

**December 05, 2016, oc120516.mp3**

**Rockfish Conservation Areas on the West Coast of the U.S.**

**Jennifer Stock, Kelly Ames**

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*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!

(Musical intro)

Welcome to another addition of Ocean Currents, I'm your host, Jennifer Stock. On this show we talk with scientists, educators, explorers, policy makers, ocean enthusiasts, adventurers, children, 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 off the shore of the KWMR listening area are the Greater Farallones and Cordell Bank National Marine Sanctuaries, which together protect 4,581 square miles.

More than 60 species of rockfish dwell in vast numbers in the eastern Pacific Ocean, from Baja to Alaska. White fleshed and delicious, they frequently school together and often intermingle with other commercially sought fishes, but a few members of the rockfish family have spoiled the party. They were harvested nearly to economic extinction last century and this ample species is now largely protected by the Pacific Fishery Management Council from trawl nets, traps, and hooks. Rockfish are notoriously long-lived and painfully slow growing, and as these species gradually recover from the deaths of overexploitation, the once phenomenal fishery may remain closed or restricted south of the Canada/United States border. So we're going to be exploring today the topic of rockfish conservation areas that are in place with my guest, Kelly Ames, and Kelly is a Pacific Fisheries Management Council staff member she's responsible for the groundfish fishery analysis. She has in the past worked with Oregon Department of Fish and Wildlife as ground fish management program leader and has worked with both commercial and recreational fisheries.

So, Kelly, you are live on the air, welcome to KWMR!

*Kelly Ames:* Hi, good afternoon!

*Jennifer Stock:* Thanks for joining me today! I really want to start broad, talking about fisheries management in general because a lot of people don't realize who really

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manages fisheries and we have the states and the sub sects, so can you talk about what the role of the Pacific Fisheries Management Council is and provide a little information about its history?

*Kelly Ames:*

You bet. So, the Pacific Fisheries Management Council came about as did, um, 8 total regional fishery management councils, we all came about at the inception of the Magnuson-Stevens Act, which came about in 1976 and is named after the late senator Warren Magnuson of Washington and senator Ted Stevens of Alaska. And so that act basically gave the U.S. control of the ocean waters, so basically out to 200 nautical miles, and worked to push out the foreign fishing fleets that were operating off of our coasts and to implement measures to prevent overfishing. And so that act went in in 1976 and it's been amended a few times, most recently in 2006, and it established these regional fishery management councils and so we are 1 of 8; there's the North Pacific, Pacific Council, which is who I work for, Western Pacific, Gulf of Mexico, South Atlantic, Mid Atlantic, there's a whole bunch of us around. But what we do, we operate off the west coast and we cover the states of California, Oregon, Washington, and Idaho. And we have authority, basically seaward of those states, out into the Pacific ocean for about 200 nautical miles.

*Jennifer Stock:*

Now, before the Magnuson-Stevens Act of 1976, how was fisheries management handled?

*Kelly Ames:*

Well, it was very complicated and there was a lot of foreign fishing activity which a lot of people believed that the high removals in those days, which were not very regulated, were responsible for some of the rockfish declines that you spoke of at the beginning of your program.

*Jennifer Stock:*

Okay, so was also one of the key changes changing the exclusive economic zone out to 200 miles, was that changed at that time too?

*Kelly Ames:*

Yes, that's right. Yep, the Magnuson-Stevens Act gave us that U.S. control of our waters out to 200 nautical miles, which is called the EEZ or Exclusive Economic Zone.

*Jennifer Stock:*

Excellent. So, rockfish are a popular species for people, and have been enjoyed by divers and diners for years, but after decades of this pressure and years of poor ocean conditions, the reduced survival of young fish, scientists and

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economists, they took a hard look at what to do and several species were considered overfished. What is considered “overfished” from the council perspective?

*Kelly Ames:* Well, what we do is, we work with our science and statistical committee and they run some very complicated models to look at what level of harvest is appropriate for which type of species. So we have flatfish species, we have round fish species, and we have rockfish species. And so these scientists help the council develop their policy framework to determine at what level do we want to keep these stocks in order to keep them at, you know, healthy levels that can be sustained for the long term, so through the scientific process the council develops their policy and gets kind of a target that they’re aiming for. And so for rockfish, the goal is to keep their biomass, or the level of the stock, higher than 40%.

*Jennifer Stock:* Okay,. How do you assess the biomass?

