

*Jennifer Stock:* You're listening to Ocean Currents, a podcast brought to by NOAA's Cordell Bank National Marine Sanctuary. This show was originally broadcast on KWMR in Point Reyes Station, California. Thanks for listening!

And welcome to another edition of Ocean Currents; I am your host, Jennifer Stock. On this show we talk with scientists, educators, explorers, policy makers, ocean enthusiasts, adventurers, archeologists, and more all uncovering and learning about the mysterious and vital part of our planet: the blue ocean. I bring this show to you monthly from NOAA's Cordell Bank National Marine Sanctuary, one of four national marine sanctuaries in California, all working to protect unique and biologically diverse ecosystems. Just offshore of the KWMR listening area are the Greater Farallones and Cordell Bank National Marine Sanctuary which, together, protect 4,581 square miles.

I was just out on the sanctuaries on Saturday, lots of activity in the water, it was very exciting. It's August, it's my favorite time of year here at Point Reyes, swimming is right, coastal fog is cooling, and whales are around and it's a great time to slow down and take some time to relax by the water. We have a diverse show for you today; we'll be talking about a proposal to create new ocean conservation area around seamounts in California and on the second half of the show we will be talking about deep sea research and some coastal maritime archeology research happening just off shore of Point Reyes and up the Sonoma Coast in the Greater Farallones National Marine Sanctuary with the exploration vessel, Nautilus. Much of this work you can watch live from your computer online, so stick around for a great show here on Ocean Currents.

For decades, researchers have been astounded by the richness and beauty of the habitat and wildlife at ancient islands, underwater volcanoes, and deep-sea mountain ranges off the California coast. Not well known to most, but these deep-sea habitats are oceanographic hotspots where wildlife congregate, not only on the surface, but at depth on the seafloor. Ancient corals and long-lived deep-sea organisms are fragile and largely unexplored. About 12% of the land around the world is now under some form of protection as national parks, world heritage sights, and monuments while less than 4% of the ocean is protected in any way. While the urgency of stabilizing our warming climate rises, safe-guarding productive and

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vital ocean places parallels to withstand the rapid changes that could occur in the ocean.

Recently, a new campaign has started from the NGO community to protect underwater seamounts, ridges, and banks in federal waters in California and my guest today, Samantha Murray, will join us to tell us about it. Samantha Murray is a long time marine conservation advocate, she worked on the State Marine Protective Area process here in California and as a strategic consultant for marine conservation projects and she is the California Seamount Coalition Director, so Samantha welcome! You are live on the air.

*Samantha Murray:* Thanks! It's great to be here.

*Jennifer Stock:* So I was on leave a few weeks ago and catching up on emails I read about this new effort and was surprised as I heard nothing about it until now, and working here with the sanctuaries and having a bank as the centerpiece of our sanctuaries we are really curious to learn a bit more; that's why you are on the show today. Thanks so much! Tell us what is the California Seamount Coalition.

*Samantha Murray:* Sure! The California Seamount Coalition is a relatively new coalition as you mentioned and it's a group of organizations in California, Surf Rider, Wild Coast, Marine Conservation Institute, and others, we need support all the time who are dedicated to securing new ocean protections and sort of long term protection that some of these really special habitats in the deep, deep waters off of California.

*Jennifer Stock:* Can you just back up too and tell us what is a seamount? I know there's a lot of different terms used for features on the sea floor but they are pretty unique and interesting, can you give us a little bit of background on what a seamount is?

*Samantha Murray:* Yeah! Well, some of these are seamounts, and some of these places are ridges, some of them are banks and they are all a little bit different. Seamounts are sort of the long extinct mountains that some of which used to be volcanoes that rise more than two miles off of the floor of the ocean and yet there is some that are frequently more like 1000 feet beneath the ocean's surface. We also have ridges, which are more like underwater mountain ranges if you could imagine. And then there's some banks as well and some of them, you know Cortez Tanner Banks for example, come

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really, really close to the surface of the water within 10-or-12 feet of the surface of the water, so it's got really a diversity of different kinds of geological special places and habitats in this proposal, but generally we call them seamounts.

*Jennifer Stock:* So, why seamounts? How did this whole effort come to be and what is the California Seamount Coalition trying to do?

