compressed air, and then you've got a higher concentration of nitrogen in your blood as you breathe in compressed air. So, I don't think so.

David Todd [01:07:54] OK.

Emma Hickerson [01:07:56] Anyway, so really, bringing the animals up slowly is for the divers. And so, we got the animals to the surface and then onto the boat, which was a challenge in itself because they're a couple of hundred pounds. And I think one of the animals was ... well, I don't know, but he was a very big animal, maybe 300 pounds. But, we got them onto the boat, and then I would process them.

Emma Hickerson [01:08:41] And, I'd learned some tips from Dr. Dave Owens, who was my professor. One thing was putting them on to an automobile tire, so that they were immobilized and they couldn't crawl around the deck and hurt themselves and hurt people, because those claws are quite sharp. And they can injure themselves.

Emma Hickerson [01:09:06] I would also designate one person to give the turtle a neck massage. You might laugh about this, but, that actually really calmed them down. And it was quite noticeable. If you stopped massaging their neck, they'd get all agitated. But if you kept on the task of massaging their neck, they'd really calm down.

Emma Hickerson [01:09:30] And then that allowed me to be able to process them. So, I would take blood samples from the sinus cavity in their neck. I'd give them flipper tags and PIT tags, which are little tags that can be read with an external reader to identify them.

Emma Hickerson [01:09:47] So, I cleaned their shell off so that I could attach the transmitter. I used fiberglass to attach the transmitters. And you had to do a very slow mix of, what's called a slow mix of fiberglass, because if you do a fast mix, it heats up and you can injure or kill the turtle with heat. So, you had to do a very slow light mix of the fiberglass. And it took a couple of hours to do that so that it wouldn't heat up.

Emma Hickerson [01:10:27] And after the transmitter was attached and it was dry, we would let the turtle just step off the boat and do a giant stride into the water.

Emma Hickerson [01:10:43] And I attached both satellite and radio transmitters to them. So, the satellite transmitter could tell me about the location of where they were. And the radio transmitters would give me some directionality from where it was from the boat. But also I used that to figure out what their dive time was and surface time was.

Emma Hickerson [01:11:12] So, it turned out these turtles would spend about an hour underwater, between 50 minutes to an hour underwater, before we would expect them back up on the surface. And they'd spend sometimes a minute up on the surface. And I knew that was important information. So, I knew if I had enough time on the surface in order to get the satellite links and the satellite signals.

Emma Hickerson [01:11:41] And, when I started looking at the information from the satellites about these animals, it turns out these animals were very tied to the Banks where I'd caught them. So, the East and West Flower Garden Banks are 12 miles apart, but my East Flower Garden Banks animals stayed there; my West Flower Garden Banks turtle stayed there. And what they were doing was going out foraging during the day, and coming back to the Bank at night to rest.

Emma Hickerson [01:12:18] And so, that turned into my looking into the management side of creating more protection for these animals. So, I knew what their home and core ranges were. And I asked, "How much of their ranges were protected within the Sanctuary boundaries? How much more would we be able to protect if we had buffer zones, or extended their protection to other management zones around the sanctuary?"

Emma Hickerson [01:12:48] So, that's where I ultimately ended up doing science for management.

David Todd [01:12:58] Excuse me, I just, I gather that the loggerhead is considered endangered. Is that why there was such focus on managing the Flower Gardens in a way that would protect them?

Emma Hickerson [01:13:09] Well, they're not actually endangered in the Gulf of Mexico. In other areas in the Caribbean, they are listed as endangered, but they are listed as threatened at the Flower Garden Banks.

David Todd [01:13:25] Okay.

Emma Hickerson [01:13:28] Yeah. So, that's where I really started thinking about the aspect of doing science for management. And that became sort of a key feature of a lot of the work that we did, that I helped direct and coordinate and manage for the Flower Garden Banks.

Emma Hickerson [01:13:51] So, as Research Coordinator, I not only coordinated research for researchers that wanted to come to the Flower Garden Banks, I actively looked at management questions or data gaps or information gaps that we didn't have and said, "We need to know about these things." So, I would recruit and look for specialists in different fields.

