

June 7, 2017, oc060517.mp3

Ceramacists helping seabirds (pt.1); Volunteer scientists help inventory coastal species during California coastal "bioblitz" (pt.2)
Jennifer Stock, Michelle Hester, Rebecca Johnson

Jennifer Stock:

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

(pause)

Welcome to another edition of Ocean Currents. I'm your host, Jennifer Stock. On this show we talk with scientists, educators, fishermen, explorers, policy makers, ocean enthusiasts, authors, 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 upshore of the KWMR listening area, on the west Marin coast, are the Greater Farallones and Cordell Bank National Marine Sanctuaries, which together protect four thousand five hundred and eighty one square miles. So, here on the Marin coast we've been seeing the signs of upwelling with strong winds, cold ocean temperatures as low as forty-nine degrees at our coastal buoys, humpback and blue whales returning, and even krill washing up on the beaches. It's an exciting time of year on the West Coast, for the ocean really starts churning and stimulating the food web. Seabirds are setting up nests and getting ready to lay eggs and benefit from all the food production in the coastal ocean. Some seabirds, though, are facing challenging times with habitat erosion and thankfully to innovative collaborations between ecologists, habitat restoration experts, land managers, artists, and designers, conditions are improving. On the first half of the show we'll be discussing a really innovative and cross-disciplinary program that is bringing together all those different people to really help solve this conservation issue. And we have Michelle Hester joining us from Oikonos Ecosystem Knowledge to tell us all about this project. And on the second half of the show we're going to explore how scientists are building programs to bring interested volunteers into the fold to help collect valuable data to help better understand our changing world and habitats and specifically in the intertidal zone here in California. So we'll be diving into the world of volunteer science and talking with Rebecca Johnson of the California Academy of Sciences Citizen Science Program. And I have a lot of announcements to share after these two interviews. It's World Oceans Day this week, so a lot of stuff to be contemplating as we talk to our guests today. So stick with us, we have a full show.

(pause)

Alright, welcome back. Ready to dive in and talk about seabirds and what's happening on Año Nuevo Island. So, I really would love to welcome my guest, Michelle Hester, to the air and talk about this program. So, welcome back Michelle, you're live on the air.

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Michelle Hester: Hi, Jenny.

Jennifer Stock: For folks just tuning in, Michelle Hester is president of Oikonos Ecosystem Knowledge. And Michelle, you've been on our show but it's been many years, maybe you can remind us, tell us all about what Oikonos Ecosystem Knowledge and what this group is all about.

Michelle Hester: Okay well we were actually a nonprofit organization that was born in Bolinas, born in West Marin and we work now in California, Hawaii, and Chile. And all of our programs share a core mission to investigate and protect imperiled ecosystems and we do this by engaging diverse communities in artistic and scientific collaborations. And mainly, a lot of our work is on islands, islands and island species, and we're studying the seabirds, landbirds, plants, sometimes frogs, that live on these islands, for their protection, because a lot of them are critically endangered. We're also studying them because they track things like ocean conditions and changes that are happening on the islands, so they're also really good indicators of these ecosystems that we're trying to learn about and protect.

Jennifer Stock: So you've been working on Año Nuevo Island, which is just south of Half Moon Bay, and you've been working there for many years. Can you tell us a little bit about Año Nuevo Island, some of the natural history about it? Was it attached to the mainland at one point, and there is some human history out there too?

Michelle Hester: Yeah, it's a really fascinating island and so I've been working there for twenty five years and it has definitely captured my interest and love for a long time and part of it is because history and also because it is just a rare piece of real estate off California. We don't have enough island space. so we think in the sixteen hundreds, it was still connected, so it has, for an island, it has an interesting history because ecologically, it has the same coastal plant communities and probably even has predators on it like coyotes, when, in the sixteen hundreds. And then, because of our eroding coast, naturally eroding coast, it became an island and since then it's changed a lot through the years between whaling and sealing, lots of hunting, they pretty much decimated the seal population, and then it became a lighthouse because there were lots of wrecks around that area and it became a really important aid to navigation and for almost one hundred years it was a place where lighthouse keepers lived and had their families. It's only a kilometer offshore and you can see it from the mainland but a lot of people don't even notice it. But it is a pretty treacherous channel with sharks and kind of unpredictable wave action and there were deaths, and it definitely has this reputation of being a hard place to get to.

Jennifer Stock: Wow. So in terms of, um, thinking about the seabirds specifically, cause that's a lot of the work you've been working on, and being so close the mainland, such

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easy access for people to take things there, what have been some of the other, well what are some of the seabirds that breed out on Año Nuevo?