*Samantha Murray:* Well as you mentioned, these seamounts are really these special places that have been explored by scientists and sort of peaked the interest of scientists for many, many years, for decades really, so scientists have looking at these places for years for quite a long time and recently started wondering there was a way to get some more long term protections places. You know, you mentioned that 4% globally of marine waters are protected in some kind of long term way by off of California in the federal waters, which is a part of the ocean which is more than 3 miles off shore but less than 200 miles, only 1% are permanently protected, and that's true really in the whole continental US. If there is a way to sort of pick and choose some of these places that we know have really, really unique habitats and are supporting these really fragile ecosystems in sort of delicate food webs; scientists got excited about the idea of doing that.

*Jennifer Stock:* What are some threats to seamount habitats throughout California, not just seamounts but ridges and banks as you were mentioning, and these are all off-shore approximately 20-30 miles off-shore, but what are some of the threats that the community sees to seamounts?

*Samantha Murray:* Well, actually, they are even farther off shore. Most of these places are at least 45 miles off shore, some of them are all the way to 185 miles off shore. So these places are really, really remote and are largely pristine, a lot of them already have some protection as designated by the Pacific Fishery Management Council, but those protections just aren't long term so when you think about the threats, there's a whole variety. You've got things like climate change and ocean acidification and warming ocean waters and you know those things already changing our ocean really, really quickly. And anybody who spends time on the water is seeing those changes. And then you've got threats from things like sea bed mining. We don't have sea bed mining in the waters of the United States yet, but I think right now the statistic is something like one-and-half-million square kilometers of the Pacific Ocean is currently under exploration for deep sea bed mining so, that's certainly a

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growing threat that's potentially "coming to a theater near us" at some point. The technology is changing for mining in these deep shore waters and it wasn't there before but it could be in the future. And even here in California, off the waters of California, for example in Gorda Ridge, this is one of the places that is included in the proposal, there was some exploration that was done maybe many years ago and there was actually a proposal to release 70,000 square miles of the deep sea ridge at Gorda to mining companies (to mine) for metals like gold, silver, copper, and zinc. Now, that never came to fruition because the technology just wasn't there, but, again as the technology continues to evolve and advance it is certainly possible that threats like that could become more realistic even off of California.

Fishing is also a threat, again some of these places are already protected by the Pacific Fishery Management Council, but that's not permanent and it's possible that one swipe of a draw net could really, really cause irreversible damage and take decades and decades to heal before we even really know how special these places really are and what kind of value these places hold.

*Jennifer Stock:* That's a great overview, thank you! I want to go back to deep-sea mining a little bit because most of the time here in California we are thinking about oil and gas exploration, we know this is a hot bed along the west coast but you are mentioning metals. Is this one of the only ways to get metals and what are the metals used for? Is it for fabrication of industrial products, computers, or...? Do you know what deep sea mining actually yields in terms of product?

*Samantha Murray:* I think that's still evolving, too. I think as, you know they're aren't actually any deep-sea mining projects underway. I think that the first project just got granted in the Bismarck scene in Papa New Guinea to a company called Nautilus. So, that hasn't happened yet and I think everybody is sort of just waiting to see how that goes, how successful they are, what they are able to yield. It's kind of just one big experiment and sort of the pilot project of deep-sea mining so I think it sort of remains to be seen what kind of ecological impact there are from that project, what kind of metals are able to yield, and what they're able to use them for.

*Jennifer Stock:* Wow! It sounds like a giant experiment and is anybody studying and will be following in terms of impacts from that? It sounds like it could be very destructive to habitat.

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*Samantha Murray:* I think that's right. I mean I think that's the fear, right, that it could be very destructive to habitat. For a variety of reasons, like I said. Sometimes, I think the statistic goes that, "we know more about the dark side of the moon than we do about what's under the surface of the ocean," on a global scale anyway, and especially in these really, really deepwater habitats. And I think that there's another statistic that says only 5% or something of the ocean's floor has actually been seen by human eyes. And I think that the take home lesson is that if there are places, the places we have studied we know are sort of harboring these fragile, living food webs; those are the places where it seems like it's worth it to just take a leap and safe guard these places even though they are relatively pristine for now, to keep them that way.