Emma Hickerson [01:14:15] And that really became important when we started looking at the areas that were deeper than the coral reefs. So, historically, the coral reef caps had been ... a lot of research had been focused in those areas. It was easier to get to generally.

Emma Hickerson [01:14:42] But they were a very small portion of the Sanctuary.

Emma Hickerson [01:14:47] So, I think I'll start talking about some more technologies that we were exposed to and that we really adopted as ways to expand what we were doing, other than SCUBA diving.

David Todd [01:15:02] To operate at greater depths. I guess?

Emma Hickerson [01:15:06] Yes. So, as a SCUBA diver, we were limited, with a sort of hard bottom at 130 feet. Our coral reefs actually went down to 150 feet, so we couldn't even get down there with our regular SCUBA diving.

Emma Hickerson [01:15:24] So, we started bringing in our remotely operated vehicles. The first one was from the University of Texas. But then we started working with the University of North Carolina at Wilmington with their underwater vehicle program, a wonderful team led by Lance Horn and his Phantom S2 ROV.

Emma Hickerson [01:15:56] And when we started working with Lance and doing the work in the mesophotic areas, which is below about 150 foot, down to about 500 foot, we didn't really know a lot about what we were looking at. Some of it we'd learned from the reports from Tom Bright and Dave McGrail and Richard Rezak and their wonderful reports and manuscripts. But overall, the biology was really unknown to us.

Emma Hickerson [01:16:38] So, we started just ... we had no way to collect anything, so we just took photos, thousands of photographs, of the areas within the Sanctuary at these depths and also outside the Sanctuary at some of the other banks.

Emma Hickerson [01:16:53] And we brought them back and we sent them off to the Smithsonian and to all these experts. And the answer, for most of the time, was, "Those are amazing photographs, beautiful photographs. But we don't know what they are because we've only seen pickled samples." So, they'd not seen the live animals, so, the live, biology. They only knew what the processed samples looked like.

Emma Hickerson [01:17:27] So, that was a huge revelation that we had to link the biology to the taxonomy.

Emma Hickerson [01:17:42] In, I think it was 1998, 1997 time frame, Dr. Sylvia Earle brought the Sustainable Seas Expedition to us. So, Dr. Earle was the Explorer in Residence at National Geographic Society then, and the Sustainable Seas Expedition was funded by the Richard and Rhoda Goldman Foundation. And it was a five-year project of underwater exploration and discovery of the marine world, with an emphasis on the National Marine Sanctuaries.

Emma Hickerson [01:18:33] So, she was bringing these single-person submersibles, Deep Worker and Deep Rover, primarily the Deep Worker, to do a tour of the Sanctuary program, and train Sanctuary staff and Sanctuary researchers as pilots.

Emma Hickerson [01:19:00] So, I was so lucky to be part of that training program and was trained as a submersible pilot, along with quite a few others in the program. And the first

expedition or mission at the Flower Garden Banks was in 1999. We were somewhat thwarted by weather, but we did get to do a few dives within the Sanctuary in the submersibles.

Emma Hickerson [01:19:34] A key thing that happened right before Sustainable Seas got to the Flower Garden Banks was that Dr. Jim Gardner, from the USGS, fortuitously wanted to test some seafloor-mapping multibeam technology in the Sanctuary on his way to other areas of the world to go do mapping. So he said, "Do you mind if I stop by the Flower Garden Banks and do some mapping?" "Of course not.".

Emma Hickerson [01:20:05] So, he produced our first high-resolution multibeam maps of the East and West Flower Garden Banks and Stetson Bank. So, we are able to use those in our first expedition to the Flower Garden Banks with the Deep Workers to help us guide and plan for those dives.

Emma Hickerson [01:20:33] We went back to the Sanctuary, and actually we went back to the northwest Gulf of Mexico, in, I think it was, 2001. And we went to other Banks outside the Sanctuary. We actually started in Florida and moved our way to the northwest Gulf of Mexico and did several dives in and around the northwest Gulf of Mexico banks.

Emma Hickerson [01:21:02] I did a dive at Alderdice Bank down to about 500 feet. And being down there by yourself in a little one-person submersible was extraordinary. And honestly, down at 500 feet, I was astounded by how much light was coming down and making its way down to that depth. It's because of the clarity of the water.

