

Jennifer Stock: Welcome to another edition of Ocean Currents, I'm your host, Jennifer Stock. On this show we talk with scientists, educators, explorers, policy-makers, ocean enthusiasts, authors, and more, all uncovering and learning about the mysteries and vital part of our planet: the Blue Ocean.

I bring this show to you monthly from NOAA's Cordell Bank National Marine Sanctuary, one of four national marine sanctuaries in California, all working to protect unique and biologically diverse ecosystems. Just offshore of the KWMR listening radius, on the West Marin coast, are the Greater Farallones and Cordell Bank National Marine Sanctuaries, which together protect 4,581 square miles. The ocean makes up about 70% of the planet's surface, with about 30% of the planet as land and continental masses and islands. The water around these land masses have what's called an "exclusive economic zone", which gives exclusive extractive and conservation rights to its governing country. This zone extends 200 miles out. Beyond that 200 mile mark is the 'High Seas', waters under international jurisdiction, which make up about 2 thirds of the entire global ocean, which is about 45% of the earth's surface. And what a hard place to govern: we're going to be discussing this today.

I'm thrilled to welcome Dr. David Freestone; he's an expert in international maritime law, he's the Executive Secretary of Sargasso Sea Commission, which we'll talk a bit about in the second half. He's a visiting scholar at George Washington University Law School, editor-in-chief of the International Journal of Marine and Coastal Law. He has many other appointments and positions and publications grounding him as an expert in international governance of the ocean, and I'm so honored to welcome David. David, you're live on the air!

Dr. David Freestone: Good afternoon Jennifer.

Jennifer Stock: Thanks for calling in today! So we have about fifteen minutes to dive into this topic that's so massive, covering almost half of our earth, and I know you have so much to share about it. I wanted to just start with in 1982, the UN Convention on the Law of the Sea occurred and laid a basic framework for the law of the sea. This is kind of the big backbone picture of it all, but can you talk a little bit about how this convention came together, and what were some of its outcomes?

Dr. David Freestone: Yeah, surely a great place to start. So the '82 convention, or 'Sea Convention', is really what was caught by the chair, the constitution for the oceans, because it's an enormous document, over 350 articles, five annexes, a huge document, which took nine years to negotiate. They started talking about this in 1973, that's a long time ago, and our views of

the ocean, and our knowledge of the ocean, was very different in the 70's than it is today. I think we have a much closer view of the impacts that we're having on the ocean today, and we also know a lot more about deep sea ocean resources than we did in the 70's. So it covers basically that regime for maritime zones, so it constitutes the territorial seas that states are entitled to, the exclusive economic zones which you talked about earlier, which are really the creation of the '82 convention. And it also recognizes the continental shelf, which extends out to the 200 mile limit, but also in many cases beyond as well.

So now we're at the stage where we can actually explore beyond 200 miles and states are allowed to make claims under the convention. In excess of 200 miles, we've seen some of these claims in the Arctic for example, but also large extents of other areas as well where there are resources, which belonged to continental shelf of the coastal state, which are still under the high seas, so it's quite a complex regime. And the main point I think to take away from it is because we knew so little about the importance of the High Seas, and of the deep seabed in the 70's, that this is a little bit of what we called the "unfinished agenda" of the convention. It was never really thought through what regime should cover the areas beyond "national jurisdiction", as the UN calls it. So, it's rather an unfinished issue which the UN has been talking about and actually is just about to do something, beginning negotiation, just in the next month or so.

Jennifer Stock: Wow, so this has been going a long time, just discovering and discussing how we all need to work together, there's a global community. When I was thinking about this topic, I was thinking a lot about all the conversations about climate and regulation of carbon and energy, and this is so much along on the same lines in terms of international agreements to conserve the commons that benefit us all around the planet.

Dr. David Freestone: Right.

Jennifer Stock: And we're not making the strongest and fastest progress in that area either, do you see these as almost parallel efforts in terms of the commons?