*Jennifer Stock:* So what type of protections are you hoping to aid to these areas and is it a specific width around the geologic feature that this protection would occur, could you talk a little bit about what types of protections? You talked a little bit about deep-sea mining and also fishing, but are those the two that would be regulated? And who would regulate them?

*Samantha Murray:* So right now there's a bill that's been introduced, a federal bill, that Congressman Sam Farr and Congressman Ted Lieu, and it's called H.R. 5797, and the bill is pretty general; it seeks to implement comprehensive protection. What we know about marine protected areas is that they work the best when you just sort of leave these places alone and let them do their thing, let them just exist without a lot of human intervention. That's really difficult to do in the ocean as I mentioned before. The ocean is changing, it's getting warmer the chemistry is changing and it's changing really quickly relative to how long the ocean has been around. So, for those human impacts we do have some control over, the bill seeks to comprehensively protect both the sea bed and these fragile food webs that exist above the sea bed and in the waters because these places attract endangered sea turtles, endangered whales, sea birds from all over the world: they really these sort of hotspots of diversity.

So this bill, introduced by Congressmen Farr and Lieu, it doesn't give specific boundaries, it doesn't mention these places specifically, but it says that the boundaries and the regulations would be created through a really robust public process with fishermen, with tribe, with a Pacific Fishery Management Council, so it's a little bit open ended in terms of the actually "what", and really leave that "what" to be decided upon with really robust public process.

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*Jennifer Stock:* So this bill, has it been introduced yet? And does it suggest an agency to lead that effort to work with those communities and industries?

*Samantha Murray:* It has been introduced, yeah, so it's H.R. 5797 and it basically says that the Secretary of Commerce and the Secretary of the Interior shall have joint responsibility for management of this new national marine conservation area and then it instructs both of the secretaries to work with stake holders and with tribes to create an implementation plan.

*Jennifer Stock:* Would that come down to NOAA and the National Parks Service or Minerals Management Service, what do you think?

*Samantha Murray:* Maybe the National Marine Sanctuary's office, I think that it's possible as what we saw with Davidson Seamount when that got included as part of the Monterey Bay National Marine Sanctuary, that's one possibility for some of these places are near existing National Marine Sanctuaries, it's possible they could sort of co-manage these places or could sort of become part of the National Marine Sanctuaries, but certainly they're are other ways to do it to. One of the things I like about this bill that Congressmen Farr and Lieu have introduced is that it really is sort of this well-rounded proposal and as I mentioned, it doesn't get specific on exactly what the boundaries will be and exactly what the implementation plan will look like, but it does have some specifics in terms of creating exemptions for things like albacore fishing, or saying that at Cortes there won't be any regulation of fishing, it will only be about protecting the sea bed. And some of those provisions were included in the bill as a way to sort of be responsive to some of the concerns I think Congressmen Farr and Congressmen Lieu heard early on from fisherman.

So, I think this sort of well-rounded proposal that addresses and responds to different needs from geographies, different activities going on at these different places, makes it a really well-rounded proposal. And I think similarly, in terms of the management of these places, I imagine that the outcome would be really well-rounded and it depends: for some of these places that are 185 miles off shore like Taney Seamount for example, its gonna be different than a place 45 miles off shore like Gumdrop or Pioneer Seamount that is closer to, for example, to the Farallones Sanctuary.

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*Jennifer Stock:* Those are tough to watch over, as well, in terms of enforcement. For those tuned in, this is Ocean Currents and my guest today is Samantha Murray and she is the California Sea Mount Coalition Director. We're talking about a proposal to help protect California seamounts and ocean ridges and banks, really interesting areas off the coast and they're very fragile and also very productive hotspots on the surface.

I had a chance to sail from San Francisco down to San Pedro and was very excited to sail over Davidson Seamount. You could tell you were near a seamount because wildlife changed: we saw many more whales, many more sea birds and it was really great to see that. You've read about that and we see the same thing Cordell Bank, but you definitely see the sea-surface wildlife be so abundant there. And it's cool how the sea conditions really affect the wildlife on the surface and also knowing that, at deep depths, there are such incredible species such as 200-year old corals and invertebrates, and things we haven't even discovered yet. So I hope we can continue to research the deep sea and these really far offshore mounts where so many mysteries to be discovered. So tell us a little bit, you said this bill has been introduced what are some of the next steps and is there a voting process, does it need to be introduced to the Senate?