Emma Hickerson [01:21:31] And the biology that I was able to document and see myself was beautiful. It was a sponge garden. And there was a lot of life down there. There was a very special grouper called the marbled grouper, which is quite rare in the Caribbean in general. But we've documented that the northwest Gulf of Mexico is a hotspot for these beautiful grouper. They're, as adults, they're black in color and they've got some white spots on them, and they're very curious. And when we put the ROV down, they often come in and give you a look, and they're quite inquisitive.

Emma Hickerson [01:22:26] And I remember at one point, when I was in the submersible, I was sort of driving through some of these big sponge gardens down in Alderdice Bank. And I turned around and there were five marbled grouper behind me. It was like a little parade. It was just gorgeous.

Emma Hickerson [01:22:46] It's just moments like that that just, just bring a smile to my face in remembering them and just reminding me how lucky I was to be able to do some of these things.

Emma Hickerson [01:23:03] So, this Sustainable Seas expedition, while we did a little bit of science, it did put us on the seafloor ourselves in person. It really launched our desire to learn more about the northwest Gulf of Mexico using submersible technology.

Emma Hickerson [01:23:24] So, we put a huge effort for the following 20 years into exploration and characterization of the northwest Gulf of Mexico. We put in, you know, we actually ended up with quite a large grant for Jim Gardner to go and map 15 additional reefs and banks in the northwest Gulf of Mexico. And they have been the cornerstone of our success of collection of biological data, really our roadmap to guide our science for the last 20 years with the remotely operated vehicle surveys.

Emma Hickerson [01:24:13] So, we've done dozens of dedicated research cruises, for collection, for characterization. We've done, we've made discoveries of new species. And we've been able to empirically document the densities and the biological community in these areas.

Emma Hickerson [01:24:44] And that all led up to the expansion proposal that was finalized in 2021, adding 14 additional reefs and banks in the northwest Gulf of Mexico. So, that was an incredible effort - millions of dollars' worth of data and biological collection and documentation and analysis - that drove, that was the backbone of the proposal for the expansion.

David Todd [01:25:14] Well, I think that'd be really interesting to hear about. I mean, you talked a little bit about the original designation of the East and West Flower Garden and then about Stetson Bank. But, I know that you were there during much of the period developing the case for protecting these additional banks (I think you said maybe 14 or 15 of them). Can you talk about how that came about?

Emma Hickerson [01:25:44] Yeah. So, as I say, it was it was our, you know, our dedicated efforts of 20 years of exploration, characterization that was built on the previous, at least 20 years, of work that was led by Tom Bright and his colleagues.

Emma Hickerson [01:26:03] So, in 2007, there was a recommendation presented by the Sanctuary Advisory Council for a 281-square mile expansion.

Emma Hickerson [01:26:25] When we published our DEIS in 2016 (another lengthy road), we identified a preferred alternative, which was the staff's preferred alternative, which was 380, about 380 square miles.

Emma Hickerson [01:26:50] This was basically the 2007 recommendation by the Sanctuary Advisory Council. But we took into account new information that we gained since 2007, because we'd done a lot more exploration and characterization. But we aligned the same criteria that was used by Sanctuary Advisory Council, and we also aligned regulatory regimes and also looked at the boundaries to simplify ease of enforcement. We took into account oil and gas infrastructure that was in place at the time.

Emma Hickerson [01:27:33] And so, that was our 380 square mile expansion proposal, which was 15 reefs and banks.

Emma Hickerson [01:27:44] The final 2021 expansion action actually decreased the expansion, even from the SAC's own 2007 recommendation. In my opinion, that was highly influenced by primarily oil and gas, and from politics.

Emma Hickerson [01:28:15] A lot of this was driven, I think, by a man named Clint Moore who embedded himself in the process from an early point. He first became a member of the Sanctuary Advisory Council in May 2015. Actually, no, he came on to the Council in 2005, but in May 2015 he was voted in as the chair of the Sanctuary Advisory Council. And then he also became the chair of the Boundary Expansion Working Group.

Emma Hickerson [01:29:01] Clint Moore was the owner of a hydrocarbon oil and gas company called Gulf Slope Energy. And for some reason, he ended up on the SAC longer than

anybody else that I'm aware of. And actually our Superintendent, G.P. Schmahl, was directed by Sanctuary leadership from headquarters to reappoint him on to the SAC on multiple occasions.

