

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

(Music)

Jennifer Stock: And thanks for joining me today on Ocean Currents. My name is Jennifer Stock and on this show, we delve into the blue, watery part of our planet and highlight ocean-related topics. We talk with scientists, educators, explorers, policy-makers, ocean enthusiasts, ocean adventurers, and more trying to uncover and learn about the mysterious and vital part of our planet. I bring this show to you from NOAA's Cordell Bank National Marine Sanctuary. Cordell Bank is one of four special areas in California waters that are part of the national marine sanctuary system and it's located just offshore of the KWMR listening radius off of the Marin-Sonoma Coast.

So, today we have two shows in one. Today we have two very different topics and we'll keep you on your toes. On the first half hour, I'll be talking with Nancy Iverson, a swimmer and by profession a doctor in San Francisco and we've had Nancy on the show in the past and we're going to get an update from a program that she does where she works with Native American tribes in Pine Ridge and is working on improving their lifestyles, a program that involved swimming in San Francisco Bay. So, we'll bring her on and on the second half of the show, we will be having Josh Adams from the USGS talking about a mysterious seabird that moves up and down the north Pacific and is heading south right now, the sooty shearwater and we'll hear a little bit about this incredible seabird. So, please stay with us. We'll be back in just a few minutes.

(Music)

Jennifer Stock: Welcome back. You're listening to Ocean Currents and my name is Jennifer Stock and on the phone with me, I have Nancy Iverson. The ocean is a source of life for millions of organisms. It generates air for us to breathe, food for us to eat, energy, jobs, recreation, and often unrecognized, but felt very deeply by many of us is the psychological or emotional outlet for us. My guest Nancy Iverson uses San Francisco as a place for such enjoyment and has been inspiring others bringing the Native American Lakota tribe to San

Francisco Bay and we'll talk with her about that and I want to welcome Nancy. Welcome, you're live on the air on KWMR.

Nancy Iverson: Thanks, Jennifer.

Jennifer Stock: It's nice to have you back. We talked just, I guess, over a year or so now ago, right before the San Francisco Ocean Film Festival where your film From the Badlands to Alcatraz, which depicts this whole story...so beautifully...it debuted at the film festival and you founded this nonprofit organization called Pathstar, which focuses on the preservation of traditions and healing and I'd love for you to kind of recap for listeners that may not have been around with us then about this program that you started and the whole story that the film was based on.

Nancy Iverson: Ooh. Where to start? Well, one, I live in San Francisco, as you mentioned, and I got very hooked on swimming in the Bay in 1993, actually. I had a lot of problems with back pain and the cold water of the Bay drew me in there. I found it very soothing for the pain. So, ironically, I'm one of the people that's actually welcoming the cold of the Bay rather than daunted by that cold of the bay. Around that same time I also worked as a pediatrician in the in house service hospital in Pine Ridge, which is in South Dakota. I'm originally from South Dakota. So, I had gone back and done some work there and several things that I saw and just the way that I kind of think about how we can encourage healthy lifestyle and help reverse the trend into diabetes, heart disease, obesity that's a natural trend and hugely in a crisis mode among the Native American population just led me to ideas to start a program that would actually try to encourage changes on a core level so that they would be sustainable changes for people to reconnect with their old traditions of health lifestyle and healthy nutrition.

Jennifer Stock: Can you describe the pine ridge reservation a bit for us. When I was reading up on it, it really sent me back, the second time around in terms of the state their community there. Can you just describe it a little bit?

Nancy Iverson: It's an extraordinary place. It's sometimes described as the domestic third world and some of the statistics about Pine Ridge are pretty harsh. It sits in Shannon County, which is the poorest county in the United States and the per capita income is about \$4,000 per year. One of the really incredible statistics, there's the life expectancy in Pine Ridge is 20 years less than the national average. So, the only place in the Western Hemisphere with a

lower life expectancy than Pine Ridge reservation is Haiti. The unemployment rate is about 85-90%

Jennifer Stock: This is in the United States and I think that's one thing that's really difficult to hear in terms of I know we have such a range of economic scenarios here in the United State, but when you talk about the per capita of \$4,000 a year and the life expectancy, that's right here in our country. So, I just find that to be such an interesting fact for this group of people that are really trying hard to stay alive and vibrant.

Nancy Iverson: Yeah, and one of the things..it's true, it's really generational now. So, one of the things that I really think needs to be incorporated into any program is just to turn the tide around on the generations. 85 to 90 percent unemployment rate...as much time as I've spent on Pine Ridge, it's still really hard for me to get my head around what it means to live in a community where most of the people really don't work or have the prospect of working, especially in a meaningful way, which is something in the mainstream United States, most of us have the expectation that we are going to fulfill some sort of life dream, be gainfully employed, be able to do something beyond just basic life functions everyday.

Jennifer Stock: So, you started this program about 9 years ago now?

