Jennifer Stock: Randall Arauz is a Costa Rican biologist and activist. He is the director of the Latin American Program with the Sea Turtle Restoration Program based out of Forest Knulls in California and the president of Pretoma, a Costa Rican nonprofit founded in 1997. Pretoma, which stands for Programa Restauracion de Tortugas Marinas is a marine conservation and research organization working to protect ocean resources and promote sustainable fisheries policies in Costa Rica and Central America. Randall was also the winner of the prestigious Whitley Environmental Award in 2004. Welcome, Randall to Ocean Currents.

Randall Arauz: Well, welcome, and thank you to you and to everyone to listening to this program here in California.

Jennifer Stock: Thanks for coming to the studio in your one week visiting here. The Sea Turtle Restoration Project, based locally here in California, has been working with you in Costa Rica for a while now. How did your two organizations link up?

Randall Arauz: Well, actually, it all started before our formal consolidation. This was back in the year 1990. I went to a sea turtle symposium and I was seeking funds to work on the sea turtle shrimp issue. You know, when you're catching shrimp you catch a lot of turtles and I actually met Todd Steiner, the director of the sea turtle restoration project in those days…looking for funds. I was trying to get him to fund my projects and even though the funding never came through, he did like the work I was doing and eventually in the year 1994, he hired me to direct the Central American program specifically to work in Nicaragua.

Jennifer Stock: Wonderful. So, what's the current relationship now? How do the two organizations work together?

Randall Arauz: Well, I started working with them in 1994, directing a Central American program, but from the very beginning, we kind of, like, agreed, that one of the objectives was to consolidate a local grassroots Costa Rican NGO made from Costa Rican conservationists that could work as a team with the Sea Turtle Restoration Project. So, Todd Steiner urged me to come up with this organization, which I founded in Costa Rica in 1997 and the organization is basically a bunch of biologists and conversations and tour guides and we created Pretoma and ever since, well since then, we've enjoyed the support of the Sea Turtle Restoration Project. In 2002, we became of age and broke off of the Sea Turtle Restoration Project and we became independent.

However, we still worked very closely designing strategies, working with the Turtle Island Restoration Network and Todd Steiner.

Jennifer Stock: What are some of the primary objectives you're working on with the communities in Costa Rica for sea turtles? Is this mostly leatherback turtles or is this other species of turtles as well?

Randall Arauz: Well, we work with all sorts of turtles and all turtles are endangered and they all need our help. Some are a little more endangered than others, but basically, how the program started was working on nesting beaches that did not really enjoy official protection and where there were local communities that were consuming all of the turtle eggs. So, we would start working with these community members, always like in a friendly fashion, never you know, like beating the stick on them and telling them they couldn't take turtle eggs, but convincing them that turtles can be more beneficial to them economically if they let them live rather than slaughtering them or harvesting the eggs and, of course, the people at first were a little, you know, they don't buy it, like, "Oh, how can that be?" But then we developed a volunteer program and we bring volunteers down to Costa Rica, like, for their vacations they can stay with us for a matter of weeks or even months and they stay in these local community's homes. They get fed by these community members and they learn the language and they develop very strong ties with these community members and now the community members support the program because they make more income doing something that isn't only legal, but it's also very pleasant.

They make great friends with foreigners and, you know, it brings them pride in what they do now instead of when they were poachers and, of course, they were doing something illegal, not that they were going to get busted, but, you know, they were still doing something that was an illegal activity. So, that way we've worked and changed their attitudes and we do this with all turtle species, but, of course, we have a special concern for the leatherbacks.

Jennifer Stock: That's a really positive turn for conservation is bringing the communities in to be on the positive conservation side and a great message for kids and the younger generations witnessing that instead of poaching and that historical practice. So, that's such a huge benefit I've seen happen with turtle populations and conservation groups like yourselves doing that. Does poaching still happen?

Randall Arauz: Poaching still happens and what we've noticed, we have to remember, for one thing, that this poaching is very deeply, you know, set in the minds of many of these people. They've harvested sea turtle eggs for many, many years, for generations and, you know, there's this local belief that they're aphrodisiacs, which, you know, there's no foundation for that, but, you know, if it's in your head people believe it works, then it works and, of course, now we do a lot of education, but what has really persuaded people to change is precisely turtles are worth more alive than dead, you know? So, it's better if you keep them alive. It'll be better for your community, for your own sustainable development right in your communities and that's the route we've followed.

And you're right, we see major changes. So, it's possible. People can change their minds, they can change their attitudes, even if they're…or people on the Costa Rican coast or, you know, people in other parts of the world. They can change their minds or their attitudes. Unfortunately, for the turtles that hasn't been enough.

Jennifer Stock: Yeah. So, there's…it's more than just poaching. There's been…that's been a long historical practice for a long time, but also the fisheries, interaction with fisheries and that's been fairly recent in the historical time period of turtles. So, how do the two kind of play with each other as far as, obviously they've had a total downward turn for the turtle populations, but now that we're starting to turn poaching activity around a little bit, how about the fishing activity?