Emma Hickerson [01:29:46] So, I that's where I think that the politics came in with his ownership of an oil and gas company. And you'll hear a little bit more about this, I believe he had a clear conflict of interest.

Emma Hickerson [01:30:04] I was in meetings in the Boundary Expansion Working Group, when he was literally hand drawing boundaries that were ultimately adopted as official sanctuary boundaries. He carved out and excluded areas that he pointedly said in meetings were locations where he was planning on drilling, to the extent that he excluded an entire ridge or bank to avoid a lease block he had plans on drilling on. That was Bryant Bank. Bryant Bank did not end up in the Sanctuary.

Emma Hickerson [01:30:45] In meetings when we were discussing drawing boundaries, he directed us to turn the biological layers off because they were not needed in the discussions. The resulting expansion action had virtually no impact on the oil and gas activities, as the boundaries followed closely the no-activity zones, which, if you recall, were drawn and based on decades-old data from the 1980s.

Emma Hickerson [01:31:29] And the boundaries ended up being non-continuous. There were banks that had sort of little peanut areas drawn off as boundaries. Very hard to enforce. Very complicated.

Emma Hickerson [01:31:45] You know, I do recognize that the finalization of the expansion was undertaken during the Trump administration. So, we are probably very, very fortunate that it actually got over the line. And we should feel grateful for an expansion of any kind during that time period.

Emma Hickerson [01:32:10] But for me, personally, because I worked on the collection of the scientific data and guiding that, you know, the rigorous process for over 20 years and, you know, to have the biological layers turned off in a meeting because they weren't important in the discussion for protection of these areas was like a gut punch.

Emma Hickerson [01:32:34] But so, you know, I am grateful that there was an expansion that was successful. But it's, for me, quite disappointing that the data and the science that was collected was disregarded in that process to some point.

Emma Hickerson [01:32:54] But it's still incredibly valid and important. And I hope it will be considered and used for further expansion efforts in the future.

Emma Hickerson [01:33:04] So that's the story, you know, in a very, very summarized way, from my perspective, and there's obviously lots of other machinations going on. There were a lot of other voices in the room, but primarily I think it was driven by the influence of one person in particular and based on oil and gas needs.

David Todd [01:33:29] So, this is fascinating. And I think it gives a real, in-the-trenches view of how difficult and challenging it can be to protect anything, in particular a reef that's in the middle of an oil and gas rich area.

David Todd [01:33:48] I was wondering if we might, given that we've got limited time (I know you've got other obligations), if we could talk a little bit about the threats to a reef such as the Flower Garden, and maybe talk about what can be protected against, and then some sort of existential threats, maybe such as climate change, that are maybe more difficult to protect against despite no-activity zones, boundaries and so on. Can you talk about what the sanctuary can provide for a place like the Flower Gardens?

Emma Hickerson [01:34:29] Yes. I think that's a really important question.

Emma Hickerson [01:34:33] David, I'm going to stop there because I do have to get on to another call. But can we pick this up again, because I really want to finish everything that we had planned on talking about.

David Todd [01:34:46] Absolutely. Yeah. Yeah. I think this is a good place to stop. I think you've, if I can sort of summarize, you've brought us through 2021 and the designation of these additional reefs as part of the Flower Garden system.

David Todd [01:35:02] And maybe when we pick up again, we can talk about some of the issues, the challenges, for reefs of all kinds, particularly the Flower Gardens.

Emma Hickerson [01:35:13] Terrific. And I really want to make sure that we spend time talking about some of the fantastic things about the Flower Garden Banks as well.

David Todd [01:35:20] Yes. I love the views that you gave us of the loggerheads, there. And I know there's all kinds of other fauna, so maybe we can visit about that at a future point.

David Todd [01:35:33] But thank you very much, Ms Hickerson. I'll shut this down, and then we'll hope to revisit this at some future date.

Emma Hickerson [01:35:45] Thank you, David. Looking forward to talking to you again soon and finishing this story.

David Todd [01:35:48] Okay, good. Thank you so much.