Nancy Iverson: Well, we're coming up, Jennifer, to our 9th Alcatraz swim program next week. So, yeah. We actually had plans in motion to have our first program occur in 2001, but the events of 9/11 really stopped air traffic for a bit and that was just when we were going to have our first group fly out from South Dakota.

Jennifer Stock: So, it's been nine years. It's probably been a nice time for you to reflect and see some of the changes in terms of the participants and going back to their reservations and making changes. Can you tell any stories of any of the people and how they've changed after their experience of working with you and swimming in San Francisco Bay?

Nancy Iverson: Yeah. There's a few stories. One for the viewers...the listeners who have viewed the film, they may recall those two sisters in there and one sister went back after doing the Alcatraz swim and actually finished high school and started into college, which she said she did that because she had done the Alcatraz swim and realized she could do more than she thought she was able to do before if she just put her mind to it. There's one young man who's

gone back and worked with South Dakota's state pension and has worked over three years, first one community garden in Pine Ridge and then to the following summer in 13 community gardens. We've really worked hard to develop some degree of sustainability and some degree of what people come out here and participate. It's really going to get implemented back home and I'm very excited to say that this year, it looks like we have a three generation family coming.

We have Terry Mills who has participated in the past. His daughter, Nikina, is also a participant and her son, Shai, who is a baby. So, we're not expecting him to swim Alcatraz, but I love the idea that he's being included in this circle of the family working to develop healthier lifestyles.

Jennifer Stock: That's wonderful and that's really powerful.

Nancy Iverson: Oh, and we have a father-son team coming from Pine Ridge for the first time and then we also have a mother-daughter team coming from Ketchikan, Alaska.

Jennifer Stock: That's neat. So, you're diversifying a little bit in terms of the geographic location of some of these tribes this year?

Nancy Iverson: We are. We thought we'd sort of throw out the invitation and see who responded. One of the things that we committed to in the last year, which we did, was to be in at least three national, native or indigenous wellness slash diabetes conferences and so during the times of those conferences, we also communicated with other tribal members and put out the invitations. So, we've got people coming from Ketchikan and also from the Coleville Federated Tribes in Eastern Washington.

Jennifer Stock: So, this has really become a program that's growing and expanding. How are you able to sustain this yourself? Are you bringing on more resources in terms of trying to help sustain this? I'm sure that funding is quite a challenge, but it sounds like it's really needed to keep this going.

Nancy Iverson: Funding is a challenge and funding is really needed. I'm happy to say this year, as of last week, we hit our fall funding goal. So, we can move into next week feeling confident that we're going to be able to cover all the expenses for the program. One other new thing that we did this year, we've alluded to it in the past, but this year we worked to formalize it a bit, is encouraging people who are

participating to really work within their own communities, their tribes, to get some sponsorship and the group coming from Alaska, from Ketchikan, has actually worked with their own tribe to sponsor a diabetes prevention grant. So, they're actually working to get the funding, which ultimately, I see most sustainable when the participants really own, take ownership of the program and their responsibility for ability to contribute to keep it going. So, I'm very, very excited about that.

Jennifer Stock: That's wonderful and then the community wants to hear back of how it went. So, that's one of the questions I have. It's such a great thing. You spend about a week with them talking about healthy lifestyles and preparing for this swim, but it's a huge contrast in terms of where they come from. When they go back, how do they start helping to educate others and helping to make some of these changes in their communities? I heard you talking about a community garden. Was that started up from one of the participants or...?

Nancy Iverson: That was....I'm not sure if he...I don't know if he single-handedly started it, but he had a big role in getting it started and the idea that there are 13 community gardens throughout Pine Ridge now is really exciting to me.

Jennifer Stock: That's wonderful. So, can they learn a little bit about gardening while they're here?

Nancy Iverson: Yes, I am so excited, Jennifer, for this year. One of our days here...we've always visited farmer's markets and I've tried to pick farmer's markets that would be most, kind of, realistic for what they'd want to replicate back at home. This year we actually get to go to a farm, spend the afternoon with the farmer, hear how he started his farm and got involved with farmer's markets, help him with the harvests, help him pack it up, and take it to his local farmer's market and help him prepare for the farmer's market. So, we get to have hand's on experience pretty much...obviously not planting the seeds and stuff, but from the time of being on the farm all the way through harvesting and participating in the farmer's market. So, I am so excited about that.

Jennifer Stock: That is so incredible. That seems like a real sustainable thing that's not a huge cost, although, there are start up costs, but being able to get really more people involved back at home with that.