Michelle Hester: There are probably eight seabirds. There's seven seabirds that we study. There's a species that's related to a puffin, that's called a rhinoceros auklet. There are Cassin's auklets. These are both diving birds, that dive for krill and forage fish. Pigeon guillemots, which a lot of people have seen out there on the coast, have nests out there. There's three species of cormorants. Our western gull, which is endemic to our area here. And, likely the ashy storm petrel probably breeds on the island, but we haven't found any nests yet.

Jennifer Stock: Ah, that's exciting, a little mystery to figure out. And are there pinnipeds breeding on the island itself, or is it more of a haul-out location?

Michelle Hester: It's an important pupping sight as well, it's actually the southern extent of the steller sea lions, it's kind of the closest place to the coast and the furthest south for steller sea lions to pup, but we're definitely at sort of the edge of a lot of the cold water species, like rhinoceros auklets and steller sea lions. And it's really fun to study species at their edge because that's when you can usually first detect changes in climate and changes in what they need. But it's also, of course, it's famous for elephant seals, so people flock there, it's one of the most visited California state parks because people come to see the elephant seals fight, and mate, and have pups, and they were almost extinct and it's definitely a success story. They came back from hunting and in the sixties, seventies, and eighties they started to increase slowly and now there's a thriving pupping area for northern elephant seals.

Jennifer Stock: Yeah it's an amazing story, for sure. So the island is obviously very valuable habitat for these seabirds, and for some breeding seabirds, why has the habitat degraded so much?

Michelle Hester: Well it was, for you know almost a hundred years, it was a lightkeepers station and there were coast guard families living, putting up fences, you know, kind of interacting with the wildlife to make it a livable place and the whole island is only about nine acres including the rocks and so it's a small space, very easily altered. So the native plant community was definitely reduced and we have a naturally eroding coastline anyway, and then it just was um, I'd say the amount of erosion was definitely increased by, you know, human adaptation and changes that they made on the island, and so our, it became really obvious that this was one of the things that would really help the seabirds, especially the seabirds that live underground. We really needed to stabilize their soil because up to seventy percent of the burrows in some years were being collapsed and this was really threatening their survivorship on the island.

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Jennifer Stock: The collapsing because the soil on top was unstable without the native vegetation?

Michelle Hester: Right, exactly.

Jennifer Stock: So with this long-term monitoring that Oikonos and I know PRBO is involved early on as well, how did this come together? You've been part of a big restoration effort on the island and when did this collaboration come together to really start to restore the island?

Michelle Hester: Well, in 1993 we began studying, the rhinoceros auklets in particular, and we were watching how the population was increasing and that was really exciting because in California a lot of, you know, ocean wildlife species were declining, so it was really interesting to watch this piece of land, once you protected it, and if they have sufficient prey availability, populations will recover. And so we were documenting that and I'd say for a good ten years we were documenting it and watching it and I just couldn't stand by anymore and not take active, an active role in improving their habitat because it was really obvious what they needed, and what they needed was simply to have a stable place to nest and a safe place to raise their young. And we developed some pretty big goals, you know we wanted this habitat restoration to basically outlast us, and we knew that we needed more expertise, we needed to bring in people that are thinking on a large scale for land restoration and we also needed to bring in some innovation, we needed to bring in some designers and architects and artists to not only stabilize the habitat but also improve the artificial homes that had been used for many years. We would install plastic and wooden nest boxes, a lot of animals benefit by having, you know, artificial nest boxes and that also is the case for seabirds. But we really wanted to improve their artificial homes so that they would be more stable, and we brought in some ceramic artists and we started this collaboration with many different people.

Jennifer Stock: How did you determine clay, is clay just a more long-lasting material for stabilizing underground burrows?

Michelle Hester: We kind of did an exploration. So we've been using wood and plastic for many years and it just became too hard to maintain, it became too difficult to make sure that the boxes didn't become actual traps and we just knew that we could do better and so we started experimenting with materials and, you know, we brought in experts and we started really thinking about concrete, composite, different things, and when we started working with Nathan Lynch, he's a master ceramicist at the California College of the Arts, it just became really clear that ceramics is the material that is natural, it's actually not very expensive, it's really easy to customize, and you know, and you can make nests that look more like they're more like natural burrows. They can dig a three meter burrows and they can make turns, and forks, and ceramics really gives you the ability to customize

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and create tunnels and nest cavities that look more natural. And I always had the impression that ceramics were fragile, and I've, you know, learned a lot through this, that obviously you can make ceramics, and a good example is sewer pipes that have lasted hundreds of years, you can make ceramics incredibly strong. And that's what we did, we set out to make extremely durable, sustainable, customized nesting modules that were spaced for many different species to raise their young inside.

Jennifer Stock: So you actually approached the California College of Arts as a partner to help solve this problem. What was their reaction in terms of an arts institution being approached to solve an ecological problem?

