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A NEW ERA FOR U.S.-CUBA RELATIONS ON MARINE AND COASTAL RESOURCES CONSERVATION

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P R O C E E D I N G S

MR. EDWARDS: Welcome, everyone. Good afternoon. I hope you're enjoying the nice cool summer day here in Washington, D.C.

It's about 90 degrees outside.

My name is Scott Edwards. I'm the Director for Latin American and Caribbean Program in the Oceans Program at Environmental Defense Fund.

We have been working -- Environmental Defense Fund has been working in Cuba for nearly a decade -- some of us individually for more than a decade -- on marine conservation and environmental policy, on areas and issues such as the creation of marine-protected areas, the development of environmentally sound ocean energy policy, fisheries, and environmental law.

We're very pleased to be presenting and co-hosting this event with the Brookings Institution -- and Vicki next to me -- on embarking on a new era of relations between Cuba and the United States, particularly on marine and coastal conservation.

We have a very distinguished panel with me here today -- folks from the Brookings Institution, EDF, the Mote Marine Laboratory, the State Department, and from NOAA -- here really to talk about how we can engage in a mutually constructive way with our Cuban colleagues.

We hope to one day soon have many of those colleagues from Cuba here in a setting much like this one so that both sides will have

the opportunity to present and discuss projects to improve our knowledge and awareness of the shared resources between our two countries.

There are several universities, academic institutions, and other NGOs that are not presenting today. These are not the only institutions and organizations that are working with Cuba. There are many others working in Cuba and running very successful programs.

Some of the individuals are in the room today. W.W.F. Canada, the Nature Conservancy, Conservation, International.

We also have a very special guest with us in the audience, Wayne Smith, who is a former Chief of Mission at the U.S. Interests Section in Havana.

Last week, some of you may have attended the Brookings event that Vicki chaired at the -- it was actually at the Carnegie Institute; correct?

They had just released a report entitled “Cuba: A New Policy of Critical and Constructive Engagement,” which is right here, and there are copies available in the front. It was a report they worked on for 18 months, a very impressive report and Dora actually -- I can't pronounce her last name -- but she’s here in the room.

MS. BESZTERCZEY: Beszterczey.

MR. EDWARDS: Beszterczey. She did an incredible job writing the report. It lays out recommendations to the Obama administration on how to embark on a new course of dialogue and

engagement with Cuba.

This particular mini-conference, we call it, is about the environment, however, and in particular our shared marine resources and how this government has a unique opportunity for cooperation with Cuba.

We're asking that President Obama make the environment one of its top priorities in the future of Cuban policy. And they can do this without any legislative action, as we talked about -- as you talked about last week -- and could make tremendous strides in advancing knowledge for both countries that are important about fisher -- you know, about important fisheries, about coral reefs, about the development of oil and gas exploration in the Florida Straits -- all of these things that are dear to the United States and important for Cuba and the United States.

Before I get into -- I'm actually not the introductory speaker. It's Vicki and Steve, so I went a little on. But before introducing our first speaker, I just wanted a couple of logistics. If you could turn off your phones or put it on silent right now, so it doesn't interrupt the folks, especially the speakers.

The bathrooms are in the back, to the left. And we will be reserving questions to the end. All right. We'll have probably 45 minutes to an hour to answer your questions to the individual speakers.

So to begin, I'm going to ask the Vicki Huddleston, former Chief of Mission to the U.S. Interests Section in Cuba from 1992 to 2002, and if you remember Elian Gonzalez she was the diplomat there at the

time and handled that very well from both the Cuban perspective, I think, and the U.S. perspective.

So, Vicki?

MS. HUDDLESTON: Thank you very much, Scott. And thank you all for taking some time off from this beautiful day and coming to talk about the environment.

It -- for me, it's such a pleasure and an honor to have been asked by EDF to co-chair this with Brookings, because usually I'm talking about Cuba policy, politics, relations and all this, and today I have the great pleasure at least to begin by talking about Cuba's history, its beauty, and its environment, which brings me immediately to think about one of the prettiest and most unique places in Cuba, and that was the place that Christopher Columbus first laid eyes on.

And when he saw it, he said, "This is the most beautiful place in the world. The birds sing so that they can remain here."

And that was Baracoa or that is Baracoa. And Baracoa became Cuba's first city, its first capital, and was founded by the Conquistador Don Velasquez Quillar.

I first came to Baracoa by driving on this windy and twisty highway that goes way up into the Sierra Cristal and traverses 11 bridges with water running down the road in the midst of a tropical storm.

And you come in Guantanamo City and then drop down into this absolutely marvelous bay. And we stopped and we looked around,

and this old man came running down the road, and a machete in one hand, bananas to sell in the other, and it just seemed as if we had reached this sort of 100 years of solitude place, like Maconado. And I wonder, you know, how is Baracoa today. And how is it doing, because its very name tells us that it's something special. In Taino the native language, it meant presents of the sea.

Right next to Baracoa is the Alejandro de Humboldt National Park in Cuba, perhaps the most complex park (inaudible) in Cuba. It holds 16 of Cuba's 18 endemic species. It's thought to be one of the most humid places on the island, and, as a result, it's produced all these marvelous things.

But yet, when I returned a year later to Baracoa and I went up again la Farol Highway, I noticed that some of the mountain sides had been cleared for banana plantations, small farms -- population pressure.

I also in talking to some of the environmentalists in this group learned that the Alejandro de Humboldt Park itself is threatened to some degree by the fact that it probably harbors nickel and other mineral wealth.

So for us, there's an important issue about where Cuba is going with its natural resources and how we can cooperate to help Cuba use its environment -- and use it and conserve it and preserve it at the same time.

I am aware that the Environmental Defense Fund has done

so much in this regard, because they been working in the four major island groups off of Cuba.

All of the groups, to some degree, are threatened. The Canaros and the Jardines de la Reina on the far side of Cuba have been battered repeatedly by hurricanes. The Savane Camaguay of (inaudible) or battered repeatedly by amazingly aggressive tourist development. And then the beautiful refuge of the Colorados up around Maria del Gordo, which actually harbors of the seven species of turtles that exist in this planet today, and it happens to be, I can assure you, a scuba diver's paradise is again battered by the hurricanes that touch Cuba.

