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!

(Music)

Jennifer Stock: Welcome to another edition of Ocean Currents. I'm your host Jennifer Stock. On this show we talk with scientists, educators, fishermen, explorers, policymakers, ocean enthusiasts, kids, 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 offshore of the KWMR listening area, on the West Marin coast, are the Greater Farallones and Cordell Bank National Marine Sanctuaries which together protect 4,581 square miles of rocky shorelines, sandy seafloors, rocky banks, and deep-sea canyons, and maritime landscapes, and artifacts.

A good majority of our ocean health problems are due to what's going on upstream globally, and always it comes down to humans. This year I'm looking to bring to you interviews with people working upstream on issues that have huge impacts on the ocean. On Ocean Currents, we've talked about marine debris a lot and today I'm really looking forward to focusing not so much about the debris problem in the ocean but the ways we're dealing with waste management on land. Trash and climate change are connected. Methane from landfills contributes to global methane levels, a greenhouse gas that is about 25 times the global warming potential of the carbon dioxide produced by power plants. Project Drawdown, which is a book compiling the 100 top solutions to reverse global warming, states that recycling is number 55 on the list of the top 100 solutions to reducing carbon dioxide emissions. It states with about 50% of recycled materials coming from households, if the average worldwide recycling rate increases to 65% of total recyclable waste, household recycling could avoid 2.8 gigatons of carbon dioxide emissions by 2050. However, it seems like hardly anything is really being recycled anymore. And if it's not recycled, it ends up in a landfill. So we're going to explore this topic today with a local expert. I'm thrilled to welcome Ruth Abbe who is the President of Zero Waste USA. She has several other affiliations in waste management advancing the practice of

environmentally and economically sound municipal solid waste management in North America. She works with municipalities across the U.S. to develop the social and physical infrastructure to achieve zero waste. Welcome, Ruth, you are live right here in the studio.

Ruth Abbe: Thanks, Jennifer. It's good to see you.

Jennifer Stock: Thanks for joining me. I've been really excited about this topic because I feel like as a consumer, I've just noticed some changes and I've also as an educator talk a lot with people and a lot with kids and recycling comes up a lot. And I've been reading and hearing about how very little is being recycled so this is such an important topic for ocean health and carbon dioxide. So number one, recycling is often held up as the number one thing people say they do to prevent waste or to justify their purchase of single-use plastic items. But my hunch is that very little is actually recycled. So what's going on?

Ruth Abbe: So you alluded to the fact that we have a worldwide market for recyclable materials and that most recently, last year, China introduced the "National Sword" which put a restriction on the amount of materials that they would buy from the U.S. and European countries. So that has been really kind of an extreme effort on the part of a local recyclers to hurry up and figure out how best to package their materials for export. We'd become reliant in the U.S. and in Europe on packaging up our mixed plastics and our mixed paper and shipping them to China. And when that market has basically closed, we either have to figure out how to unpackage all that mixed up material and get it to the right commodity markets in the U.S. or find another country to take are packaged up materials. But if things are properly sorted, these are commodities. They can be purchased and sold in the U.S. and worldwide.

Jennifer Stock: How long has China been taking our stuff?

Ruth Abbe: It's been about 20 years. So if you can recall back into the 80s and 90s, we did have recycling programs. We had the emergence of curbside recycling since the 70s, and back at that time the recycling centers would sort all the materials by category so plastic over here, glass over there, paper over here. Everything was sorted. And it would go to local manufacturers or it could be sold. And about 20 years ago, there was a huge increase in the amount of communities that wanted to recycle stuff. We went from small

little tubs at the curb to big carts for recycling, and there was a market in China for all that mixed paper and all that mixed plastic. And so we just said "Hey, throw it all in there. We'll package it up. They'll sort it out." And because of some what, you know, obviously lower labor costs and somewhat lower environmental restrictions, it was cheaper to do the reprocessing in China.

Jennifer Stock: Why did they decide to stop taking our stuff?

Ruth Abbe: So over the last 20 years, China's become an economic giant, right, and they have invested in huge industrial processes and there is also a growing middle and upper class in China. So all of those materials that they were really looking for from us, they could get locally. So they have invested in the last 20 years in what we call the circular economy which is they manufacture things, obviously for export, but they also manufacture things to sell internally in China. The middle class, the upper class are buying those things and recycling those packages and products.