Randall Arauz: Right. The fishing activity is precisely the problem because we've been seeing that after years, decades of working in these coastal communities, they do change their minds, you know, and people do change their mentalities and in spite of the good news, we see that sea turtle populations continue to decline, especially the Eastern Pacific leatherback and this has to do with fisheries and not usually when you speak of fisheries, people think about the fisherman who lives down there in that little town and he has his little boat and his father was a fisherman and his grandfather was a fisherman, but that's more traditional fishing, domestic fishing and that has always pretty much been under control. In my experience in Costa Rica, at least too, has been when I work with these fishermen, it's like working with coastal communities. They know that there's a problem, they know that there have to be limits established and, you know, if overfishing is occurring, but the big problem with the fisheries are the international or foreign flagged fleets because these are just big investors who, you know, they're never on one of these boats. The people who work on these boats

are, you know, poor peasants from Asia, either Thailand or Malaysia or Vietnam.

They're on salaries making like 50 or 60 dollars a month. So, it's almost slave labor and they're just in it for the business. They're there to reap the resources and when the resources are gone, they'll just sell the boats and turn to any other business, mining, or wherever there's business out there is where they'll go. That's where they'll go and that has been the main problem for the fisheries. These turtles are highly migratory and all turtles are, and once they hit the oceans, they're being highly subject to being killed by these industrial fisheries operations that have nothing to do with our domestic fishing.

Jennifer Stock: What are some of the…can you describe some of these big boats? I have this image of this big boat with loads of hooks, but it's also miles and miles of line. Can you just describe these boats a little bit and the types of nets they're setting?

Randall Arauz: Okay, well, right. They're not setting the nets, but they're setting lines and they're called long lines precisely because that's what they are, extremely long lines. So, for these long…lines can vary in distance. For instance, Costa Rican boats usually have ten, fifteen ton capacity and their lines are 15, 20, or 25 miles long whereas an international flag vessel, which means they're coming…most of these vessels, when I say international flag vessels are Taiwanese, just that they're flagged under different nations. They're either Panamanian or Belizean or Georgian, but they're all Taiwanese, but anyway, these international flagged vessels can have long lines up to 150 miles long and their storage capacity can be all the way up to 200 or 300, or 3,000 tons.

So, it's, you know, it's overwhelming. These boats can go out and fish for four or five or six months at a time. They don't come back to port until they're completely full and, of course, when you add to that that they're shark-finning, it just makes the problem, you know, increases the problem exponentially.

Jennifer Stock: What's the target species they're going after?

Randall Arauz: Well, that depends. Officially, they're going after tuna or they're going after billfish, that's a swordfish, or they're going after mahi, mahi. It depends on the region. In the tropics you're going more for mahi mahi, colder regions more for billfish, and, of course, they're fishing these products. Any sharks that they catch they say is incidental. They won't admit or acknowledge that they're targeting

sharks, but what they say as well, any sharks that they catch, they keep, but because sharks are so valuable for their fins and since other fishery resources are so badly depleted, such as swordfish or others, then when there's hardly anything out there and the fishermen are fishing and they have to pay bills too, they target their fisheries towards the sharks and then they target the sharks for their shark fins, but then, of course, we have to remember, we also have several or many of these international flag vessels that are targeting sharks specifically for their fins and, like I said, they won't admit it, but a recent report was released by the Indian Ocean Tuna Commission and they're acknowledging that there's a fleet of at least 250 Taiwanese long liners in the Eastern Pacific Ocean targeting sharks exclusively for their fins.

Jennifer Stock: Interesting. When did shark finning become so popular. Has this always been going on historically? It just seems that in the last few years we've heard this as this terrible, destructive, widespread, huge, mass problem, but how long has this practice been going on?

Randall Arauz: Okay, well, this shark finning problem or the crisis had started pretty much with the introduction of the long line technology, which was introduced in the Eastern Pacific in the 50's, but consumption of shark fin soup has been going on for thousands of years. In Asia, it used to be a culinary…what would you call it?

Jennifer Stock: A culinary….I know the word you're trying to...

Randall Arauz: Okay, well, anyway, back in like thousands of years ago, it was reserved exclusively for emperors. It was something for very high-class people in imperial China. After the cultural revolution, you know, and the war in China and when China became Communist, it was very repressed. It was bourgeois?

Jennifer Stock: Bourgeois.

Randall Arauz: Yeah, it was Bourgeois. So, anything that had to do with fancy or high class was totally repressed, but after the 70's, after Richard Nixon went to China and normalized relations, as you know, China has been recovering economically. It has turned into an economic power and now, there is a Chinese middle class that did not exist forty or fifty years ago. After the economy was freed, now was all this economic growth and now there's more freedom in China as well.