- Nancy Iverson:* Well, and part of what I'd like to help people look at is what do they have that's already there that they're just not necessarily utilizing in the same way.
- Jennifer Stock:* That's exciting.
- Nancy Iverson:* So, like, there may be people that have gardens, but don't really work collectively to make sure that the food gets distributed throughout the reservation. So, doing something like a farmer's market, and not necessarily the way that we do them in California, but as an afternoon giveaway or a community gathering, something like that, but to just trigger ideas that are kind of like "A-Ha. We could do this at home."
- Jennifer Stock:* That's great. What are some other ideas that participants express before they head back that they're interested in trying to do when they get back?
- Nancy Iverson:* Well, we prepare the first meal and then after that the participants prepare all the meals. We do the shopping and we meet with dietitians and health educators throughout the week so that hopefully, the shopping and the food we have available makes sense to them, but again, I really want this to be an experience that can continue on at home. So, starting on Monday morning, they do their food preparation and if we're gone during the day, everybody helps to pack a picnic that we take with them so that we're not out shopping for fast food. We're not kind of running out of food on the run and trying to find something just to get over being hungry. We're actually being really thoughtful with food, doing things in a simple way, but doing things in a way that anybody would be able to do back at home.
- Jennifer Stock:* And this starts next week so you're running around right now, huh?
- Nancy Iverson:* Uh-huh.
- Jennifer Stock:* Thank you for joining us again. I'm talking with Nancy Iverson who is a doctor in San Francisco that has founded a nonprofit called PathStar and she works with Native American tribes in South Dakota in encouraging health lifestyles and the culmination event happens in San Francisco and I want to hear a little bit more about the swim. How do you plan the swim because this is a very special swim that not everybody can do, just logistically, crossing an area where there's big ships in all the time. Tell me about the planning of the swim from Alcatraz to the shore in San Francisco.

Nancy Iverson: It is immense, but again, in a way, the swim is a reality, Jennifer, and it's also a metaphor. I think it is so important for people to have the experience of being encouraged and really aiming for a goal, but then being encouraged in the tools that give them success to reach that goal. So, we have eight practice swims during the week. This year we have 11 people on our roster. Three have come before and participating. We have 8 brand new people, which is pretty much how the mix turns out every year. We partner up a past-time participant with an experienced swimmer for every single one of the swims, whether it's the first swim when we just get in the water to the actual Alcatraz swim.

So, by the time the Alcatraz swim comes up, which is a week from the first Monday, they will have had eight swims in the bat. Each one we aim at increasing the time in the water, getting a little further out from the shore, and really working in rhythm so that they can participate and be encouraged by their partner and develop confidence that they will be able to make it across and it's absolutely amazing the day of the swim.

We've done this...this'll be our ninth past Alcatraz swim and every year we garner more support and enthusiasm. We're very heavily piloted to be doing open water swimming. We have to have boat pilots and again, just like I want the one to one swim partnering, we have a row boater, a kayak, or someone on a surfboard accompanying each swim pair across the Bay too and we can always use plenty of support. It's just a really exciting day.

Jennifer Stock: It just sounds wonderful. Just viewing the video, it's such a powerful piece, just hearing the music and the swimming. I'm a swimmer too and there is a big metaphor there in terms of growth and challenge and accomplishment and feeling good and what are some of their initial reactions after they've done this. It's a mile and a half swim across.

Nancy Iverson: Well, it's 1.2 miles across. So, the swim is usually, of course, a bit longer. It can be even up to two miles swimming depending on how much kind of zig zagging there is with the currents out there. It's a cross current swim. So, very seldom is anyone able to swim just straight across. So, we time it more in terms of the amount of time it takes rather than the actual distance covered because we don't really know the distance covered.

Another thing that we have really aimed to do and again, we build as we go along, but community is so important and the spirit of

community, working together, those who are stronger and faster encouraging those who are weaker and slower. So, our intention that we set throughout the week is that we'll all intend to finish together and so, each swimmer is kind of paired up with other abilities, but to start training on that during the week where not only do you overcome your own fear, but you look for ways to help other people that are maybe struggling a little bit more than you are and when it does work that everybody swims that final piece together, it's just incredible.

Jennifer Stock: That's awesome. Do students want to come back to...I mean, obviously, you have some repeats that come for a few years, but do they want to come back and swim in other areas or enjoy the bay again?

Nancy Iverson: Some of them do, especially for South Dakota people, the bay is a long ways away. There was a group who the...? group from 2006 had learned back in Pine Ridge about a pool that was going to be closed because they didn't have lifeguard support and they so badly wanted to keep the pool open that they contracted independently with the Red Cross to do some lifeguard training. So, I look at that as a very positive follow-up and that was without any of my guidance or anything. That was just something they took on themselves when they got home.

Jennifer Stock: Fantastic. How do you keep up on all the stories? It sounds like there's so many things that are so small, but they really are significant back at Pine Ridge and do you have just...is there some way to check in in terms of getting all this information because this is really the...this is the success of this program is the change that's happening back there.