Jennifer Stock: How is waste management nationally managed in terms of looking at the fact that China was taking our stuff, they're not going to take our stuff anymore. So how does it work for adapting at that point and where did all our stuff go? Cause we kept on buying stuff and putting stuff in the recycling bin, but all of a sudden, it's not going there.

Ruth Abbe: Well, you know, so we're lucky in California in that we do have manufacturing plants that do take recycled content material. For example, all of our PTE bottles, water bottles and soda bottles, can be purchased locally and recycled locally. We have two huge bottle plants in California and those can be recycled from bottles – old bottles into the bottles – which is great. We don't have that across the country and in every community. There are parts, recycling deserts in some parts of the country that still are going to rely on exports. But for us another big opportunity we have is that for glass recycling, we have a very vibrant glass recycling market because, guess what, Gallo and all of the big wineries and wine producers buy a lot of recycled glass to make their wine bottles.

Jennifer Stock: I'm glad to hear that glass is still a big one because I know glass is made out of sand, and I had an expert on our show last year, or the year before, about how we're losing sand globally. How about organics and compost? In California we have a diversion goal of recycling 75% of organics by 2025. How are we going to do that?

Ruth Abbe: Right and the reason that we have that state goal is because it's related to the Global Solutions Act back in the Schwarzenegger Administration. The State recognized that we can be a leader and reducing greenhouse gas emissions. As a result of the Global Warming Solutions Act, many departments of the state including the Air Resources Board and the CalRecycle, which overseas recycling, have come up with plans and policies and additional state legislation requiring things like the reduction of organics to landfill which creates the methane that you mentioned. And so the 75% reduction of organics is directly related to implementation of that Act, which is awesome. It makes California a leader nationwide, worldwide, and unlike the federal government we're not withdrawing from Paris. We're kind of stepping up to the Paris Climate Accord in that way. Virtually every community in California really needs to either provide organics' collection, and organics includes things like yard trimmings, of course, but also food scraps and food soiled paper, and that's the things like pizza boxes.

Jennifer Stock: So we need to check our local process. We have Recology around here. I think Recology is in Marin as well as Sonoma. That is new information for me. I didn't realize that. The compostable piece is huge when it comes to recycling because a lot of people are thinking they're doing the right thing by picking up single-use compostable service ware. And I've read that this gets in our recycling and gums up recycling and messes things up. Can you talk about that?

Ruth Abbe: Right. So we know and I think your listeners are very tuned to the fact that we want to phase out single-use plastics…

Jennifer Stock: Yes!

Ruth Abbe: …and we have the example of European Union and here locally a number of communities are restricting single-use plastics distribution. Most recently, last month, the city of Berkeley introduced their ordinance to reduce single-use plastics and charge a fee on coffee cups – $0.25 for coffee cups. So you can bring your own and then avoid that fee. So that's really a leadership at the local level. But the problem with just restricting single-use plastics is that if you still buy single-use, like single-use compostables, you're replacing one problem product with the other. It's kind of that old saw, you know, when we were concerned about the bag ban, the plastic bag ban, but we don't want to replace that with a paper bag. Paper bags also have a huge global footprint just like a

plastic bag. What we really want, of course, is reusable. We want reusable shopping bags. We want reusable foodware. One of the things that we really want to encourage, and a lot of local communities are working on this, is having a requirement or an encouragement to bring back your own containers to have them refilled.

Jennifer Stock: I'm dreaming of that.

Ruth Abbe: Yeah, so on the cup side, it's pretty routine that you can bring your cup to get it refilled. It's a little more rare to allow you to bring your own reusable containers to the deli or to the grocery store; it can be done, but there are a few restrictions and state law around health codes and other things that need to be kind of gotten through. There will be some bills in the legislature this year to clarify some of that and to make sure that folks can whether you're at a festival or you're at the grocery store or you're at a restaurant, you can bring your item to be refilled. And there are some precautions that the restauranteur has to take because we don't want to have dirty containers that are cross-contaminating other containers.

Jennifer Stock: Right. How have recycling plants dealt with these compostables? I don't think we have the composting facilities to actually compost this stuff quite yet. Can you speak to that a little bit more?