*Samantha Murray:* So right now, Congress is on recess and they will continue to be on recess until after Labor Day but we're hopeful that after they come back from recess that there will be more congressional delegates, especially coastal congressional delegates from California and others who want to sign on and co-sponsor this exciting bill. It's ambitious and it's exciting, and it's a really cool opportunity to do something that hasn't really been done before, certainly not off of the California coast in these deep, deep waters. So, I think it's a really exciting opportunity to safe guard some really special places and we're hopeful that other co-sponsors will want to sign on and then we will look forward to continuing to support the bill and moving it forward through the process.

*Jennifer Stock:* Fantastic! Are there ways that listeners can learn more about this proposal? There was an article in the San Francisco Chronicle last week, but can you tell us if there is a website if people can learn more and what they can do to support it or discuss their concerns about it?

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*Samantha Murray:* Yeah, definitely! So there's a website: It's [www.californiaseamounts.org](http://www.californiaseamounts.org), California seamounts is one word and yeah, there is a place there to check out some photos. We have a lot of photos, actually, from all these different places, online of the different proposed areas, so definitely worth checking those out and there's also contact information on there as well. I'd be happy to hear from anybody who wants to get involved or to ask questions or send me feedback. My email is [samantha@californiaseamounts.org](mailto:samantha@californiaseamounts.org)

*Jennifer Stock:* Great, Fantastic! Coming back to some actual content, because I have this map in front of me, and you keep mentioning Tanner and Cortes Banks, are those in Mexico? They must be in California waters but I don't see them on the map.

*Samantha Murray:* Yes, they are. The map you have might not have them included because they have been treated this unique way in the bill which is that the way they are listed is that they're in the last section of the bill called "withdrawals" and Tanner and Cortes will only be withdrawn from commercial leasing for exploration development, oil and gas, mining, energy site-ing, and cable laying. So, that's probably why they don't appear in the map you have but they certainly are a part of this proposal and part of what makes this proposal so well-rounded.

*Jennifer Stock:* Well thank you so much, Samantha, for sharing your information about this proposal and all these interesting features. I am really fascinated by the sea floor and see some thought put into a lot of these sea floor features that not a lot of people know about which is really interesting, so thanks so much for taking the time today.

*Samantha Murray:* Thank you, I really appreciate it and enjoy your conversation with the folks from the Nautilus as well after this. I've been watching and live-streaming it myself and they actually went to San Juan Seamount, which was kind of a treat as well, also part of this proposal.

*Jennifer Stock:* Absolutely, yeah, we're gonna talk a lot about the Nautilus on the second half and thanks, Samantha, and have a great afternoon!

*Samantha Murray:* Thank you so much! Take care.

*Jennifer Stock :* We're just talking with Samantha Murray and she is with the California Seamount Coalition, a coalition between a bunch of

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different nongovernmental organizations working together to put some new protections to these offshore seamounts throughout California and we'll keep an eye on that. There's a bill in Congress that should be interesting we'll see where that goes and I'll keep you posted here on Ocean Currents, at KWMR. We are gonna take a short music break, we'll be back in a little bit, I have some announcements and then we will come back with Mary Jane Schramm to talk a little bit more about the Nautilus and some of the research going on in the Greater Farallones.

*(Music Playing)*

*Jennifer Stock:* You are tuned here to KWMR, at Point Reyes Station, this is Ocean Currents and we are going to focus a bit more local on this second half of the show. We have Mary Jane Schramm on the air from the Greater Farallones National Marine Sanctuary. Welcome MJ, you're live on the air.

*Mary Jane Schramm:* Hi Jennifer, it's great to be on the air with you.

*Jennifer Stock:* Are you at San Francisco or are you up on the Sonoma Coast today?

*Mary Jane Schramm:* I am in San Francisco but I am headed north tomorrow.