*Kelly Ames:* Well, they do stock assessments, which are very complicated but once you listen to them a couple times you start picking up on some kind of key features that go into the stock assessments. So, they take information from the fishery itself, so if you’ve ever been a recreational angler and you’ve landed your fish and you’ve been intercepted or interviewed by a state biologist they’ll ask you lots of questions about your fish. “What type of gear were you using? “Where were you fishing?” “How many fish did you catch?” And a similar process occurs on the commercial side. And so both of those pieces of information, what we call “fishery dependent data”, as well as some research surveys conducted by the scientists, from universities or from the National Marine Fisheries Service, they take both of these fishery dependent and independent data sources and combine them into these complex models to get an estimate of how large the population is and whether or not we’re achieving our harvest goals

*Jennifer Stock:* So in 200 or so, it seems there was an alarm going off about rockfish populations plummeting, or at least a few species. Which species were the ones that were really being kind of the cause for the large conservation area development?

*Kelly Ames:* Well, we had a quite a few stocks throughout time kind of go in to what we call the “overfished status” and so that means, simply, that the stock is not at the

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level that meets the council's policy goals for being a healthy stock, and they were mainly rockfish species. So, some Bocaccio off of California, Cowcod, Yelloweye, Canary and as you pointed out, they are a very long lived species, so it takes quite some time to rebuild those populations. But what is exciting to me is I have been in this process for about 8 years, and we started off with about 8 overfished species when I began working in this process, and we are now down to about 5, and of that we expect 2 of those species to indicate that they have been rebuilt in the next stock assessment cycle.

*Jennifer Stock:* Alright, I wanna talk about that in a little bit, but going back to the early 2000s when they discovered all these overfished species; tell us a little bit about the rockfish conservation area. Where was it when it went into place, and what the goal was for that.

*Kelly Ames:* You bet. So, there are basically three types of rockfish conservation areas off the coast, off the west coast. Some of those are for recreational fisheries, and that's where we would say during the recreational fishery "You cannot fish deeper than or shallower than a certain depth contour." And the idea there was to kind of push effort away from these stocks were that we're rebuilding. We also have two commercial large closed areas, that probably most commonly referred to as the rockfish conservation areas. So they are up and down the coast, there are big area closed say from about 100 to 155 that are areas where you cannot fish using pot-trapping or line gear or trawl gear to catch groundfish. So that means you need to be transiting through those areas, you cannot stop to do any type of fishing activities. And these broad area closures were really designed to reduce pressure on these overfished stocks and promote rebuilding.

Along with those area closures, we also had some other of our changes to management measures to, again, reduce that pressure on those overfished stocks. So we in the trawl fishery had quite a consolidation of the fleet, there was a federal program to buy back some of the trawl vessel permits and reduce the fleet size. We also put in, in addition to these area closures, large reductions in management measures, so limiting. We put in all these extra tools to limit the amount of catch that people could interact with.

*Jennifer Stock:* So, that was always something a little confusing to me. Knowing that there is this large conservation area in place, and this is across all three states, there's still rockfish being sold in markets. So where is that coming from, the rockfish? I

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know there are some areas where people can still fish, and does that change seasonally, in terms of the depths where fishing can still occur? Can you explain that a little bit?

*Kelly Ames:* Yes, you bet. In trying to rebuild these overfished species, there are trade offs that occur and so while you may have an area closure that is reducing access to one particular stock, there might be another area that allows greater access for another stock that might be in a healthier state. Additionally, in rebuilding we really can't take catch of these species to zero, so there will still be some interactions for these rockfish species, even though we're closing these large areas of the coast where they live, they don't tend to follow our rules. So even though we think they should always be in this depth span that we've closed, they often show up in other places and are still caught as what we call by catch or unintended catch.

*Jennifer Stock:* And so that can be sold?

*Kelly Ames:* Depending on the fishery and depending on the area, yes. So, for the trawl rationalization program these trawl vessels have individual fishing permits and quotas. And so they do have quotas for the overfished stocks, they're at very low levels, but they are allowed to catch and then land those species. Now, they must have quota pounds to cover those species, and it's very expensive quota. And so the idea is that they are not out targeting on those species that are in rebuilding it's simply that we've allowed them to retain that by catch and actually sell it.

*Jennifer Stock:* I see, okay. Now, with the RCA closure put in effect, has that put additional fishing pressure on other species or in areas where the RCA is not in effect?