So, in the Chinese culture, if you're a very prosperous person, like the emperors used to be, if you want to show off or you want to

show your prosperity to other people, what you do is you buy this shark fin soup. When a woman marries, her father or the father of the bride has to invite the shark fin soup for the party and at business meetings when you have these high-level CEOs meeting anywhere, whoever is in charge of the meeting wants to show that he has a prosperous company, he invites his shark fin soup as well. So, it's a cultural thing and it goes all the way back then, but the point is this all started to be a problem here in the Eastern Pacific or in America around the 80's and 90's, which is when these international flag fleets started coming to these waters specifically for the shark fins and, remember, China after the economy was liberated, you had this middle class, which it's now estimated that it'd be 300 million Chinese people, so a whole new market has opened in the last few decades and this market is demanding shark fin soup.

So, that's why the fleets moved over here. That's why there's more and more boats and that's why it's become more of an issue as, you know, more recent times have come about.

Jennifer Stock: So, we started on that with turtles, then we realize the shark finning problem, this is a huge international conservation issue, what is your group trying to do right now to address these problems?

Randall Arauz: Well, like you mentioned, it's turtles, it's sharks, and everything boils down to overfishing and sharks and turtles have several biological characteristics that make them extremely susceptible to fishing, like, let's say, any normal fish, a tuna or a rockfish, they lay thousands of eggs and they lay eggs every season, but sharks and turtles have a totally different reproductive strategy. They only have very few young. It takes them years, decades to reach sexual maturity. So, these are animals that need to live very long lives, but if their mortality is high, caused by other sorts of fisheries for shrimp or for rockfish or whatever, well, it really puts a dent in their population. So, what we're trying to do at the Sea Turtle Restoration Project is give this more of a holistic approach and at the moment, the only ecosystem solution for this overfishing problem is we have to stop fishing so much.

We have to reduce fishing and, of course, when we come up with these proposals like we need moratoriums, we need closures, lots of people don't want to hear this, especially in the fishing industry, and, you know, that's where the battle comes. We really have to put a grip on these fisheries and it's ok. We need to find better technologies. We need to create reserves, marine protected areas. We need to tackle this problem on all the different fronts, but

probably our main tool is reduction of fishing effort and if we reduce fishing effort and we use different technologies and if we have marine protected areas, if we compliment that with other tools, then we're talking business, but if we want to maintain the current level of fisheries and say, "Oh, we can maintain this fishery as long as we use this special hook," for instance, that's not going to do the job. The job might help turtles, but it's not necessarily going to help other animals, the sharks or the sea birds, and basically, fisheries is the problem and we need to curtail the fisheries somehow.

Otherwise, all of these other efforts we're doing are not going to work.

Jennifer Stock: That's a huge economic problem. For listeners that are just tuning in, I'm talking with Randall Arauz, he's a Costa Rican biologist working with the Sea Turtle Restoration Project here in California as well as Pretoma, a Costa Rican nonprofit based out of Costa Rica and we're talking about the highly migratory species that are using the oceans and industrial fishing practices that are really impacting these populations widespread. So, we're trying to attack the issue from lots of different angles and the real issue being the heavy effort of fishing. What are some of the strategies as far as trying to educate international management agencies about these? It seems like a big political process and education process and what are some of those strategies that you're trying to do to change these methods?

Randall Arauz: Okay, well, yes, you're right. It's a very long process. It's not going to happen overnight. Unfortunately, for the leatherbacks at least, leatherbacks are under such a big crisis, yeah, let's hope they have enough time, but, well, we're trying to attack this problem on several fronts. On one hand, we want to try to find immediate solutions, you know, what could be done on the short term, but on the other hand, we have to go the long route. We have to go the international policy way, even though we know it's going to take forever.

So, we have to take the two-pronged approach. Let's do our homework and work on the policy, but on the other hand, what can we do now? So, like, for instance, what can we do now? We're collaborating to do research and create awareness locally. So, for instance, in Costa Rica, we've been doing research on movements of sea turtles and of sharks. If we need to create marine protected areas, where should these marine protected areas be? Especially for the leatherback turtle, which is the great concern, and then, we do

this research and then we show this information to the Costa Rican people.

You know, the Costa Rican people are very proud of our conservation record around the world. We're acknowledged as one of the most conservation-minded countries and the Costa Rican people are proud about that. So, we tell them, "Well, look. The leatherbacks are disappearing and if we don't do anything about it, it's going to be every Costa Ricans responsibility." So, we need, for instance, a corridor here and there, you know, to protect the migration of the turtles and the sharks from one island to the other, but we're going to have to do this in a regional fashion.

