Audio file length: 1:58:02

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Interviewee, it's on February 12, 2025. We are, what city are we here in, what community?

-This is Cabo Rojo.

-Red Cape.

-But this is the El Corozo sector.

-The corozo.

-Yeah, it's divided into different sectors.

-OK. And I'm going to start by asking you, what is your occupation?

-I fish commercially, mainly for queen conch (Strombus gigas) and spiny lobster (Panulirus argus) and fish, but 90% is just queen conch (Strombus gigas).

-Carrucho. And how long have you been fishing?

-Since 1973.

-¡¿73?!

-I'll soon be 52 years old fishing.

-Wow.

-I started fishing when I was 13 years old.

-Who taught it?

-Another fisherman.

-So, are you the first in your family to do this?

-Yes. My dad didn't want to.

-Because?

-Because of the danger, it is dangerous.

-And why, how did you start, how did it attract you at 13 years old?

-The story is, I've told it many times, when I was 5 years old we were moving from one house to another and, as a child after all, I was about five years old, I found a little doll in the mud and when I cleaned it, it was a man, right? But I didn't know what it was, at that time, in the 60s, it was when there were the Apollo flights and the first trips to the moon, for me it was an astronaut, but it wasn't how I saw it, because in my house there was no television either, but there were the [cut] ones that came in candy. So the first television that my dad brought was black and white, and the first thing that came on the screen when they turned it on was the series Sea Hunt. It was a diver... and when I saw the doll I went to look for the little doll, it was a boom, that filled me.

-And how did you seek to learn?

"I skipped classes, I didn't go to school to go to the beach, only with a mask, with fins, that's what they lent me, until we started fishing, we bought a harpoon and I started selling the catch, but I didn't use a tank yet. So I saved up money and bought my own equipment. At 13, already then, I started with a tank. I went as an assistant on a boat and the owner of the boat told me: 'Do you dare to jump in?' 'I dare, what do I do?' 'Well, as if you were diving with a tank, the only thing is that you're going to breathe, you're going to feel, as always, that your ears are tightening, compressing, when you reach the bottom you catch conch (Queen conch, \*Strombus gigas\*) (queen conch),

[00:03:00]

When you run out, when you feel like you can't breathe, come up slowly, don't hold your breath, don't give the bubbles any room.' Like that. That was the fastest course. I came out with a headache, when I fell into the water, I'd already seen the Jacques Cousteau series; them diving with whales, with sharks (Requiem sharks, \*Carcharhinidae\*) and on my first dive with a tank I found six dolphins, I forgot the conchs and went after the dolphins. 'What are you doing!?' he says to me, 'well, the dolphins', 'no, forget about the dolphins, take conch'. And that's where I started.

-I want to return to this story, but first, because we're looking at the nautical chart of Puerto Rico, and I wanted to ask you, in order to understand which maritime zones are of economic and cultural importance to the people who are fishing here, from your knowledge, if you could show me...

-Depending on what type of fishing, for example.

-All types of fishing, but can you tell me if there are any special spots for one or the other? Yes, please.

-We, who dive fish, have to stay on the platform. Why? Because of the depth. All of this is already deep water, and here, obviously, there are areas deeper than others. But I usually stick to this route, from buoy 4, this is buoy 6, this is buoy 8, from here, more or less, this. Maybe a little further, but this, to Guánica.

-Here you can tell me, this is diving.

-Yes, all this is diving.

-Important for diving.

-Exactly. But it's because of the depth.

-How deep is it there, more or less?

-From 10 to 20 feet, where we dive, commercially, because there are shallower areas, but they have no commercial value because we don't dive them, to areas where they allow us to dive safely, for example, in my case, I've been given the bends a lot of times, I've been in the hyperbaric chamber a few times too and because of my age, obviously, I'm 65 now, I'm staying closer, the water is shallower, so to speak... I'd tell you, there are shallow waters around here too, but I'm regularly here, around here. That's current.

-But there are divers who go everywhere...

-Oh, yes. But we also have another problem, and that is that outside the 9 nautical miles, fishing for queen conch (Strombus gigas) is prohibited.

-Because?

-Because they are federal waters, and in federal waters you cannot fish for queen conch (\*Strombus gigas\*), so that has been prohibited since 2000 something, it has been quite a while.

[00:06:00]

-Do you think this regulation benefits fishermen?

-First, they did it without any studies. They closed it, well, because they felt like it. I've tried to get them to present us with studies, to do new studies, and now they come up with the excuse and tell us it was banned to prevent diving accidents. But only here within the 9-mile zone, there are deeper waters. It's to prevent accidents, both here and there, you know, the 9-mile zone excuse is to prevent accidents... In fact, there's an area here, at buoy 2, around here, known as the 'ramp of death,' it's where the most divers have died, which is around here.

-Oh, yeah?

-Yes, right there, that's where they call it the 'ramp of death.' In fact, that's where Alfonso was, where he was beaten last, and there was Gordo. Gordo from Puerto Real also beat him there.

-And how did it affect you, when they closed this area, how did diving affect you?

-Well, not for me, because I hadn't been there for a while, due to the fact that these are waters, which for my safety, well, it's no longer cost-effective, because I can fish the same here, closer, shallower, than going so far out.

-Have there been fishermen who have moved to your place, which is more crowded now because of that thing?

-No, but that's because of the weather. Nowadays, the north winds blow more, and these waters get really strong, so the fishermen tend to move south because then the island protects us from the winds.

-Are there other areas that are important, in general, for the fish economy?

-Yes, but this is by area. Okay, from the mid-west to the south, the waters are shallow. You see, they're not deep, and the shelf is very close. The sea conditions here are very rough. For our fishing, for queen conch (Strombus gigas), this is worthless. First, it's far away, and second, it's deep. There's no point in diving in these areas, and I've caught queen conch (Strombus gigas) there, but why go so far? There are so many queen conch (Strombus gigas) that...

-So, for Cabo Rojo, this is the most important area, especially…

[00:08:51]

-It's where there are the most dive fishermen. In second place is the eastern part of the island, for the same reason, because it has shallower waters. Third is the south, where the platform isn't as large but has plenty of area. And lastly, the north is the area where diving is practically nonexistent. There's very little dive fishing there. There, then, there's deep-sea fishing for snappers (Lutjanidae) and sea bass. They hunt for them up there, near La Mona and near Santo Domingo. (Blackline tilefish, Caulolatilus cyanops)

-Are there areas in this zone that have noticed drastic changes in the maritime environment?

-There are changes here. When hurricanes hit, every time a hurricane hits, it affects both the water and the environment, but it recovers. It's like everything else. Climate change is obviously raising temperatures a bit, but I understand that all species are adjusting, it's like ourselves; we've gotten used to living in the desert, we've gotten used to living at the poles, so it's a matter of adapting.

-The lion fish (Blue Marlin, \*Makaira nigricans XLII\*) when it arrived here was a plague and it still is, but now the local species are learning to defend themselves and consume it. I have personally seen sharks (Requiem sharks, \*Carcharhinidae\*), I have seen barracudas and moray eels (Moray, \*Muraenidae\*) (moray/green moray) eating the lion fish (Blue Marlin, \*Makaira nigricans XLII\*) without you giving it to them, otherwise they are normally preying on it, like why do they respect it, nature finds its way.

-And are there areas that you think would have or a type of fish that you think should be protected in this area in some way?

-For me, I think we have to protect everything, both the fish and the habitat, because if the habitat is bad, the animals will suffer too. So I understand that this balance is our responsibility: first, not to abuse it, to comply with the laws, to help enforce the laws, and to improve. In my case, I did it. Do you remember, Jannette, with the queen conch (Strombus gigas)? When the investigations into the management of the queen conch (Strombus gigas) began, and they imposed a closed season, from the moment they set the date, I knew it was wrong. I didn't know exactly because I hadn't paid that much attention, because it wasn't necessary. But when I saw that they insisted so much, I bought a camera, one of those 35mm ones, digital, but, well, it's a camera for taking photos underwater. How could I prove that what I was documenting was true? using newspaper, the front page of the newspapers. Then I started to notice when the queen conch (Strombus gigas) started to reproduce, and it wasn't in July as they said.

[00:11:58]

They began to show mating behavior at the end of August, but the fishing season ended in September. Thanks to the photos and notes, I was able to determine that the peak of reproduction was from the second week of September to the second week of October. In other words, we were leaving half of the fishing season out of the fishing season. I sent publications to the newspapers, the Fisheries Council, and Natural Resources, explaining them, and they even listened to me, and the fishing season was postponed. So now it starts in August, but fishing begins on November 1, which means that the peak of reproduction is covered. So, we as fishermen are responsible, right? The same goes for the Nassau grouper (Epinephelus striatus) in the 1970s, which was one of the most fished species, and then it disappeared. I can't just sit back and watch things happen. I have to do something. Why? Because I felt guilty, because I was part of the slaughter, because I've caught the groupers (Sea basses, Serranidae). So it occurred to me to start collecting data: where I saw them, the dates, the coordinates, the depth, the type of bottom, the condition of the animal. And I started downloading the data to Dr. Michelle Schärer. Now, the app is made, and everyone is contributing, and the Nassau grouper (Epinephelus striatus) is recovering. I feel incredibly proud. Maybe I have nothing to do with it, maybe it's just part of nature, but what if I had just sat back, waiting for things to happen, with my hands crossed and doing nothing? Something has to be done.