Michelle Hester: Well it is, it's new and I think the fact that it was, you know, new and innovative was exciting and, you know, Nathan Lynch in particular, he's the chair of the ceramics department at California College of the Arts and he always has this vision that he wants to make art that matters. And this really fit in with the vision of their program and it became really interesting because, you know, and it's still happening, we created a course work around this. So there's students from design, architecture, and ceramics. The students are actually coming up with solutions to the problems. Like some of our problems would be, on one island there are ravens that are attacking the seabirds. So one problem would be how do we design a nest site where ravens cannot get inside? Or, how do we design a nest site that won't flood? And one we're working on right now, that the students are helping with, is how do we design a nest site that won't overheat, because we do have some hot days.

Jennifer Stock: Mm-hmm.

Michelle Hester: And they just embraced it and it's now an ongoing course at the California College of the Arts and it's become kind of part of their program.

Jennifer Stock: That is really amazing and I love this example of coming together to design solutions for adaptation as we move forward with these rapidly evolving habitats on the coastline. That's great. Have some of the students come out to the island itself, so they could really see it and experience it and see the habitats that they're designing towards?

Michelle Hester: Yeah, we've done that some. It is a really sensitive habitat and it is hard to get out there, but we try to make up for the fact that they don't get to directly experience it. You know that is one of our challenges with a lot of remote work and

Jennifer Stock: Mm.

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Michelle Hester: Multidisciplinary work, is to bring people together, but we're really inspired and really excited too. You know working with a client too, that's a seabird, that's a new concept for a lot of students.

Jennifer Stock: That's great. You have this approach with helping with the burrows under the earth, how about the terrain on top and approaching the vegetation and have you been working on re-vegetating the surface as well?

Michelle Hester: Yes, we've planted lots of the native plants from the coastal area. Also direct erosion control, to stabilize the soil immediately, we've used matting, natural biodegradable matting that does hold down the soil and we've reduced the percent of burrows that collapse every year to between five and ten percent. Probably as good as we can get with the species that digs in sand. And then there are also seabirds that nest on the surface. So you've got these multiple species that are cohabitating above and below ground. It's pretty crazy out there, the density of wildlife.

Jennifer Stock: I have a little audio recording that I found I want to share to listeners about a rhinoceros auklet. It's really quick.

(pause)

So they have this fun little moan to them, like a little groan. Were there other birds that you were hearing in the background there too?

Michelle Hester: No, mostly rhinoceros auklets. There might have been some Cassin's auklets singing in the back as well.

Jennifer Stock: Pretty noisy place to be.

Michelle Hester: Yeah, and especially at night, at night it sounds completely different than during the day, as well. So that's the other part. And not only is it isolated on the island, but you've got this nocturnal life. A lot of the birds are out feeding during the day and they only come back to take care of their chicks after dark.

Jennifer Stock: Oh, cool. I love how they are busy at night, kind of secret operatives out there. So, since you've been doing this restoration, what are some of the changes you've seen in terms of breeding success for the birds?

Michelle Hester: Just the fact that the burrows are not collapsing. You know, if a burrow collapses in the middle of the season, what happens is the egg or the chick will get crushed and so that was just directly impacting how many chicks they were able to raise successfully, so just by reducing and stabilizing their underground burrows, about sixty percent of the chicks are happily fledged and that's pretty much the normal. One thing we do, too, is we compare our work with the Farallon Islands. The Farallon Islands have the same species, the island group

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off San Francisco and so it's really great, we can have a metric for both places and so we've seen that their ability to raise chicks has stabilized to be around sixty percent. We've also seen in this restoration area, the area where we're doing most of the planting and protection work that every year the population has increased. So, really that's what we want to see. We want to see the numbers grow and at least be stable and growing is fantastic. And they have been growing every year in this restoration area and there's about three hundred and thirty birds now, rhinoceros auklets, in this area.

Jennifer Stock: Is there an area that's not being restored, just to compare? Or is there overall just a whole island attempting to be restored?

Michelle Hester: The island does have, there are cohabitation challenges with the sea lions. Not so much the elephant seals are not able to climb, but the California sea lions actually have articulated hips and they can actually climb and so you do have the sea lions up on top of the island terrace with the seabirds. So there are some areas that have just been designated just as sea lion haul-out spots and those areas we wouldn't attempt to plant. So we are sort of separating out and doing some intervention, I would say, and separating some of the sea lions from the other habitats so that everyone can coexist.

Jennifer Stock: So is the goal at this point now to keep monitoring or are there, what's the work now that you've put these burrows out, are there still more burrows to be put out? Is there still more work to be done to feel that this area is on its way to thriving?