*Kelly Ames:* You know, it is definitely possible. We do know, of course, that by closing these broad areas of the coast that we have displaced fishing efforts. We know there was quite a lot of activity in that 100 to 150 fathom area post wide that was closed, but there has not really been a detailed analysis yet to know exactly how and where that effort was displaced. And again, it is kind of confounding because along with the big area closure, there were these other changes in management measures, like consolidating the fleet size, that had some big effects as well.

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*Jennifer Stock:* I see, and that, you're speaking of the trawl fleet. How about for recreational?

*Kelly Ames:* Yeah, for recreational we do hear in our public comment at council meetings that these closures are putting a lot of pressure on near shore stocks. For the recreational fishing community, for the charter boats we do have fairly good information about the location of their fishing activities. But for the private anglers, the location of catches is reported at a much broader scale, so it's very difficult to kind of tease out how the displacement has occurred in those fleets, but I think it is fair to say that they have been displaced and that certainly there has been greater pressure on the near shore species

*Jennifer Stock:* Okay. For folks just tuning in, this is Ocean Currents and my guest today is Kelly Ames from the Pacific Fisheries Management Council and we're talking about rockfish conservation areas along the west coast, some broad areas where there's closed fishing.

I wanna get back a little bit to some of the vocabulary of "trawl", "fixed gear" and "hook and line", and there might be "trap" too, can you describe the different ways that we can catch rockfish with those different types of gears?

*Kelly Ames:* Yeah, absolutely. So the recreational fishery, of course, is mostly rod and reel, is how we refer to them. Each state has limits on how many hooks can be used on each fishing pole, so that's kind of one type of activity that occurs, and again the recreational fishery, we do say that they are held to rockfish conservation areas because they have depth closure that apply to them to promote the rebuilding of overfished rockfish species. In the commercial fishery we have what we call the "non-trawl sector" so anything that is not a trawl gear. Those are mostly longline gears, which are long strings of gear that are laid on the ocean floor and then off of those long strings of gear, which are called "skates", there are lines that have hooks on them that catch various types of fish, predominately, the main target would most likely be Sablefish if you're in deeper waters or maybe Blackgill rockfish, and then if you're shallower, any of the nearshore rockfish species, so China, Copper, and Quillback, kind of the pretty fish that you might see in the line fish markets or your "fish of the day" specials

For the non-trawl sector, they also fish with pot gear, those can be on single pot fishing at a time or it might be a string of pots put together, which is called long-lining the pots. Again usually if you're in deeper waters, you're gonna be looking

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at fish like Sablefish, or you might also hear it called Black cod, or a Blackgill rockfish, and near shore, again, the nearshore rockfish species and sometimes Lingcod is a popular fish in that target strategy. For the trawl gear, there are two types, there's the bottom trawl gear and also the midwater. Our largest midwater strategy currently is for Pacific whiting, that's a white fish that is most commonly used to make fish sticks, and that's our biggest, probably, non-bottom trawl gear type and fishery.

*Jennifer Stock:* And, bottom trawl, you're saying, has been consolidated quite a bit, how many bottom trawlers do we have on the west coast at this point?

*Kelly Ames:* Ooh, that is a good question. I would venture we probably have maybe 80 active vessels.

*Jennifer Stock:* One of the things that I've always wondered about, I know that with rockfish that live specifically at those those deeper depths, they're really accustomed to being at depth, and when they come up to the surface their air bladders expand hugely making them kind of floaters on the water. Have there been changes in terms of how to reduce by catch with rockfish in terms of catching fish that you really shouldn't be catching and having them survive being brought to the surface?

*Kelly Ames:* Yes, there have been. So in the recreational fishery in particular, you know this barotrauma, which is where those fish are really affected at the change in pressure as they're being taken from the bottom of the seafloor up to the top, and they can suffer some physiological damage. There are these new techniques with descending devices, is what they're called, and it can help a recreational angler get that fish back down, slowly so that the fish has time to decompress, and it's really just an analogous to what you might encounter if you're diving, you know, when you're diving you certainly don't want to descend or ascend too quickly or you end up with burst eardrums and other painful conditions so that is kind of the general idea behind these descending devices, is to slowly put the fish back down and let it acclimate to the various changes in pressure.

*Jennifer Stock:* And have those been shown to work, in terms of surviving and not just floating up somewhere else?