-Are there any fish (Blue Marlin, \*Makaira nigricans XLII\*) now that makes you think that maybe you would need to make some rules to protect some fish now?

-Well, there is, but I haven't seen any recovery and it's with the goliath grouper (Atlantic goliath grouper), with the big ones, they are prohibited, but they are not seen.

-Can't you see anything? When did you see him last?

-More than 20 years ago.

-And when did they ban it?

-Maybe a little later.

-As a fisherman, do you think you know a little bit before scientists when something changes significantly in the environment?

-I understand so, because based on the time we're in the water, I dive four tanks, every day from Monday to Saturday, so I spend 24 tanks in the water. So, we've seen the changes there... in the 90s, there was an overpopulation of sea urchins, of the Eucidaris species, I don't remember exactly...

[00:15:10]

-Curl? What is curl?

-The sea urchin.

-Oh, sea urchin.

-But one in particular has thick tips that don't bite. Those urchins normally live on grassy bottoms, but there was an overpopulation; there were millions of them. From where I dived, from here to here, and they ate the bottom, leaving it like this, eating the grass, eating everything. And the queen conch, obviously, which feed on grass, moved to deeper waters. That caused more diving accidents because all the fishermen were forced to go deeper. But depending on how they appeared, they disappeared. They arrived, they moved, leaving the area white, without grass. They reached the edge of the reef, began to climb the gorgonians, ate about 3 or 4 inches of the gorgonian, and died. I don't know if the gorgonian was what killed them, or if their lifespan was that long and they died, but then you found the marks on the skeletons and the environment slowly recovered.

-When did that happen?

-In the 90s… Like 92 or 94.

-Let's sit down because the letter is nearby, we need it again.

-In fact, I alerted the Fisheries Council and the Department of Natural Resources and explained what was happening, but they ignored me. Some high school students came for a science fair, and I took them. They made charts, we counted them, da-da-da, they submitted their entries at the science fair and won in Puerto Rico and in the United States—I don't remember if it was in Philadelphia, or one of the states they went and won. Obviously, she won a scholarship until she finished her master's degree for that work, because no one had done it before.

-How did the students find you?

-This isn't the first time I've helped students, Jannette. How many students have I helped in this life?

-(Jannette): Uuuuu...

-I don't know. Whenever they come and ask, I tell them yes.

Let's go back a bit to the story of how you started diving. I see now that you also have a business, with tanks, but that beginning around 13 or 14 years ago, you started diving, and what happened from there?

[00:17:45]

-Well, I went as an assistant first. Because before, fishing for queen conch (Strombus gigas) wasn't like it is now. Now we pick them up from below, we use a pickaxe, a knife, we pick them up ta-ta, and we leave the hull there. Not before, before, we caught them in baskets: we used two baskets, each basket had a rope with a buoy, the fisherman walked along the bottom with that basket, filled it, pulled it up, the guy on the boat came and caught it... You had to know what you were doing because you had to know where the diver was and where to throw the basket so that it reached him properly. So while a full basket went up, he would throw you an empty one. But there were a lot of diving accidents, why? because you were exercising a lot at the bottom, using a lot of strength, then you got into the boat with an empty tank and your partner was getting off, so instead of resting, you had to keep pulling and using strength and there were many accidents, my best friend died with me, in 1989. A normal day, but that day it was his turn.

-What happened that day?

-They gave him the bends.

-As?

-The bends, the bubbles. We were diving at 110 feet. I think about him every day, and that was in '89. Before that, my cousin Meander died, and so, a lot of people have died.

-Why do you think you survived?

-Because I'm a little more cautious, and with age, I stay more level-headed, using air mixtures. Now I use Nitrox. Since 2005, I've been using Nitrox to reduce accidents. They happen, but less so. I've had to go to the chamber two or three times, I think four times, and I get rid of the symptoms I get right here with oxygen, diving, and decompressing. But that's part of it. A carpenter can crash, and guides occasionally crash, so, well, it's part of the job. That's why I don't want any of my children to fish.

-Don't you want to?

-No, not at all. I'd give my all for them, but they shouldn't dive. They know how to dive, and since they're 5 or 6, I've given them a tank, but for them to use as a sport, not for work. It's too tough.

-What do your children do?

-Shall I tell you the story of each one?

-Of course.

-The oldest is in California. He's studying—pardon me, he's working in some laboratories where they're studying how to make a generic stem cell treatment for cancer. They, with the laboratory they work in, using your cells, can cure you. I think they manage to cure 7 out of every 10 cases, but what they're looking for is something generic, something that works for you, something that works for her, for me, for everyone. I don't know how they're doing, because it's something they don't talk about.

[00:21:10]

-Is he a scientist?

"No, well, I understand that little by little he's become one, but what he mostly studied is to keep laboratories sterile, so they've progressed from there. The second, who is Andreica, is like me, but a woman, very hyper. She runs a trust in the metropolitan area, and she's the one who gives grants for scientific research. They're now working with NASA; they've done two or three projects that have gone into space. The third, that one is more, is into education, but with people with special needs; she has a very nice heart. The other, who isn't a black sheep but is different, he likes heavy equipment, trucks, heavy machinery, he's crazy about it. Each one has something different, but I love what they do."

-But as a father and working in diving, did you push them to do something else?

-Exactly, I don't dive. I ask that you use me as an example, but not imitate me.

-What is the difference between being an example and not being imitated?

-First, I love diving, I'm telling you I love it, period. If not, I wouldn't have done it. Second, I'm really curious. I don't like to be afraid of anything. So when I have a doubt, I like to find out why. And it started with sharks. (Requiem sharks, \*Carcharhinidae\*) In '74, I'd been fishing for a year, the movie Jaws came out, I'd throw myself into the water and even hear the music, turum-turum, well, and I'd never seen a shark in the water, so I imagined that when the animal saw me, it was going to come right up to me and eat me. When I saw the first shark in the water, I was scared, obviously, my heart was in my neck, but I saw that it passed by me and left. It was more afraid of me than I was of it. And I, I mean, it's not like they're saying it is, and no, and it's not, period. An animal like any other, I'm more afraid of being on the road driving than being in the water.

-And how did you find out…? Well, that was an incident that got you thinking, wasn't it: why doesn't he attack me?

[00:23:47]

-Yes, exactly, and it's not like in the movie; there's no music, you're not immersed in the music, so I like to find out; the whales, I watched Jacques Cousteau with the whales and I did it. Oh, I love it, when they come to me, and look at you and study you, you feel: k-k-k-k, when they're looking at you, because they're looking at you, you see that their eyes are searching for you, they turn you over, look, my hair stands on end, because it feels so beautiful, believe me, I love what I do. I don't know if one day I'll have to retire, if I have to retire, what am I going to do, I think I'll die that day.

-Are you saying that the day you die you're going to retire from the water?

-Exactly, because when I think about retiring, what am I going to do? The day you wake up and you don't have a reason to live, there's no reason to live, and that's why I always spend time...

-What's the reason? You tell me it's curiosity, it's the pleasure of doing what you do. Is there another reason that makes you continue to go diving?

-Yes, you know what it is, and this is quite simple: if I don't teach someone what I've learned in my life, I feel like I've lived in vain. It's like having a diamond in a safe. What's it worth? No one sees it. If you have something worthwhile, show it.

-I mean, he's teaching.

-And let others learn. Of course.

How many people have you taught? Many?

-I have no idea. How many master's degrees, how many doctorates... Yes, and simply for the pleasure of doing them, I like it. I'm not even interested in having my name put on anything, no, that doesn't interest me. What I'm interested in is that what I know, well, someone learned it and is making the most of it, obviously.

-I mean, it's not just about teaching other divers how to dive, it's about teaching people about the sea in general, about what's happening, things like that.

-But more so to students. Why? Because they're the ones who will have the obligation to do something for this world, don't you think? They're the ones who are obligated. Why? Because they are. If you study Biology, it's because you have in mind that you're going to do something with Biology, not sit at a desk filling out papers. Leave me alone and I'll change the tanks. I'll be right back.

[00:26:24]

-Andrés is now going to check his tanks.

(...)

[00:29:35]

-Okay, back to you. I wanted to ask you, what's the most important thing you learned from your mentor, your first mentor, who taught you about diving, what stuck with you the most?