*Jennifer Stock:* Excellent! So the Greater Farallones National Marine Sanctuary is right along the coast here off Point Reyes and there's always tons going on with the sanctuary because it's rather large and there is a lot happening in the month of August with research, happening on the deep sea and also near the coast. So, I am really excited to welcome you aboard and I wanted to ask you first, let's start with first the research/exploration vessel, Nautilus; this is in a few weeks and we'll come back to the Sonoma Coast stuff in a little bit, but tell us a little bit about what is the exploration vessel Nautilus and when is it going to be coming to here in the area?

*Mary Jane Schramm:* Okay, It's going to start from August 19-28. The Office of the National Marine Sanctuary is teaming up with the Ocean Exploration Trust, which was established by Bob Ballard, which many of you know from Titanic fame, to explore marine ecosystems in shipwrecks within the Greater Farallones National Marine Sanctuary and some of the waters adjacent to the Sanctuary. So, we are going to have teams of scientists and they'll be representing several different disciplines: so we'll have biologists as well as maritime history archeologists who are going to be investigating

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these waters for various things. So they'll use remotely operating vehicles, and a lot of people are familiar with the term ROVs, and using those, the scientists are going to map out and explore deep sea habitats and they will be visiting quite deep waters as well and look for creatures, such as cold-water sponges and cold-water corals that inhabit the sea floor which themselves provide important habitat for many species of fish and marine invertebrates. These are organisms that all contribute to the richness and diversity of the biological life within our marine sanctuaries here.

So, NOAA's office of exploration and research is providing funding for the Nautilus program and it's pretty ambitious, but the Nautilus itself is an extraordinary vessel: it's equipped with telepresence, and that will allow scientists all over the world to participate and contribute to the success of the mission as it investigates these habitats and shipwrecks using the ROV technology and multi beam, sonar technology as well. So of special historical interest is the wreck of the USS Independence, which was used during WW2 at Bikini Atoll and it was one of the target ships that was used during the A-bomb tests. After the tests were concluded, it was brought back to the port of San Francisco and there they cleaned it as much as possible and then took it back out to sea and sank it, so it remains just outside the Farallones Sanctuary boundary in sort of an offshore area part of the Monterey Sanctuary that we actually administer. But it will be exciting to get some good strong visual images of it and see what there is in the debris field get a little more detail of some of our historical structures that lie on this sea floor.

*Jennifer Stock:* There is a couple others ships they're going to be going to. Do you know which ones they will be going to? There's several hundred ships in this region.

*Mary Jane Schramm:* There are approximately 400 vessels, and I'm afraid I don't have a list of the different vessels in my head, but if you go to [nautiluslive.org](http://nautiluslive.org), that website will give you a complete listing pretty much of all the different what they call, "targets" and as much information as we have to date. We really are interested in learning a great deal more about them as these explorations are ongoing.

*Jennifer Stock:* I know the lead maritime archeologist for the shipwreck investigations is Dr. Delgado, who we've had here on Ocean Currents before, a treasure trove of historical knowledge, and I know will be very engaged during the broadcast to the internet regarding the investigations of those. So, people can ask questions on [nautiluslive.org](http://nautiluslive.org) and interact with them. He's one of those people

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that just has an incredible memory and is an incredible storyteller, so folks might want to be interested in that.

*Mary Jane Schramm:* Yeah, so Dr. Delgado is actually a San Francisco Bay Area native, so this really is a work of love. He is just so knowledgeable about shipwrecks worldwide, but here this is his special focus and I swear he channels the people who are aboard some of these shipwrecks and things like that. He really makes history come alive for you. We will have some webcasts during the course of the Nautilus expedition so on August 23rd, it's going to focus on the Independence and the maritime heritage part of the research crews. And then on the 26 and 27, we will have somebody speaking from the Exploratorium floor on some of the biological and physical oceanographic aspects of these cruises. So they'll be talking about them, the marine floor and fauna they encounter, and some of the things like ocean currents and bottom topography, which is called bathymetry, the shape of the ocean floor which actually causes the physical dynamics of our local ocean areas to be so unique and so incredibly productive.

*Jennifer Stock:* Are these webcasts things people can tune in from their computer or do you need to be at the Exploratorium for those?

*Mary Jane Schramm:* No they absolutely can, again just tune into [nautiluslive.org](http://nautiluslive.org), and that will give you full information on how to tune in. You can be part of our discovery process by doing so.