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*Kelly Ames:* Yes, absolutely. There's a lot of research behind the barotrauma and the descending devices that has shown to be very successful. There, I think, are still some questions about, you know, how does the change in pressure, for example, affect their reproductive fitness? You know, is there anything that might have been changed or damaged in the process of being caught and then rereleased at depth. So there's certainly still some questions, but I think the bulk of the research shows that the short term survival is greatly extending using these descending devices.

*Jennifer Stock:* That's great there's new technology to help with that. Is it required or is it completely voluntary to use devices like that.

*Kelly Ames:* It is voluntary to use them, but I would say certainly groups like the Recreational Fishing Alliance and others have really promoted them and gotten the word out, and we are seeing large increases in the use of these descending devices, so when anglers land their catch and are intercepted by these state biologists that are asking them questions, they will ask "did you have a descending device on board? did you use it?" and so we do have some good data that the use of descending devices has really increased as the education and awareness has come out. I think everyone loves rockfish, so you know, the anglers get very frustrated when it's the regulations that are telling them they can't retain these fish and they're uncertain whether these fish will live when they are released, because if they're not descending they often do just float away, and they watch them be predated on by other individuals and so when they heard there was this option that was backed by science that would help promote their survival, they definitely got on board very quickly.

*Jennifer Stock:* Fantastic! So there's so many different gear types, you just explained a little bit of the different ones; the non-trawl sector, and the recreational, and the bottom contact, bottom trawl. It sounds like because there's different gear types different species can be targeted. Since the rockfish conservation area's been effect, has there been abilities to maybe open up some types of fisheries that may not target these overfished species?

*Kelly Ames:* Yes, yeah, definitely. There have been, particularly I guess I want to highlight the fact a lot of these stocks are rebuilding, and so as a result of those rebuilding species we've been able to loose a lot of the restrictions. So there

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have been changes in the depth closures or the rockfish conservation closures for the fisheries, for example in California, when you compare the 2016 season to what's being proposed for 2017, there are several areas where they are going to be provided greater access to fishing grounds, so being able to fish deeper as a result of rebuilding successes.

*Jennifer Stock:* Alright, is that all regionally based in terms of the different stock assessments in terms of the differences there?

*Kelly Ames:* Yes that's right, so in some areas off California they have much greater— so I think off of San Francisco and the central management areas, they'll be able to fish out to 40 and 50 fathoms respectively, whereas in the northern management area we still have quite a few of issues with interactions with Yelloweye rockfish. So in that area, in the northern management area, they can only go out to 30 fathoms. That's still a benefit compared to 2016, where during that certain time period, the May through October 31 time period, they were only allowed to go out to 20 fathoms. So you know, that's a big release for those recreational anglers to have that greater access to fishing grounds

*Jennifer Stock:* So it sounds like you have a pretty good idea that the RCA, the rockfish conservation areas, have been success, but a few species not so much. Are those long lived species that really have maybe a slower time to rebound in population — what species were those again?

*Kelly Ames:* So yeah, right now I would say the most constraining or limiting species would still be Yelloweye rockfish, in particular, because Yelloweye rockfish is caught by all fishing sectors. So everyone is, kind of, bearing the brunt of management restrictions to help rebuild the stock. There is also Cowcod rockfish, which is not encountered in as many fisheries, but the allowable harvest is very low, and so you know there is kind of that tradeoff where even though you might not be caught by many sectors when the numbers are very low, it becomes very challenging.

*Jennifer Stock:* This has been, what, 14 years now, does the fisheries management council have an idea about the economic impact of this closure?

*Kelly Ames:* Yes, yes there have been — it is very difficult, I think kind of the direction you're going in is more back to the traditional trawl and non-trawl RCA and not the

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recreation aspect so I wanna make it clear that my response here is really focused on that rockfish conservation area.

There, yes, there have been a lot of opportunities lost by closing those broad areas of the coast. I think the challenge is trying to quantify what could have been and so the council is currently considering whether or not they should remove the trawl rockfish conservation area because we do have this shore based IFQ program where there is individual accountability, so the fishermen are responsible for every single ground fish that they catch. So they're considering whether or not they need to have these broad area closure as their primary catch control, and in doing that analysis it's been very difficult to say what will opening the RCA provide. So it is very challenging to point some point estimates on what they have through time and what they might be available to gain in the future.

*Jennifer Stock:* Well, Kelly, thank you so much! I have a couple more questions for you, but I think we're gonna just take a quick break so if you wouldn't mind just staying on the line, we'll come back and keep talking about rockfish conservation areas.

*Kelly Ames:* You bet! Thank you Jennifer.