Dr. David Freestone: Very much so. As an ocean specialist, and I actually also teach International Law at George Washington University as well, we were one of the first to introduce a course on this. One of the big disappointments is that the framework convention on climate change doesn't mention the oceans at all, there's one reference to it in relation to sea crustaceans, but there's very little of ocean agenda within the framework convention of climate change. And the Paris agreement, that was the one that was

decided in December of last year, the Paris agreement does talk a little bit about the oceans but it's not central to its agenda, which is about really reducing the emissions of greenhouse gases from the member states and it's not just the developed countries now but the developing countries, that are taking on unilateral commitments to do that.

So they are two very parallel agendas, I was mentioning we knew so little about the sea floor, we knew very little about ocean ecosystems, but again in [the] 1970's we didn't even know really about climate change in the way that we do. There's no mention of sea level rise, for example in the convention that was discussed, negotiated over nearly 10 years in the late 70's. It was really only in the 80's that we began to be concerned about sea level rise, so some of the provisions actually need to be looked at again in the light of what we now know about sea level rise.

Jennifer Stock: Most of the activities we have along the coastlines are fairly coastal, within about 200 miles, and it's expensive and extremely difficult enduring to go out into the beyond, can you talk a little bit about some of the activities that are in these international waters that are of the highest concern?

Dr. David Freestone: Right, sure. I mean I think that, again, I was brought up to think that the seabed was sort of an arid space that there was nothing there, it was like a desert. We now know that are cold-water corals, we know that there are seeps, that there are black smokers, that there are systems on the seabed that which contain lifeforms which aren't based on oxygen, the way that we are in the sunshine we are used to. They're based on sulfur and these other creatures that are called "extremophiles", which have a lot to offer us in terms of scientific research, etcetera, so there's all that aspect of the expiration of the sea, which we didn't know in the 70's. I think in terms of our current uses of the areas beyond national jurisdiction, since 1990, and this is quite an interesting coincidence, a scientist was doing research on icebergs, and he was doing it using satellite data. By accident, he discovered that he could actually pick up the tracks of vessels. And he discovered that in from 1990 to 2010, when he was doing his work, that there was actually a three-fold increase in the number of vessels, of cargo ship traveling across the ocean. So there was this huge amount of international traffic, a lot of it obviously concerning trade, etcetera.

There's been a big increase in the cost in submarine cables, submarine telecommunication cables, really what fuel the internet, and so there's been a big increase in the number of cables which are being laid, and the main impact really is fishing. As demands for fishes increased, as our technology improved, we've pushed out into those areas of the ocean where previously we didn't go, if we look at the increase of fishing

activities, largely coastal in the 50's, some of those in the 60's, 70's we began to push out into the 200 mile zones.

And since then we've moved out, really beyond 200 miles, so a lot of the tuna that's taken in the Pacific and in the Atlantic is taken outside 200 miles, a lot of the deep sea species we didn't know anything about: Orange Roughy, the Patagonian toothfish, which is sold as Chilean seabass is actually a rare species; some of these species we know little about, I mentioned Orange Roughy. Orange Roughy was commercially discovered about 20 years ago by New Zealanders; it used to be called the "Slimehead", and they changed it for marketing reasons to orange roughy. It's a very pretty little fish, about eight inches long, these live to 150 years old, and so they are a unique species which we know very little about. They don't reach sexual maturity until they're about 18, they spawn in year classes, which can be taken up by some of these big nets which are being used on some of the seamounts where they spawn.

So all these sorts of activities were not in vogue when they were negotiating the 'Law of the Sea' convention, we have a system of regional fisheries management bodies, most of the oceans cover it by tuna bodies, but there are regional agreements covering most of the areas of the High Seas, but not all of them, and we certainly don't have many regional environmental treaties that deal with the areas, which are beyond the 200 mile zone. So this is all a new agenda really, I think, if I can carry on, for the last 10 years, the UN general assembly has been talking about this and now working group has been looking at this, whether we do actually need something to supplement the famous '82 convention to deal with our bill on national jurisdiction, particularly the constellation and sustainable use of the biodiversity in those areas where there isn't really regulatory framework.

Jennifer Stock: If I may interject right there, when you're talking about a working group to address that, do you think they would look at it as somewhat of an issue-based working group, so one on the biodiversity that you just mentioned, including fishing, but maybe another on minerals and the seabed, or is it all lumped together? Because in my mind it just seems like the big Wild West, there's no regulation, there's no enforcement, just everybody out on their own, which is terrifying, thinking about a changing ocean, and things changing all the time and the biodiversity, as you mentioned.