Costa Rica alone can't do it because they're highly migratory. So, what we need is, we need to work at political levels. So, in order to convince, for instance, our minister of foreign affairs, that we need to be talking to Ecuador, well, then we move the Costa Rican people so the Costa Rican people can get their feeling or their sentiment to the minister of foreign affairs so that he can know that if he takes these moves he's going to be backed up by the Costa Rican people. So, it's a long process, but that's the way it's been working and then it goes from the regional efforts to a more global effort and what we've been doing, again, we've been using Costa Rica as a spearhead. The Costa Rican government has expressed willingness to take the leas in several of these processes at the UN, at the convention for migratory species, at the intra-American tuna convention and, like I said, again, it's a very slow process and sometimes it's frustrating because you come out of these meetings with a resolution and you say, "Well, now what?"

But, they're all little building blocks and they're all necessary and eventually, you know, they all come together to attain the results we're looking for, which is an efficient reduction of the fishing effort in the region.

Jennifer Stock: So, is that the main goal for all the work is to really reduce fishing effort in the eastern Pacific?

Randall Arauz: That's one of my main goals, exactly because it's the only thing that's going to save the sea turtles, it's the only thing that's going to save the sharks. When they talk about sea turtles they want to use all of these different types of hooks. When they talk about sharks they want closed areas, they want different sharks on no-take lists, for instance. So, you have different approaches for sharks and for turtles. I don't work with seabirds, but seabird people have their other approaches as well, but the bottom line is if we don't reduce

the fishing effort, none of this is going to work, you know? Something might help for the sharks, but it won't help for the turtles or it might help the turtles, but not the seabirds. So, if we reduce fishing effort and then we all do our homework with our own little species, then we'll be talking business.

Jennifer Stock: So, the fishing effort is the result of money and food and what do you think some of the alternatives are for these fishing companies internationally to still have economic benefit and produce food for the world, but not have such an impact on the ocean's fisheries? There seems to need to be some type of incentive to make this effort to reduce. What do you think are some solutions on that end?

Randall Arauz: Well, unfortunately, I get that question a lot and unfortunately, what's driving most of these industrial fisheries is plain greed. You have to remember, lots of these fisheries have been moving from one place to another. They deplete areas, they go to another, they're not seeking sustainability. If fisheries can be held sustainably, it's already known. It can happen, but these companies are just way too greedy and, again, I want to make the difference between the local fishermen here, the domestic fishermen on the coastline who have been in this for generations and they want to continue to be in this for generations. They would like to see their kids be fishermen, although, more and more fishermen are saying I don't really want my kid to be in this business because it's not such a good business and that's because these industrial fishermen have just been way too greedy and they've pushed these fish populations over the edge and it's just a process, you know?

So, you know, some people with the more fatal view say, "Well, they're not going to stop until they wipe everything out," but I think they can be stopped if different nations who are concerned about this, we get together and we make them stop. There are international laws that we can make them abide by, but it's going to take some muscle power and that's why we have to work at the UN and these other international forums.

Jennifer Stock: We're going to take a short break. You're listening to Ocean Currents and I've been speaking with Randall Arauz, a biologist from Costa Rica working with the Sea Turtle Restoration Project in West Marin, California also, is the president of Pretoma, a nonprofit organization based out of Costa Rica working together to address sea turtle and shark finning issues in the Pacific Ocean. So, stay with us, please.

Jennifer Stock: Welcome back. Randall Arauz is with us. He's a biologist from Costa Rica and we're talking about leatherback turtle conservation and shark conservation. There's some very big efforts afoot to try to help conserve these populations with practices going on in the Pacific and Randall, let's talk a little bit more about the shark finning issue. There is this international fleet coming in to do shark finning and they're taking thousands and thousands of sharks on one haul because they tossed the carcass over of the shark pretty barbarically. It's a live fish that's getting its fins cut off. How have the laws changed since that time of landing all these fins without the carcasses and then there was a law that said they had to bring the carcasses back. Can you give us a little history of how that worked and where are we now today with that practice?

Randall Arauz: Okay, well, yeah, sure. There is two parts to this story in Costa Rica and one has to do with the local Costa Rican fleet and the other one has to do with the international long line fleet that later became Costa Ricanized and I'll explain how that happened, but anyway, by the late 70's, Costa Rican fishery resources, or coastal resources, were depleted and Costa Rica has Cocos Island and we have this EEZ that was not fished and the motto back in the late 70's was "Costa Rica lives with its back to the sea." So, we need to exploit all that ocean water that we don't use. So, in 1982, the Costa Rican government had the great idea to invite a mission in from Taiwan and this mission from Taiwan came to Costa Rica to teach us this new technique that was called long lining, but when they started teaching the Costa Ricans this long lining technique, they saw, "Man, there's a fortune to be made here. So, screw this." They stayed in Costa Rica and now in Costa Rica we have one of the biggest long line fleets in the world.