And even more so, when you think about the fact that just offshore, to the north of Cuba, its deep-sea oil resources amount to 5.5 billion barrels of oil just to the north, if you include the eastern gap, probably around 10 billion. It has around 10 trillion cubic feet of natural gas.

The exploitation of this wealth could reduce Cuba's dependence on Venezuela, which would be obviously a benefit from the view of the United States government. It would provide the possibility for better lives and development for many of its people. But how it’s done it’s extremely important.

Certainly, no one wants an environmental spill great tragedy of that type so close to these unique islands of Cuba, the Caribbean itself, and our own coast, our own East Coast, and Florida.

Fortunately, again, and I think maybe we'll hear a little bit about it, Dan Whittle and Orlando Rey have been working on Cuba environmental and coastal Law and policy that will help in that regard.

But Cuba is going to change. Cuba is changing, maybe slowly, but Cuba is coming into the 21st century. And as it comes into the 21st century, not only will it have to deal with some of the issues I've spoken of, but it has tourism, mining, crumbling buildings, pollution in Havana Bay, pollution from Moa in the mining of nickel -- all of these things will have to be addressed.

And they will have to be addressed before it's too late.

So what better time now to begin thinking about it than today. And I congratulate you for holding this conference and beginning to really bring people together and think about how to develop a comprehensive strategy on the environment toward Cuba.

But it also most appropriate because the Obama administration has shown a new flexibility toward Cuba. They have put aside the policy of hostility and isolation for one of engagement.

We don't know how far they are going. We know they have already allowed Cuban-American travel, remittances, and the ability for American companies to provide television, and radio and telecommunications hookups to Cuba. That is a good beginning, because perhaps they have realized something, if I can step back to Baracoa again for a minute.

The chief of the Taino, Hatue, he was about to be burned at the stake and the Spanish priest said to him, look; I can't stop you from being burned, but I can promise you eternal salvation if you convert now.

And Hatue said, "Would there be Spanish in heaven?" And the priest said, "Well, of course." He said, "Well, in that case, I would rather burn in hell."

So perhaps it is time that the United States would find it better than hell would be actually dealing with the Cuban government.

The Brookings Project, of which I co-chaired with Carlos Pascual and of which we had 19 advisors, half of whom are Cuban-American, who span the ideological spectrum, reviewed these issues of Cuba over an 18-month period.

At the end of our review, we came to the conclusion -- and remind you some of these were very, very conservative Cuban-Americans and all of them were major academics on Cuban issues -- came to the conclusion that there is nothing else that the United States can do that really make sense for Cuba than to have a long-range strategic vision of a policy of critical and constructive engagement.

Well, how did we get there? I'd like to share with you, if I could for a few minutes, some of the principles that we developed as we went through these simulations together. And this is what made us be able to come out with a roadmap and with recommendations, despite the fact that this group was extremely diverse, not only in ethnicity, but also in

ideology.

The first principle that we realized -- and I think we came to that realization almost immediately -- and that was that the revolution is a reality. It seems sort of simple. It cannot be undone. It cannot be unlived.

If the United States is going to have a relationship with the Cuban people and the Cuban government, we have to accept the reality of the Cuban revolution.

Secondly, the Cuban hierarchy -- and this is perhaps the most difficult issue for many Cuban-Americans -- the Cuban hierarchy is strong, interdependent, and has been around in some cases since the Sierra Maestra and in almost all cases for the last 20 years, except those who were purged just recently.

It is an inter-braided leadership between government, the Armed Forces, and the Party. We should not anticipate but suddenly this government, this leadership, is going to disappear.

We don't have to like it, but we have to respect it. It's a fact of life, and if we're going to deal with it, we'll have to accept that reality.

The third principle we found was almost shocking, because we were doing it in the simulation in which we were looking at a crisis in Cuba. And, of course, the first thing we came to immediately -- and this was with the international community -- is no intervention, certainly no U.S. intervention, and even an international intervention would be a very difficult, complex, and unwanted affair.

So what do you do to stop a complex emergency in a country? We'll you get in contact with those people in charge.

But even the international community -- and this is European ambassadors, Latin ambassadors sitting in the room have very, very thin knowledge of Raoul and the hierarchy. It should be self-evident perhaps that we have it, because every time we make a prediction that Carlos Lahe is going to be first president or the next president of Cuba, we find that that's not only not the case, but he's looking for new job.

We just don't have the kind of relationship nor do most of the world with Cuba to really understand who's running the place. And this makes dealing with Cuba, when or if there is a crisis, extremely difficult and very much in need of being addressed not only by our own country, but by our allies as well.

Fourthly, the only valid agents for change in Cuba are the people, are civil society. And the only valid way to help them engender change is to be in contact with them. But yet, we must remain aware that civil society is extremely weak in Cuba. And it will be some time before they have the ability, the knowledge, and indeed the lack of fear to be able to demand changes in Cuba.

And then the two last ones, which are pretty self-evident, is reintegration of Cuba into the atmosphere. If Cuba begins to meet the standards of the hemisphere, then how much better -- what an incentive to bring it in and how important for the environment, because it isn't just the

United States and Cuba or the Caribbean and Cuba, indeed it is the whole region that should be talking about the environment with Cuba and looking at ways in which we can protect and conserve it.

And then the final one, of course, is reconciliation.

In the end, U.S. policy toward Cuba will never really be satisfactory until Cuban-Americans and Cubans reconcile. And to the degree that we can encourage Cuban-Americans and Cubans to reconcile, we will push that along.

So let me then talk to you just a few minutes about what we did in this roadmap.

What we laid out was short-term, medium-term, and long-term measures that the President himself, that the executive branch without the Congress can implement. And indeed the President has the authority and the popular support to do so.

The President has the right to change many, many embargo regulations -- rescind and modify. Helms-Burton you heard codified the embargo, but it also codified the authority of the Secretary of Treasury to license any prohibited activity.

So there's much that should be done. So don't be hesitant today. Most of the things that you and the environmental community want to do can be done through executive authority, through licensing, through more liberal approval processes.

Also, there's the popular support. A December poll of

Miami-Dade County residents who are Cuban background showed that 53 percent of Cubans in the United States, in Miami-Dade, would lift the embargo; and 65 percent would establish relations with the United States -- that's a pretty significant change from the past.

So what are some of the things that you might begin with and do?

Well, here the following brief list are some of the things that are contained in our three stages -- in our three baskets.