Dr. David Freestone: Right, well I think that's right, I like the Wild West analogy but it's not quite as bad as that, the basic principle is what's called "flag state" jurisdiction. It's the country's flag, which own the flags which the ships fly that are responsible of policing them, and some of them are much more rigorous in doing that. We know about what the UN expects of the United States, you can gather from my accent that I come from Europe or the

UK and the EU, [who] particularly are fairly good at making sure their vessels comply with the international requirements. But, there are a lot of so-called “flags of convenience”, which offer much cheaper registration. Systems there have much less rigorous enforcements, so that’s a big hole in it, but otherwise we’ve got what we call “sectoral regulations” so we have International Maritime Organization that regulates vessels, we have the fishing organizations that regulate fishing, actually we have quite a developed system for seabed mining, or let’s say “seabed exploration” of minerals which is governed by the Seabed Authority which is set up by the ‘82 convention. So that’s actually one of the areas there really is a good international regulatory system that’s just for the exploitation of minerals on the seabed that are just beginning to look at the possibilities of mining in these areas.

But there isn’t anything that ties it all together, there isn’t a holistic or overarching framework that gets the Marine Maritime Organization to talk to the fishing organizations to talk to the cable-layers, etcetera. So all these activities are taking place in an area which we regard as limitless, half the planet is areas beyond national jurisdiction. So we’ve tended to think “Well, nobody’s going to be treading on anybody else’s toes, we use regulation closer to home, 10, 12 bars outside our coast”, we’ve tended to see the High Seas as being sort of limitless, and it isn’t. Increasingly we realize that our own reaches extending, our own activities are having huge impacts; The pollution that comes in from land, discharge of plastics for example, is all accumulating in the gyres in our oceans around the world, so that’s something we didn’t even think of.

Jennifer Stock: Right, well land-based plastics are an issue we’ll have to be working on, but I do know one positive with the MARPOL Act, the International Convention for the Prevention of Pollution from Ships banned any release of plastics, but I’ve always wondered how do they enforce that?

Dr. David Freestone: Well this is the flag state jurisdiction--I think you’re right, let’s just address that first, we’re talking about land-based sources, we’re talking about people throwing away plastic bags, the plastic bags washing away to the ocean, and then breaking down into small pieces. I was listening to a radio program the other day when someone said “Well, what does this plastic look like?” It’s not as if you can walk across it, on large pieces of plastic--it’s all broken down into fairly small pieces.

Jennifer Stock: Yes.

Dr. David Freestone: I think that from a scientific point of view, all the plastic that’s ever been created, except that which has been burned, is still there, it just gets smaller and smaller--it degrades, it doesn’t destroy itself. So it’s all there, it’s in small pieces which fish ingest, etcetera, and it has an impact

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on the way the system works. So we're not really talking about plastic discharges from vessels, you're right, MARPOL is a very effective convention I think because it regulates the way that vessels make discharges during their voyages, and when they get to port, and this is where port jurisdiction is important, the port states look at their logbooks and see what they've done, so if things aren't right they can call the flag states and say "We need to take action against this, and if you don't, we're going to keep them here until you do", so there is this second, crudely put, there's this sort second backup within MARPOL, which I think makes MARPOL more effective. We're going to be talking, I hope, soon about my particular little baby convention.

Jennifer Stock: Yes, and actually we need to take a break right now actually, and on the second part of the show we're going to dive into this wonderful case study that is a positive and showing how these international efforts to potentially work together are bringing commission in the Sargasso Sea Commissions.

(Musical Interlude)

Jennifer Stock: So we've been talking about High Seas, and you've been a part of an exciting collaboration that is actually taking all these ideas and conventions to another level of actually doing something. And going over to the Atlantic Ocean there is a special place called the Sargasso Sea, can you just give us a little background on what the Sargasso Sea is?