Ruth Abbe: It's definitely an emerging area. So right now, the whole field of solid waste management is really regulated at the local level. It's really a public utility, and most communities have their own contractor franchise agreement, or they do their own collection. And so it's a hyper-local activity, which is again how we can make a difference, very locally in this area. A lot of things like the electric grid and other things are outside of our control, but we can make a difference at the hyper-local level with waste management collection and processing. But what that leads to is differences between communities. I think one of the most frustrating things that we have is I can recycle black plastic in Alameda, but you can't in San Mateo or this or that or this or that. In San Francisco they've invested in the technology so that coffee cups can be recycled, and they actually want the coffee cup to go in the recycling. In other communities, coffee cups, you know what we were talking about reusable is best, but if you did have a paper cup, a lot of communities want to put that in your compost. So again, it's a very individual community-based decision, and those individual community-based decisions go up to the processor or the provider, so in this area Recology, and to their processing

equipment. Really, it's the responsibility of the local community and their service provider to do education, and it's up to us as consumers to read that education, look on the website, look at the brochure.

Jennifer Stock: With the goal to reduce the organics diversion by 75%, with the goal of that, are we looking at building new treatment facilities that will be able to take on these compostable things or compost them?

Ruth Abbe: For sure. There's a tension, right, because obviously we want to create the products that can be handled by the processing facilities and we want our processing facilities to be able to handle those material types. But if you think about what a recycling facility is supposed to do, and what a composting facility is supposed to do, a recycling facility is supposed to prepare materials for market to be made into new products, and a compost facility is supposed to be composting organic material to make soil to sell to farmers, right? So the more we introduce these things that are kind of technically recyclable or technically compostable, but not robustly recyclable or robustly compostable, we're introducing a complication. For example, there are coffee cups that are lined with the PLA, which is a derived product from corn, that are completely compostable in a high-tech industrial scale composting facility. But we would really rather folks didn't have to get a paper cup and they would get a reusable cup. So there's that tension.

The other areas around the idea of compostable plastics, which is highly controversial in my neck of the woods because on the one hand, again these materials made out of polylactic acid, which are derived corn, are conceivable compostable, but they're not really a nutrient for the soil. You know, you don't need polylactic acid in the soil. There are companies like ReGrained that make granola bars out of spent grain from a brewery. Awesome, but they also have invested in a compostable plastic package. It is technically compostable, but it's not robustly compostable at every compost facility. So we have all these tensions. We want convenience. We want everybody to do everything for us and it's like, "Oh man, you know, we gotta try little harder."

Jennifer Stock: It's also hard to know what companies are using which products in terms of those cups and stuff. So just bring your own, it's simpler.

This is Ocean Currents and I'm talking with Ruth Abbe who is with Zero Waste USA and many other affiliations reducing waste locally and globally. I want to talk a little bit about the process. We

put our stuff in the bin, we take it to the curb, the truck comes through, everything goes in the same truck – like the garbage, the recycling and the compost – I mean, do they have a divider inside the truck that like separates it?

Ruth Abbe: It should be either 3 separate trucks, which they have in many communities. So where I live in Alameda we have three separate trucks; they look identical but one comes down the street for the trash, one comes down the street for the recycling, one comes down the street with organics. In other communities they have a split cart, and it could either be split recycling and organics or recycling and trash, or, you know, it could be trash and organics. And those split carts have two different bays where the materials are loaded and separately collected. So if you see your service provider come and empty one bin of one color and then one of the other, it is usually in that split body truck.

Jennifer Stock: I see. We actually do have two. I'm in Petaluma, and we have two: one for compostables, the other one is the recycling and the garbage. So then it goes to the facility and the blue bin, the recycling bin, is dumped out, and what happens there?

Ruth Abbe: In some communities, in addition to splitting the recyclables from the trash and organics, they also split the recyclables from containers and the paper. So in a lot of the Marin communities, Berkeley, others, there's a split cart for the recyclables, as well. So that's just kind of an added complication. But once those materials get to the processing facility, which we would call a recycling facility or material recovery facility, a transfer station, it is loaded up on to a conveyor belt and through either optical sorters and technology or through just regular old fashioned labor folks, people picking off the material types, they are sorted back into the commodities that can then be sold to the worldwide market or domestic markets. So they're going to be primarily addressing all of the paper. We have now, because of the Amazon effect, we have a lot of cardboard in our residential stream, so they're usually going to separate the cardboard and the mixed paper. In some communities, they are separating the paper to their commodity grades: newspapers versus office paper, those are different types of paper. I mentioned, in San Francisco is also recycling things like coffee cups and milk cartons and juice boxes, which is another grade of paper. So separating all of the different grades of plastics, different grades of paper, and different grades of metals – the ferrous metals, the aluminum, cans, that sort of thing. So when you get all the materials to the processing facility, it gets separated into

all these different categories depending on their subsequent markets.