Now, 380, well definitely in Latin America, but 380 of those boats are Costa Rican boats and these are the smaller boast that have, you know, 15, 20 mile long lines. They don't have freezer capacity and they usually fish within 200 miles of Costa Rica, but then we have 150 boats that are Costa Rican flagged, but if you look at the owner of the boat, their name is Juan or Sen, you know? And they're Taiwanese citizens and it turns out that they are the same mission members that came in 1982 or their children who stayed here. So, you know, they came to train the Costa Ricans and what they did was, they set up their own business, they brought in their own boats, and they became filthy rich exploiting the shark fin resources.

This has been going on since 1982, but in 1998 Costa Rica had another great idea. Let's allow foreign fleets or the foreign boats,

the one from Taiwan that are not flagged in Costa Rica, let's allow them to land in Costa Rica too and the first fifteen boats landed in 1998 and by 2002 and 2003 we're talking now 40 or 50 boats a month, you know, on these huge boats with 100, 150 ton capacities coming in the Punta Arenas, our main port, landing sharks and shark fins. So, all this was happening and the Costa Rican fishermen started not liking it and they thought, we need a regulation to stop shark finning because all these international boats are landing fins in Costa Rica, then they're getting exported and if you look at the FAO, the Food and Agriculture Organization, statistics, they say Costa Rica is a big shark fin exporter and the Costa Ricans say, "Hey, it's not us. It's international fleets." But, technically speaking, it's a Costa Rican export.

So, in 2001, I was working with the Costa Rican fishermen and we persuaded the government to come up with a shark finning ban and the shark finning ban said no shark finning, of course, and to control it, the sharks have to be landed with the fins attached and this was considered a victory, but then, throughout 2002 and 2003, we're busting them left and right and I would send Pretoma members to Punta Arenas with video cameras and we were catching boats landing shark fins in the middle of the night with no fishery inspectors at private docks, which is another illegal activity. So, yeah. We were busting them left and right and in 2003 a new regulation came into place, which we also had to shoot down because then what they do is, like, they have this regulation that doesn't work, so they came up with a new regulation, which was basically a whole bunch of loopholes which would allow shark finning to occur.

So, again, we had to do lawsuits and it's been a permanent fight back and forth.

Jennifer Stock: So, where is it right now as far as in Costa Rica with shark finning?

Randall Arauz: Okay, well, as this whole campaign progressed, we persuaded the Costa Rican legislative, what would you call it, like our deputies, the congressmen, we persuaded them to come up with a shark finning law and the shark finning law, which was approved in March of 2005 says, and now it's by law, sharks have to be landed with their fins attached naturally and period because this law was passed in March of 2005 and we would have thought that was a victory. Now, there's no loopholes. The law is very simple and solid and direct. Sharks with their fins attached. Period.

But then, this is just to show you what the fishery authorities are willing to do, then, by the way, the Costa Rican fishermen were totally cool with this regulation and, you know, we go to the ports and we have video shots of them landing the sharks with the fins attached, but the international fleets and the freezer boats and the boats that belong to the Costa Rican-Taiwanese fishermen, they didn't like the regulation. So, then the Costa Rican government came up with the new interpretation and they said, "Oh, okay. Find attached, but if we look at the dictionary, the dictionary says, 'Attached means stuck back together again with glue or with tape or tied back on.'" So, they would allow the Taiwanese fishermen, basically to fin sharks, but right before they came to Punta Arenas, they would just tie the find back on and, of course, this creates another series of loopholes. We had to go to the Costa Rican attorney three times and we won this case in court three times and as of August of 2006, sharks have to be landed with their fins attached naturally to the body and Costa Rica was the first country in the world to demand this and right now the economic union is starting to follow Costa Rica. El Salvador, Columbia, Panama, all those countries followed Costa Rica's policy because it's the easiest and best way to make sure that there's no shark finning going on. So, that's been one of the positive spins of our whole campaign.

Jennifer Stock: Wow. A lot of work to actually make that happen. Why do you think it's taken so long for the Costa Rican government to get behind this need as far as policies go. All those loopholes kind of just delay the actual actions. So, what's been the story there?

Randall Arauz: Well, I'm in a very tight position, here. I would just say I'm out on a limb quite a bit because I'm working with the foreign affairs office. I'm working with the environment ministry and I have very good working relationships with them, but I have terrible relations with the fishery institute and it's hard to say exactly what's going on. People ask me, "Is it corruption?" And it's like, how can it not be corruption? But I don't have the evidence, but why do I always have to go to court? Why do we keep on winning? And it's because we're right and here I am, they have technicians, I'm a technician, but as biologists, we end up going to a lawyer and we end up explaining to a lawyer the technical facts and the lawyers always resolve on our side.

So, it's like, as technicians, shouldn't we be able to agree? Why do we have to go to a lawyer to take a decision? But, that's been the bottom line and that's where we always have to go. So, it's a funny position to be in because, you know, I don't want to go out and say the Costa Rican government is corrupt, but on the other hand,

what's going on here with the fishery institute? Why don't they just respect the regulations as they're written? Why do they always interpret the regulations to favor the shark finners?