Dr. David Freestone: Sure, sure. I think most people have heard of it, but not many people actually know where it is, they find it difficult to put their finger on the map. So it's basically the North Atlantic Gyre, it's a (inaudible) gyre around Bermuda, Bermuda is about a thousand miles of the coast of South Carolina, so it's right in the middle of the North Atlantic. And it's formed by sargassum. Sargassum is a form of seaweed, which floats as a result of great bubbles, bubbles of air which keep it buoyant, it's called holopelagic and that means that it spends its whole life at sea. Seaweed is broken off from the shore, but holopelagic seaweeds are completely oceanic, they reproduce by breaking in half, and they can be very old, some of the seed stalk of the algae. It's formed in the Gulf of Mexico, it finds its way into Miami straight up into the Gulf Stream, and washed into the gyre. And there it accumulates into mats, and those mats, if you anything float in the ocean, fish get underneath it, and they act by fish aggregation devices, fishermen are aware of the importance of this, so this is like a coastal environment, which is two, three-hundred miles from the shore.

It has its own species that live on it, over the years it's actually developed endemic species that live only in the sargassums: special fish, and crabs, and shrimp and other creatures. And it also acts as a habitat for a large number of other species like baby turtles, I'm thinking off the beaches of the Atlantic, there are a lot of predators, they head out to sea from the coastal predators. They find this very nurturing environment, because the temperature is slightly higher amongst the weed than elsewhere, they can eat it and it also provide them with protection. So, it has endemic species, and it also provides a kind of nursery.

And the most amazing story, really, is the European and American Eels, the *Anguilla* eel, which live in what's called catadromous, so we're used to--knowing about salmon, they're anadromous, they spend all their life at sea, they return the place they were spawned, up rivers, spawn again, and another generation is spawned--the eels do exactly the opposite. They spend their lives in brackish water and in fresh water, when they're about ten, twenty years old, mature, they can be much older than that, but about after 20 years, they head out to the ocean, about three thousand miles out in the Sargasso Sea just south of Bermuda, where they spawn and die. And then the little guys, the leptocephali they call them, make their way back on the ocean currents, the European ones find their way to Europe, the American ones find their way back to the Americas, we don't think the same rivers but we're just verifying, it's only recently that we've fully understood this, never been witnessed. So the Sargasso Sea is this huge mass of weeds which was discovered actually by Columbus on his first voyage. His seamen when they got into the weed thought they were near coast, little did they realize they were four hundred miles from the nearest land, and then they were worried they'd just get caught up in the weed because it was so thick.

Jennifer Stock: Mm.

Dr. David Freestone: We don't see mats like that anymore. So it's a very iconic ecosystem which is very important to biodiversity and of course, you were mentioning climate change, it's also a carbon sink because the algae grows, then it dies, it props the bottom and the Pacific West is carpeted.

Jennifer Stock: Amazing, that is a really wonderful description of that environment and that eel story is absolutely amazing, thinking about saltwater in freshwater and freshwater in saltwater, I love that there's still so many mysteries out there that we're still learning about. So with that wonderful ecosystem that obviously has so much benefit to so much marine life out there, how did the premise of the Sargasso Sea commission come to be?

Dr. David Freestone: Well we, I and a number of others, have been working with the International Union of the Constellation nature on this (inaudible) issue, there beyond national jurisdiction, and which has been talked about in the UN, there's been for nearly a decade. And there will, I think, be a treaty negotiated, it's likely to take four or five years more, so in about 2010 there was a number of philanthropists got together with a very famous American scientist, who has been leading this and they said "Well, shall we try and do something in advance of the UN? Let's see what you can do within the existing institutions who actually put protections in place to protect national jurisdiction. We won't wait for (inaudible) mention." And so what we decided to do was to try to do was to use the existing, let's say sectoral organization, so let's go to the National Maritime organization to see if they can put protections in place against the risks of discharges from shipping; let's look at the fishing organizations, which there are two, there's the Northern Atlantic Fisheries Organization, and there's the International Convention for the Conservation of Atlantic Tunas (ICCAT). So we've been talking to them and we've actually made progress with them as well, we've talked to the cable-laying organizations, the International Committee it actually, it's not a regulatory body actually, it's a self-regulation body, committee for the protection of cables, and we've actually made a lot of progress in the realms of good practice. And then we've also talked to some of the agreements which regulate conservation of migratory species, the Convention of Migratory Species, we've actually got them to list the European Eel as a species that needs special protection and international collaboration.