Jennifer Stock: Now, I've also read about how if there's any soiling or if they're wet, they're removed. So I'm thinking of like an olive oil bottle and we've gotten every last drop out of that olive oil, but it is going to take so much water and soap to really clean it. There is some tension there. Is this product actually going to be recycled or not? Can you talk a little bit about that?

Ruth Abbe: We would like them to be as clean and dry as possible, but, you know, I, like you, do a lot of work in the schools, and if you're recycling and composting in a lunchroom at school, hello, you're not going to get every last bit of that yogurt out of that yogurt tub, right. So can we still recycle it? And the answer is yes. At home we have the opportunity of leaving those yogurt tubs in the sink or putting in the dishwasher and getting them a little cleaner than we would at school. But the answer is they can be recycled. Glass can of course be recycled. A little bit of olive oil is not a contaminant to the glass processing system because it goes through such a high temperature treatment to melt it down and make into a new bottle. So your little bit of olive oil, you're cool on that. Plastics, you know, it's not as high temperature, there is not always so much in terms of washing, but, you know, a little bit of contamination of the yogurt or milk in the milk jug is not a contaminant. The reason there is such an emphasis right now about keeping things clean and dry is because that impacts the paper. So if the paper and the containers are collected together, that olive oil could get on your paper making the paper less sellable.

Jennifer Stock: Well, that's very helpful. So really it seems like we need a lot more re-education of our recyclers. Now in terms of volume, it seems like there's no slowdown of stuff coming to our bins. There are definitely a lot of people that are working hard if they're conscious to reduce their use of stuff and production of stuff and recycling, but there's more stuff coming in. And so I can imagine that at those belts there's gotta be some discernment of "that just looks too dirty, we're gonna get rid of that." Where does that stuff go? Does that go straight to the landfill?

Ruth Abbe: Well, sometimes. Although we have what we call sort of secondary processors that will take the material that come off of the line at the primary processors and reprocess it. We have, for example, down in Los Angeles, the Titus MRF takes a lot of the sort of secondary plastics, not the number one PET bottles, not the HDPE

milk jugs, but those kinds of weird, esoteric things that are hard to recycle because they can't get enough of them. So it's not that they're not recyclable, it's just that we can't collect enough of those little weird things to accumulate, put in a bail, put in a truck, and send it somewhere to be recycled. So these secondary processors will go a little bit deeper into those materials and take out that stuff that's recyclable. Similarly, with the paper, there are some communities that we have what we call "unders" at a material recovery facility, the stuff that gets shaken down at the bottom, and it's stuff like bottle caps and broken glass. There's also a lot of food scraps and compostable materials. So some communities will send that kind of a weird "unders" from their material recovery facilities to either a glass processor, will take out the recyclable glass, or to a compost facility that can put that on the shaker screen and get the compostable materials out. So there is technology and there is the ability to do stuff – it costs money, it costs time, and it costs effort. Of course it's better if we did it better job up front.

Jennifer Stock: Oh yeah! This is so interesting. I'm really enjoying this conversation because there's just… we have a stuff issue in the United States, and I know in other countries too. And I just continually have images in my mind of some areas of the ocean are just so highly impacted by this stuff making it the ocean. It's not so much of the landfill issue. A lot of it is the transport to the landfill where things get lost. In some countries they don't have good containment of things. Or things get dropped out of our car, we open our car and are running to get into work as it's pouring down rain type of little accidents, so I really appreciate this conversation. And I'd like to talk a little bit more about who's buying this stuff and what are we making with this stuff? But we're going to take a short break here in just a minute and come back and continue talking with Ruth Abbe of Zero Waste USA. So please stay with us here at Ocean Currents.

(Music)

Jennifer Stock: We're back here on Ocean Currents talking about our waste management here in the United States, and I have Ruth Abbe here in the studio with me and we're talking about all the efforts in our country for recycling and compostables and a lot of the details in between. We were talking earlier about the process from our bin to the truck to the plant and how they separate these commodities. And who buys these products? Are there companies in the United States that buy these products or are they companies overseas? I'm

thinking carbon footprint, you know. I'm thinking about how much carbon dioxide we need to burn to get these things to be reused and making products that stay as close to home as possible.