Michelle Hester: Yes, there's more need. We have the species, the Cassin's auklet, which is another success story because the Cassin's auklets are declining off California, however, they colonized Año Nuevo Island late, like in the eighties they started colonizing and they are increasing and fortunately most of their habitat is in this one old boardwalk structure that was part of the lightkeeper's house. This area is going to fall down, it's going to erode into the sea during a big storm and we are trying to encourage the Cassin's auklet into natural burrows and ceramic nest modules and they're a much smaller bird and they have different needs than the rhinoceros auklets and so we are redesigning the nest modules and customizing them using the ceramics for those different birds.

Jennifer Stock: Excellent. How did things fare out through the heavy winter? I know you had really good breeding success last year in 2016 and we had a really heavy winter this year. Is it too early to tell, are returning birds and burrows holding up in the big rain?

Michelle Hester: Well the rains didn't cause too much damage actually on the island. It did cause some habitat on the mainland to be lost, some of the cliff nesting cormorants on the mainland, there's a lot of sloughing, but the island did pretty well. And

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actually the rain did help the plants because we were in years of drought which was actually affecting the island as well, so the plants are happier this year.

Jennifer Stock: Oh, that's great, yeah.

Michelle Hester: Yeah.

Jennifer Stock: I guess you need water to regrow vegetation, don't you?

Michelle Hester: Yeah

Jennifer Stock: Well that's awesome. So, for folks that want to learn more about this project, I also know with the ongoing needs that you have to keep it going and keep working on restoring, how can people participate in donating to this program? I also know you have a list of gear that you need, a lot of maritime gear, and some of this stuff I was like "oh, I think we could round up some of this stuff at home in like boxes and stuff". Can you share how people can track Oikonos' work and how they can get involved and donating if possible?

Michelle Hester: Yeah, you can track our work on Facebook and Instagram and donate from there as well. Oikonos.org is the website and if you search on Año Nuevo Island you'll find different links. We do all of our own boat operations and for sure we need outboards and stainless steel hardware and things that you need for small boat operations, so donations on that level would be fantastic and having partners and having individual donors that really value multidisciplinary work and value that we're really applying it directly to conservation, we really need more individuals participating in our projects so we can keep going.

Jennifer Stock: Folks can go to Oikonos O-I-K-O-N-O-S dot O-R-G to follow more of this work and I'll just share, they have a beautiful website, just really nice, and it's almost like looking through an art gallery. So, really well done and people can learn more about the work there and see some of the videos of the restoration sites and if they want to contribute, there are ways to contribute on their website, too. Michelle, any last pieces you want to share with us about this work?

Michelle Hester: Yeah, I just wanted to make a pitch that sometimes it's a struggle for biologists to innovate, because a lot of our funding is pressure to get things done in one year and pressure to have outcomes and I really think that whenever you have an opportunity to reimagine and have a different approach to something, if you believe it will lead to improvement, it's really the opportunity that I think the conservation community needs to grab when we can.

Jennifer Stock: This project is a really wonderful example, I was trying to look for others that approach conservation and solving ecological problems through these interdisciplinary partnerships and I couldn't, I didn't do a ton of research but

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there was nothing other that was popping out. When I heard about your program involving the artists I just thought, "Oh, that's it! That's amazing and that's a great way to approach it!", so I was trying to look at other examples, and I'm still looking, so I definitely want to show more of people who are using this interdisciplinary approach and highlight it because it's just a great way to bring multiple minds together to solve problems, so kudos to Oikonos for working on this and helping these seabirds out. Thanks again for joining us today on Ocean Currents.

Michelle Hester: Thanks Jenny, for everything you do.

Jennifer Stock: Alright, well take care. For folks tuning in, you're listening to Ocean Currents here on KWMR and I just had Michelle Hester on from Oikonos Ecosystem Knowledge and we've been talking about a seabird restoration project on Año Nuevo Island, that took a really neat interdisciplinary approach working with artists, ceramicists, and also habitat experts to work together to restore this island, bringing it back for the seabirds that had a lot of degraded habitat and a really wonderful example. Oikonos.org if you want to learn more and follow the work that they do helping seabirds mostly on islands, which is really exciting. We're going to take a short break and we're going to come back and talk with Rebecca Johnson from the California Academy of Sciences. So stick around.

(pause)

While seabirds are setting up shop for breeding, there are some good tides for us to get out and explore the intertidal zone. But Rebecca Johnson of the California Academy of Sciences wants us to do more than just explore. They want us to contribute to a statewide effort to document coastal biodiversity. So I'm thrilled to welcome back Rebecca Johnson of the California Academy of Sciences Citizen Science Program. Rebecca is a scientist who specializes in nudibranchs and she's also the 2017 Bay Nature Local Hero Environmental Education award recipient along with her colleague and co-leader Allison Young. So Rebecca, congratulations on your award and welcome. You're live on KWMR.

Rebecca Johnson: Thanks so much Jenny and thanks for having me back with you and your listeners.