Travel, two-way travel. We need to get back to the people-to-people travel that allowed academic exchanges, education, cultural. But also we need more Cubans coming up here to attend universities, to meet with WWF and EDF. We -- it's very simple for the administration now to go right ahead and do migration talks, and it can also do environmental talks and other issues of mutual concern to both our countries.

We could easily go ahead and allow gift parcels, money remittances to civil society and to individuals.

For example, EDF could provide nets to, say, a cooperative of fishermen or two individuals -- scientists in Cuba who are monitoring rainfall and other things such as this. There's no reason again that these things shouldn't be pushed forward and shouldn't be done rapidly.

Last night, we were talking and I was suggesting opening an office. That, too, is completely doable.

Another thing that we're suggesting and I think that would help immensely in your environmental projects -- Howard Berman passed an amendment which is the Free-Trade of Ideas, but it was always interpreted that this -- that we could not create new films, new music in Cuba.

Imagine going down to Cuba and creating a film, a documentary about the environment. And this is just a matter of better and wider interpretation.

What else can we do? We could have a disaster relief agreement with Cuba. We could actually provide funds for disaster relief to Cuba, in which we didn't keep our hands so tightly on as we have tended to do in the past.

If we took Cuba off the terrorist list, various types of equipment -- computers, telecommunications would be -- more easily flow to Cuba. And that would go along with the idea that we could sell and donate all sorts of telecommunications equipment to Cuba.

And then step back, let the region decide how to deal with Cuba. Let the region begin discussions on how to reintegrate Cuba into the community of nations.

The opportunities are there. The administration is beginning to move forward. And you hear today are in the unique position to have the information, the knowledge, and the opportunity to begin to build that strategy. That can be done quietly. That can be done effectively. And not

only will it protect the environment, it will help the administration move forward.

So I hope to answer the question that I began with that in 10 years, when we go back to Baracoa and indeed any of Cuba's unique archipelagoes that we will find the presents of the sea.

Thank you very much.

(Applause)

MR. EDWARDS: Thank you very much, Vicki. It was clear during your time in Cuba you had some time to get out and to see the beauty of the island. That's fascinating. And --

MS. HUDDLESTON: Well, you know, that's another sad thing, because now we can't travel around, you know. That would be a first thing to change.

MR. EDWARDS: Right. Drive around on the island. And I suggest if you haven't read the report, read it, because there are some recommendations that the Obama administration has already picked up, like telecommunications and opening that for Cuba, which is something in a meeting that we've had with scientists from Cuba, something they desperately need is access to the Internet and information.

Steve Hamburg, the Chief Scientist for the Environmental Defense Fund and actually a recent member -- a new member to our organization, is here to speak about the opportunities with Cuba, with scientists and working in that country.

Steve, do you want to say a few words?

MR. HAMBURG: Thanks, Scott. So, for me, it's great to be here and a real pleasure. And I'm an ecologist by training, and I've worked on the role of human disturbance in the ecosystems, and this, without a doubt, is a propitious time to be thinking about the kinds of things that could be done with these shared resources with Cuba. But -- and there's no better way in my experience to engage society than through the environment and through marshaling the science of the environment.

I say that as I serve as the vice chair of a group called the International Long-Term Ecological Network, which is a network of 45 countries, member networks around the world -- as diverse a group of countries and status of science as any in the world, from Malawi to the U.S., to China, and southern Africa is represented, South America.

So we got a wide range. And it provides an amazing opportunity to share and to understand the context of the environment in ways that are very neutral. The National Science Foundation has supported these efforts for a long period of time. There are funding opportunities within the U.S. government that are seen as very neutral and apolitical that provide us with the opportunity to, for example, reach out to the scientific community, provide the infrastructure.

I've spent time in northern Mongolia in one of the most remote places in the world working on these kinds of issues in a very

closed society in educating and training young scientists. It's a two-way street, and clearly there's that opportunity here that I think could be mustered very quickly and would provide an enormous opportunity to learn, mutually and in multilateral ways. It doesn't just have to be bilateral.

These kinds of networks exist and provide a wonderful forum for us to really learn from each other and provide the knowledge base to really move environmental considerations in Cuba along.

And certainly, from a global perspective, the fact that such networks exist because there really is a rising concern globally, whether it be through climate change or other international issues, and we need to be able to have those dialogues in order to effect that change.

Obviously, there are specific reasons for doing that jointly with Cuba, because of the really world-class ecosystems, the critically important natural systems on the island; natural systems that are very linked biologically and physically to those in the U.S. So we have a very strong mutual interest that we need to address, whether they be from migratory fish populations or these energy issues that Vicki addressed, to the terrestrial ecosystems and the issues that we address nearby in Puerto Rico. I've worked on land-use history and the effects of development on the island of Puerto Rico -- enormous capacity in the U.S. within the context of Puerto Rico and infrastructure that we should be tapping in this conversation, as well as across the Caribbean.

There are risks. There are opportunities to mitigate those.

Now is the time that we can exploit the resources that exist, the knowledge that exists, and the opportunity for all of us to learn.

So I'm hoping I'm going to learn today, and I really want to exhort us to take advantage of it -- from my perspective the scientific opportunity to effect an understanding of the environment that hopefully can lead to a set of policies that are mutually beneficial.

I think that those kinds of relationships really do provide an opportunity for conversations, for insight to bridge some of what historically have been polarized relationships. And we know how to do that, both in the U.S. and as a global community.

So I think I want to stop with that and really say there's this really wonderful opportunity. It's a really important time. And I look forward to being part of the conversation on exploiting those opportunities.

Thanks very much.

(Applause)

MR. EDWARDS: Thank you very much, Steve. I'm going to turn now to David Herman from the State Department. He is with the Office of Ocean and Polar Affairs. And I know what you're thinking: Cuba is not near the poles. It's true, but in his purview is the wider Caribbean region. And he's going to talk about perspectives on marine resource conservation in the Caribbean. David?

MR. HERMAN: Great. Thank you very much, Scott, and thank you very much for having me here today.

As Scott mentioned, I am with the Office of Ocean and Polar Affairs, so I'm, by no means, an expert on Cuba. In fact, I don't even serve in what we call our Western Hemisphere Bureau. I serve in our Ocean Environment and Science Bureau.