Ruth Abbe: Right. So it really depends on the commodity type. So we do, for example in California, have really robust reprocessors for things like PET plastics and glasses we described. Our paper plants, however, have closed or are no longer accepting paper for recycling, and so a lot of that does go to plants in other parts of North America including both Canada, the Pacific Northwest, and Mexico. For example, the milk cartons and the juice boxes, that are being sold as a grade 52 commodity, do go to plants in North America, and that is a really good paper source. It's a very clean kind of paper that's in a paper milk carton, it's just covered with a plastic coating, and so it has to go to a mill that has a hydro-pulper. It just makes it a little bit more difficult since there are fewer and fewer paper mills that can accommodate that. But they're typically within North America, so a lot of our paper can be sold in North America.

Our plastics really depends on the commodity type. We have local processors who will make bender board for garden use here locally in the Bay Area. They want number for plastic which is the plastic bags, LTP bags, or HDPE milk jugs. So it really depends on the commodity type. Things like organics are typically very hyper local because you really are not going to be shipping compostable materials around the world. And in California, because we have a vibrant cultural base, our agricultural sector is able to buy all of the high-quality compost that we can produce. And I did want to mention a really good news story about compost locally, which is your neighbor here in Nicassio, John Wick, has the Marin Carbon Project which is demonstrating how ranchers can put a quarter inch of compost on their rangeland and all of that can be absorbed into the soil and create the infrastructure in the soil to sequester carbon. It is like the most exciting thing to happen and we're going to see a big blossoming of that activity across California and across the U.S. as a market for our compost. We can invest in our climate reduction through applying compost to our rangeland and other land that's not tilled.

Jennifer Stock: Is local climate a factor in the ability of these facilities to produce this compost? I'm just thinking of the people that are experiencing deep freezes through the winter.

Ruth Abbe: You know a lot of compost technology is also changing. So even here in California we're going from long piles of what's called windrow composting, where the material is exposed to the air, to being inside a vessel underneath a tarp where it's called in-vessel composting. And those can happen winter, summer, rain, snow because the material, the microbes, are heating up and creating that warm pile for the compost process. In other parts of the country, Ontario, Canada, Minnesota, they still have the compost in the winter.

Jennifer Stock: Again, another consumer question is some companies are really making an effort to make a product that they can sell to you and then they want you to send it back to them so that they can reuse it or refill it. I was thinking of those toothbrushes that we have, Preserve toothbrushes. Are those on the rise as companies? And which ones are good ones?

Ruth Abbe: Yeah, it's important to think about it in terms of what we call "producer responsibility." So the companies that you're talking about are making the extra effort to be closed-loop – that circular economy of taking the material back and reprocessing that. Unfortunately, we don't have a lot of examples of that in our country. In Canada, there is still a very vibrant reuse market for beer bottles. Beer bottles are standardized. They go back to the breweries and are refilled. Our capacity to do that locally has changed because of how shipping is done and manufacturing is done, but there is always an opportunity to invest in that kind of thing locally and to have that footprint be smaller. There is a new example, Unilever, in New York and in Paris, I think, they're introducing a reusable kit where they will give you all of their products, laundry detergent and other things, in a reusable keep that then they will come and pick back up and refill again. Whether that takes off as a good model, you know, we'll sort of see what that logistics is and that footprint, in terms of moving reusable materials around, is also potentially a problem. So I think for us the best thing locally is to go to our bulk food stores, bring our own bags, bring our own containers, refill them, and that's probably going to be better in the long run. And in the short run to get that refillable aspect rather than relying on the producers to do it voluntarily.

Jennifer Stock: There's a lot we can do as consumers, for sure. Europe, up you mentioned earlier, banned single-use plastics. How has that come about?

Ruth Abbe: Right! So ocean advocates like yourself and folks that listen to this program have done a really good job of raising the issue and raising the alarm around single-use plastics and what that's doing. So this has been a response both globally and in Europe to reduce the amount of stuff we're making. Do we really need a Q-tip that has a plastic bond? So this restriction in Europe is also going to be considered in the California legislature this year; Senate Bill 54 by Senator Allen is really going to be addressing single-use plastics. And keep in mind that some plastic is really important to us.

Jennifer Stock: Right, we know that.

Ruth Abbe: We need some. Let's save it for what we need it for.

Jennifer Stock: We need it for these microphones here in the studio. Our glasses. I wanted to just ask if there's other events coming up, resources you would love to point listeners to learn more about what's happening locally, statewide and nationally or internationally about the work that you're doing?