Nancy Iverson: Yeah. I do my best. It's one of the places where people are often asking how they can help and how they can volunteer and to have some...we're entirely volunteer run. We don't have any paid staff and anybody that would like to volunteer to help compile some of these stories or help with that, we would love to hear from those people. One of the things that we've really encouraged with the people coming this year is that they really think about coming out at the start of a year long association with Path Star so that they're sort of at home keeping the momentum going with staying in touch with us, letting us know what's happening.

With the conferences that we joined last year, the Native American health conferences, I helped coordinate Path Star's role in that, but

in each one, a previous PathStar participant was part of the panel that presented. So, the participants are coming back and doing the teaching as well.

Jennifer Stock: That's wonderful. It's what you probably hoped for in the end.

Nancy Iverson: It's totally what I hoped for. I would love, really, if we could success ourselves out of existence. When we've done enough to inspire ideas that are coming from the communities and communities working within their communities to encourages changes, especially healthy lifestyles, we wouldn't need to exist anymore and then we could be doing it just sort of as a triumphant moment. So, I look forward to that day when every community has such a great investment in their own well being and sees the possibilities of healthy futures.

Jennifer Stock: That's wonderful. So, what are you most excited about for next week?

Nancy Iverson: You know, as the momentum gains, of course right now, it's a logistical nightmare as I'm putting together all the different details that need to be attended to, but it is incredible to just start with that first swim and see how people progress during the week and I'm really looking forward to meeting...I don't know most of the people that are coming. Again, this year I corresponded with all of them, but I've not met most of them. So, to just really see and be a part of the transformations that occur during the week, I'm really, really excited about that.

Jennifer Stock: That's wonderful. It makes it all worth it, all that time. I know very well the amount of effort that goes into planning these details and meeting the students and participants is always the warmest part.

Nancy Iverson: It's also cool, we have age range in participants from 14 to 62.

Jennifer Stock: Oh, that's great.

Nancy Iverson: Which is a really...well, and I'm not counting the little baby, but in terms of swimmers and real program participants and I'm very excited about that age spread and I'm really looking forward to seeing everybody come together and really work together as a team. I also love the group here, locally, that volunteers and stuff. It is just such a great experience for me and it's not just...I do do a lot of very, very hard work and a lot of stressing out as much as I try to de-stress about it, but it is really a joy to see how everybody

starts to light up and respond and the layers of generosity just really, really spread and it becomes so exciting during the week.

Jennifer Stock: That's awesome. How can people contact you after this week, of course, if they wanted to volunteer or donate or get involved somehow?

Nancy Iverson: The best...to actually reach me directly would be to go the PathStar website, which is pathstar.org P-A-T-H-S-T-A-R dot org and one of the logistics, our website is pretty well kept up, but it doesn't have this upcoming week in there. So, they should overlook that, but to go to the contacts and those emails come to me.

Jennifer Stock: Okay.

Nancy Iverson: There's also, of course, we are a 501C3 and we welcome donations. We have, like I said, we're covered for this next week, which is a fantastic feeling, but we've also committed that going into next year that we're going to help people set up similar programs in the communities from which they come. So, there's an ongoing appreciation of generosity with donating, too.

Jennifer Stock: Fantastic. So, people can stay involved for the next year and be in touch with you to help volunteer as well and I look forward to hearing about the outcomes. I'm sure there will be something in the media, the news, about this in terms of the success at the end of the week. So, we'll be keeping our ears posted.

Nancy Iverson: Well, the other thing too, it's always a little...we don't know exactly when we're finishing the swim, but certainly if anybody wants to come down to be on the dock to see the swimmers come in, it'll be Monday, October 17th and I'm just recommending that people be on the dock at the South End Rowing Club, which is 500 Jefferson Street at Hyde in San Francisco and if people plan to be on the dock about 9:30, they may have to stand on the dock for a while. It depends on how long it takes us to get in as swimmers, but it's really wonderful to be there and then we do do a follow-up, right away we have a meal after all the swimmers are in and if people want to come to that, we do that as a pot-luck meal and again, we would encourage healthful foods, primarily healthy fruit and vegetable dishes if people wanted to come and bring a pot luck, but we love to have people come and really witness the culmination of the week.

Jennifer Stock: That's wonderful. Well, we're just about out of time here and I just want to say good luck to you next week and to all the participants coming and I hope that the weather cooperates and it's a very nice program for you.

Nancy Iverson: Thanks, Jennifer.

Jennifer Stock: Thanks so much. I'm going to just repeat your website for you. So, if people would like to get interested, learn more, and actually see clips from the video, you can go to pathstar.org to contact Nancy to find out a way to volunteer or to donate and if people are interested in seeing the participants come in, these are people that have only probably seen the Bay for the very first time and started training this week, or next week, a few days before they do a big swim from Alcatraz to shore, you can come down to the South End Rowing Club on Monday the 17th of October about 9:30 and keep your eyes posted as they come across and feel free to bring a healthy potluck meal as well.