And I really don't have the answer to that, but how can it not be corruption? That would be the other question.

Jennifer Stock: Yeah, but as of 2006, it sounds like they are taking a good role and being a leader for other counties as well in regards to the issue.

Randall Arauz: Right. Unfortunately, we still have an issue in Costa Rica and it's the use of the private docks. We still have these international flag vessels landing in Costa Rica. We want to get rid of them and these international flag vessels are landing at private docks. Our laws say if you import products into the nation, they must be imported through a public facility and that law exists in every country in the world. It's only logical. Well, in Costa Rica, the law exists too and the law is applied to everybody, every sort of fishermen, every type of importer except the Taiwanese shark finners. They're allowed to land at private docks where there is no guarantee that the public interest can be respected and that's still one of our main loopholes and we're not trying to kick out the Taiwanese fleet, we just want them to respect our regulations and if they're obligated to land at a private dock as the law says, they leave on their own. They don't have to be kicked out because they can't respect regulations. They're shark finning and if they can't shark fin, they're not ok there anymore.

Jennifer Stock: Now, I understand the United States, NOAA, banned shark finning in US waters by US fleet, I think, in 2000 or 2002, but does shark finning still happen in US waters, do you think?

Randall Arauz: I wouldn't know, but again, the United States has been a good ally at these international meetings against shark finning. The problem are the domestic regulations, like, we don't have a strong enough ally, for instance, when we go to the UN and Costa Rica is calling for a fins-attached policy, we want the whole world to have it. Well, the United States backs us up, but the United States can't call for a global requirement to land sharks with the fins attached because the United States doesn't have the regulation itself. So, you know, that's something the general public can help us at. Talk to your policymakers and tell them you want the United States to have a strict policy of fins-attached because if the United States has that policy, then they can be stronger allies in other parts of the world.

So, you know, that's the problem with the US policy. It isn't strong enough. So, again, it allows for loopholes.

Jennifer Stock: So, even though they have a ban of it in the US waters, which in my mind, would mean you can't land shark fins in US waters. What I'm think of is international boats coming in and how do we know if they're in our waters or not? What type of enforcement….but, based on the interpretation of the law, are you sawing that shark finning…they could still land sharks in the United States waters or for shark fins?

Randall Arauz: Okay, well, the law in the United States says, "Ok. It's forbidden to shark fin," and everybody in the world agrees to that, but the issue is how are you going to enforce the shark finning ban? And what most coast countries have preferred is to allow a system where the shark fins are landed separately from the body, but the weight of the fins have to respect a certain ratio of the weight of the body and that's where it gets really, really, messy because according to the best scientific knowledge I know about, at least, this percentage is 5% of the dressed carcass of the shark. In other words, it's 5% fins, like, if you're a fishery inspector, it's 5% of the weight in fins and 95 percent of the weight in carcass and a carcass means it has no heads, it has no guts, and it has no fins. It has no heads, guts, or fins.

So, that's a carcass. So, 95 percent and 5 percent, but then you have other studies saying, "Oh wait, but it's not the dressed weight, it's not the carcass, it's the whole body weight," but then other studies say, "Well, if it's the whole body weight, it's 2 percent, if it's a carcass it's 5 percent," but then other resolutions don't say if it's a carcass or dressed weight, you know, or whole weight and then it depends on the species. If it's a thresher shark, it has bigger fins. So…and then it just gets really messy, you know, it's going to be some percentage with some sharks. It depends on if the shark is dressed or if it's a carcass, you know? It just gets really complicated and by using these methods, you open loopholes because imagine you're a fishery inspector and this boat is landing 80 tons or 100 tons of shark products. Are you going to be sitting there and weighing all the shark fins and weighing all the carcasses, adding them all up, and then doing a rule of thumb to make sure it divides by the 5 percent and what if it's 5.5 percent? Are you going to allow it?

Or 5.2%? You know? So, then does that mean they shark finned or not? So, it just gets incredibly messy and the easiest, best way is fin attached, it's allowed. Not attached, it's illegal.

Jennifer Stock: Right. So, overall, we've got these reduced populations of sharks happening in our oceans. What could this mean for the ocean overall? The ocean is facing all of these other threats of climate change and changing ocean conditions and how does the reduction of sharks overall in the ecosystem, what could be the long-term impact of that?

Randall Arauz: Well, it's pretty scary when you think about it. For one thing, we have to remember diversity fosters diversity. That's one of the principles, you know, of ecology. That means if you have a lot of predators, you have a lot of predated animals upon and sharks, you know, so, you need, what would you call…compound structures of sharks to sustain these very complex communities of animals and reefs who are in tropical waters or pelagic waters. If we reduce the diversity of sharks, then you're going to reduce the diversity of everything they prey upon and lots of what they prey upon are commercial species that we depend on as well and all this is theory, right? What could happen? But let's look at a real, concrete example of what did happen.