-The basics, diving, the basics, because fishing, well... I teach you how to read, I mean, I teach you the meaning of words, but you have to learn how to read. He taught me how to dive, I had to learn how to dive. You know, how to find the queen conch (Strombus gigas), which I actually love because there's a trick: you have to pay attention to how they move, where they move, what they're doing, because they move in packs, so he didn't teach me that. I had to, little by little, learn, paying attention and paying attention. Spiny lobsters, how they move, when the lobsters call each other, when you see a male walking, you know that he's either coming from a female or going towards a female. Yes, because that's the nature of animals. In fact, when I presented what I did with the queen conch, I realized that at the peak of spawning, when all the adults are reproducing, searching for each other, mating, laying eggs, the adults who are close to the groups of juveniles, the babies, don't reproduce. Those who are far from the juveniles do; they do reproduce. I gave a presentation in Colombia about the work I did with the GCFI, the Gulf and Caribbean Fishing Institute. I was there and was explaining the behavior I saw with the work I did. I'm not a scientist; I'm just a fisherman. When people asked me what I thought, what I believed, why the adults acted that way with the juveniles, the only thing I could think of to say was—believe me, I said it loud and clear—that adults don't play tricks in front of children. But I understand it's something chemical, it has to do with something chemical that keeps the juveniles together, but prevents the adults from trying to procreate with them, that's what I believe, I don't know if it's true or not. Another thing, I didn't discover it, but I did say it, all fishermen know: we have four populations of queen conch (Strombus gigas). They're the same conch, but they vary in size, in the shape of the hull, and I've been saying this since they started planning the conch. Because a measurement was made, to comply with the law, it was a standard measurement, they had to measure more than 9 inches. I told them: but if they measure more than 9 inches, more than 60% of the population will remain within the limits, and it's illegal to fish them. 'No, they all grow the same,' no! I learned that it wasn't.

I insisted for years and years, until the genetic work was done, which we did here. And when I brought them the four varieties, Dr. Richard Appeldoorn, the expert on conch (Strombus gigas), told me: 'If I don't see it, I don't believe it.' I've been telling you since the 1990s that there are four different varieties. The Department of Natural Resources didn't pay for the complete results of the genetic content, but what they did pay for were the smallest ones, which we have names for: flines, which are the tiniest and are genetically different from the others.

[00:33:43]

-Do the other 3 have another surname among the fishermen?

-Yes, the smallest one is known as flin, the flines.

-How do you write that?

-Yes, because I'll explain, in El Combate there was a man, he wasn't a midget, but he was a small man, he was tiny but he's very strong. So one time we brought the snails and look, they look like Flin, tiny but all of them…

-But Flin, whose partner is this?

-He was also a fisherman, but his nickname was Flin, so as we saw him small and strong; he looked like Flin, and the queen conchs remained like Flins.

-Understood.

-Then there's the common one, which is the one you find most, it doesn't reach 9 inches, but it's bigger than the flines and has slightly longer points. Then there are the porpoises, which are two varieties of porpoise, they grow gigantic, the nails are like two fingers, the snails reach up to 12 inches and the meat weighs up to a pound, a pound and a half. There are some that are smooth, which is the smooth porpoise, which doesn't have points at the back, you know? If you take the empty snail (True tulip, \*Fasciolaria tulipa\*) and you want to put it on as decoration, it won't stand up, because there's nothing to hold it up, and the other one that's a little smaller but just as big, but has smaller points, but it does have points, those are the porpoises with points and the porpoises without points, the common ones and the flines. They were brought here; they have different weights, as there are certain varieties of snails, which we can distinguish. We see the animals and we already know where they come from. But that's not the strange thing; the strange thing is that our platform isn't huge, and what divides one population from another is perhaps half a mile or less. In other words, there's a group here, a group there, another group there, and they don't mix.

[00:35:52]

-And you think they don't mix? Is there no change in the marine environment? It's the same marine environment?

-The same environment. They feed on the same things.

-Do they eat the same thing?

-At least out of 100 fins, you could find 1 common and maybe 1 porpoise, but 99% are fins, the same with the commons, the same with the porpoises, but when the 9-inch regulation was put in place, and obviously the fins are smaller, they set a quota of 150 animals per angler. What were we going to do? We couldn't catch the fins, because 150 fins yielded 20 pounds. We caught 150 porpoises and they gave us almost 80, so we focused on catching porpoises and left the fins. And now the fins are invading the porpoise areas, but they were warned, because we told them.

-And they haven't changed the law yet?

-No.

-When did you start telling him the first time?

-In 2005, I think it was, 2004 or 2005.

-Until they understood that genetics was right, when they proved that genetics is different, they still didn't change the law, right?

-No. No one is putting pressure on us.

-And now someone is finding out that there is a larger population of flin and that it is converting the population completely?

-The thing is, the studies are done in Parguera, because it's close to...

-Where is Parguera?

-Here to the south.

-Where is the Marine Sciences University campus?

-Can you show me the letter?

-Yes. They do the studies, but in here, in here.

-And what's there?

-Because it's close to them here, the Marine Sciences complex, and it's easier for them, but the good conch fishing boats (Strombus gigas) are out on the island, on the other side of the island. All of this is in the direction of this island.

-What do you find here?

-There are queen conches, but there you can...

-What kind?

-You can find porpoises and you can find common porpoises. Porpoises are abundant around here, but they are very few, so for fishermen to live off the quantity they get there, no, it's not average, but it's easy for them to do so, which is why so few studies have been done on queen conch (Strombus gigas), very few. And that's what it cost us to move the queen conch (Strombus gigas) for that one, because there are tons of queen conch (Strombus gigas) and in the deep waters, over 200 feet, there are also. Recently, with ROVs, they have found populations of up to 230, 235.

[00:39:03]

My cousin died at 165. When I said my cousin died at 165, a biologist told me I was a liar; that there were no queen conches deeper than 100 feet. (Queen conch, \*Strombus gigas\*) I lost my temper and told him four things [unintelligible] that my cousin had died. So, what was a queen conch doing at 160 feet? Many years later, I went on the NOAA ship, the Nancy Foster. They called me to ask if I wanted to go on the ship, so I went. They asked me if I could take them to the steps, which is where my cousin died, and I said, ‘Well, let’s go,’ and we went. We squared the mark, they lowered the cameras and found queen conch (Strombus gigas) at 165 feet. But that biologist told me I was a liar. That's why I'm more committed to students, so they can break that 'I've been studying for so many years, not a fisherman who doesn't have any schooling.' That's my goal, because we can work together. They don't know what I know. Maybe they know the scientific name, but I know how the animal acts. So if we join together, what you know with mine, we can do something. That's the only thing I'm interested in. I'm not interested in bragging about anything, none of that interests me, but I am interested in teaching them. In fact, I gave a presentation, Jannette—you weren't at that presentation, were you, Jannette?—in Magueyes, it was two months ago, when we were working with the compressors. They called me from Natural Resources, asking if I could give a presentation. It was the first time a fisherman was going to be invited to talk from the local perspective, from the fisherman's perspective. Not from the scientific side. And I understand they liked it, but in my own way. I'm not a scientist. But I told him about everything we've been talking about, and about our willingness to help, telling him that we can be their eyes, because we're underwater, we spend a lot of time in the water. If you need anything, contact me and I'll help you. There's no problem with that.

-Well, let's talk more about what you've noticed in the sea, if you'd like to sit down... How are you comfortable? Since you've been diving for so long, what changes have you noticed in the marine environment, compared to when you started?

[00:41:50]

-Wow, a world. I'll try to summarize 50 years ago. There were just a few fishermen. When I started fishing for queen conch (Strombus gigas) there were no more than 10 divers in the southwest. In fact, the mecca for queen conch (Strombus gigas) was El Combate, and where I used to go out, leaving here there were three fishermen, there was no one. Queen conch (Strombus gigas) were worthless; when I started they were worth 45 cents a pound and it was: you caught what you could sell, if you managed to sell 100 pounds, you went and got 100 pounds. You couldn't catch 150, because then you wouldn't have anything to do with the other 50. And that's how it all started. Spiny lobster (Panulirus argus) wasn't worth anything; there was a lot of fishing and few fishermen. As the cost of living increased, things got more expensive, and people, jobs became more difficult, and people saw that it was easy to get into the water and make a living, so the number of fishermen started to increase. I compare this to a party, where you have a cake, but you have six guests, and you want them to eat the cake, so you're going to cut that cake into six pieces, so everyone gets their own. Now we're talking about 100 fishermen, so you have the same cake, but you have to cut it into little pieces so everyone can eat something. In other words, the quantities for me remain the same, but they're divided among more people.

-Many more pieces.

-In many more pieces. Exactly.

-And how has your life changed because there are more fishermen? What has the business been like for you? How has it changed?

-The trick: marketing. I was the first fisherman to start cleaning queen conch (Strombus gigas). Why? To get more out of it, I had two options: first, I could raise the price because the buyer doesn't have to hire an employee to clean it; it's already clean. Second, we throw the leftovers, the guts, into the water, and the fish come in, and we catch fish. So, we caught queen conch (Strombus gigas), but we also caught fish.

-What fish do you catch?

-Sea basses (Serranidae), snappers (Lutjanidae), wrasses (Labridae), the gut-feeding animals. In other words, we're not throwing it away, we're making the most of it because these animals come and we can catch them.

-Where do they throw it, from the shore?

-No, in the same boat. When we get on, we're up top, we clean pa-pa-pa. During that, I rest and jump in again and if there's fishing, if we're on a bottom where there are fish, well, I take the harpoon and with the harpoon I catch fish and add something extra. Second, since everyone started cleaning it because obviously everyone saw that I was earning more, well, then everyone started cleaning it. So, how did I do things? Selling it really clean, in a bag, giving it to the client, and I started charging a little more. All this is marketing.

[00:45:14]

-When did you make that change more or less?

-I would say like the late 90s, 95.