*Jennifer Stock:* It's pretty exciting, I've been watching the feeds whenever I can just to see where they're at and the one thing I noticed with the west coast cruise that is happening with the Nautilus, there's been a real focus on deep-sea coral habitats and obviously they have the technology, because their ROV's go so deep and so it's great to take advantage of that technology. But can you talk a little bit about this, MJ, in terms of the importance of understanding deep sea coral habitats, especially at this time with shifting climate and all these other different issues, and why is it so important for us to know these habitats in our local waters?

*Mary Jane Schramm:* Right, it's important especially that we can take advantage of unique opportunities like this because ordinarily we don't have these very sophisticated instruments at our beck and call, we don't have access to them, that's why this cruise is going to be important. But we need to know what the baseline condition is of these species in our ocean and as I mentioned before: corals, deep sea corals, and sea sponges and other marine invertebrates are,

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themselves, valuable in the whole biological mix as they also habitats that house additional species. You might think of one coral being a living entity of itself, but it's also housing an entire community of other species. So, in order to gain information on how we can best, as resource managers, conserve and protect these species, we need to know what is down there. And when you are working at depths that range from 600-feet to several thousand feet, those are really beyond ordinary technology for us to gain any real picture of. So the fact that we will be using much more sophisticated equipment is going to make this an extraordinary undertaking.

*Jennifer Stock:* Well, it's pretty exciting both for the biology and also for the history (of it). I'm not a big shipwreck buff myself, but I do know that this work is important for the history books, for understanding these ships and where they went, and who went down and why. There's a whole body of knowledge around the maritime history that is rather interesting with a lot of holes, so it's really exciting that we will be able to fill in some of these holes on this cruise.

*Mary Jane Schramm:* And one thing to keep in mind is that a lot of the human development of this area has occurred simply because it had already had an abundance of wealth in terms of its living resources.

*Jennifer Stock:* Which I think is a big focus of this effort happening this week, August 1st-9th, up at the Sonoma Coast Fort Ross area. I know that our research vessel, Fulmar, is helping support what's happening. But can you tell us a little bit about that work that's happening this week up on the Sonoma Coast the newly expanded parts of the Greater Farallones National Marine Sanctuary?

*Mary Jane Schramm:* Sure, we have several teams of archeologists who are going to be surveying shipwrecks in coastal ruins of what are called dog hole ports along the redwood coast. Dog hole ports are these small coves in which, as the sailors would say, only barely enough room for a dog to turn around in, so none of the larger coastal cruising vessels could actually put into the ports themselves. So, there was an elaborate system of ports, smaller coves along the coasts, where there would be shoots and zip lines, I guess would be another way to describe them, by which lumber that had been filled along the coastal slopes as such would be transferred to larger vessels to be taken down either along the coast or all the way across the Pacific to Japan and China. Redwood was highly valued as a lumber because it is so impervious to insect damage and it weathers wonderfully, so we call it "redwood" but I guess we should

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really call it is "goldwood" in some respects, because it was such a valuable commodity, and in order to access these areas where the timber was actually being spelled, small vessels specifically designed to come close into shore were deployed in several places along the entire coast, from Sonoma County all the way north.

Some of the ships came to grief on the rocks -people are familiar with how rocky and foggy ocean of the coast can be- so it was highly lucrative, but it was also a high-risk proposition if you were one of the sailors on board. So at Ross Cove tomorrow at Fort Ross, at the Visitors Center, we are going to have a special event, and the public is invited, between 10 a.m. and noon. We will have a number of celebrity archeologists, I guess you could call them that: there will be Dr. James Delgado from NOAA's Office at the National Marine Sanctuaries and Richard Fitzgerald with California State Parks, because this is a partnership with the State Parks, so that we are combining our efforts and our talents and resources to gain a better understanding of how the coast and ocean interface and occurred. And also Senior State Archeologist, Brett Parkman, is going to be there, along with local historians and such. You, as the public can visit. Again, it's Fort Ross at the Visitors Center from 10 am to noon and you can ask the folks questions you might have. It's really an unusual opportunity; they will be working that section of coast from land, they'll be the land teams that excavate and look at some of the support structures, but also we will have a team of divers operating from the research vessel, Fulmar, and they will be going into the water and diving on shipwrecks such as the Pomona and several others that are in these various dog hole ports, bringing up artifacts, noting the conditions of the wrecks and such. It's a pretty exciting undertaking, but again, it puts us in mind of how humans have interacted from ages back with their environment and why this became such an attractive area for Westerners to come in and establish themselves along the west coast.