Ruth Abbe: Absolutely. So to keep track of things locally here in the Bay Area, we have a wonderful organization called the Northern California Recycling Association, the url is NCRArecycles.org. And of course, you can keep track of Zero Waste USA at zerowasteusa.org. We do a training program and a certification program. Then if you're interested in recycling legislation, and California is number one in the country in recycling legislation, Californians Against Waste is at CAWrecycles.org and they are lobbyists in Sacramento that are looking out for us. So it's CAWrecycles.org.

Jennifer Stock: That's great. I want to ask one more thing. If you're at the store and you're going to buy something, what are you thinking in terms of a progress of the most friendly for the environment, thinking carbon dioxide, thinking about recyclability, to the worst?

Ruth Abbe: Probably for a lot of areas of the environment buying locally, buying from people that you know, farmers that you know, products that you know that are produced locally. Or you can bring your own bag, or your own container refill obviously would be optimal. The direction that we're sort of concerned about is the plastic sachets and other kind of little packets and things which have really kind of inundated the global South. So if you go to the Philippines or other countries and you can buy a tiny, tiny bit of the laundry detergent in a tiny, tiny little pouch that is completely

unrecyclable and even though you can afford it cause it's just a tiny, tiny bit, it's on a per unit basis extremely expensive.

Jennifer Stock: So go big, go bulk, and stay low on the food chain or recycling chain, too. Great! Well, Ruth, thank you so much. This was so exciting. Alright, I am going to end the show with our Positively Ocean episode.

I have a special guest also in the studio. We have Liz Fox here who is the producer of Positively Ocean, and Liz welcome into the studio. Tell us a little about our episode for today.

Liz Fox: Hi Jennifer. It's great to be here and our episode today is about coho salmon in the Lagunitas Creek, and there's some really good news.

Jennifer Stock: What's the good news?

Liz Fox: The good news is that the numbers are up, and more importantly is that the physical landscape that the juveniles that will be born into this year has been really fixed in some major ways that people have been working on for many years to create a safe space for these tiny little juvenile fish that hopefully will come back and spawn again and we can continue to see good numbers.

Jennifer Stock: Fantastic. So stay tuned here for Positively Ocean.

Liz Fox: Hi. This is Positively Ocean where we celebrate the ocean and look at what's working well. I am Liz Fox. There's something fishy in the Lagunitas Creek these days and it's fish, lots of them. Salmon. Specifically, coho salmon. That's big news because they've been on the brink of extinction, and this year's healthy run could mean that local restoration efforts will continue to bear, well, salmon. Eric Ettlinger, the Aquatic Ecologist at the Marin Municipal Water District, and his team counted 320 redds, or mounted pebble nests, that female salmon build for their eggs. Assuming there's a male and a female pair for each redd, Ettlinger estimates that's about 740 salmon returned to spawn this year. That's up from the long-term yearly average of about 500 salmon. More importantly, it shows that the population is on the rebound after a bottleneck here in 2008 when only about 52 fish came back to spawn. That year, scarce ocean food sources threatened the already low number of coho salmon that had survived the big storm as hatchlings three years earlier. Since salmon have a three-year life cycle, a healthy habitat for young salmon is especially critical, and coho are

particularly vulnerable to habitat degradation because they've evolved to spend more of their lifetimes than other species of salmon in the slow-moving rivers and streams of coastal redwood forests. More time in freshwater means more exposure to habitat loss, drought and land-based pollutants. So the canary in the coal mine in this story is really a fish in the backyard. Here's Ettlinger.

Eric Ettlinger: These big, bright, red fish that every year swim up from the ocean into people's backyard teach us about the connection between the ocean and freshwater, the health of our streams, about water quantity and water quality, about changes that are happening to the ocean food web.

Liz Fox: Because coho are so sensitive to changes in the terrestrial environment, development anywhere in the watershed can impact them. Again, here's Ettlinger.

Eric Ettlinger: Whenever there is new development, there's more pavement. When it rains, the water doesn't soak in, so we get these very flashy streams and the creeks flow very fast and they cause erosion. And the people who live adjacent to creeks have to protect their banks with rock, and that just means that the Creek goes even faster because it's not being slowed down by vegetation, and the habitat for fish is being eliminated.