*Jennifer Stock:* Thanks for staying with us! Folks tuning in, this is Ocean Currents here on KWMR, and my guest is Kelly Ames. We're talking about rockfish conservation areas that have been in effect since 2002, big areas of Washington, Oregon, and California have been closed to fishing for rockfish. So we're going to take a quick break, we'll come back in a little bit and talk more about what's happening with the rockfish conservation areas.

(Musical Break)

Thanks for sticking with us here on Ocean Currents, this is Jennifer Stock and we're talking about rockfish conservation areas today, I have Kelly Ames with us from the Pacific Fisheries Management Council giving us an overview of what's been going on with all that, and Kelly, welcome back! You're live on KWMR again.

So thank you so much, this has been a really good overview of this really big area, and I can imagine the complexity of managing all these different streams of information and data and the changing conditions, so it's really great to hear, especially after all this time. Now since the RCAs have been fairly successful,

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with a lot of species coming off that overfished list, is there consideration as to when RCAs will be opening up?

*Kelly Ames:*

Yes, so as we mentioned right before the break, the council is currently considering whether to remove that trawl rockfish conservation area and they have been under this consideration for about the last year or so, and they're scheduled to take final action on that consideration in June of 2018. And so, one might expect, if they go down that path and remove the RCA, that sometime in 2019 or 2020 those trawl rockfish conservation areas would be removed

*Jennifer Stock:*

Now, one thing I always wondered about was trawl, because trawl is one of the most destructive types of fisheries, in terms of hurting habitat and taking unintended species, I'm curious why trawl would be opened up first when it's one of the most destructive as opposed to some of the other ones that are a bit less destructive

*Kelly Ames:*

Right, so the important thing to keep in mind is that the trawl rockfish conservation area purpose was specific to rebuilding the overfish species and so, you know again its purpose was species conservation, and so given that those species conservation objectives have been met for some species and are being met for other species that that's really the heart of why that consideration is at the forefront. Additionally, with the trawl sector having their individual fishing quota pounds, we know that we can adequately control catch to promote rebuilding for the remaining stocks. Now when the council is doing this consideration for the trawl rockfish conservation area removal, they're also looking at whether or not they have achieved their essential fish habitat objectives, and so they're doing these two actions at the same time because there is a recognition that by removing the rockfish conservation area you are opening up habitat that have been closed for some time, even if its primary objective was not habitat protection, there were, as secondary benefits, habitat protections provided. And so, part of their action then is to consider these essential fish habitat proposals and decide whether additional essential fish habitat areas need to be closed to kind of offset any opening of habitat areas that were within the area that would've formally been the trawl RCA.

*Jennifer Stock:*

Can you define what essential fish habitat is a little bit more? It sounds like an area where trawling would not be allowed.

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*Kelly Ames:* Not necessarily, we have essential fish habitat closures that also apply to fixed gears, and so the idea is that, you know, there are regulations that require us to designate essential fish habitat areas for waters and substrate that are necessary for fish to spawn, breed, and feed from growth to maturity. And so we have several areas off the coast that are already closed to either bottom-contact gear, recreational gear, fixed gears, to help promote essential fish habitat as a whole.

*Jennifer Stock:* And how about, since you're talking about potentially opening up trawl areas in rockfish conservation areas, is there a thought about fixed gear and recreational fishing rockfish conservation areas opening in the future too?

*Kelly Ames:* For the non-trawl sectors I have not heard or seen the council prioritize that. I think the main concern there is for the non-trawl commercial fisheries, that they don't have the same level of observer coverage and individual accountability to ensure that catch of these overfishes stocks is at levels that promote rebuilding, and so again, that's kind of the difference between the trawl program and the non-trawl, is the wealth of information that we're getting under the trawl rationalization program allows the council some confidence that they're still meeting their rebuilding objectives, and we just don't have that same information from the non-trawl commercial. For the recreational fisheries, if I provided earlier the example, all three states have kinda looked at, as these stocks rebuild, whether or not they can provide more depth available to recreational fishing. And so, for California, we recently had Canary rockfish rebuilt and that was the primary driver for allowing greater access to fishing depths in California for next year.

*Jennifer Stock:* One of the things I've heard as a tough thing for the coasts, especially in small fishing communities, like Bodega Bay and Bolinas and Point Reyes, the whole region of these small little towns, is that it's been really hard for small scale fisherfolk to make a living with this conservations area. I'm curious how the council takes into account small scale businesses, that's like one person going out on a boat and is really gonna catch a much smaller amount of fish compared to a trawl. How is that taken into account, in terms of making these changes?