Studies have just been released of the northeastern coast of the US where shark populations have been depleted for something like 90 or 95 percent during the last decade and there's a fishery up there of scallops and whole communities, coastal communities, have artisanally used these scallops for their, like, a small fishery and it's been sustainable for hundreds of years. Well, they wiped out the sharks. Oh, big deal. We still have our scallops…you would think. Well, there are cow-nose rays upon which these sharks feed. So, now that the sharks are gone, the cow-nose rays have had demographic explosions and what do cow-nose rays feed on? They feed on scallops.

So, now they wiped out the scallops and a century-old fishery upon which many coastal communities depended on was wiped out. So, this is a beautiful example of how it can even trickle down the chain and hurt our coastal economy communities.

Jennifer Stock: Yeah, for the other example here too is with the excess nutrients coming into the ocean and excessive jelly blooms. There's tons and tons of jellyfish in certain areas and in my mind, I'm thinking, "Well, we need those jelly predators like ocean sunfish and turtles, leatherback turtles." And, you know, bringing it around back to turtles again, here on the coast of California, a very productive upwelling zone, cold water, we get a lot of jellies naturally and this happens to be a destination foraging area for leatherback turtles and recently, there have been some requests for permits to fish

long lines in these waters. Can you give us an update about that and what the Sea Turtle Restoration Project is doing in response to that effort?

Randall Arauz: Okay, well, first, like you were mentioning, the leatherbacks like to eat jellyfish. This is an upwelling area. These waters are very productive, which means there is lots of, you know, little fish, you know, lots of fish being born and the leatherbacks feed on jellyfish, which, you know, are also occurring in these areas and they have to eat lots of them. Jellyfish are not very nutritious. So, they have to eat lots of them and they keep these jellyfish populations in check and a hypothesis that's being shopped around right now, there's no evidence that this is true, but just following our logic…well, jellyfish are, in this area because there's lots of productivity, and jellyfish feed on zooplankton.

Zooplankton are little, like, crustacea, and also lots of fish larvae and lots of these fish larvae are of commercial species of fish. So, jellyfish feed on that and leatherbacks feed on the jellyfish. So, if we don't have the leatherbacks feeding on the jellyfish, then we're going to have these jellyfish explosions and the jellyfish explosions are going to overeat the zooplankton and guess what? It might hurt our economies, you know? Commercially important fish for us might be among the prey of the jellyfish. So, again, you know, it's all these possibilities, but we have to remember, these are ecological chains and it's all going to filter, it's all going to cascade down these webs and, you know, this is only a hypothesis, but yeah, the removal of the leatherbacks could have a very hard impact on our commercial fisheries.

It's necessary for them to be there. That's why it's so important, you know, and now that we're doing more studies on leatherbacks, we know now that leatherbacks have very definite migratory routes. So, instead of trying to go out there and, you know, save the entire Pacific Ocean, which, you know, would be a logistic nightmare, we do know that there are areas that leatherbacks frequent and they're concentrated in certain areas in space and time and that during these time frames, they need to be strictly protected and these coasts of California are very important habitats for these turtles. We have to remember these turtles are coming all the way from Indonesia where there nesting grounds are at.

Jennifer Stock: Yeah, that's what's amazing is in the Atlantic, they nest down in the Caribbean area and they go up the coast. Here, they cross the entire Pacific Ocean. That's a feat in itself to feed here and I just think that's an amazing fact for, you know, this turtle, this huge,

slow-moving, it's actually not that slow, but coming here to feed. So, I just think just alone, right there, to cross that feat is huge and then the threats they could face just take it away so quickly. So, here, what are the threats off the coast of California?

Randall Arauz: Well, all the runoff and all the pollution off the coast of California will definitely be an issue, but to be honest, I'm more involved with the fisheries issues. So, I'm not sure what's going on here in California, but in Costa Rica, for instance, we have nesting beaches and our turtles in Costa Rica, in spite of being on the same continent, you know, we have leatherback turtles too and one would have thought that the leatherbacks or Costa Rica come up to California and forage, but they don't. In the eastern Pacific, we have two very distinct populations. We have the California population that nests in Indonesia and forages in California and we have the Costa Rican Population that nests in Costa Rica and then forages off the coast of Chile, but our nesting population is very, very endangered from coastal development. You know, Costa Rica now is a big eco-tour destination and I'm sure lots of people listening to this program have been in Costa Rica or they're planning to go in Costa Rica and just consider when you're at these coastal areas and these beaches, your impact, mainly on the turtles.

Keep the turtle beaches dark. Most of our beaches are turtle beaches and, you know, we have to have these considerations for the turtles.

Jennifer Stock: What do you think turtles and sharks too, what do you think their…how could they be impacted by ocean temperature changes or climate change overall, I should say?