Liz Fox: Raging streams coupled with a loss of floodplains to development including vineyards means that young coho salmon along the Lagunitas have floundered for years. But that began to change when the Marin Municipal Water District planned to expand a reservoir in the 1980s. The district reached out to watershed stakeholders to ensure aquatic habitat protection as required by law. Since then, the resulting Lagunitas Creek Technical Advisory Committee, a group of federal, state and local nonprofit agencies, proved their staying power with their shared vision, cooperation and public support. In one project, the Salmon Protection And Watershed Network, or SPAWN, partnered with the National Park Service which removed a ghost town on its property in 2016. Last summer, SPAWN completed its work on the first phase of the project to remove dirt and reshape the terrain to reopen Lagunitas Creek's access to floodplains. Preston Brown, Director of watershed conservation of SPAWN, can see the projects paying off. Here's Brown.

Preston Brown: Are we creating the habitat that we'd prefer, which the answer is yes, we are seeing it functioning the way we want it. And then

second, are we actually seeing fish use it? And the answer is yes. So we know that it's creating a habitat that we intend and it is providing habitat for fish that we can actually see, and count, and measure.

Liz Fox: This year's successful coho run in the Lagunitas Creek can't be directly attributed to that project. But the new access to floodplains will provide a safe and healthy habitat for juvenile fish that hatch from this year's strong run. And while the endangered coho salmon aren't out of the woods completely, hundreds of people have worked throughout the decade to make these woods more hospitable. That's an example of folks doing right by the ocean. Until next time, I'll be searching for all things Positively Ocean. For Ocean Currents and KWMR radio, this is Liz Fox reporting from Berkeley, California.

(Music)

Jennifer Stock: Thank you, Liz, for producing that story. It's very exciting to have all this rain, and coming into the station today you got to pass all these creeks. Is there any other last pieces you want to share about the coho story?

Liz Fox: Sure, well, as with any story, there is so much more than I can fit into a single piece, and really the big takeaway from this story is that so many people are involved, so many agencies. And it's just a huge successful story about cooperation and shared vision and if I could have more time that's where I would spend reporting on that.

Jennifer Stock: That's great. Well, it is exciting to have this happening this year. This weather… weather is really just that redistribution of heat around the planet, which I just thought was really interesting to think about with all these interesting storm systems that we've been experiencing, that polar vortex, and now this incredible rain that we're having. It's all about our planet redistributing heat, and our planet is heating up. So thank you, Liz, for coming to the station and I'm glad you got to drive past those watersheds that are flowing today to see it all happen.

Liz Fox: They're beautiful.

Jennifer Stock: And I will say that it's been some great viewing for salmon along the Lagunitas Creek especially in Samuel P. Taylor Park and the Leo T. Cronin Fish Viewing Area. I went there during a long-extended break of which I was not working, time on the bicycle,

the furlough, and got to see the fish and it was just so exciting and really happy and so great to appreciate all the people that have been working on that watershed. Thank you to everybody. SPAWN and the National Park Service and the County of Marin and the residents for working on that watershed.

I just have a couple announcements. Going back to zero waste, the National Marine Sanctuaries have a zero waste week that they promote in schools in the springtime, and schools can get involved. Students For Zero Waste Week as a school-driven, week-long campaign to reduce waste on school campuses and within local communities with the intention of moving towards zero waste. People are starting to sign up now, March 18th, and you can choose any week between March 18 through April and go to sanctuariesnoaa.gov/education/oceanguardianzerowasteweek. You can also just type in 'zero waste week sanctuaries' and it'll come right up. Really great for getting students involved.

Lastly, Ocean Currents is the first Monday of every month at 11:00 AM to 12:00 PM. I love hearing from listeners and a couple have emailed me, so if you have topics, ideas, questions, comments, please do email me at cordellbank@noaa.gov. I want to give a shout out to Amy Parker from the UK who shared with me that she was so inspired by Ocean Currents that she started her own UK-based and focused podcast about the ocean called Sea Tales. So thank you Amy so much for writing and congrats on your podcast focusing on ocean life in the UK. Thank you so much for listening. You can enjoy the ocean, bay or whatever body of water you can get into safely. This has been Ocean Currents.

(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 on this program may or may not be that of the National Oceanic and Atmospheric Administration, and are meant to be educational in nature. To contact the show's host, Jennifer Stock, email me at Jennifer.Stock@noaa.gov. To learn more about Cordell Bank National Marine Sanctuary, go to cordellbank.noaa.gov. Thanks to bensound.com for royalty free music for the Ocean Currents podcast. For more info visit www.bensound.com.

(Music)