Jennifer Stock: We're starting a bioblitz in about a month here. What is a bioblitz?

Rebecca Johnson: So a bioblitz is when a bunch of people come together in one place at one time to document all of the biodiversity they can find. So record all of the plants and animals and other life that we can find in one place.

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Jennifer Stock: The one that's coming up here, Snapshot CalCoast, is this a specific bioblitz that you are coordinating?

Rebecca Johnson: Yeah, so Snapshot CalCoast is kind of like a bioblitz, expanded, right, on steroids. So, bioblitzes are usually are held like I said in one place at one time, in our case at the academy we hold and run a lot of bioblitzes with local partners where we work in one local park, or a county park, or a beach, or on private land we've partnered with marin agricultural land trust to work on their private land. So those are one place at one time trying to discover and document biodiversity. Snapshot CalCoast is that same thing, people coming to one place to record everything they can in one local place, but happening in lots of places at one time. So this year June 23 to July 2 there will be over fifty bioblitzes happening along the California coast, organized by local partners getting people out, in Del Mar county to go out and look for creatures in the intertidal, in Del Mar Beach in San Diego looking for the same thing. So people locally looking where they are but then were kinda combining everything together so we can get a one time snapshot of the biodiversity of the entire California coast.

Jennifer Stock: And has this been going on for a few years? Is the goal to do this every year from here on out so there like this one week of a snapshot?

Rebecca Johnson: Yeah, so the goal is to make this an annual event, kinda like Coastal Cleanup Days that we have in California, but this is only the second year.

Jennifer Stock: That's great! How was the first year? Did you have a good turn out?

Rebecca Johnson: The first year was amazing, so we had a pretty small window for our planning and organizing but we worked with really great and amazing partners up and down the state. So last year we had about twenty four different events, over four hundred people participated, we observed over nine hundred species and made over seven thousand observations.

Jennifer Stock: Wow. And this is all in the intertidal zone right?

Rebecca Johnson: So last year we really focused on the rocky intertidal, this year we are still hoping that people get out to the rocky intertidal areas, but were expanding it, and asking people to do event all along the coast anywhere any habitat that works for them. We really wants this to be an event that builds community, but also uses and works with the community and the expertise that already exists up and down our state, there are a couple people doing some events in marshes, or in estuaries Were kinda saying that if people can do rocky intertidal, sandy beaches, docks, and dunes. Like those are the things we are most interested in but really anywhere along our cost is a place that were interested in gathering data and getting people out there exploring.

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Jennifer Stock: So can people just go out on their own during that time and participate?

Rebecca Johnson: They can so we are working with all of these amazing partners to organize small events, some of those are open to the public, some of those are just for staff or volunteers that already work in certain places. But because we use an app called *iNaturalist* that's an app and a web platform, anyone can make observations, all you have to do is download the app, or take your camera, digital camera out, along the coast, and if you see a plant, or an animal, or evidence of a plant, or an animal, so a shell, or a sand dollar. If you take a picture with your phone, it's automatically marked with the date and time and where you took that photo and then if you share that photo with *iNaturalist* that counts for the bioblitz, for the Snapshot CalCoast, so you don't have to be part of a big group, any observation that is shared with *iNaturalist* that is made along the California coast from June 23 to July 2 counts for our Snapshot CalCoast.

Jennifer Stock: So you don't even have to know what these things are, you can just take a picture and contribute.

Rebecca Johnson: Exactly! This is one of the amazing things about *iNaturalist* that it is a social network and a community of people who are naturalists. And so you don't have to know what you're taking a picture of, you just have to take a good enough picture, or series of pictures that someone else can identify it for you. So for example the sand dollar, you might want to take a picture of the top side and the bottom side, the oral side and the aboral side. Take pictures of both sides, get close enough that people can see what you're trying to take a picture of, and if you share that, and even if you didn't know if it was a sand dollar but you knew maybe it was an animal, you could say this is an animal and someone will help you identify it, there's a huge community of naturalists and people that are literally waiting to help people identify what they found.

Jennifer Stock: That is so cool, so you can take a guess at what you think it is, and then you can get some help in verifying your identity.

Rebecca Johnson: Exactly, and it's almost better to take a guess, because you imagine, this is a big database there have been over 4 million observations made on *iNaturalist* so people have alerts, just like you might have on Facebook or any other social network, people have alerts set up, for me I might have an alert that says: "Nudibranchs of California" so I will get like a little alert or a little post that tells me there's been a nudibranch uploaded from the coast of California. So that helps me see things more quickly, if it has no identification, if someone uploads it without guessing what it is then it takes a little longer for me to find it, so even if you say: "I think this is a mollusc" or "I think this is a bird" that helps get it to people that know a lot about those groups, and can help get a finer identification.