-I mean, the number of people diving has grown quite a bit for a while now…

-Yes, it's gone down a bit right now. But I understand it's holding steady. There must be around 40 or 45 divers in the southwest.

-Is that all they do for work?

-Diving, yes, but the thing is, everything has changed. For example, before, people fished with pots, with traps. But when the regulations were introduced, which increased the size of the wire, well, it was no longer cost-effective to have a pot. Why? Because most of the fish that were sold were no longer caught; they slipped out of the wire. So you went, and the cost of the wire, of the rope, increased so much that people, young people, abandoned the pots and went diving.

-When was that?

-Like the early 2000s.

-So, the fish that was sticking out, what was it?

-It was mostly what is known as second, cachicata (white grunt), the feathers (Porgies, \*Sparidae\*) (porgy), the arrayao (lane snapper), they are small fish that are marketed, but having the largest wire, the animals come out.

-Was he famously traded with the people here on the island?

-Mostly local, for local use. I mean, in the fish markets, local people would go and buy. There was also the guagüero modality. Guagüeros were people who had a vehicle, put a refrigerator in it, bought fish, and went out with a loudspeaker to sell in the neighborhoods.

-And what happened when people stopped fishing with the trap, with those people?

-The guagüeros are gone.

-They're gone, and at first you sold most of your fish directly to the customer?

[00:47:35]

Yes, at first, because there were few buyers. Then these guagüeros (fish-fishing boats) started appearing, some, not all, who bought fish, so they started buying conch (Queen conch, \*Strombus gigas\*), but they had to teach people how to eat conch (Queen conch, \*Strombus gigas\*) because the locals knew how, but on the island, they didn't, and there are still many places where people don't eat it. But, little by little, people learned. So what happened was that the trap was no longer cost-effective and people were moving to diving. In fact, more than 60% of landings currently come from diving. Spiny lobster (Panulirus argus), Queen conch (Strombus gigas) and fish, but the fish we are looking for are high value and large fish, it is not worth shooting a small fish that is worthless.

-Not for sale?

-Maybe it sells, but it's not worth the effort you're going to put into catching it very small, you can do it with a large animal.

-But before, when he started catching, like he told me, he started giving him food, the gut, it didn't matter the size or what fish he caught...

-No, we always looked for the big ones and the best value, for example, the groupers (Sea basses, \*Serranidae\*) (sea bass), the captains (Wrasses, \*Labridae\*) (wrasses) and the snappers (Snappers, \*Lutjanidae\*) (snappers), among the snappers, (Snappers, \*Lutjanidae\*) the mutton snapper (Lutjanus analis\*) (mutton snapper) which is the one with the best value, but the queen triggerfish that also comes, we left it, because the other fish (Blue Marlin, \*Makaira nigricans XLII\*) was worth 3 dollars a pound, it is worth more now, but at that time it was like 3 dollars, but the hogfish was by weight, at 75 cents, so it was not worth catching hogfish, we left the hogfish and we looked for the most valuable species. And so on.

-And now, what fish is…?

-The same, the only thing is that the value, well…

-It's bigger.

-It's better.

-And how do you sell now?

-I sell to a wholesaler, that is, I fish, I have the catch in the freezer and they come on Wednesday and Saturday, and they take the catch, I sell to them.

-Is it a person who is in charge of selling it around the island?

-He takes it to the metro area, mostly.

-And do you sell it to restaurants there?

-Hotels, restaurants, mostly hotels and restaurants.

-OK. And does he sometimes say to you, 'Look, I need this kind of fish so bad,' or not?

-No, because he already knows that what I fish for is queen conch (Strombus gigas) and spiny lobster (Panulirus argus), but spiny lobster (Panulirus argus) isn't my first priority; if I find spiny lobster (Panulirus argus), I'll take it, but I don't dedicate myself to looking for it. Now, when it's closed season, and when fishing for queen conch (Strombus gigas) is closed, then we do dedicate ourselves to looking for spiny lobster (Panulirus argus) and then looking for the fish, because then we have to leave the conch.

-It's eating us up...

-This is their time. Let me check the tanks.

[00:51:00]

-Yes please.

(...)

-Okay. He told me the business has changed over time. It's mainly because there are a lot more fishermen now.

-Dog.

-But when we talk about the marine environment, the seabed, the fish, you already told me about a change in the queen conch (Strombus gigas), that there are more flin, which are covering the area, it's a change caused by fishing regulations.

-Exact.

-Besides that, have you noticed any other changes in the maritime environment?

-Yes, but these are changes that I understand fishing has nothing to do with. For example, in the 1970s, cobia were abundant, these large fish that look like sharks; you could see them in droves. Nobody fished for cobia here. I mean, you could catch one with a spear, once in a while, or someone would catch one on a hook, but nobody was specifically dedicated to cobia. Overnight, cobia disappeared.

-When did you notice that… more or less?

-I saw cobia about three years ago. I saw three or four in the same week, off the Lighthouse, by chance. I saw one around here, off Boquerón. It wasn't very big, but they used to be seen in droves.

-Before, when?

-For the 70s.

-70, there were a lot of them and then they disappeared?

-Yes, but no one caught them, so it wasn't overfished. Yes, because they were never caught commercially. In fact, they weren't sold; whoever caught them would chop them up and sell them by the pound to locals, because they weren't commercially available. The same thing happened with some species of horse mackerel (Jacks, \*Carangidae\*) (jacks), which used to be seen by the thousands.

-What is a horse mackerel? (Crevalle jack, \*Caranx hippos\*)

-They're jacks. And right now, yes, you can see them, but not in the quantity they were before, but they were never commercially fished either. I mean, what's causing these species to move or disappear? Maybe it's pollution, climate change, I don't know, we'd have to see. A drastic change in climate in 2017, with Hurricane Maria, first Irma, then Maria, and weeks later a storm surge from another hurricane. What happened? The seabed became steep. The queen conch (Strombus gigas) practically disappeared. We thought they were going to become extinct. We went practically three years without any queen conch (Strombus gigas), and suddenly they appeared. Right now the price is dropping because there are so many of them that, well. They appeared again.

[00:54:08]

-Did he disappear after Maria?

-From Maria.

-Three years?

-Yeah. There was so much sand movement that all over the island, the whole island, all around, so much sand moved that the sand damaged the grass areas, moved mud, and many queen conch populations here that I know of were covered in mud. The animals got buried in the mud and couldn't get out and they starved to death. Because after the mud started moving, we would find the snails dead. But, well, not only queen conch (Strombus gigas), all the mollusks that were on the plain disappeared; they're already coming back again.

-And what did you do? That is your main business, the queen conch (\*Strombus gigas\*). What did you do?

-We had a really tough time. For example, there were weeks when the only thing we managed to catch was enough to pay for gas, but we had to keep trying, right? And so it went away. Many fishermen left. They couldn't stand the pressure and left. They went to the United States, they changed jobs.

-Did any of you return from that time?

-Some, but very few, returned. In my case, I never had a plan B, so I had to stay, and because I liked it. But I stayed; I was one of the few who stayed.

-So, there are a lot fewer dive fishermen since Maria?

-Yeah.

-How much less, more or less?

-Well, on El Combate beach there were an average of about 15 divers, right now there are about 4. Here we were about 8, now there's the mute one, there's Kevin, who's new, Javier, who's one of the old ones, Choro, who's one of the old ones, and me, there are 5 of us.

-And how long before was there?

-There were like 8 or 10 here.

-So, about 50% are gone. When did you start your tank business?

-Filling tanks? In 2000.

-So, before Maria, why did you start this?

-Because in '98 there was a hurricane, George, and I had a wooden house similar to that one, which I built myself. I built it myself, I finished fishing and hammering. And I built it. It was here, on this side.

-Here in the same place?

[00:56:50]

-Yes, but here on this side, next to here. The hurricane hit it so hard, it didn't break it, but it did break the wood, so you could walk inside the house and it would collapse. It couldn't be fixed, so what was I going to do? Well, I'm filling tanks in Boquerón, because there was no electricity here yet, and they gave me a diving magazine, and I started looking through it while I waited for the tanks, and I saw they were selling compressors, and the light bulb went on. Wait, I have a weekly expense of so and so, and we checked at the bank, it was more or less what I was going to pay on a mortgage. So I took out a mortgage because the land is mine. I took out the mortgage to build the house and have enough left over to buy the compressor. And the compressor paid for the house and kept paying for itself.

-And now all the tank business from around here comes here?

-Some. There are more people filling up.

-But yes, in fact, that cost me a boat to be burned. Because the person I was filling with, I was his best client, but I told him: look, the only way I can pay a mortgage to build a new house is to buy a compressor for my air conditioning, and with whatever I'm going to spend, I'll pay the mortgage. He didn't like it. And about two months later, he told me to burn the boat.

-Wow. Was that the only incident?

-With him, yes. But then he got lost and was left stranded at sea, and I was the one who found him.

-¡No!

-Yes! That was Herman, Jannette, Herman. He told me to burn the boat, when he got lost I found him, he apologized, [he died (...) and his wife (...) of cancer], that's how karma pays off.

-OK. What I understand is that the air business is adapting after Hurricane George.