That's wonderful. So, thanks so much, Nancy and I really appreciate the work you're doing. It's a really great community program that you've started and it sounds like it's growing nationally and that's really wonderful.

Nancy Iverson: Well, thanks Jennifer.

Jennifer Stock: Alright. You take care.

Nancy Iverson: Okay. Bye, bye.

Jennifer Stock: Bye bye. So, we've just been talking with Nancy Iverson, the founder of Pathstar and we've just been hearing about this program where she's been working with communities in Sotuh Dakota at the Pine Ridge Reservation and a really inspiration way to bring people out to San Francisco Bay. They're learning about healthy lifestyles and they are swimming in San Francisco Bay as well. Pretty exciting. So, we're going to switch gears in just a minute here. When we come back I'll be talking with Josh Adams about Sooty Shearwaters. Thanks for tuning in.

(Music)

Jennifer Stock: Thanks for tuning into today to Ocean Currents and this is Jennifer Stock and we're going to totally switch gears now and start talking about seabirds. We are going to be talking with Josh Adams from

the United States Geological Survey Western Ecological Research Center. He is studying sooty shearwaters, an incredible seabird that's up in the north Pacific here. So, when I come back, we'll have Josh on the line. Please stay with us.

Alright, thanks for staying with us. I believe I have Josh Adams on the phone. Josh, you're live on the air.

Josh Adams: Hi Jenny. It's nice to be here.

Jennifer Stock: Thanks for joining us today. So, we are talking about a very special seabird, the sooty shearwater, and Josh has been studying them for some time with the Western Ecological Research Center and Josh is based out of Santa Cruz. So, first, Josh, I want to give a little background to listeners about a Hollywood connection for these birds. You've probably heard this a million times, but I think it's so interesting because we have Bodega Bay as a famous place where the birds, Alfred Hitchcock's "The Birds" was filmed and this film, the interest in the story of the film actually came from sooty shearwaters slamming into rooftops, dead birds in Santa Cruz in 1960 and Alfred Hitchcock requested a copy of the newspaper that covered this story as research material for The Birds. Is this a true story, Josh?

Josh Adams: Yeah, that is a true story, actually. It's a very interesting one and it's also very close to our hearts here in Santa Cruz. In fact, not too long ago I was looking through some of the historic photos from that event and it was apparently...it was the galvanizing event for Hitchcock, who was living at the time in Scott's Valley, which is a little community in the mountains above Santa Cruz and he heard of this event and requested photographs and information from the Santa Cruz Sentinel, which our local newspaper and basically, what happened was kind of a freak occurrence for seabirds and definitely a freak occurrence in Santa Cruz. It hasn't happened since to my knowledge, but thousands of shearwaters came in in the middle of the night and crashed through people's windows and landed on their cars and on their lawns and caused quite a stir and no one really knows why it happened.

It could have been a combination of lighting and meteorological conditions or something like that, but the one thing that was apparent was the number of these birds and that's something that we recognize here along the coast of California and Oregon and Washington, every year we have this annual occurrence of big stream abundances of the species of shearwater that comes to visit

us from the southern hemisphere where it breeds off the coast of New Zealand and Chile.

Jennifer Stock: So, we're in this migration period right now. Have you seen some mass movements or masses of these birds sitting on the water or moving on the water yet this season?

Josh Adams: Yeah, indeed, just not a couple, few, weeks ago here in Santa Cruz off our harbor there were flocks that numbers in the tens of thousands and it's a pretty dramatic sight in the evening when they come in and then swirl like a big hurricane, feeding on foraged fishes and driving the fishes closer and closer to shore where they become trapped and occasionally the shearwaters will even come right up on to the beach as they're feeding. It's a pretty dramatic thing and we are...and you mentioned we are in a migration period and for this species, the only time when it's really not migrating is when it's feeding its chicks during the breeding season. So, right now the birds that come here to the California current are just leaving the West Coast of the US and headed back to their breeding grounds. So, they should be there in about 16 days or so if they left today.

Jennifer Stock: And how many miles is this?

Josh Adams: It's about ten thousand kilometers in terms of a straight line. If you left Bolinas and you flew directly to Southern New Zealand it would be a little over ten thousand kilometers. So, you know, six thousands miles or so.

Jennifer Stock: That's a straight shot.

Josh Adams: One way, that's a straight shot and they pretty much do it in a straight shot as well when they return.

Jennifer Stock: That's incredible. That's a huge amount of time. Now, so they're breeding down in New Zealand. They're getting into their breeding season in New Zealand and they'll be down there for a couple months?

Josh Adams: Yeah. They're returning to New Zealand right now and they'll make landfall for a brief period in early November, late October, early November, and they'll reassociate with their mate and they're very interesting. They mate for life. They're fidelic in that way like some other water birds that people know. Most seabirds are like that. They meet with their mate and they get associated with their

burrow. They nest in a hole in the ground on these incredible islands off New Zealand and they clean out their house and they become associated with each other again after a long separation and then they make their way to the waters surrounding Antarctica in the South Pacific, very rich foraging area during the southern springtime and there, they bulk up and recover their resources from the migration and get ready to initiate the breeding season and that period is called the honeymoon period when they're away from the colony.