So we've tried to use the existing network of the existing organizations. And in 2014 we actually brought together a number of governments, who were interested in helping us, to sign the Hamilton declaration on the collaboration of conservation for the Sargasso Sea. We got five governments to sign: the United States, the United Kingdom, Bermuda, the Azores (it's part of Portugal, but autonomous so that's good, some of the regions of the Azores that's the edge of the Azores, they also signed) as did Monaco, Prince Albert II is one of the great advocates of conservation so Monaco signed as well. We've actually got the British Virgin Islands to sign, then we have a sort of collaboration from a number of other governments, including the Bahamas, Trinidad, Africa, and a number of others. So, we've really attracted a lot of attention in the international level. We've appointed a commission, and these are volunteers whose job is to exercise stewardship over the Sargasso Sea. We don't have legal powers, but we want to flag the fact that this is an area where bad things are happening, let's say as a result of human activities, we're finding an increase in plastics, we're finding an increase of pollution from vessels, the fishing generally in the area has been

highly depleted, so we're looking for ways in which we can take measures to protect it.

Jennifer Stock: That's wonderful, and so with the support of each of the sectors that you mentioned, what are some of the goals that you hope to see in, say, 15, 20, 50 years from now in the Sargasso Sea with this commission working together in terms of the stewardship?

Dr. David Freestone: Wow, fantastic, you've given me a little time (inaudible). We've actually achieved an enormous amount in the last four, five years, we actually got recognized by the UN, we've been mentioned in the UN every time the UN composition resolution on ocean issues, and we've been mentioned in the last four, five years just for making important initiative. The United Nations has just produced a 'World Ocean Assessment', the first one ever, and we have a whole chapter on the Sargasso Sea, Chapter 50, which is the only named ecosystem, the others are more generic, so we got a lot of recognition from the UN, so we hope that that will continue. It may be that we've moved towards having a Sargasso Sea treaty in time, which would actually be all the countries around it but other countries could join also to indicate their support, because we've gotten support from governments which aren't in the region like South Africa, for example, and other governments, the Netherlands, Sweden, and others.

So that would be one goal, the other would be to put more serious measures of protection in place, we have this area, iconic area, where it's 2,000,000 square miles, we're not going to make it a "no-go" area, 2,000,000 square miles in the North Atlantic, but we would like to see some form of restriction on vessel traffic, if the vessels go through the Sargasso Sea, they're going to break up the mats, so that's something we want to see. We'd also like to see recognition by states of the importance, particularly as a breeding area, for example eels, but also for other species which are in danger like Marlin, for example, we know definitely the Marlin spawn in the Sargasso Sea. We have some evidence that the famous bluefin tuna, which are from both the Pacific and the Atlantic, but the Atlantic bluefins are actually found in the Sargasso Sea when they're known to be spawning in other parts of the world, in the Gulf and in the Mediterranean. So there's prima facie evidence that this is probably a spawning area for tunas as well. So that's really what we've been looking at, it's not so much making it a complete "no-go" area or a complete "no fishing" area, but some form of regulative arrangement, using all these little sectoral arrangements, and ultimately if the UN does actually produce the draft convention that we've been talking about, if it's started this process now it will be finished in a month or so, the first meeting is actually the last week of March. If they actually produce a convention then we would want to be the poster child

who actually get in there and have the Sargasso Sea recognized as one of the areas they will be seeking to protect.

Jennifer Stock: That's fantastic. It's a really historic event and a wonderful case study to present at goodwill of collaboration and stewardship as a theme amongst those countries and those sectors as well. So that's a fantastic story of how it can go to another level, and while you're talking about the Atlantic and listing those countries I was just thinking about the Pacific and it's so big, and do you know of any other areas, of different ocean bodies that have similar interests of doing what the Sargasso Sea commission has done?