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Jennifer Stock: I noticed that you have a most wanted list, and what is the most wanted list all about?

Rebecca Johnson: So we have a most wanted list, actually, I think on our website has a lot of information, and this is actually still last years most wanted species list, but were updating it. But really we want people to look for everything, right we want people to be out there, and discover and, something that's new to them and is really interesting, is just as important as something that has never been seen right, if it's interesting to somebody else. So we want people to discover and explore and be excited. But we also there are some things that were really really asking people to pay special attention to. Were asking people to look for starfish, our sea stars because the sea stars along our coast have been so hit by the starfish wasting. So we're asking people to look for all species of starfish, especially a couple that we've really haven't seen or we think might be in decline or have not recovered as well. One of those is the six rayed star which is called *leptasterias* and the other is *Pisaster brevispinus* which is a pink sea star. And then, we are also asking people to look for things that we know, we have evidence that they're ranges are changing, especially things that are moving north. And in that group there California spiny lobsters, we've seen molts of spiny lobsters in Marin County and San Francisco country and now we just had a record from San Mateo County just last week, and that species it's northern range limit has got to be Monterey Bay or the southern edge on Monterey Bay.

Jennifer Stock: Wow.

Rebecca Johnson: And then a few Nudibranchs that were also looking at their ranges and one is called the Hopkin's Rose, *Okenia rosace* and last year during Snapshot we were in the midst of this big bloom of the Hopkin's Rose where we were seeing just astronomical numbers of them in our tide pools. So we want to keep a tract of that, so we have a few things, a few Nudibranchs, mostly things that have found a couple categories. Starfish wasting, their ranges are changing and we also have some introduced species that our management partners would love us to be on the lookout for, because with all these eyes looking we can get a really good, a better idea of where these introduced species might be found.

Jennifer Stock: So that was what i wanted to ask, who can use this data? Who analyzes that data and how is it shared so that resource management agencies can tap into it?

Rebecca Johnson: So these data on *iNaturalist* are completely open, so not only anyone can help you things, anyone can look at these data, anyone can download then, anyone can use them and map them, and look, and analyze them in any which way they might want to. So that's kind of amazing that all of this data that were collecting together, are open and available for anyone that has questions. But we used them, so my colleague Alison Young and I here at the academy, we're scientists,

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and we're interested in how these ranges are changing, and so some of these data are used by us to understand what changes we're seeing so we're analyzing those. And then our partners at California Department of Fish and Wildlife are also interested in these data as well as the Coastal Commission who are especially interested in some of the introduced species. But we ask a lot of our science colleagues up and down the coast for things they might be interested in, and things they would like us to be on the lookout for. So they are specifically interested in those data, like leftish areas, and there's a professor, Sarah Cohen at San Francisco state. She and her lab have been looking at this species, and so she is particularly interested in those data and we will be using them right away. And last year actually we found a beach where the starfish was really common and a beach she did not know, she hadn't seen it, and didn't know it was there. So by getting out to that beach and going some places that these people don't go all the time, we were able to discover like a new population.

Jennifer Stock: That is so great. It's so cool there's this tool that people can share their wonderings and findings with, and really make a difference to lots of people, and not just keep it to themselves as a personal discovery, but really sharing to make a difference. So, really neat program.

Rebecca Johnson: Thank you!

Jennifer Stock: Can people contribute outside of the specific bioblitz time, is that data considered, I mean I understand there's this specific time period here, but suppose people wanna contribute outside of those dates, can they do that?

Rebecca Johnson: Oh, yeah for sure. So this is a particularly like we have this targeted a couple of weeks. But *iNaturalist* is for anywhere and anytime, right so you can make observations of plants and animals wherever you are, whenever. And those data are shared. Go to *iNaturalist* the same way I just described. And so people, management agencies, people spoken on conversation, and scientists use those data, in ways that you couldn't even imagine. Because not only do they go to *iNaturalist*, those are open and easy for people to find on *iNaturalist*. But once someone has agreed with an identification, and this thing that you saw then, like a picture with a date and time and with a location, once someone had identified it, and confirmed, or confirmed your identification, that really becomes a species occurrence record and that is shared with global databases, a global database called The Global Biodiversity Information Facility. And that is where anyone who's interested in where plants and animals are found around the world, that is really their first stop to understand and find out where museum specimens are, have been collected and where these things are found right now. So data, if you took a picture, if you walked outside your office and took a picture of a butterfly right now, that picture could be used by someone who's trying to understand the distribution of that species.