*Kelly Ames:* You are absolutely right, that is one of the big challenges, you know, the Magnuson-Stevens Act that governs what the council does has what's called

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these national standards and guidelines that are provided by the National Marine Fisheries Service and it is a challenge to balance those standards. One of those standards, I'll give you just an example, is the goal is to basically take an amount of fish that can provide the greatest benefit to the nation while also keeping that stock at sustainable levels and given these overfished species constraints, it's been very difficult to provide greater access to target species while still promoting rebuilding of the overfished stocks. In those national standards, the council is also required to provide for sustained community participation in fisheries and minimize adverse impact to communities, and you can see where rebuilding is sometimes in conflict with trying to achieve that other national standard. So I think, ultimately the council is striving to find these balances between the various mandates, and it is absolutely very challenging to the smaller ports and the smaller communities.

*Jennifer Stock:*

One of the big questions I have with fisheries management is how do you account for the extremely dynamic ocean conditions we've been seeing, in terms of the blob, that new anomaly that appeared a couple years ago with warm water, and El Niño, and ocean acidification, and domoic acid, and how do these big issues that seem to be creeping up more and more affect the decision making of the council, in terms of making fisheries management decisions?

*Kelly Ames:*

Well, a few years ago, I think it was back in 2013, after several years of looking into it and developing it, the council adopted what we call a "Fishery Ecosystem Plan" and so the idea was to begin gathering and incorporating information about ecosystem dynamics into each of our fishery management plans. And so as part of this ecosystem based management plan, the council receives an annual report called the "California Current Integrated Ecosystem Assessment" and so it's a document that's produced by National Marine Fishery Service and other agencies that helps to kind of capture the annual state of the union, if you will. How is our California current ecosystem, what do we know about it, and what do we think is going to happen in the future and how do those conditions relate to what management actions might need to be taken for the directive fisheries that we're trying to provide for. I can give you kind of one example, this is, for me, kind of the easiest one to get my head wrapped about because sometimes it is very challenging to take these very complicated projections of ecosystems indicators and understand how to directly apply them to management. But we have seen, for example, with the domoic acid in the ground fish fishery we have what's called an open access fishery, which means

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anyone can participate and you don't need a license, so participation is unlimited.

And we do know that when domotic acid levels are high and the crab fishery is either cancelled or postponed or there are low levels of take, fishermen look for other opportunities and so they often come into the open access Sablefish fishery or Black cod fishery. And so, when we know that domoic acid levels are causing problems in other directed fisheries we have to make sure that the landing limits for our Sablefish fishery are gonna match that increase level of participation so that we can make sure then that our total catch limits of Sablefish aren't exceeded. So there's some kind of direct ways that we can respond to it, and then maybe less direct ways, like for example, incorporating some of the ecosystem information into a stock assessment.

*Jennifer Stock:* For you personally, what are you ultimately hoping to see as a successful outcome from the RCA? I'm assuming getting all those overfished species off the list, but is there anything else you wanna ass about that ultimate success of the RCA?

*Kelly Ames:* Yeah, I guess what's exciting to me is the rebuilding of these rockfish stock, it's exciting to me to look across the board at each of the fisheries and see the opportunities that we're able to provide. When I started in this process we were at very, very low levels of both Canary and Yelloweye, and we were closing large portions of the coast in addition to the trawl rockfish conservation area. There were many businessmen that were put out of business and communities that are definitely not as engaged in the fishery as they had been, and I can see on the horizon that as these stocks have rebuilt and others are kind of in the wings, coming in to rebuilt status, we're going to be able to provide greater opportunities and that's really positive.

*Jennifer Stock:* Since fisheries are so complicated in terms of regulations and dates, are there specific websites you recommend for people that are interested in fishing? I know a lot of fishing people are already well hooked up to those sites.

*Kelly Ames:* (Laughs)

*Jennifer Stock:* (Laughs) But I'm just kind of curious what you'd recommend.

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*Kelly Ames:* Well I guess I'd have to plug our own website, which is P, as in Paul, council dot org, so [pacificcouncil.org](http://pacificcouncil.org) We have a wealth of information there, also links to other websites, you know, if you get down your rabbit hole and you decide you want to learn more about one particular fishery or another, there are links to the state management agency pages, the federal government, the tribal government, etc.