But I do -- within my portfolio -- part of my portfolio is covering the Caribbean, and so I have a little bit of work that has to deal with Cuba.

What I'd like to talk about today is the overall U.S. involvement in the Caribbean, just to try to fit Cuba within the context of what's already going on within the region, and then especially what I'd like to elaborate on a little bit is the engagement that the United States has with existing multilateral organizations and treaties in the region, many of which Cuba is also a party to.

So just in terms of thinking of other opportunities for engaging Cuba, I'd like to make sure that we don't lose sight of these existing opportunities that could possibly be expanded upon.

Just to start out, a little thing I like to say at the beginning of any talk I make about our involvement in the Caribbean is that United States is a Caribbean country. I think people often lose sight of that. We often call it our third border.

The Caribbean -- there are many issues in the Caribbean that affect us very directly, especially things such as security, stability, immigration, and particularly issues involving the environment.

The Caribbean is a huge area with huge diversity of people, of resources, languages -- very unique mixing of people in the region, and a huge diversity of wealth and ecosystems.

The bulk of the Caribbean population lives on either Cuba or Hispaniola. There is only a -- I think it's about 35 million or so in the Caribbean islands. There's only about six and a half million that don't live on either Cuba or Dominican Republic or Haiti.

And obviously a very long history of U.S. involvement in the region, but it's also very fair to say that many -- we often hear complaints from Caribbean countries that they feel neglected by us; that we are not engaged enough, considering that we're neighbors.

It's a region with many challenges that have no easy answers, especially in terms of economic sustainable development, natural disasters -- it's very vulnerable to weather-related as well as earthquakes, tsunamis, volcanoes -- things like that; insufficient response capacity and lack of adequate warning systems. A lot of problems with health and infectious diseases, and also obviously a lot of environmental problems. This is for the Caribbean region in the whole. And I think, you know, no doubt, everybody is very well aware that it's a region that's extremely vulnerable to climate change.

Perhaps next to the poles and perhaps the Pacific small island states that have an existential threat, it's probably the most challenged area when it comes to climate change in the world.

Also lots of other environmental problems that affect the region that can often be thought of as sort of core components in the feedback cycle of impoverishment, especially if you look at, for instance, deforestation in Haiti. It's an example that comes to mind.

But needless to say, the United States is -- we are committed to the region, its security, and to its sustainable development.

We give a lot of financial assistance to the region, you could obviously make the argument that it's never enough or that it's not necessarily targeted as well as it could be, but it's still substantial.

In recent years, much of that has focused on health, natural disasters, and especially natural disaster relief. I had actually listed out a whole list of examples of our environmental assistance, but I think I won't go through that now, especially I know we -- some speakers from NOAA are here. Much of that assistance is provided by the National Oceanic and Atmospheric Administration.

But one project I would like to mention, just because I'm hoping it has a lot of potential, is something that the Environmental Protection Agency's National Estuary Program is trying to start up called the Latin American Federation of Coasts and Estuaries.

And it's actually the -- our national estuary in San Juan Bay, Puerto Rico that's trying to get this started. So, just for the people in the environmental community in the room, I hope you'll pay close attention to this and supported where you can.

And, you know, eventually, if things work out the way I think most people in the room are hoping they will, it could be something that potentially Cuba could participate in.

So in terms of the U.S. engagement with the multilateral organizations and treaties in the wider Caribbean region there are actually -- there are many and I think a lot of times people aren't fully aware of what some of these opportunities are, where we are already engaging with Cuba and to do more of.

First and foremost, I'd like to mention the Cartagena Convention. This is the umbrella agreement for marine environmental protection in the wider Caribbean region. And just to explain, we talk about the wider Caribbean region, were talking about obviously the Caribbean Sea and the Caribbean island states, but also the Gulf of Mexico, the coasts of the -- the eastern coast of Mexico, Central America, even there's some of the member countries of the Cartagena Convention are countries in the northeast of South America.

The Cartagena Convention came into force in 1986. There are 23 member countries. And it has a legal structure that is -- covers various aspects of marine pollution from ships, from sea dumping, sea bed activities, airborne pollution, and especially pollution from land-based sources.

The Convention parties are also required -- expected to take appropriate measures to protect and preserve ecosystems, fragile

ecosystems, and habitats and species.

And the Cartagena Convention has three protocols. There is the oil spill protocol which all the members of the Cartagena Convention are automatically signed up for the oil spill convention as well.

There's the convention on protected areas and wildlife. The (inaudible) that's called. It came into force in the year 2000, and there are only 13 members of that.

And then there's the land-based sources protocol, which is still not come into effect, because there's only six members and there has to be nine.

Of these, obviously the oil spill protocol Cuba and the United States are both parties to already. The (inaudible) protocol on protected areas and wildlife, we are also both parties to.

And the land-based sources protocol, the United States recently ratified. Cuba has not yet ratified, but we do understand that they're in the process of doing so, and they're well under way and making every effort to do so soon.

I won't go into details about these protocols other than to say that land-based sources protocol is perhaps the most significant agreement of its kind in the world, because of its inclusion of regional effluent limitations for domestic wastewater for sewage, and its control of agricultural non-point sources. And I believe -- I probably have some people in the room from NOAA, but I believe it would also control runoff

from mining operations, too.

There are various annexes, either already existing or planned for the land-based sources protocol for other types of marine pollution from land-based sources.

The United States sees the protocol as something that will bring the countries in the region up to our standards, so, when we ratified the protocol, we didn't have to change anything in our domestic legislation or regulatory structure.

And we're hoping that our ratification -- our recent ratification we're hoping will spur other countries in the region to join it, and especially I think people in this room would hope that Cuba will join soon.

The Secretariat for the Cartagena Convention and these three protocols is the U.N. Environment Program's Office in Kingston, Jamaica, called the Caribbean Environment Program.

And we've been a strong -- the United States has been a strong supporter of the Caribbean environment program and of the Cartagena Convention.

In the last few years, we've given about $400,000 to $450,000 a year to support their activities.

And chief among the activities of the Cartagena Convention and then of its -- the implementing arm, the Caribbean Environment Program Secretariat, are -- they have these organizations set up called the Regional Activities Centers.

And there are four of them currently existing, one of them that protects the (inaudible) protocol, protected areas and wildlife; one that supports the oil spill protocol, and then two that protect -- sorry -- that support the land-based sources protocol, one of which is in Trinidad and Tobago for helping out the English-speaking countries, but then one of them that is actually based in Cuba for supporting the Spanish-speaking countries' implementation or adoption even of the land-based sources protocol.