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- Jennifer Stock:* That is so cool. So we just have a couple minutes left, are there any specific events that you want to share in the bay area that people can just join in, suppose they want to be with other people. Are there events happening around here?
- Rebecca Johnson:* Yeah so we, Alison and I are leading and co-hosting a bunch of different events in the Bay Area, so the best place to find all of those events, were currently updating our list now, but it's on the CalAcademy website, if you just Google "CalAcademy and Snapshot CalCoast" you can find all of the, list of all of our events. But two I wanted to highlight is on June 27 we'll be out at Agate Beach in Marin county, also known as Duxbury Reef, and then on the 29 of June will be out at Doran Beach in Sonoma County. So look for the details of those events on our website, those are two events that are pretty close for some of your local listeners, and we'd love to have, so sign up. You can go to our website and learn how to sign up so we know to expect you.
- Jennifer Stock:* Excellent. How are you getting around the unfortunate carcass at Agate Beach of the blue whale?
- Rebecca Johnson:* Oh my gosh. So I haven't been out to Agate Beach to see this Blue whale, but I think it will be something to see and will see. The tide should be low enough so we should be able to get around it during the Snapshot CalCoast, but it's kind of an incredible thing this, this whale and quite upsetting that it was most likely due to ship strike.
- Jennifer Stock:* Yeah.
- Rebecca Johnson:* But that it was a known whale is one of the most interesting things, right. That because people; volunteers and professionals have seen this whale show it's fluke, we know a lot about how this whale spent it's life before it ended up at Duxbury.
- Jennifer Stock:* Yeah, terribly sad. It's been a really horrible event and interesting way to really engage people actually, a lot of people have been really interested and not aware of the ship strike issue, so.
- Rebecca Johnson:* Yeah. I think, unfortunately that is like the kinda silver lining, is that people can see these animals close up and how magnificent and gigantic they are. And then really think about the human disturbances like ship strikes and entanglement in gear that are really harmful and detrimental to their health and survival.

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- Jennifer Stock:* Rebecca thanks for sharing about these dates June 27 at Agate Beach and June 29 at Doran Beach. And this is Snapshot CalCoast focused on the entire coast of California. Does *iNaturalist* take in observations from other parts of the world, and other parts, like can anyone participate in *iNaturalist* or is it just in California?
- Rebecca Johnson:* Yeah. So, anyone can participate in *iNaturalist*, so it's global, worldwide, observations from anywhere, by anyone are super welcome. And I should mention that the Snapshot CalCoast is supported by the Resources Legacy Fund foundation and so they help us do all this work, and without them it wouldn't be possible.
- Jennifer Stock:* That's great. Well thank you so much for sharing about this, I'm really excited and, got to look at the tides. I just was out with our family last week, and had such a great time tide pooling, and were so happy to see so many see stars back.
- Rebecca Johnson:* I know it's great.
- Jennifer Stock:* So, I wanna come back out, so maybe will check out and see if we can host a group.
- Rebecca Johnson:* Yeah cause we're talking a little, Tomales Bay, so we'd love to get out there with you, so we can talk a little more.
- Jennifer Stock:* Awesome! Alright well thanks again, and we would love to hear some of the results on another time.
- Rebecca Johnson:* Oh yeah we'd love to be back and share all of our results, maybe like in August or September.
- Jennifer Stock:* Thank you Rebecca have a great afternoon.
- Rebecca Johnson:* Alright, thanks you, too, Jenny.
- Jennifer Stock:* Snapshot CalCoast coming up here in California June 23 through July 2. I have a lot of other announcements I want to share after the quick brake, will come back and share some other exciting things happening around here, stay tuned.

(pause)

Alright. You've been listening to Ocean Currents, this is a special month it's World Oceans Day this week, and boy more than ever we need a global day of ocean celebration and collaboration. And that's what World Oceans Day is about, this June 8th, this Thursday is the official day. And this is an official day that the UN recognizes, the UN General Assembly passed this in December

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2008. So that every year a group of people can come together and celebrate and collaborate for a better future for our ocean. So check out worldoceansday.org online to learn more about World Oceans Day. There's events happening all around the Bay area, you can look at their website to find them. The Ocean Film Festival that we collaborate with a lot, and I brought on a lot on Ocean Currents. They're having many Bay area screenings of films from the 2017 festival. You can go to oceanfilmfest.org to see where these screenings are, some of them are in Marin. We, The Cordell Bank National Marine Sanctuary are co-sponsoring one film viewing at the Oakland Museum of California on Friday, June 9 as part of Friday Nights at the Oakland Museum of California. And will have about seven films from The Ocean Film Festival showing at the Oakland Museum of California starting at 7 o'clock. So come on early, you can come see the Cordell Gallery in the Oakland Museum and the Natural Sciences Gallery. Stick around for the films, and there's food trucks, and all sorts of fun events that are happening at the museum on Friday Nights, they stay open late. So check out worldoceansday.org for other events happening or take a personal commitment to figuring out what it is you want to do to help build a better future for the ocean. Another exciting thing happening in August is the Ocean Exploration Trust, which is a group that is led by Bob Ballard on the exploration vessel Nautilus. They're going to be exploring in Cordell Bank National Marine Sanctuary, which is right off the coast here of Point Reyes. They have deep water ROVs that go thousands of feet deep, deeper than we have ever been for sure. And we're really excited to be going out there with them in August, August 5 through the 14. And this is the cool thing, is that you can participate by logging online nautiluslive.org, and you can actually watch the dives happening. Their gonna be streaming live to the internet while the ROV is exploring underwater. So you can tune in, and watch what we're seeing, as we're seeing it live online. So check that out nautiluslive.org August 5 through the 14 to explore some really deep water areas in the Cordell Bank National Marine Sanctuary. I lastly wanna leave us with our Positively Ocean Episode for the month, produced by Liz Fox. And focusing on another volunteer monitoring program.