[00:59:30]

-Yes, but it was because I had no other alternative, because I had to get the money and I didn't have it, it was, and with the bank, but then with the income I had to then sacrifice part of the income I earned from fishing to pay, and a 30-year mortgage is a pretty serious commitment, thinking about the compressor, my own expenses that, anyway, I was going to have to use the money to pay for the air, well, it's better to pay it myself and not account for that money and pay for the house. So instead of 30 years, well, I paid it off in 20, paying a little more than normal, until in 2017 for María, then I paid it off and paid for the house, so I don't owe it anymore. And I still have the compressors.

-How did you do during Hurricane Maria and Irma?

-Irma, not so much, because Irma didn't do much here. But Maria did, but I had some of my children here. When I was growing up, there was no water or electricity, so fetching water and lighting with a candle wasn't new to me; I grew up like that, and cooking outside with firewood wasn't new either. Well, we had a good time, it was fun.

-But what about your children?

-They got used to it.

-They got used to it!

-So, my daughter's husband, he's American, he's from an Italian family, and he was here with me, and he was surprised by how calm I was. Everyone was nervous, and I was calm. If I get nervous, we can't do anything. And his parents, who were there in January, they say I'm their hero because I took care of their son during the hurricane.

-So, was the whole family here during the hurricane?

-Some.

-And the house stayed?

-The house was fine. Lots of trash, sticks on the floor, but we had a good time.

-And after the hurricane, the island had problems with the current for about 6 months, from what I understand, but you ate the fish, how did you survive?

-Yeah, yeah, chilling, because OK, I pay my social security, but I also had a separate retirement plan, thinking about quitting fishing and getting my social security and I have a retirement plan, so when Maria, things were already going to be long. I couldn't fish, first, it was murky; second, there was no electricity, I couldn't fill the tank; third, there were no restaurants, no one to sell to, many restaurants were damaged, so we went months without fishing, and the house, I was almost finished, so what I did was withdraw the retirement plan, paid off the house, which was one less worry and with what I had left, well, we got through the next 2 or 3 months, peacefully.

[01:03:02]

-Do you have to start over with the retirement plan now, or did you give up?

-No, no more.

-Are you okay now?

-Now only with social security.

-I understand. That was a sacrifice in a way because…

-Yes, but it's a positive thing; I paid off the house, that was one less payment I had to make, and I had money left over to survive the time we weren't fishing, which was many months. But we had a good time. It wasn't fun, but we had a good time.

-Calmer, right, no more fun. Can you tell me a little more about COVID, what followed next?

-Yes, no, no, and earthquakes.

-And the earthquakes…

-The earthquakes first, and then Covid again, on top of that, it's just nature. I mean, what can you do? Get used to it. When the earthquakes hit, yes, I wanted to feel one underwater, for the same reason, out of curiosity. I've heard noises, but no, I wanted to be there, so I went to the area where the tremors were, and I did.

-In the water?

-Yeah, I felt a few. Whoa. It feels good. You feel it in your chest, in your lungs, when you feel as if something invisible is pushing against you, without touching you, that you feel the pressure. Yeah, and the noise… you hear it coming, passing you, and continuing. It's interesting, it's strange. I know how it feels.

Have you noticed that animals do anything differently, sooner or later?

-Yes, but not all the time. I did notice that when the fish make a noise, like the subway, when the train comes, you hear it: clack-clack-clack, what happened? Something like that. Well, when the noise starts, the fish sort of activate, the noise passes, and they stay there as if nothing happened. Maybe they make some noise that I don't hear, but it's like they're shaking a little, but that's nothing like it. I felt a 4.2 one, the ones in the water, that one was felt in my chest, as if they were doing that to you, without touching you, and a 3.5 is how I felt.

-And this happened like 3 years ago, I understand?

-No, Jannette, how long ago did the tremors happen, the really strong spike, was it for Reyes?

-(Jannette) The big one was in 2019.

-2019

[01:06:00]

-The last biggest one.

-(Jannette) The biggest one was 6.4

-No, it was when the big ones started.

-The 7th, the 7th of January.

-Because there was one in December.

-(Jannette) Yes, but it was small.

-Yeah. Then there was one on the 6th, and then there was one on the 7th.

-(Jannette) Yes, but they were small.

-No, but the one on the 7th was tough.

-(Jannette) When, this year?

-No, last year

-(Jannette) No, not last year, in 2020, the one on January 7 was in 2020

-The Kings' Day was at dawn, there were 2 consecutive ones.

-(Jannette) It was at 4 in the morning and at 7 in the morning.

-Yeah, here are the closet doors that are made of glass and: poo-poo-poo-poo and a little while later another poo-poo-poo-poo, the same thing. The next day I remember it was the 7th.

-(Jannette) On January 7th there was the one in the early morning that was 6.4 and at 7 in the morning there was another one that was like 5 as well.

-When the second one happened, it was when they were calling Mayra that they'd found her brother dead. I remember the earthquake and the call. Or the call and then the earthquake. I remember… But it lasted for more than a year, a year and a half, it shook every day.

-Every day?

-All of them, 2, 3, 4, 5, 6 times, that were felt but you searched the seismic network and there were a lot of them.

-What did you think at that time?

(...)

[01:09:37]

-Well, let's start over. I wanted to ask you a little more about the fishing community here. You already told me there are fewer of them now, after Hurricane Maria. If you could tell me a little about this place, how important is your work, and the work of the other fishermen, to the economy of this place?

"What happens is that this is a chain reaction. For example, we depend on gasoline, so the gas stations have an income. I spend about $120 a week. If you add that each fisherman is spending the same amount, we're talking about moving quite a bit of money. For the fishermen who sell locally, it's both local consumption and for the restaurants, so the people who come from outside depend on the fresh seafood that the fishermen provide. In the same community, I understand that we also do our part. For example, when the weather is bad, mostly we, who are used to being outside, to working outside, in the environment, we help, we cooperate with those who don't know, or with those who can't. Look, people, and especially divers, seem to respect us. Maybe it's because of the type of work we do, which people don't know, or because they see us as a bit different. Well, they seem to respect us a little, and they listen to what we say, not always, but generally.

-What kind of advice do they take, or what do they listen to it on, for example?

[01:11:38]

For example, regarding the conditions of the beaches, when the hurricanes and earthquakes hit, the lighthouse area changed. I don't know if it was because it sank or global warming is raising the water levels, but the area was being damaged. They've already started working, trying to recover. The salt flats area, which has been worked on for hundreds of years, is now useless. Because the water is coming in, where they process the water to make salt, it's no longer possible because the water is constantly entering the dikes. So they started working this week to build a breakwater, but it was due to our complaints. And we went to the politicians: 'Look, this is happening,' it's an industry that may be the only one in Puerto Rico, or maybe it's not that important, because of that little bit of salt that arrives here, but it's something cultural that actually, that's where the name Cabo Rojo comes from, from the Combat: 'Mata con hacha,' well, it was a fight that took place over the salt mines, with another town and the fight was with an axe and we were left with the nickname of the 'Mata con hacha.' In other words, that's something cultural since the Indians, since the Taíno.

-Since when do you say it's the salt mines?

-Uff, since the time of the Tainos.

-But since when do they use it for…?

-Commercial? I'd say since I was 30, or earlier. Actually, since before, like I was 20 or earlier.

-And does it belong to the city or is it private?

-No, it was private, but now the land is federal, it belongs to Fish and Wildlife. They tried to close it, but with a kind of silly logic, because they themselves said that migratory birds benefited from the salt flats, and I ask them: And why do you want to close it? So, you close it so that migratory birds have nowhere to come? And maybe that's what they thought and left it operating, but not anymore. Unless they do something with the breakwater, so they can process the salt again, it's already gone under. In fact, the one who processed it was my cousin. First, my cousin himself, and then my cousin's son. Until they closed it last year, because they couldn't work anymore.

-And what do they do now, they don't have a job?

-The younger ones are working on other things, and he apparently, well, he earned enough, now his children are adults, he retired.

-Did he retire?

-He retired. There are a couple of people waiting to see if they can fix it and get back in. But the investment is worth millions.

-There's a lot of investment, so that investment is lost now...

-Yeah.

-And there were people working for the owner of the…?

-Yeah.

-A lot of people? How many people were there, roughly?

[01:15:00]

-Fixed, maybe 15 or 20.

-So, they had to find another job?

-Exactly. Because there were those who worked the heavy machinery, those who worked by hand, struggling with the dikes, and those who drove the trucks, the ones who collected the salt and delivered it around the island.

-Do you know roughly how much production…? I'm trying to understand how important salt production was for the island of Puerto Rico, over there.

-If I told you, exactly…

-Not quite.

-But yes, it's used in pharmaceuticals, it's used in marine transportation, to clean ship tanks, for food processing, mostly for animals, in animal processing. But it has a lot of uses.

-No, I know that use is very important, but I'm trying to understand, more or less, what proportion of that production was retained and was important for Puerto Rico, in general?

-Well, I understand that all the salt produced stayed here. Yes, it stayed here. He already had his business here. If he ran short, which didn't make him enough, he would buy at Sam's Club to make up for it. Because during the rainy season, salt isn't produced, so he had to buy at Sam's Club, and I think in the Dominican Republic. But during normal weather, he produced what he needed.

-To your knowledge, are there more places like this, like the salt flats in Puerto Rico? No? Was that the only one?