And just one thing I would like to say on that is that we've worked very well with the staff of the Regional Activities Center in Cuba. It's a very professional staff, and, to the extent that we do deal with them, we've always had good relations, good interactions with them.

A couple of other activities under the land-based sources protocol, under that Regional Activities Center I think are worth mentioning, because they could -- they do involve Cuba and could be additional avenues for our engagement with Cuba in the future.

There's a technical report that we're currently working on called Technical Report 33. I don't know why it's called that and where they came up with that name. But anyway, it's an overview of loading of marine pollution into the Caribbean Sea, including the Gulf of Mexico.

We are helping to lead the effort. We've provided all our data for this overview. Many countries have not, because it's -- the way they started it it was a bit burdensome. We've been helping to sort of

refine the effort and simplify it.

So it’s still an ongoing process. It's a little bit sensitive because we are just by nature of our geography and the Mississippi River, we are the largest contributor to pollution of the Caribbean -- of the greater Caribbean Basin of the Gulf of Mexico, because 60 percent of our, you know, land area drains into the -- of the heartland of the continental U.S. drains into the Mississippi River.

So people could easily point their fingers at us, but that would ignore the fact that we actually do a better job of anybody else in the region of controlling plant-based sources of pollution. So, it just goes to show that how the data is presented is very important.

Another activity worth mentioning under the Regional Activities Center for land-based sources is something called the know-why network, and that name is even more of a mystery to me than Technical Report 33.

But suffice it to say, it's meant as a snapshot. Whereas, the Technical Report 33 is an overview of overall pollutant loadings, marine pollution loadings into the Caribbean.

The know-why network is something that was set up for a one-time only snapshot, and it was really to help develop capacity in sampling and monitoring techniques for marine pollution.

The reason -- one interesting thing to note about it is that there was a workshop last month that Cuba hosted on the know-why

network, of which had somebody from our U.S. Interests Section in Havana participate, so I thought it was very -- it was a success for us that we were able to have somebody participate in that workshop.

A few other multilateral activities I think that are worth mentioning. The Global Environment Facility has a number of projects in the region. People may already be familiar with the Integrating Watershed and Coastal Areas Management Project. It's very active, and there is an ongoing project in San Fuegos Bay in Cuba.

There's also a -- under the Global Environment Facility, there's a pesticide management project.

And there are plans to start up a revolving fund for wastewater treatment that I think has a lot of potential.

There's also a regional fisheries organization. It's a non-binding organization called the Western Central Atlantic Fisheries Commission. Cuba is a member of this. It has a goal -- it's about 20 years old. It has the goals of promoting effective conservation, management, and development of living marine resources and address common problems with fisheries management.

So, as I mentioned, it's non-binding. The United States is making an effort now to try to strengthen this organization and to help it basically do more to protect the living marine resources in the region.

There's also a sea turtle convention, the Inter-American Convention for the Protection and Conservation of Sea Turtles. There are

about 11 parties to this, most of which, even though it's inter-American, most of which are in the wider Caribbean region, all but two.

Cuba is not yet a member of this. I would be interested if anybody in the room happens to know if they are planning to become a member or not. I'd be interested in knowing that.

This sea turtle convention has been in force since 2001. Its aims are to protect -- promote the protection, conservation, and recovery of populations of sea turtles and those habitats on which they depend.

Some of you may have heard of the white water to blue water initiative. That was a -- something that the United States started a few years ago. It's not really too active at the moment, but it could easily be reconstituted or resuscitated by the new U.S. administration. Obviously, it was something that -- we started it up, so was something that Cuba was not invited to. But its basic premise was to create and sponsor sustainable development partnerships for helping with marine environmental protection projects in the wider Caribbean region.

So I'll just wrap up with a few concluding remarks.

I think the main thing I want to try to get across today is that it's important to keep in mind that there are already lots of opportunities for engaging Cuba on marine environmental issues within the context of these multilateral organizations and agreements that we both belong to or that perhaps we don't both belong to now, but hopefully we both will in the near future.

Cuba is obviously very different from many of its Caribbean neighbors.

It's not a small country in either population or size. It doesn't have some of the income disparity or health problems that some of its neighbors face. It is already fairly well integrated into some of these existing structures.

And I think it's -- I'm sure others that are speaking today will expand upon the idea that the oceans are obviously our common area. All of these problems will be shared, so it would make sense that many of the solutions should be shared as well.

And just a few of the issues that in -- within the State Department's Office of Ocean and Polar Affairs in the Ocean Environment Science Bureau that we're concerned about that Cuba could easily be I would concerned about, too -- conservation of certain species, such as spiny lobster, Nassau Grouper, Queen Conch; invasive species, such as Lion Fish; land-based sources of marine pollution -- I've already spoken about a bit -- and other types of marine pollution -- industrial pollution.

I think -- you know, the basic point I'd like to reiterate is just that there are numerous opportunities for sharing environmental best practices and expertise. Many of these opportunities could be undertaken already within the context of some of these existing multilateral agreements.

So why don't I stop there, although there is one question I'd

like to ask, and this is something I'd be interested in knowing, if other people happen to be aware: Obviously, we, the United States has not been that engaged with Cuba over the last 50 years, but other countries, such as the Europeans, Canadians have, so to the extent that those countries are already working with Cuba on trying to solve some of these environmental and especially marine environmental issues, I'd be interested in hearing about that. So.

And I'll wrap up with that.

Thank you very much.

(Applause)

MR. EDWARDS: Thank you, David. Again, it's good to see that the State Department could present with us today, and there's some very interesting initiatives that I did not know about. And I'm glad Dan was busy scribbling all of this down. He's had 10 or 12 pages, I think, of initiatives that we can certainly find out more about and perhaps engage in.

And to answer your -- I won't answer your question entirely, but I do know that U.S. organizations have been working in Cuba, like us, for quite a while, and David Guggenheim is going to talk a little bit more, and we're going to talk a little bit more about some of the work that we've doing with Cubans over the last several years and particularly one very interesting project that David's going to talk about.