Liz Fox:

This is Liz Fox at Positively Ocean, where we celebrate the ocean and look at what is working well. This week's story takes us to the shores of San Francisco. A city that drums right up to the edge of the ocean, and the ocean response by carpeting the city in its signature dense fog. Daily flocks of birds and rats or pods of marine mammals frequent the beaches, and other days they wash up dead. But which changes are significant, say from a catastrophic pollutant, like oil spill. And which changes are a part of the normal ebb and flow of where the ocean meets the land. To answer those questions scientists need data, and lots of it. That's why Beach Watch, a long-term volunteer monitoring program supports a group of ocean fanatics to scour the shores monthly. It all began after the 1971 oil tanker collision at the mouth of the bay. Scientists knew that the spill had devastated coastal life, but they couldn't quantify it. Without

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accurate accounting, no one could specify clean up demands. So scientists at the Point Reyes Bird Observatory now known as the Point Blue Conservation Science began counting. They assigned community members, citizens and non-citizens alike to specific pots of the beach to observe and record birds and marine mammals, both dead and alive. Doctor Sarah Allen collected and crunched beach data when the program began, today she is the science program lead for the National Park Service, western division.

Sarah Allen: What is terrific about the Beach Watch program is that this is some highly trained group of volunteers, and because they're really well trained, the data has held up to scrutiny.

Liz Fox: By highly trained, Allen means that Beach Watch volunteers study and practice rigorously for about 80 hours with a mentor before they hit the beach on their own. And most volunteers stick around for years, becoming true experts in their assigned areas. The investment pays off, because of its historic reputation, scientists and policy makers trust Beach Watch data to inform their decisions.

Sarah Allen: Beach Watch foundation can be applied to any potential threat.

Liz Fox: Allen said that Beach Watch data clearly demonstrated the fatal effects of kill net fishing on marine mammals and birds in the 1980s, then resource managers decided to ban the practice in some parts of coastal California. Likewise, regulators change shipping lanes to avoid large marine mammal feeding grounds, to reduce the potential for ship strikes. Now under the leadership of the Greater Farallones National Marine Sanctuary, and the Greater Farallones Association, the Beach Watch program has grown its number of volunteers, and expanded it's geographic reach, and added to it's tallies evidence of ambient oil. Those tar like beach blobs that regularly wash up. Today, Beach Watch includes a hundred and fifty volunteers who cover the two hundred and ten mile stretch between Point Año Nuevo and San Mateo County and Manchester Beach and Mendocino County. While volunteers typically already care about the natural world, their participation in Beach Watch ensures more of the public has a greater understanding and perceived stake in policy outcomes.

Sarah Allen: Their also your best advocates, because they are experiencing real world things that happen on their beaches. Their finding California Sea Lions that are starving because there's an El Niño event. Their finding dead whales that have been hit by ships, and so they can be an advocate and communicate their own personal experiences to the broader public.

Liz Fox: The Greater Farallones Association will host two Beach Watch volunteer orientation sessions this summer. The first is in Gualala, Saturday July 8 from 11 a.m. to 12:30 p.m, and the second is in Bodega Bay on Wednesday July 12 7:30 p.m. to 9 p.m. After orientation, new volunteers must complete an eighty

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hour training in August. To get involved, or for more information about Beach Watch, visit farallones.noaa.gov. That's F-A-R-A-L-L-O-N-E-S dot N-O-A-A dot G-O-V. And that's an example of folks steering right by the ocean, until next time, i'll be searching for all thing Positively Ocean.

(Outro)

For Ocean Currents Radio on KWMR in West Marin, this is Liz Fox reporting in Berkeley California.

Jennifer Stock:

Thank you Liz Fox for producing another great episode of Positively Ocean highlighting positive things happening for the ocean. And thank you all for listening today to Ocean Currents enjoy that ocean bay or whatever body of water you can get into safely. This has been Ocean Currents here on Community Radio for West Marin, KWMR.