*Jennifer Stock:* Thank you for clarifying what dog hole ports were because I wasn't totally sure exactly what those were.

*Mary Jane Schramm:* It paints a picture!

*Jennifer Stock:* And I can understand that on that part of the coast there are a lot of nooks and crannies and I imagine that, over time, with sea level rise, those artifacts or those remnants are somewhat under threat of being lost.

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*Mary Jane Schramm:* They may disappear unless, again, we have to employ divers to do the investigation we can do today using land teams. So that's a very good point. And people can also visit the Farallones Marine Sanctuary website and look at our Maritime Heritage page and get some more information about the project.

*Jennifer Stock:* Actually, I noticed right on your home page, you have great links to each of these projects, both the Nautilus and the dog hole port project, so folks can go right to [farrallones.NOAA.gov](http://farrallones.NOAA.gov) to learn about each of these. Alright, and there's also, just bringing it down to San Francisco a little bit more, I see that Jim Delgado is also giving a talk at San Francisco Maritime National Historic Park at the J. Porter Shaw Library "on the 11th" and that's open to the public and is free, But (it) does require registration because of limited seating and entrance. So, Jim Delgado will also be there; will he be somewhat summarizing work that was happening up here on the coast?

*Mary Jane Schramm:* He will be doing that and it will be great because it's going to be some of the information that is freshly obtained so I'm looking forward to it very much. I'm going to be up there tomorrow and I'll be on the research vessel on Wednesday, but he will be there throughout the entire project, so it'll be great to see, over the whole week, what evolved and what transpires. I'm very excited.

*Jennifer Stock:* Excellent. Well, MJ, thank you so much. Is there anything else happening that you want to share with us, with Farallones?

*Mary Jane Schramm:* Sure, we have a Farallon Islands wildlife cruise coming up on August the 7th, this weekend. We are going to have a naturalist from the Farallones National Marine Sanctuary and the day cruise out to the Farrallon Islands to look at the amazing number of whales that we've been seeing this year. We have been seeing a lot of humpbacks as well as a number of blue whales and right now is a great time to see sea birds out there including tufted puffins, which are commonly called the clowns of the sea. They're breeding out there on the islands, pigeon guillemots, different species of auklets, there is so much happening right now! The Farallones Islands, themselves, although we don't land on them, we get close enough to appreciate that they are actually the largest sea bird rookery in the contiguous United States. There are over a quarter of a million sea birds that breed there during the spring and summer months. And it's a raucous, noisy, and very dynamic place to visit.

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Who knows what you'll see in the water surrounding it in our sanctuary?

*Jennifer Stock:* Fantastic! Well, MJ, I have to share with you, I was out at the Cordell Bank Sanctuary on Saturday, and I know as a blubber lover, you would love to hear that we saw a lot of blue whales, but also the second largest mammal on the planet; we saw fin whales.

*Mary Jane Schramm:* Did you? Okay, that's remarkable!

*Jennifer Stock:* Very remarkable! Great views of them and it was my first time seeing fin whales and they were amazing.

*Mary Jane Schramm:* I hope to see photos!

*Jennifer Stock:* Well, I have to check in with some of our guests, because my camera didn't make it out, but it was an amazing day, I know there is quite a bit more activity going on in the Farallones area, too. So, for folks that are interested in that, is that through The Association going to [farallones.org](http://farallones.org) to get information on that?

*Mary Jane Schramm:* Or it will be. You can contact the person who is coordinating it directly and that would be Sara Heintzelman and I'll give you the phone number: 415-561-6622 (extension 306).

*Jennifer Stock:* Her name may be a bit hard to email but you can call 415-561-6622-(extension 306) for a day cruise to the Farallon Islands on August the 7th. Well, MJ, thank you. I am going to sign off because I have a lot more announcements in here but thank you for calling in and have a great trip up to Sonoma!