And I think to expand a little bit on what you were saying,

too, our next speaker from NOAA, Steve Murawski, Director of Scientific Programs and Chief Scientific -- or Science Advisor from the Marine Fisheries Service is going to speak, particularly about, I think, comparative ecosystem analyses or studies and fisheries management? You talked about it a little bit last night, and it's fascinating that we not only have something to bring to Cuba, but we have a lot to learn from Cuba itself that we have not perhaps been able to do that we can perhaps do in the future.

MR. MURAWSKI: Well, thank you, Scott. And thank you to the Brookings Institution for hosting this. I think timing is everything in life, and a number of us in NOAA had been talking about would be pretty cool if we could get something going in Cuba. And this was about three months ago, you know, before the government started its rapprochement a little bit.

So I think we'd been working on this problem. It's a long-standing set of issues that we've got.

So I'd like to -- I have a short PowerPoint presentation. But before I do, I'd like to make some remarks from Dr. Jane Lubchenko, who's a new NOAA Administrator.

She apologizes for not being here today, but apparently since she was on the board of directors of EDF at the time she was announced as the undersecretary that because of conflict of interest, she cannot participate in this particular meeting.

That being said, she has a lot of remarks to make about --

and we all know Dr. Lubchenko and her passion for this issue.

She has some personal interests. She's been to Cuba a number of times, both under the auspices of EDF and otherwise. She wanted me to convey her extreme interest in this issue, from her point of view, and not only working with Cuba, but working with the organizations that work with Cuba.

She feels that there's an intersection of technical capabilities, a greater interest on solving regional to global management problems here. It's a nexus for a variety of things, and we've already heard a number of those issues.

And she also feels that NOAA has unique capabilities that she would like to utilize in whatever kind of engagement is going to be here.

And last, she wanted me to point out that I think it was your last remark, Scott, that it's not all about what we can do for the Cubans, it's about what the Cubans can do for us, not only in terms of us being the United States, but also us being the larger scientific community.

So that's sort of a good segue into the few remarks that I have.

So I'd like to see if I can pull this off here. Yeah. So far, so good.

So I have a sort of a presentation here, and you can see that I have dragged along a number of co-authors. Beth Lumsten is in the

audience, and she's been the staffer working on the Cuba issues. Bonnie Ponwith is the Science and Research Director for the Southeast Fisheries Science Center in Miami. And she has the greatest overall interactions with the Cubans, both direct and indirect.

Jeremy Jackson is a well-known coral reef ecologist from Scripps and Ivan Valiala is a very prominent coastal ecologist that works on mangroves and other issues.

And so we had been talking about this issue and some of our -- some of the issues that we want to bring to the table here. So just a very quick overview.

I wanted to convey -- and I think Steve did in his opening remarks -- the importance of comparative marine ecosystem studies. That is, Cuba, you know, what unique parts of the Cuban marine ecosystem are important and why they are.

So I'll dip into that in a minute.

Secondly, I would like to focus on a number of studies that are ongoing in the region, the so-called large marine ecosystem proposal. They also are funded by the Global Environment Facility that David brought up, and our engagement on these two important studies.

Third, understanding the source and the sink dynamics of Cuban fisheries; that is, they don't all stay in Cuba. They leak out, and frankly our stuff leaks over. And so understanding the interaction is very, very important. And we must have been channeling each other, because

we've got the same list a species here.

Assessment and management of large pelagic fishes. We have a very important strategic interest in the Caribbean in terms of -- and the case study I'll talk about is blue fin tuna -- we have a larger view of opportunities and education, research, and training. This is not only an issue for training Cuban scientists who actually are already quite well-trained, but also training our students in understanding reef and mangrove and coastal ecology in the Caribbean in a place that's very, very unique.

The engagements that we've got so far are primarily on the environmental groups and academics. We have not had serious government-to-government interrelationships and that actually is something that's sort of a missing piece of all this.

And last, I'd like to offer some thoughts on the importance of this engagement, pre-development. And that is, I think the remarks were made earlier that we're probably sitting in a period and a point in time right now that we won't see as the development rates accelerate in Cuba. And so there's an opportunity that time will lose unless we jump on this pretty quickly.

I'd like to talk about the framework for comparative studies. And this may be way too geeky for most of the audience, but I'm hoping that a few scientists here will appreciate it.

When we do ecosystem studies, we can learn in three different ways. We can look at a particular ecosystem over a long period

of time. So basically, you're looking at what happens in that ecosystem over time, and you correlate that with the pressures that are in that individual ecosystem. So, if you see the fish stocks dropping, you correlate it with the amount of fishing effort.

And you learn a lot about an individual system, but there really is no repetitive cycle there. You're simply learning about a train of facts that happened there.

The uniqueness of doing comparative studies in the second part is really taking similar systems, like coral reef systems, that have different views histories by humans, and seeing, you know, what are the similarities in the trajectory of those ecosystems and what our unique things; and then correlate that with the development history -- the fishing pressure, the coastal development, the runoff, the toxics and other things.

There's lots to be gained, particularly in this region. And then, of course, the ultimate one is comparing among ecosystem types and so, for example, comparing Arctic and coral reef systems. You really start to learn about process.

And so one of the things that we want to learn, not only is what's going to happen in individual ecosystems, but how ecosystem processes actually work. And this leads to better management and conservation -- things like biodiversity; better harvesting plans and practices in fisheries management; and then trying to understand this concept of resilience. And I think that will come out in a number of the

talks about the, you know, general perception that some of the ecosystems in the Cuban archipelago are actually some of the most resilient areas in the Caribbean already. And so why is that so?

And this is why, you know, engagement in these comparative ecosystem studies is important to us.

So in terms of our priorities for comparative studies in Cuba, certainly, coral reef resiliency to these direct impacts is right at the top of most people's list, I would say; and then, as David said, the impending and in some cases already impacts of climate change. And I'll elaborate on that a little bit.

Secondly, mangrove ecology and the impacts on the coastal zone -- of coastal zone development. Cuba has some of the best intact mangrove areas in the world. And you can compare these to places like Trinidad to the Florida Keys and elsewhere, and so this represents a very, very unique ecosystem that is almost unparalleled in the Western Hemisphere.

And thirdly, Cuban reefs as compared with, say, the Florida Keys, Belize, and other places, using these structured observations to really help not only Cuban society, but all of our societies develop these decision support tools, like, for example, where to site, marine protected areas; you know, how much activity to allow in areas if we want to maintain this resilience to various threats.