Jennifer Stock: And in the late spring our time, northern hemisphere, they start coming up or is it more like the summer where they start coming back up to the California current?

Josh Adams: No, they finish up about in April and then they make their way from New Zealand, at least, we know that they make their way to the north and also to the west. So, some birds make a migration that looks like sort of a half of a figure 8 and they'll fly from New Zealand and they'll catch the Westerly winds and fly across to the coast of Chile and then they'll make their way up towards the northwest and then either make it up into the Central Gulf of Alaska, the California Current, or they may swing left and end up over by Japan and Kamchatka over on the Western side of the Pacific.

Jennifer Stock: Wow. It's such a huge range.

Josh Adams: Yeah.

Jennifer Stock: So, what does your research focus on? You've been working in the California Current and what are some of the main things you want to find out about this bird and what are some techniques you use to do that?

Josh Adams: Well, we started looking at the condition of these birds as they were wintering, so to speak, or during our summer period when the birds were occurring off of Monterey Bay and back in, I think it was 2004, we decided we'd go out and see if we could catch these birds at sea during the nighttime and record their body condition using some simple morphometrics. We'd weigh them and measure them, but we also took a small blood sample and we sort of created a library of blood values that were associated with the free ranging birds out here and that was sort of in the context of rehabilitation or sort of to guide what normal healthy birds would be like in the case of, say, an oil spill if those birds were to go into a rehab

facility and rehab personnel there would need to know based on blood values and body mass and overall body condition how those birds were responding to rehabilitation.

So, we did that and then as a second part of that study, we decided to look more at depth of their movements and distribution within the California Current. We didn't know if those birds were only visiting Monterey Bay for a short period of time or were they just passing through. It was sort of a mystery and so, since that time about 2005, for about 5 years we looked at the movements of a small sample of these birds along the California current from Southern Central California up through Washington State and we've been finding some pretty interesting information about where these birds like to spend time.

Jennifer Stock: So, what are some of these hot spots that you can find sooty shearwaters?

Josh Adams: Well, certainly, the central California coast is one, but even within the central California coast, they tend to hang out in areas that are downstream from these archetypical upwelling centers. So, where the cold water is generated during the spring and summer. They like to hang out downstream of those cold water areas in areas where the cold nutrient-rich water tends to stick to the coastline somewhat and create a gestating pool of marine algae and a food web that's associated with that that simulates large shoals of anchovies and sardine and juvenile rockfish and these really important forage species that so many of our predators here depend on.

Jennifer Stock: Now, I saw a fact on your website about how many tons of anchovies and fish that sooty shearwaters will eat and do you have an estimate on that in terms of their intake?

Josh Adams: Yeah. It's an interesting one and I think it's a question that should be looked at again in the future. There was some work done by a graduate student at Moss Landing Marine Labs in 1977 where she actually looked at some of the energetic sort of requirements for the shearwaters in a lab setting and based on how much energy they expend, she estimated that the abundance of shearwaters in a place like Monterey Bay, which is relatively small considering the range of this bird, that they would consume, I think it's on par with the same amount of forage fish that are captured by the commercial fisheries here. So, I think it was on the order of 11,000 metric tons during a year. So, I'm not sure if that number is

actually correct, but the point was that in terms of the order of magnitude of consumption of these birds given their abundance, they're taking on par the equivalent amount of forage resources as the fisheries themselves.

So, they are acting like a big fishery or the fishery is acting like a really big predator is another way to look at it.

Jennifer Stock: There's a couple different foraging strategies for the sooty shearwater, pretty incredible. Can you describe some of those?

Josh Adams: Yeah, their foraging strategies in California include like a, sort of a wing-propelled plunging dive and so, these birds mill around and they seek out these large shoals of forage fish and these flocks can exceed hundreds of thousands, up to say, a million birds in one single foraging flock and so, they literally blacken the skies above the ocean and they'll dive from a short distance above the ocean or from the surface itself and they fly underwater very well.

Jennifer Stock: That's amazing.

Josh Adams: Yeah. They can achieve depths of 150 feet with no problem and so, when they're over the continental shelf, the forage fish become trapped against the sea floor in these shallow waters. It makes them very accessible. So, and they tend to feed in groups. So, they're very highly aggregated when they're doing this. I think they just must confuse the heck out of the forage fish and just go down there and pluck them like chickens feeding on scratch or something.