*Mary Jane Schramm:* Alright, take care.

*Jennifer Stock:* Just taking with Mary Jane Schramm, also known as MJ, with the Greater Farallones National Marine Sanctuary sharing what's happening with deep sea research on corals but also on shipwrecks and some incredible maritime archeology happening both offshore and near shore along the Sonoma Coast and a lot of ways for folks to here more either through public lectures in person or online through [nautiluslive.org](http://nautiluslive.org). You can go to [farallones.NOAA.gov](http://farallones.NOAA.gov) to get all the information on these lectures and how to participate on those webcasts later on in August that are happening with the Exploratorium. I'll share just as a sanctuary person and educator, this is a really unique opportunity that we've had here on the West Coast with National Marine Sanctuaries

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working with the Nautilus to have these telepresence opportunities to bring deep sea research to many, many more people through the internet. I've done a couple of these ship-to-ship lessons with campers here in Point Reyes and another up in Sonoma and it's a really, really a neat opportunity for people to really feel like they're there during exploration and you might be exploring and seeing something for the first time as scientists to see it for the first time. So, we're really excited about this opportunity for people to learn more about our local ocean and the not so explored resources that we have right off the coast here. So don't forget: [farallones.NOAA.gov](http://farallones.NOAA.gov), lots happening.

I have some other announcements to share... There's always so much happening around ocean education and the Cordell Bank National Marine Sanctuary is recruiting for sanctuary advisory council members here in Point Reyes Station. Our office is located here in Point Reyes and our council meets between Point Reyes and Petaluma. And the members we are recruiting for applications from are primary seats for Education and Fishing and alternate seats which are in collaboration with the primary Education and Fishing as well. Application materials are at [cordellbank.NOAA.gov](http://cordellbank.NOAA.gov) and the deadline to apply is August 31<sup>st</sup>. The role of the council is to provide advice to the Sanctuary Superintendent on the operation of the National Marine Sanctuary. All 14 sites in our National Marine Sanctuary system have advisory councils and all meetings are public meetings. Anyone is welcome to come and listen in; there is often presentations about different activities happening that might effect the Cordell Bank National Marine Sanctuary or nearby; they're always very interesting. And so we do have a meeting coming up if you'd like a taste for it, August 25<sup>th</sup>, and it's a joint meeting with our sister sanctuary, so it's Cordell Bank and Greater Farallones National Marine Advisory Council meeting together at the Red Barn Classroom at Point Reyes National Seashore. The times haven't been announced yet, but you can keep tuned to both websites [farallones.NOAA.gov](http://farallones.NOAA.gov) or [cordellbank.NOAA.gov](http://cordellbank.NOAA.gov) for updates on the time on that, but August 25th is a joint meeting between those councils here at the Red Barn Classroom in Point Reyes National Seashore.

There's a lot we have talked about today and I just want to do a recap of some of the websites and if you wanted to follow up with any of the information: the California Seamount Coalition, you can learn more information at [californiaseamounts.org](http://californiaseamounts.org), all the stuff about the archeological work and deep sea coral work happening with the Nautilus, you can go to [farallones.NOAA.gov](http://farallones.NOAA.gov), and all the

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public talks they're having with Jim Delgado and others are listed on that website. And also nautiluslive.org and I can't recommend it enough, tune in and see what's happening! I just checked in online a minute ago, they had a little problem with the cable so the ROV has ascended for now, but may be diving later today, you can keep tuned to find out what's happening at nautiluslive.org.

Thanks for tuning in today! Ocean Currents is the first Monday of every month 1-2 pm, ocean currents has a podcast, you can go to iTunes or [cordellbank.NOAA.net](http://cordellbank.NOAA.net) to hear past episodes. I love hearing from listeners so if you have ideas for topics, questions, or comments, please email me at [cordellbank@NOAA.gov](mailto:cordellbank@NOAA.gov). You can follow us at social media and Facebook and also at Twitter at Cordell Bank and thank you so much for listening! Enjoy the ocean bay or body of water you can get into safely. This has been Ocean Currents on community radio for West Marine KWMR, thanks for tuning in.

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