One of the interesting things that's really coming to fore now

is resiliency to climate change. And this is a product that a -- a satellite-based product that we used to look at the various coral reef areas in the world and see if they're going to go -- undergo thermal stress, which would lead to coral bleaching.

So this is a kind of a film loop, but you can see that we are monitoring the areas around Cuban and the rest of the Caribbean as well. And we can see, for example, in that little time series, as temperature goes up, they start to approach critical levels.

So we know that there's these basic climate change factors that are impacting Cuban reefs. But we don't -- we can't correlate is if, in fact, the reefs themselves are having greater or lesser amounts of coral bleaching, because the animals are in better or poorer condition. We can do that and most of the rest of the Caribbean. And there have been a few studies in coral reefs, but this represents a really unique opportunity to understand if there are things that we can control that would make these reefs more resilient to these factors that we can't control, you know, for example, the increased heating of the region.

One of the issues that we're all concerned with in the -- not only in the scientific community, but elsewhere now, is the impending implications of ocean and acidification.

And that is a direct consequence of increasing CO2 levels in the atmosphere, which is this red curve -- the blue dots, dark blue dots, representing the CO2 in the ocean water and the pH representing the

scion representing the pH. This is not speculation. This is physical chemistry or freshman chemistry that, you know, you get.

So we know that this is an issue, and it will be an issue irrespective of the warming.

The importance of this for us is that if you look not only in the Caribbean but elsewhere, half of the value of fisheries in the Western Hemisphere is by crustaceans and bivalves, which are going to be particularly prone to, you know, pH declines in carbonate chemistry in the ocean.

And certainly issues like conch and lobster are going to be an important issue down there. We need places to study, to actually, you know, to undertake these effects and adaptation issues in a marine environment. And there's probably no better place to study, particularly in terms of some of coral reefs and some of these fisheries than the Cuban archipelago.

I'd like to switch a little bit to the large marine ecosystem programs, and this -- I'd like to call this diagram the shrimp diagram, because if you sort of, you know, twist your eyes there, you can see that these are the coastal zones of all the different countries in the Caribbean region. And you can see that, you know, there is a term that is overlap of -- in particular, if you look at Cuba's territorial sea, it overlaps two large marine ecosystems -- the Caribbean one, which is already covered by an LME Project called IO-Caribe; and then also a new one, that's the Gulf of

Mexico LME.

Now we've been engaging the Mexicans in the Gulf of Mexico large marine ecosystem group, but we've been trying to get the Cubans involved in it, because of their critical nexus that they play there. And, in fact, I'll say that JFF has already offered that they will fund Cuba in sort of a special allocation, if, in fact, they join the Gulf of Mexico LME Project.

So we've got money on the table here. And these large marine ecosystem projects are basically a five-module project to not only look at ecosystem science, but also improve the management of these resources.

And so you can see that there's an opportunity here.

Just -- one of the other potential things I wanted to point out here is United States and Mexico have a program called the Gulf of Mexico Alliance ongoing. And this is a unique governmental issue, because it's a federal engagement from some of the agencies, but also five U.S. states are the primary drivers of this.

And they've actually entrained the five Mexican states that are involved in this in this cooperation.

And that brings in a different layer of government to solving some of these coastal problems than just the federal government. And I think it would be a really unique opportunity if we can invasion that level of governance rather than the national level of governance. And, of course,

a number of us are quite neophytes in understanding the government system in Cuba, but there's lots of good capacity building that can be done outside of the governmental -- the federal governmental nexus.

So one of the issues that I wanted to particularly emphasize is some of our shared problems.

We often think of Cuba, or at least some of us who have not studied it for a long time as somewhat pristine in terms of their reefs, their mangroves, et cetera. They also have their share of problems. And if you look at Nassau Grouper catches -- one of the important aspects is they have pretty good data you know for a lot of the things that they do.

And so you can get some of these -- these long time series by which you can compare things. So they have problems in fisheries management and elsewhere. And so, you know, trying to take a more cooperative view on this is important, I think.

It -- the connectivity of Cuba to the rest of the Caribbean is an important one, and we've got a number of studies looking at water flow connectivity around the region. That's a program run out of Miami by the office of Atmospheric and Oceanic Research. And it’s looking at putting out drifters throughout the Caribbean Basin and looking at where the drifters go. And you can see that in drifters that, you know, are put south of Cuba, you know, interact in Cuban waters. They interact over at the Yucatán, and they all come up through the Straits of Florida. So, any problems or any issues, both in terms of environmental problems, but also

the drift of larvae are going to circulate around this basin.

And there's a very interesting study, and, you know, I don't want to make this to science-y, but this is a simulation study that was done looking at snappers, different snapper species, and the top left panel indicates some simulated releases of larvae around Cuba. And so the groups of dots basically indicate where they would go given the water circulation patterns.

The bottom line is if you -- we sort of switch to the next one, this is for Lane Snapper, there's a lot of self-circulation of larvae spawned in Cuba, but then you can see that it -- these larvae potentially go to a lot of different countries.

And this was the connectivity issue that I think has been raised; that, you know, we're -- Cuba is not an island into itself, and then there's also a lot of export into the region.

One of the particular problematic issues I want to talk about is Western Atlantic Bluefin.

Interestingly, this -- this is a big science issue. This is a big management issue for us. This stocks spawns in the Gulf of Mexico. Some animals move over to the east, but mostly it stays on the west.

Cuba has been a fisher for tuna in the past. You can see its time history.

Its reported landings are quite small. Interestingly, it's not a member of ICAT , which is the commission out there.

One of the sets of very interesting studies that are ongoing right now -- in fact, this cruise is out right now -- the United States and Mexico have been cooperating on surveys of the babies -- the larvae.

And so you can see that in general, we have had times when the Cubans have let us into their coastal waters to actually do the studies; right.

And the last time we made a port call in Cuba was 1999. And this was, you know, prior to some of the other issues out there. And we would love to get back in there, because you can see that in terms of the coastal zone is important, in terms of overall productivity.

If you look at the satellite imagery, you can see we're sampling on the western side of the loop current. We also want to sample on the eastern side of the loop current in Cuban waters, but at this point we can't.

This is a very difficult management problem. This is the spawning mass of Western Bluefin. We want to try to increase it, and we want to do everything we can in terms of overall conservation.