*Jennifer Stock:* Well, Kelly I really appreciate you giving us such a great overview today of the rockfish conservation areas, I learned a lot today, it's very very complex! So thank you again for all your time today!

*Kelly Ames:* Great, and thank you!

*Jennifer Stock:* For folks tuning in, you're listening to Ocean Currents here on KWMR and I've been speaking to Kelly Ames of the Pacific Fisheries Management Council about rockfish conservation areas that have been in place along the west coast between Washington, Oregon, and California for the last 14 years, since 2002, and some potential changes coming to open up a little bit for the trawl area, and some species that are getting off the overfished list, which is very exciting! I'm gonna share our next piece of Ocean Currents coming up here is a piece called positively ocean. This is produced by volunteer Liz Fox, and she looks for stories that are basically helping the ocean and what's doing it right, and she focused on a story about a study that involves the rockfish conservation areas and the sanctuaries and some scientists doing some work so we'll learn a little bit more about that here on Ocean Currents. Here's Positively Ocean.

(Musical Break)

*Liz Fox:* Hi! This is Liz Fox at Positively Ocean, where we celebrate the ocean and look at what's working well. This week's rockfish story takes us to the bottom of the Pacific Ocean along with continental United States. Two decades ago, rockfish, a group of slow to mature bottom dwelling fish, were in extreme peril from overfishing. In 2002, the Pacific Fisheries Management Council banned fishing for rockfish in large areas along the length of the United States west coast. As a result of this protection, several rockfish species are bouncing back! But without science we wouldn't have known about the population declines in time to save the species! Rick Starr is a researcher at Moss Landing Marine Laboratory,

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throughout his career he studied coastal life in the ocean and worked with groups to help make smart use of resources.

*Rick Starr:*

The way that science works, is that we do our best to provide information about a particular species and provide a set of sideboards as to what we think that population is doing.

*Liz Fox:*

The problem is, that throughout history in the United States, unbridled, economic actors have decimated natural resources, sometimes beyond recovery, that's why state and federal governments created agencies to measure resources and regulate their extraction. Our land based regulatory agencies limit the number of trees we can cut so forests have a chance to recover after harvest or environmental events, like fires or droughts. In the ocean, regulatory agencies determine how many fish we can catch without destroying a population, where we can drill for oil, and where to protect exceptionally critical coastal ecosystems. Scientists in the late 1990's witnessed, recorded and warned that a spout of inhabitable oceanic and atmospheric patterns impacted rockfish reproduction and, coupled with commercial fishing, could decimate populations off the west coast. The Pacific Fisheries Management Council imposed a fishing ban and created rockfish conservation areas in 2002 to support rockfishes' longterm survival. One of Starr's challenges, was to estimate the number of rockfish, both inside and outside of the rockfish conservation area. Those numbers would help determine if the areas achieved their intended goals. The California Collaborative Fisheries Research program funded his sampling studies and Starr recruited students and recreational and commercial fishermen to become citizen scientists.

*Rick Starr:*

Our goal was to engage stake holders, primarily anglers in the essential coast area, in monitoring those marine protective areas. And the reasons to fold, one is that we believe that any area that is put off limits to fishing should be monitored and the information will be best used if it's monitored who are effected by that decision. And secondly, we wanted to use the expertise of the anglers in the central coast area to help us monitor fishes.

*Liz Fox:*

Starr, his colleagues, and citizen scientists measured rockfish and their populations in 2014 and compared the results to the results of similar surveys in 2002. The data showed that protections for rockfish worked.

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*Rick Starr:* The good news was we found lots of large fishes in those areas that had been heavily fished in the 80's and 90's and both number of fish and size were much greater than they were in the 1990's. We can say that the increased numbers and sizes of fishes were directly related to the closures but also directly related to some environmental conditions

*Liz Fox:* But there's a constant push and pull between fishing interests and conservation. When fish populations rebound to healthy levels, anglers seek access and regulatory agencies prefer to relax their protections. So while Starr's data show that many species of rockfish recovered enough to sustain a population, numbers for Yelloweye rockfish and Cowcod still haven't reached a turning point.

*Rick Starr:* Unfortunately, there are still 3 or 4 different species of rockfishes that still haven't completely rebounded or rebuilt from being in an overfished state. So there are a couple of species right now whose low populations are constraining the options for the Pacific Fisheries Management Council. And right now the managers in the fishing communities are trying to work through that to try to figure how to increase fishing access and fishing opportunities while still protecting those few species whose populations are still low.