-I think in Salinas, in the town of Salinas, there were some, but there aren't any more, right, Jannette? In the town of Salinas, they don't work anymore, right?

-(Jannette) I don't know what?

-The saltpeter mines.

-(Jannette) No, not in Salinas.

-I know that in the town of Salinas there was.

-(Jannette) Yes, but I haven't seen it. I haven't seen it in a while.

-The papaya was there.

-(Jannette) No, not either.

-And Fortune?

-(Jannette) It's closed.

-And this one here, which was damaged, they've already started to deal with it...

-(Jannette) I saw them take out stones.

-With the breakwater. Right now, that's all there is to it. I mean, there isn't one in Puerto Rico anymore.

-We talked a little about the other fishermen, about what you know. Well, he told me a little about his story, and how he was diving. He grew up in a family, from what I understand, with difficulties because of the hurricane and things like that, but without that, a pretty good life.

[01:18:05]

-Yeah.

-What can you tell me about other dives? Do they have a good life from this work?

-This is individual. I see it as a job. I put my effort into it, like a job, to make sure the equipment is in good condition, to have, obviously, let's see how I set it up for you; there are different expenses: gas, boat, and tanks. I separate those three expenses, I don't mix them. Gas is gas, boat expenses are boat expenses, and tanks are tanks; it doesn't even come out of my pocket. Well, that's what I pay, what I earn, well, this is practically a net salary, because all the extra expenses, well, come from fishing. That's thinking like a business; buying what I need, I buy in quantity, in bulk, to make it cheaper. This is thinking like a business; Oil, filter, boat expenses, etc., etc. The compressors, both the oil and the filters used for the compressors, I buy them in bulk. It's cheaper, and I have them available. I don't have to be at the last minute, like a crazy person, searching, buying, because no, that's there. That's thinking like a business and not mixing this with the other. The profit from there, well, OK, I put it here, but the expenses stay there. That's thinking like a business, and that way you can have control of what you do. Why? Because as a fisherman, you don't have a fixed salary. Someone who works in a factory and gets paid $500 a week, no matter what happens, they're going to get $500. For me, if I don't go out fishing, and if I don't fish, which are two different things, I won't have an income. So, I have to think the other way around. When I have something in mind, I can't think about what I'm going to earn to pay for it. No, I have to have it in my pocket first, and then use it. Because if I take out a loan and I can't pay it back because I'm not fishing, do you see the different way? I mean, the way you do it, if you're going to take a vacation, you're going to take a vacation if you have the money, but if you take it with a credit card, that's not a vacation, that's stupid. Because then you come back in a year or two, paying for the vacation you had, that's not a vacation, a vacation is you having the money, going, jumping, drinking, dancing, and when you come back, you start working normally, because you don't have any debt. Do you see the different way of thinking? The same with jobs, with work, it's better to have the money and then execute what you're going to do. And that's how I do it, and it works.

[01:21:17]

-How many fishermen treat work the way you do, do you think?

-Ask how many fishermen pay Social Security. Because you have to pay it yourself. I paid it, and I'm collecting it. Now you can ask Jannette, who's dealing with fishermen: How many fishermen pay Social Security?

-Few?

-Very few, because they get used to having money in their pockets. I was like that too, I was like that. Until my first son was born, when I came back from fishing and spent all my money, and when I got there, there was no baby bottle, no milk. And I was like, 'Damn, what do I do now?' That was the biggest lesson. No, this can't go on like this. My youngest son...

-Hi nice to meet you.

-When it came to the lion fish (Blue Marlin, \*Makaira nigricans XLII\*), he was the one who saw the difference between the female and the male lion fish (Blue Marlin, \*Makaira nigricans XLII\*).

-How so? Was he fishing?

-No, it was that I was helping a student with a thesis that was about lionfish (Blue Marlin, \*Makaira nigricans XLII\*), so I caught the lionfish (Blue Marlin, \*Makaira nigricans XLII\*) and we were looking for parasites, to see if there were parasites in the lionfish (Blue Marlin, \*Makaira nigricans XLII\*). So, I had a bunch of lionfish on a table and I was opening them up, looking for parasites in the gills, and he says to me: ‘Daddy, whenever you open these up they're girls and these are boys. ’ And I said: ‘Well, how do you know, Andrés? ’ ‘Yes, look at them, they're different,’ and I said: ‘Why? ’ ‘Look, the males are black, the females are white, the male has a round face and the female has a long one,’ and I said: ‘Really? ’ ‘Look, it's true. ’ So we brought in a biologist, there were 60 or so lions, and he missed one because it was a baby, you know, it didn't yet have the features of an adult. But with all the others, yes: 'This is a girl, boy, boy, girl.' So a paper was written, and the Fisheries Council told Andrés that if he studied Marine Biology, he already had a doctorate, because no one has that, no one, not even in the deep Pacific where the lions come from, no one knew; in fact, they still doubt it. But he did prove it. But he wasn't interested in Marine Biology.

-He wasn't interested. What does he do? He told me, but I forgot.

-He knows how to do everything, he knows how to cook, now he's a business manager, he knows welding, he knows electricity.

[01:24:04]

-Does this guy like the truck, the one who told me that…?

-No, the older one.

-Older than him, OK.

-In electricity, welding, cooking, cooking is pretty good, but well…

-He has the curiosity that you have.

-Okay. I don't ask anything of my children, I don't demand anything of them. The only thing I demand is that they do what they do well, whatever they like, be it engineering or collecting cans, but that they do it with pride, that's pride. It's not what you do, it's how you do it, and that's the only thing I ask of them. And if they do something, that they be happy with it. Nothing else.

-That's good advice.

-Sure. Except for fishing, no fishing.

-It could be anything, but don't get involved...

-It is completely prohibited.

-It's forbidden, wow.

-Because it could cost them their lives. No, not that. If someone has to die, let it be me, but not them.

-Well, tell me a little bit about what you think. Are there any barriers to diving in this area continuing sustainably and perhaps growing in this area?

-Well, there have been attempts. There have been two attempts, and the attempts have been to create marine sanctuaries. This has nothing to do with fishing; these are political issues. And luckily, not unfortunately, luckily, in the last attempt we discovered the roots and they were removed; it's Pew, P-E-W, Pew. They wanted to create a marine sanctuary, but it included from here, like this, like this, to here. This entire fishing area was going to remain as a sanctuary. According to them, it was to promote tourism, to promote other things, they explained. But you don't make sense of it, because tourism can be done as it is, but then when they held a meeting, apparently it was an exclusive invitation, but it was fishermen. And the fishermen heard that Pew's goal was to have 85% of the island as marine reserves by 2030. In other words, if that's a reserve, you can't fish. Someone asked, they asked Richard Appeldoorn,

[01:27:00]

When they asked how long he could guarantee the fishermen could continue working, he told them: 'Like five more years,' 'And after that?' 'I don't know.' So, what were we going to do after five years? Fishing was going to end, because there weren't going to be any fishermen. It's a sanctuary; in a sanctuary, you can't fish. Until we found out the reasons: Pew, which is maintained by two oil companies, is the one that gives the money to Pew. When you have an area, for example, you have a farm, this is your farm, you're going to divide it into plots. In order for you to sell this farm and have it segregated into plots the way you want, you have to leave a research area. That's why urbanizations always have a park, because that park isn't because it's pretty, it's because it's the research area, and you have to leave the green area with trees. Pew is in charge of getting the green areas for the oil companies, and what would that green area be? The sanctuary of Puerto Rico. So they would continue issuing permits to them. When I found out about this, which I posted on my commercial fishermen's website, I said, let's follow Pew's money trail for 24 hours. Pew withdrew, and they forgot about the sanctuary.

-Tell me a little about the process, what did you do, exactly, did you do your research and what did you do with it afterwards?

-I threw it in the middle.

-To the social media?

-To social media.

-On Facebook?

-Exactly, I only said: 'We have to follow Pew's money trail,' because I'm speaking out because I have the proof. I can't write anything if I don't have something that's true, the backup, and since Pew knows it was true, well, within 24 hours they backed out, saying the sanctuary was no longer there. So they're looking for signatures from people, but people from the center of the island, who have nothing to do with the coast. And in the only meeting they invited me to, because after that they didn't invite me anymore, I said it, and without offending anyone, but the people of Maricao have no say in the water issue, just as I have no say in the farms in the center of the island, because I don't know. So they have to respect us, and there, well, they did understand that they were being used and they backed out, but they never invited me again.

-We're almost done, but thanks for your patience.

-Of course.

-What I wanted to ask you is, you told me about the fishing community, could you tell me how important the fishing economy is in this area and for the country, for Puerto Rico in general?