Jennifer Stock: That's just amazing. You just don't think about seabirds swimming around as much as fish, but that's just an awesome adaptation they have. So, not only sooties, but you're also involved with work with the pink-footed shearwater, which breeds off the coast of Chile as well and tell me a little bit about that program because...are you looking at similar things in terms of the sooties, these hot spots where they might hang out or what's the goal there?

Josh Adams: Yeah, it's a similar goal there and that work is being done cooperatively among a bunch of us that are working together to try to figure out these questions and the pink-footed shearwater is related, but it's a little bit different and it doesn't...it's not as numerous as the sooty by any means and it only nests on several islands off the coast of Chile. So, it's relatively, as a breeding bird, it's an endemic Chilean bird, yet it's one of our species too during

its winter migration to the north and so, a number of us have been looking at the distribution and the migration of that bird.

Currently, we're looking at a handful, several birds, that are on their way back to Chile after being captured on their colonies down there this last April and what we found with them is that they also seek out discrete wintering areas. Not all of the population comes up to the northern hemisphere. Some stay off the coast of Ecuador and Peru where things tend to be rich all throughout the whole entire year in terms of ocean productivity there and then, some of them come up to Mexico and stay there and winter off Baja and some of them come up to our coast and winter here and it's interesting to look at the pink-footed shearwater in comparison with the sooty shearwater because although they're relatively similar in shape and size, they definitely occupy slightly different niches and their body design is a little bit different to accommodate their different ecologies, which is sort of fascinating.

If you didn't look at both of them together, I don't think you'd get much of an insight, but the pink-footed shearwater tends to be a little bit farther offshore, it's less aggregated, and it doesn't dive quite as deep. It's a much lighter-bodied bird and I believe that our distribution data with other species shows that it's more inclined to be affiliated with warmer waters and also with schooling fishes and cetaceans like small dolphins that can facilitate driving prey to the surface. So, yeah, it's a little bit different bird.

Jennifer Stock:

So, there are some conservation issues probably at these breeding sites. I'm wondering if you could talk a little bit about the ones in New Zealand. I know there's a big cultural perspective too with the breeding sites and collecting eggs and can you talk a little bit about that?

Josh Adams:

Yeah, definitely. It's probably one of the most interesting aspects of the species. The Rocky ?? people in southern New Zealand regard the sooty shearwater as a "tayonga," which is their word for a treasured species and if you ever visit those people and go and see their mirage or their houses of worship, they have these incredible decorations and motifs of the shearwaters and that culture has been going to the islands off of the southern coast of New Zealand and engaging in a culturally defining harvest that seeks to collect the chicks of the year, the eggs provide so much protein resource, but the nestlings are where it's at in terms of food and nutrients. So, those people for the past 800 years or so have been going down there and they've worked out a set of rules that

allow them to sustainably harvest shearwater chicks on these islands and that sustainability is currently being evaluated. It was directed by their community to work with university staff in New Zealand to try to figure out if their practices are indeed sustainable from a population perspective and I think it's one of the examples of a marine harvest that really does seek out sustainability. They're targeting the young of a very long-lived, low reproducing species.

So, if their culture started by taking the adults, which are regarded as sort of sacred and sanctified, then they would deplete the population really quickly and I think they realized that early on and that by harvesting the chicks, they're allowing that population to sustain itself. So, it's a really fascinating thing and it's very much a part of their life and they're very proud of it and the people there are engaged in really looking after their habitats over there and taking care of the colonies there and so, we've engaged with those people and done some work to help restore some of the colonies that were damaged by introduced mammals, specifically two species of rats and we worked with the trustee councils from the Command Oil Spill which is an oil spill off the coast of San Mateo County, south of Point Reyes and San Francisco to garner funds from the US to help eradicate rats from some of the major breeding colonies for sooty shearwaters in New Zealand.

Jennifer Stock:

For those tuning in, this is Josh Adams I'm talking with, a seabird ecologist with the Western Ecological Research Center, a part of the USGS, United States Geological Survey, and we're talking about sooty shearwaters and one thing I wanted to ask you when we were talking about the sustainable harvest by the Mowry people in terms of looking at that in terms of is it a sustainable practice, are they going to be looking at other external pressures in terms of ocean ecology as a whole? There's new pressures on all sorts of marine wildlife now that weren't around 800 years ago.

Josh Adams:

Yeah. Indeed and that's a very important concept to grasp is that things are changing as they're going through this harvest and they're well aware of that. Climate change and the pressures associated with changing food webs and meteorological systems over the Pacific can impact survival, but one of the... probably one of the most important factors, I mentioned that they're after harvesting the nestlings of the young of the year, but for a number of years there was a high seas drift net fishery that operated in the north Pacific and that fishery was responsible for taking, in worst case scenario, more than a million adults per year for a number of years until people got together and there was a United Nations ban

on that fishing practice and so, some of the declines that have been recognized at the larger colonies in New Zealand over the past 20 or 30 years have been associated with adult mortality from that fishing practice and so, I think now we're also faced with maritime commerce and the risk of an oil spill is always present and if that oil spill should occur in an area where shearwaters are aggregated during their pre-migration staging when they're over here, then significant mortality of the adult portion of the population can occur there.