*Liz Fox:* For Starr, the role that science and information plays is paramount.

*Rick Starr:* And it's really important to maintain the information base to allow us to make wise decisions about ocean resources. And that information base comes from research and it also comes from having the fishing community out on the water catching fish.

*Liz Fox:* This is an example of how to do right by the ocean folks. Until next time, I'll be searching for all things Positively Ocean. For Ocean Currents Radio on KWMR in west Marin, this is Liz Fox reporting in Berkeley, California.

(Music)

*Jennifer Stock:* There you have it, Positively Ocean by Liz Fox! And I wanted to highlight too, that study she was referring to, Cordell Bank National Marine Sanctuary actually worked with Rick Starr's work and many partners to have Cordell Bank National

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Marine Sanctuary, the area right around Cordell Bank, as part of that study. And in addition to areas around the Farallones and Half Moon Bay, and they had good success in bigger fish, more fish, and higher species diversity, so it's been a success and I'm sure we'll be curious to see how much more success we can have as time goes by here.

I also wanted to mention, Cordell Bank Marine Sanctuary, we've been doing remotely operated vehicle surveys on Cordell Bank from time to time and working on establishing a more regular monitoring pattern, and there's two reports up on our website, [cordellbank.noaa.gov](http://cordellbank.noaa.gov) to check out. We had a survey in 2014 with our ROV and in that report you can see highlights of what was seen on that cruise. One of the things that we have seen in the last few years, is that Cordell Bank is a really great habitat for Yelloweye rockfish, which is one of the species that has been a bit slow to recover getting off that overfished list. So it's been a real value to have some protections around Cordell Bank, That's a real healthy, great, rocky reef habitat to help Yelloweyes in particular.

Want to just highlight a couple other announcements before we wrap up the last show of 2016 here on Ocean Currents. This past Thursday, the Gulf of the Greater Farallones and Cordell Bank National Marine Sanctuaries hosted the Beyond the Golden Gate Research Symposium at the Romberg Tiburon Center and 40 talks were given, about 20 posters were presented about current research happening in the sanctuaries offshore. It was a fantastic overview, of all the different research happening from tiny phytoplankton to the mega blue whales and all the different stories science is telling us about what's happening in our very dynamic ecosystem offshore here. This year, they used a hashtag to curate content from those who like to tweet, and this is something that if you happen to be a Twitterer, you can go on Twitter and type in the hashtag and see some of the highlights from the talks and you can just go to the hashtag, it's B, as in boy, G G S 16, I'll repeat that, it's BGGSS16 and you can type that into the search to curate all the tweets that were presented during the talks from the folks in the crown. So kind of fun, using social media to keep some communication efforts going to expand our reach.

I just want to thank all of you for listening to Ocean Currents and thank you for supporting KWMR, I want to wish you all a very happy, festive and safe, replenishing season of holiday for all the various holidays that are happening

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this time of year. Thank you to Kelly Ames of the Pacific Fishery Management Council for being on the show, and Liz Fox, producer of Positively Ocean!

Ocean Currents is the first Monday of every month, 1-2 pm. Ocean Currents has a podcast, you can go to iTunes to search for that, or come to the sanctuary website, [cordellbank.noaa.org](http://cordellbank.noaa.org), to hear past episodes, we have 10 years of episodes at this point. And also, Ocean Currents has a Twitter feed, you can follow OceanKWMMR on twitter to get information about the Ocean Currents radio program and supporting links about each of the shows we have here on the Ocean Currents on KWMMR. So we will be sharing information out there, check it out! I love hearing from listeners so if you have ideas for topics, questions, comments, please email me at [cordellbank@noaa.gov](mailto:cordellbank@noaa.gov), or you can tweet @OceanKWMMR

Thanks so much for listening! Enjoy the ocean, bay, or whatever body of water you can get into or nearby safely, and certainly on the west coast please be careful of these big winter storms and the big swells along the coasts as you visit the beaches.

This has been Ocean Currents here on Community Radio for West Marin for KWMMR, have a great afternoon.

(Music)

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, KWMMR. 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 contact the shows host Jennifer Stock, email me at [jennifer.stock@noaa.gov](mailto:jennifer.stock@noaa.gov). To learn more about Cordell Bank National Marine Sanctuary, go to [cordellbank.noaa.gov](http://cordellbank.noaa.gov).

(Musical Outro)

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