Dr. David Freestone: Well, yes, we've certainly been held out as being a model, exactly there are some in the Pacific that are part of an organization which you've probably know of called Big Ocean, where we're looking at areas of the ocean that need protecting. But in the Pacific there's a great project run out of Costa Rica called the Costa Rica Dome, which is an area where because of the currents they have very high productivity in Costa Rica off the west of Central America where a lot of species collect: cetaceans, but also tunas and the sorts of creatures which we've been talking about in the Sargasso Sea so very similar, and we're in very close contact with them, we're in good colleagues with that. I was hearing about this place called the White Shark Cafe, a thousand miles off the coast of California, where White Sharks gather, and they just discovered this by tagging, no idea why they call it the cafe, which has got a great name. But basically there are lots of sharks there, presumably they might be breeding, they might be pupping, they might just be hanging out, that's quite interesting that we know so little, we're only beginning to discover why particular areas are important.

Jennifer Stock: Well, chiming in, we're almost at the end of our segment here, but you brought up a good point about the White Shark Cafe. We know about that because of technology, and tagging, and satellite technology which has certainly illustrated much more of the ocean that we have never seen before, and I'm sure activities as well and I'm curious of your standpoint, working with these global agreements; do you believe satellite technology and technology like Google Ocean is an aid or a hindrance when it comes to potentially adding in components for stewardship of these High Sea areas?

Dr. David Freestone: Oh absolutely fantastic aid, we're actually having a workshop, courtesy of NASA, who's working with us later this month. We're having a workshop to look at all the data that they've collected, the satellite data, and then we're trying to overlay it with information about tracking of animals, about ship movements, about fishing activities so we can get some kind of picture. Otherwise it's sort of a blank area in the ocean, so

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we want to make sure satellite and the other ways are a way of filling in so we can learn much more about the dynamics, so we can make much more informed decisions about the activities which we permit and which we allow, that we don't just regard it as an empty space which we can do whatever we like--the Wild West you talked about. So I think this brings it home, we can pick up vessels which are not doing what they're supposed to do, that's one thing that Google has been looking at I know and others. I think new technology is definitely the way to go, we haven't got enough vessels to be policing these areas, so satellite observation is a tremendous way of doing that.

Jennifer Stock: Well that's fantastic. We're just about at the end here and I wanted to ask you is there any way that people can follow along and hear what's happening with this next rendition in the UN convention, and certainly with the Sargasso Sea; are there any websites that you would recommend?

Dr. David Freestone: Absolutely. Well, we have our own site which we just revamped called www.sargassoseacommission.org, because we're a non-profit, national organization, so I'm happy to look at that. And we actually post developments from the UN as well, we also have the UN's website as well, the Division of Ocean Affairs and Law of the Sea is un.org, which has the Law of the Sea convention and the records of all those meetings as well. So those will be some great sites.

Jennifer Stock: Fantastic! Wonderful, well David, thank you so much, I know that you are extremely busy and an important person with all the work you're doing on an international scale and I really thank you for coming on Ocean Currents today and sharing a little bit about what's happening out there!

Dr. David Freestone: Well it's a great pleasure and I'm very impressed with the program, congratulations and I hope your listeners enjoyed it.

(Exit music)

Jennifer Stock: Been tuning in to Ocean Currents, we've just been talking with David Freestone about the High Seas, and specifically focusing on an area called the Sargasso Sea, which is an area in the Atlantic that's extremely productive, and a bunch of countries are coming together to work together to conserve it! And I just want to let folks know that if listeners have ideas for topics, questions, comment please email me, [jennifer.stock \(S-T-O-C-K\)@N-O-A-A.G-O-V](mailto:jennifer.stock(S-T-O-C-K)@N-O-A-A.G-O-V). Ocean currents is the first Monday of every month, it's part of the West Marin Matters Series where every Monday at one you can tune in every Monday you can tune in and learn about a topic of environmental focus, either locally or globally. And Ocean Currents has a podcast, if you haven't checked it out yet you can

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go to iTunes and search for "Ocean Currents", or you can go to cordellbank.N-O-A-A.G-O-V to get past episodes. Thank you for listening, enjoy the ocean, bay, or whatever body of water you can get into safely, this has been Ocean Currents here on community radio for West Marin KWMR, thanks for tuning in!

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