[01:30:01]

Puerto Rico produces about 15% of what we consume, we depend on imports, in everything, in everything; agriculture, fishing, 85% is imported product. We're struggling with that, but we don't have the infrastructure. Fishing, ours, that's not commercial, it's artisanal. Having a fishing fleet like Colombia has, Venezuela has, which we've seen, we don't, we're artisanal. And we have a limit, I mean, it's not something you can say you're going to increase production, because you can't. I mean, I can reduce it but I can't increase it, because we're at the limits; in fact, we're exceeding the limits. Because if you, in the diving rules, use four tanks, in fact, we've done studies, they've done studies with us, using computers, measuring our time and everything we do underwater, and the three studies I've done, they tell me: 'You're alive by a miracle.' What you're doing isn't done. How are you still alive?' They don't know. I mean, we're exceeding our limits. I mean, we can't go any further than that, we can't use more tanks, we can't go any further because we have a platform. I mean, we can't go 100 miles because we don't have a platform, so we can't increase fishing efforts, nor can we go any further. So we stay the way we've always done, exactly the same: the same tanks, going to the same places, fishing remains stable. Obviously, the environment is very resilient; hurricanes make and break, and everything recovers. That's why I tell you, some areas later, other areas sooner, but this is part of life; the world gets sick and comes back and recovers. I thought that COVID was forever, but no, it's already part of history. And I understand that climate change requires either we adjust or we adjust. We can't go somewhere else. We either have to adjust. How we, each of us, can do something to improve things is difficult. But if governments unite and make an effort and put aside their financial interests to preserve what we have, something could be done. Because during COVID, the ozone layer was depleted.

[01:32:56]

I mean, if we unite, but then there has to be a disease, a plague, for that to happen, and why can't we do it while we're healthy? And seek to make the world a better place. That's my thinking, but as I've said before, it's better to make a spark, to make an attempt, than to do nothing. Maybe what I do is in vain, but what if it isn't? And if what I do does something positive in the world, the day I'm gone, I didn't leave in vain. You know, I tried, I tried to do something for my children, for the community, for my friends, for the world, although "the world" sounds like Miss Universe, of world peace, but doing something, right? Or trying. There's another fisherman from Rincón who has, more or less, the same thought as me, but more poetically, Paúco. And he has, more or less, the same mindset as me, but he fishes for deep-sea fish, but we have, more or less, the same thought: we have to do something, even if it's a little bit, maybe it's not important, but what if it is? What if it is? It's like, for example, if someone tells you something really important and you say it and it doesn't come out, well, you're going to be seen as a liar. But what if you know something and you don't say it and something happens, you're going to have a guilty conscience because you knew, but you didn't do anything. In our case, whether it's beneficial or not, we're going to do something and we're going to shout, we're going to sound the alarm. If nothing happened, well, nothing happened, but what if something is going to happen and we were able to resolve it in time... That's my way of thinking.

-Can you tell me what makes you think climate change is real?

"The changes you see, of course, the whales come later... We, at least I, with the smell and just looking in the morning, you already know what the day is going to be like, what the day was going to be like. For example, right now, it's dry weather and look, it's raining. You know? Right now, the weather changes from one moment to the next. Before, you'd wake up in the morning, see the clouds here, and you knew it was going to be southeast. If you woke up and saw clouds here, you knew it was going to be north. Right now, this is a northeasterly wind. In the morning, it dawns from the north, but after 10:00 a.m., the southeasterly blows, up to 20 or 30 miles away. That wasn't the case, it wasn't like that before. The northerly winds, the cold fronts, when they came, they went completely from north to south. Now the cold front that comes to you, the wind is from the northeast. The changes, yes, the world has changed, from 2011 onwards."

[01:36:04]

-In 2011, what did you see first…?

-That there was a really big earthquake in Japan, the world shifted half a degree, and I already received a paper, something that I hope isn't true, but apparently it is. Okay, the Mediterranean is practically a completely 'isolated' sea; apart from the Strait of Gibraltar, there's the Atlantic and the Mediterranean. The Mediterranean didn't mix with the Atlantic. Even the whales that were in the Mediterranean didn't go out to the Atlantic; it was the species that were there. When the earthquake happened, and if you want, you can look up the information and corroborate it, the change that caused the sargassum to move now in the Atlantic is because a thin layer of current is emerging from the Mediterranean to the Atlantic. It's minimal, it's superficial, but that's going to create a dramatic change because it's going to slow down the Gulf Stream. The current that passes through the Atlantic, which moves and circulates around Florida, reaches Spain, passes through Africa, and returns to South America, and returns and rises, and that's going to reduce speed. You take a bath and create a whirlpool. You leave that whirlpool and it slowly stops, but in the case of the current, it remains active because of the moon and the movement. But if you do the same thing and put your finger on a little corner, the circulation stops faster, and that's what the Mediterranean Current is doing; it's going to reduce the speed of the Atlantic Current. And that's what's causing the sargassum to flow continuously, because that current is breaking up. If that slows down enough, there could be brutal climate changes, because then there's no longer stability in the climate; it'll be the end of us, or the world will adjust, or we'll adjust. The world isn't going to end; the world will continue to turn, but then the species that are here are the ones that either get used to it or we'll leave. An example of that current that's emerging... I'll show you...

(...)

-Look, this stuff comes from Africa, and it's already in Puerto Rico. It flows through the Suez Sea into the Mediterranean, and from the Mediterranean into the Atlantic.

[01:39:07]

-How do you know it comes from Africa, where do you know?

-This is, the species is, ahh, oh, I don't remember the name of the species exactly now, but this comes from the Indo-Pacific, native to the Indo-Pacific.

-So, you never saw him until when?

-I reported it a couple of years ago, but there were already people who'd been seeing them for a while. The thing is, fishermen don't seem to dare to speak up or pay attention, but now, obviously, there are people eating them; the spiny lobsters are eating them.

-Do lobsters eat this?

-Yes. They're already in the environment, there are thousands of them.

-¿Miles?

Thousands of them, in the grass, under the snails, are in abundance, because they don't yet have an enemy to eat them. But they're herbivores, so I understand there's not as much impact. There are species of algae that are also invasive, and they're also arriving.

-Tell me a little about this seaweed thing? I'll take a picture when we're done.

-No, take it, I'll give it to you, there are tons of them.

-Thanks, I'll take it.

-We've identified at least four different species of algae. In fact, the biologists I'm filling their tanks for, every time I find something strange, I go to them: look, I found this, I saw this, and then they're in charge of searching. It's with them that I found out that they come from... Scientific name: Naria turdus. That's the scientific name. Well, I go to them, look, I saw this, I found this, and they say yes or no, yes or no, OK. Well, yes, there are at least four species of algae. There's a type of coral that's new, that's new, it's a white coral, but one evil kills another. There's a type of algae that grows when there's human solid waste, when there's sewage discharge, which I understand comes from La Parguera. It filled everything from La Parguera to outside Combate, it's an algae that looks like cotton, that algae grows when there are a lot of chemicals that come with the sewage. OK. This white coral was coming here, I found two reefs that were full of it white coral, I went later, because they catch a lot of spiny lobster (Panulirus argus) there (spiny lobster), it was filled with green algae that we call dead algae, because when that algae grows, it kills everything else there, so it was covered in dead algae, and when I came back after about a month, it was gone, the dead algae was gone, but it also killed the corals, that white coral, it was gone. Well, I told the biologists, I gave them the coordinates and I said: ‘look, it's full of dead algae’, I even took a sample and the white corals were there first, now the dead algae is gone but the white coral is no longer there either. Apparently, the algae suffocates it, but the local coral survives.

[01:42:20]

-Did the algae survive?

-Yes, it seems they're used to it. Since this is another new coral, not from here, it's apparently not acclimated.

-Acclimated.

-Exact.

-About how many miles of coral or how extinct was that coral?

-No, I don't know. I found out from the biologists. They found them in Guánica, at about 100 feet of depth, they found it shallow.

-But here, how big was the area?

-The area was, how to say, less than from the gate to the other corner of my land, less, because it was a reef patch.

-Small, like that?

-Yes, but there was a lot of it. It looked white on top. And the coral, which has movement…

-And when did you see that coral for the first time?

-That time. Later, when I went back to look for spiny lobster, it was full of dead algae. Then, about two months later, I came back, and the dead algae was gone, but so was the coral.

-But when was this, in what year?

-This past year.

-Last year, recently.

-Yeah.

-And when did you see changes in the maritime environment, the first time you thought: oh, that is, perhaps, connected with the change…?

-Well, the first changes started to be seen in the 80s, and it was obvious. Off La Parguera, the reef was full of beautiful palmata coral, which is like orange. That's what it was. You'd go by boat in clear water and the water would look red, all the way to Guánica, until they started to die, and all that's left are the skeletons. That coral, apparently, is very sensitive, I don't know if to pollution or climate change, but it is very sensitive.

-Can you show me where this coral was?

-Yes, at least where I saw it, oh yes. All this outside, all of this. Is this the key?

-Yes, show me?

-All this, the whole outside, all this over here.

-The orange coral?

-Yes, and on the 4th, over here on the 4th there was a lot too. This is the 6th, this is the 4th, all this here, all this over here, there's Gallardo and [inaudible]. Now, those areas were red, red, but completely, the other corals remain and are quite healthy, but that one, that one is gone.

[01:45:01]

-Was that in '80?

-Yeah, by the 80s.

-It was red and orange.

-But it was complete, the entire outer part of the reef.

-And where did you see the most recent white coral?

-That was at the Eagle, at the Lighthouse, Dirty Bay, here at the Eagle, over here, over here and over here.

-Let me write it down, white coral. It's gone.

-Yes, after the dead algae covered it.

-And what seaweed was that?