Randall Arauz: Okay, well, in several ways it can be tragic. In one way, for instance, one of the most important ways is their sex determination. Sex in turtles is determined by the temperature at which the eggs are incubated and we know now, for instance, that if you take 100 green turtle eggs and incubate them at 29 degrees, you're going to get 50-50 sex rates, but a couple degrees higher and you're going to get 100 percent females…yeah, females, and a couple degrees lower and you're going to get 100 percent males. So, just imagine what climate change is going to do, like, in places in Costa Rica. Also, there is a limit or a roof temperature after which the eggs just aren't viable anymore. So, if the temperature keeps on increasing, first we're going to bias all the sex rates towards females and then we can even reach temperatures at which the eggs aren't even going to develop.

Of course, I don't mean that…probably the population, the nesting population will just start migrating north and who know? Some decades from now, you might have nesting turtles here in Marin county.

Jennifer Stock: Wow.

Randall Arauz: But, yeah. The other problem is, of course, our food supply. How is global warming going to effect just the food supply, like, how the productivity of the oceans, the plankton, the whole…the conveyor belt that's occurring in the ocean, all the salt..it's anyone's guess, but that's a very big concern.

Jennifer Stock: Plus sea level rise as well and….

Randall Arauz: …the nesting beaches will be buried, then how long does it take for a beach to be created? I have no idea, really, but I'm sure it's not going to happen as fast as the sea levels are going to rise. So, yeah, there's many issues that are coming with global warming.

Jennifer Stock: What can we do? This is, I mean, these are two big topics that really weigh heavy on me because I just feel like they are just so big, but we all want to do something and I think there's got to be some hope that we can generate for people about getting involved, getting more knowledgeable and doing something. What are some recommendations you have for helping to conserve populations of sharks or getting involved with the conservation efforts there and also with sea turtles?

Randall Arauz: Yeah, that's a good question. For one thing, the political support. That is key because lots of the political changes are going to come through political decisions and those will be heavily weighed by popular support, you know? If people show the politicians what they want and then, well, a politician wants votes, he'll give the people what they want. So, it's really important to, you know, to support us on these, you know, sign on petitions. Sometimes people say, "Oh, big deal. Why should I sign on?" But it really does help, you know?

If we can possibly land tens of thousands or millions of petitions on a politicians desk, that helps. Also, just spreading the word, telling friends, you know, getting other people to express their concerns and lots of people know politicians, you know, they're related somehow or they're friends of one or whatever. So, you know, it's really important to get the word out there and just now, I mentioned how also if you're planning on traveling to Costa Rica

or traveling to any of these developing countries where sea turtles occur, don't buy sea turtle products. For instance, don't buy ?? shell and if you see people selling it, tell them it's illegal. Make them feel embarrassed.

Jennifer Stock: (Unintelligible) back to the US anyway.

Randall Arauz: Yeah, they're illegal to bring back to the US and tell the sellers or the vendors that they shouldn't be doing this either. Also, when you buy, you vote too. So, as a buyer, for instance, if you're going to Costa Rica on a tour, buy tours or use hotels that are eco-hotels that are certified that they're doing the right thing. You know, you can, you know, use businesses that are more eco-friendly and in that way you're also helping. Also, you can contribute to the Sea Turtle Restoration Project. There's always volunteer work to do and we always need resources, video cameras, professional assistance of any sort and I'm sure if you call the San Francisco office and you have time to volunteer, there's always work to do.

Jennifer Stock: I'll just mention a couple of websites for folks. The Sea Turtle Restoration Project has a nice, new website that has a lot of information about the turtle issues and the shark issues and what's going on in Latin America, the stuff that Randall is leading, and that address is seaturtles.org and they have some other links on there about what fish is good to buy, using the power of your dollar, and also, another website that's a link off of there that I think is really interesting and it's more about the health impacts of eating some of these fish is gotmercury.org and it's got a really interesting calculator where you can type in a type of fish and an amount you might eat and it will tell you how much mercury you're getting and that's another really interesting resource. I just went to that the other night and I was really surprised and I don't eat that much fish. I was really surprised.

So, there's some web resources there as well and Randall, thank you again for sharing all this and doing incredible work you're doing in Costa Rica. We really appreciate it.

Randall Arauz: Okay, well, thank you and thank you to everyone out there in Marin County that listened to this and if you have time you can also check my website, which is, well, I'll have to say it in Spanish, but I'll try to make it the most pronounceable in English as possible. Tortuga Marina dot O-R-G. That means sea turtle in Spanish and it has an English version on the webpage. So, if you want to check it out, be my guest.

Jennifer Stock: Yeah, I saw that. It's actually…spell it out for you. It's T-O-R-T-U-G-A-M-A-R-I-N-A dot O-R-G. So, please take a look at those resources on the web and learn more. Thanks again, Randall.

Randall Arauz: Okay. Thank you.

Jennifer Stock: Thanks again for tuning in to Ocean Currents and we'll be back next month with another topic related to the ocean.