Jennifer Stock: That would be horrible.

Josh Adams: Yeah.

Jennifer Stock: And that's even more so...I know that's a big concern here on the Farallones with the common murre sitting on the water. It's a really big concern, but the sooties too, my god, in the thousands sitting here on the water. If that happened that would be terrible.

Josh Adams: Yeah, it would be a mess. Luckily it hasn't happened.

Jennifer Stock: Knock on wood on that. The more information we have the better for helping to protect them and other birds and wildlife as well. How about the pink foots? They are over by Chile and just nest on a couple islands on Chile. Are there some conservation issues there? They're burrow nesters too, right?

Josh Adams: Indeed. Yeah. So, they face threats on the Juan Fernandez Islands, which are located fairly far offshore from mainland Chile. There's been introduced ungulates and grazing mammals. They were placed out there for food and those animals decreased the vegetative cover and caused erosion and for a seabird that nests in an earthen burrow, when you lose the stability of the soil, your nesting habitat disappears and there's also the introduced predators such as cats on some of those islands and there are groups locally here in Santa Cruz, Island Conservation and Oikonos, another nonprofit group are engaged in trying to fix some of those problems and there are other threats emerging in Chile as well. The island that I visited in April just received power for the first time in its history and this is an island that is shaped like a backbone and the ridge line along the middle of the island is remnant forests and contains substantial numbers of pink-footed shearwaters in the colony there, but circling that mountain range is lowland grazing areas and there's been some loss of habitat as those people have encroached up the hills, but recently they're...the island is now

going to gain streetlights and lighted habitation and that can be a problem for these birds.

You brought up at the beginning of the show the shearwaters that came in to Capatola and might have been attracted there by light and that is a problem for this group of birds in general.

Jennifer Stock: Interesting. We are just about out of time, Josh, but one last question. We've had a really big phytoplankton bloom happening here off the coast and it's not determined yet if it's a toxic bloom or what not, but it's all over the place and the whales have left the area. Have you had any noticeable different migration patterns in the soots this year as a result of that or...?

Josh Adams: Well, I wish I could answer that question, but we are not tracking their movements this year. We finished that work in 2010, but we will be starting to fly some surveys starting this week from about Fort Bragg up to the state of Washington and we have a special little sensor on our airplane that records ocean color and so, we can maybe get a handle on what's going on with some of the phytoplankton blooms, but...and we'll be counting birds at the same time, but we're at the time of year when the shearwaters are starting to leave.

Jennifer Stock: That's interesting. It's just been everything's gone and we've heard that the humpbacks have already arrived in Hawaii from the north. So, things are little different this September where we expect things to be hopping and jumping. It's a little quiet on the water. So, I was kind of curious. That will be interesting to hear about the airplane surveys.

Josh Adams: Yeah. Maybe we can talk about that in the future.

Jennifer Stock: Excellent. Well, Josh, thanks so much for coming on the show to share your information. Sooty shearwaters are incredible and...any hot spots here in Point Reyes and Bolinas areas for looking at them?

Josh Adams: Yeah, sure enough, off of Bolinas there, that's a great spot, it's one of those area where the cold water kind of spins in a circle and I think that's one of the areas they like to hang out. I've certainly seen my data has indicated that there are flocks off of Bolinas and certainly off of Point Reyes too, especially to the south of the ? there and within reaches of the Cordell Banks as well.

Jennifer Stock: Wonderful. Well, thanks again for joining us today and good luck with the rest of your field season.

Josh Adams: Great. Thanks very much, Jenny. It was a pleasure.

Jennifer Stock: Alright. Take care.

Josh Adams: Bye bye.

Jennifer Stock: We just were talking with Josh Adams from the Western Ecological Research Center in Santa Cruz from USGS and hearing about sooty shearwaters. Had two different topics today: swimming and health and sooty shearwaters and next month, I'm not sure what we'll have yet, but we'll have another topic for you related to the ocean. Feel free to catch up on past shows at our website, www.cordellbank.noaa.gov, I have a podcast there for the last five years of shows and stay tuned for future topics. I hope everyone's doing well this afternoon, staying dry out of the rain. Take care and thanks for joining me today on Ocean Currents. You're listening to KWMR, 90.5 Point Reyes Station and 89.9 Bolinas.

(Music)

Jennifer Stock: Thank you for listening to Ocean Currents. This show is brought to you by NOAA's Cordell Bank National Marine Sanctuary, on West Marin Community Radio, KWMR. Views expressed by guests of this program may or may not be that of the National Oceanic and Atmospheric Administration, and are meant to be educational in nature. To learn more about Cordell Bank National Marine Sanctuary, go to cordellbank.noaa.gov.