-We know it as dead algae, which looks like cotton, but it's green, like phosphorescent green.

-Cotton. And he also told me there was coral here, too.

-Yeah. The palmata.

-Red, orange

-Acropora palmata is the scientific name.

-Please write to me.

-It's that the light...

-I'll give you light. Here it is.

-Acropora palmata, we know that as yuca. That's in Spanish.

-That was the first time you noticed it in the 80s, what else have you noticed since then?

-The thing is, the changes are so subtle that by the time you come to see them, they've already happened. You know, the changes are so subtle, so, I don't know, that we who are in the water, unless you're not very curious, and you pay attention all the time, they can happen and you don't even notice. For example, this other example, there's a parasite—I haven't seen it in a while—that's particularly affecting one species, the yellowtail snapper, the red-tailed snapper. It is a parasite that penetrates the anus, but it sticks its tentacles out through the top of the fish's mouth (Blue Marlin, \*Makaira nigricans XLII\*) and fills the fish's mouth (Blue Marlin, \*Makaira nigricans XLII\*) with the parasite, then the parasite makes some little holes above the fish's snout, (Blue Marlin, \*Makaira nigricans XLII\*) which I understand is for breathing, but the fish's mouth (Blue Marlin, \*Makaira nigricans XLII\*) fills up with parasites that it starves to death. It was always seen in small colirubias, never in adults. That means that either the parasite leaves or it kills the host. It kills it and that's why the animal dies, it doesn't grow up.

[01:48:00]

Well, I saw them with their mouths open, unable to close, filled with the parasite, and the animal splits in two; it has like two little legs, but they fill the animal's mouth. I reported it, I said it 20,000 times, and no one paid attention. It was specifically seen at buoy 2, then it spread until I saw it at buoy 4 and near La Parguera, but now, it's been a while since I've seen animals with parasites in their mouths. Maybe they are there, but where I'm fishing, I'm not seeing them, and I'm seeing large, but healthy, gurnards. Another time, they were some black spots that appeared on the yellowtail snapper too, as if it were a fungus, some black spots, but the animals looked healthy. And the lion fish (Blue Marlin, \*Makaira nigricans XLII\*) first, some went blind, the eye turned white, others the eye sort of sank, until the eye disappeared, and ulcers, ulcers appeared, mostly in the anus, near the anus and it ate away at them as if it were a cancer, but since there are almost no lions anymore.

-Are there no more lions here?

-In some areas, only. The animals are eating it. In fact, I started seeing sea lions with a V on their back, a V scar. Curious, after all, I wanted to know what was doing that V to them. And one time, by chance, I was biting a queen conch (Strombus gigas), and I saw a barracuda changing colors. In other words, it was going to attack something. It seemed like it was getting its aim. When it went to the bottom, whoosh! I started up to see what it had in its mouth. When it came out with a sea lion by the back, it shook it and let it go, with the V on its back. I found out what was doing the V to them. The thing is, the V was on large animals. Apparently, it bit it, but couldn't eat it, so the animal would walk away, but with the wound. And it heals. And the small ones, well, she ate them. But I found out what the V was. And I even have a photo of the animals with the V on their backs. But it's always a question of who and why. And the picúa, the barracuda, when it's attacked, whoa, it grabs it by the back, but they're very clever: it grabs it, kills it, raises it high so that the animal swells, so that its bladder swells, then it lets go and swallows it headfirst. The picúa, as a rule, stings them, stings them in half, eats one edge and then eats the other, but since it knows there are bones, it lets go of the whole thing and eats it headfirst, so that the bone gets stuck. Animals are clever; they've been around for millions of years, longer than us.

[01:50:54]

-Well, one more question, what do you think, what changes are fishermen going to have to make to survive with the changes that are coming or the changes that are already happening, climate change or what's happening in the world, what do you think they're going to have to do to continue with this type of work?

-We have to adapt, adapt, we already did it with the traps, we already did it with the baskets to prevent accidents, adapt. Either we adapt or we become extinct.

-And what kind of adaptation do you think will be important?

There's a saying that says you dance to the music. Depending on how things go, I can't say, "I'm going to do this," but what if things don't go that way? You have to wait for the music to start dancing.

-And in your opinion, what do you think will happen, what will be the biggest impact of climate change, for local fishermen?

-I'm most likely not going to see it. What I'm left with is... more cuts... but there will be changes. Rest assured, there will be changes. How people process it, honestly, if I tell you anything, I'm lying. I have no idea.

-But he does tell me he's doing things, because he thinks there's change. What do you think the people here should do, whether it's the government or anyone else, what should they do to improve the outlook for the fisherman's life and the life of Puerto Rico, in general, on the coast?

Let's look at it this way: if there's a disease, COVID. The whole world moved, looking for a cure, and it was achieved. Why? Because it's something concentrated, a virus. But when it's the whole world, if I say something, I'm lying, really. I'd like to, like, I'll come back and tell you, I'm trying to do something. Maybe it's nothing, maybe it's something, but I can't sit idly by. But I can't guarantee that what I'm doing will have any benefit in the future, maybe, but it's worse not to do it. At least I have hope that it might work. If it didn't work, at least I tried, but I didn't sit idly by. But we're talking about the whole world. It's a global change. The whole world has to get on board, like what happened with COVID. We're going to do something. We're going to cut down on pollutants and help the world heal little by little.

[01:54:00]

Maybe the world has to emerge from us to heal. Maybe we are the sickness. It's not the world that's sick, it's us who are making it sick. I don't know, it's a possibility. Maybe we, the world, eliminates us and comes back and heals. But how can we know that? I know I won't see it, but I die trying. No one can take that away from me. I die trying.

-What is the main thing you think you do for that?

-Teach what I've learned to the youth. As I told you at the beginning, if you don't teach what you've learned in life, if you've lived in vain, you passed through the world, well, because I was breathing, no, trying to leave a mark. What I learned out of curiosity, I taught to others. Why? So they'll find some use for it. Maybe in the future, what I think is nonsense now might be useful, who knows. But if I don't do it, I don't teach it to anyone. There will never be that little opportunity, that little window. I'll come back and tell you, that's the way I think. I don't spoil myself with anything. I don't want anyone to give me any importance in anything. I'm nobody. But at least what I saw, what I heard, what I felt, I taught it to someone who might experience something in the future. At least I feel happy, and there are quite a few who have a doctorate. Arelis Arocho is one of the last to have one, along with Michelle and Graciela, who are already doctors in their profession, in Marine Biology. I helped them with their theses.

-Really?

-Sure, yes, I feel great, in fact I feel like I'm myself.

Is there anything else you'd like to tell me at the end of this interview, anything you'd like the world to know?

-That we have to unite and let go of our egos. We have to lower our humility, stop looking down on others, and treat each other as equals. What I know as a fisherman can certainly help a PhD holder, as can what he knows with mine. We have the rifle with the bullet, not just a bullet or a rifle alone. There has to be a combination for there to be an effect. I would love that, which is what I've dedicated most of my life to. I've even made enemies with fishermen. 'No, you always hang out with the biologists,' but if I don't hang out with the biologists, who's going to help get the regulations made? Right now they wanted to ban the conch (Queen conch, \*Strombus gigas\*).

[01:57:00]

And we hit it hard and yes, they passed, threatened, but until now, now they have to do studies, again, to corroborate whether what they have is true or not, but with the condition that I asked: they have to use fishermen, not students, and I don't take credit away from the students, but I've been fishing for queen conch (Strombus gigas) for 51 years; I know how they move, I know how to find them. A student, I've brought students to learn how to look for queen conch (Strombus gigas), and for every 10 that I find, they see 1. So, I'm putting students to do a study, and if you're counting that I see 10 and he sees 1, well for every 10 that he sees, I'm seeing 100. But if we teach them or work with fishermen, those results can be better, do you see the combination of one and the other? That's the only thing I ask, to work together. Of course, and we get our hands on it and go wherever we want.

-Well, thank you very much.

-Sure…

-of this interview. I'm going to stop now.

-And the order always.

—-----Audio # 2: (00:01:38)

-Again, where did you see the red algae, where did you see it the first time?

-The episode lasted, I would say, about 6 or 7 months, from the bottom to the surface, in the column, from Guánica to here, from the shore to outside.

-(Jannette) That's the southern part of Puerto Rico.

-Yeah, the whole southwest.

-And that's the first time you saw her?

-That algae exists, because that is the algae that queen conch eat, but it sticks to the bottom, but this time it was floating, not floating, throughout the entire water column, from the bottom to the top.

-(Janette) And what do you think, why do you think that happened?

-Héctor, who has a PhD in algae, thinks it could be due to the increase in nutrients in the water.

-But is this the first time you've seen her like this?

-In those quantities, yes.

-Is this the first time you've seen her in your life?

-It's usually on the bottom, but not everywhere. In some places, the queen conch (Strombus gigas) feeds on them. But this time, it was everywhere. And the sargassum, since 2011, when the winds shift to the southeast, starts to arrive. Patches of sargassum measuring more than a mile, two miles, five miles long, in lines, in lines, in lines, it's a headache. And when it reaches the shore, it kills the mangroves.

-That's what we hear now.

-Yes, the oxygen runs out, the clams, everything. Everything on the shore dies.