One of the interesting issues is that there is mixing -- Mediterranean to the West and vice versa, but if you look at the Gulf of Mexico region, it's almost pure Gulf of Mexico spawned animals.

So it's really a home-grown problem in terms of what we're dealing with.

So I just have a few concluding remarks in terms of a

strategic view. The current engagement that we have on science is primarily to be academic scientists, international organizations like NAFO and IO-Caribe, and private institutes like the Hart Institute and groups like EDF.

There really is a huge strategic advantage to the United States as well as Cuba, you know, for looking at both project outcomes, that is, what are we interested in solving as problems, but training, you know, both our students and theirs.

There are some perhaps some possibility to engage Cuba in some of these other international forums like drawing them back into ICAT, which I think is important. There's great utility to us in developing and implementing a program of focused comparative studies that I talked about before.

Given the likely development tempo in Cuba, the value of instituting these comparative studies is right now. It's not, you know, five years out or whatever. And really we think it's important to engage Cuba on some nuts and bolts management issues.

The last thing is that it -- in terms of NOAA, it's not all about -- just about natural resources management -- fisheries, coastal zone management. We have actually an ongoing engagement on hurricanes and whether. We do help them in hurricane forecasting. They allow us to fly through their airspace to run hurricane hunters out of Guantanamo and other places, so, you know, NOAA has a large portfolio of investment over

and above the marine resource issues that we've got here.

So with that, I turn it back.

(Applause)

MR. EDWARDS: Thank you very much, Steve. I'm glad you brought up the government-to-government relationship of doing that. Actually, Dan Whittle is going to talk a little bit later about a report that the Inter-American Dialogue released -- I think 12 years ago now -- that talked about the importance of government-to-government exchanges, something that has not been done, as Steve made light of -- or not made light of or made light dot two.

And we want to see that again back with the U.S. government in Cuba.

My -- our next speaker is the distinguished -- well, he's gone now. Oh, there he is. Okay. Our Chief Ocean Scientist. So we have not only our Chief Scientist with EDF, but our Chief Ocean Scientist, Douglas Rader, who is to many in the organization our lifeline, and will be speaking --

MR. RADER: Useless knowledge.

MR. EDWARDS: -- well, that's another way to put it; yeah. But an overview or shared resources and why the U.S. and Cuba have a mutual interest in protecting these resources.

And just so you all know, too, and you've probably all got some material up to the front. There are bios of all of the presenters. I'm

not giving the long bios, but if you care to read about them, they're in the materials at the front desk.

Doug?

MR. RADER: Thanks a lot, Scott.

So as a total gringo, it's been a dramatic privilege for me personally over the last 10 years to be able to work in Cuba. I've learned a tremendous amount and learned just how much I personally -- and we together need to learn about every aspect of Cuba, about its natural ecosystems, about its social systems, and also about its governance systems.

So if you think -- keep those three legs of the ecological stool in mind, we will be more likely to get it right.

And actually, I really only have a single message today, and that is going to be that we working on marine conservation in the United States, especially in the southeastern United States, cannot get it right without factoring Cuba in.

It's been -- become really clear to me personally that many Americans are aware of the dramatic beauty of the island, of the unbelievable biodiversity and natural resources on the island, whether you like birds or manatees or lizards or even snails, it's just an unbelievable place.

I think many fewer Americans are aware of the dramatic linkages between our place and that place that affect the health of both.

And before I delve into -- dive into the marine world, from the terrestrial world, for me personally growing up in North Carolina, but with grandparents in South Florida, I came to appreciate the importance of lands to the south in sustaining some of the iconic birds of the south, including the swallowtail kite, which is shown here on the top left.

If you look at this figure, it shows you where they go once they leave our shores. So if you are interested in raptorial birds -- hawks, ospreys, kites, and the like -- you have to care about Cuba because they pass through that part of the world and are directly affected by it.

I should say that I had the great privilege two years ago to see the swallowtail kites reexpanding their range back into the -- my homeland in North Carolina, in the coastal swamps there.

If you care about tweedy birds nesting at your home, the so-called neo-tropical migratory birds -- the warblers and other things -- they aggregate just east of Havana.

We saw, when we were down there a couple of falls ago, an unbelievable video of a radar return of all -- billions -- all of the neo-tropical songbirds arising en masse out of the forest east of Havana, crossing the Florida Straits, and settling down into the Everglades over a single day. Unbelievable connection between what happens in our backyards and what happens there.

For birds you've probably never seen, the seabirds that don't nest in our part of the world here like the black cat petrels that we see

commonly as pelagic birds, ocean birds offshore, the only places that they nest are in eastern and southeastern Cuba and Hispaniola.

Without those nesting sites, we got none.

So, of course, my job, as a marine ecologist beginning to build the Ocean Program in 1995 and '96 was to protect ocean ecosystems of the U.S. Southeast.

It didn't take me long to realize that job was impossible unless we looked upstream in Cuba and in Mezo-America. It simply can't be done based on -- because of the life histories of the beasts.

You got grouper, mangrove snapper all have different life histories adapted to currents that move and an array of habitats that inevitably take you upstream beyond our backyard into the Gulf of Mexico and the wider Caribbean Sea.

Everyone knows about -- the shared coral reef ecosystems, and perhaps the piece in our jurisdiction in South Florida, including all the beauty that draws tourists to that region. You all know a bit about how sea turtles are attached there and are valued by so many people. But the overall health of the system and its integration is really just becoming apparent.

Things that move widely through this ecosystem have been dramatically depleted. Oceanic white tipped sharks, shown in this work from 2004, on the left, in the '50s all the red and multi-colored dots are oceanic white tips caught on long lines after tuna.

And if you look at the late ‘90s, on the right, you just don't see many dots. That’s a shared problem -- elimination of highly migratory top predatory fishes causing cascading ecological effects throughout this broader shared marine ecosystem.

And so, and beyond those things that can move themselves are things that are moved. I was wondering, following Steve, how much of our material would overlap, because the prospects are quite large. And I think that the one that does is good for you to see.

And that is the likelihood of connection, direct connection, between reef fishes in the southeast here and what happens upstream.

So on the left is a current diagram showing the general movement of oceanic currents to and through the Yucatán Strait fueling the Gulf Loop Current, through the Strait of Florida -- the Florida current and then keeping England warm as the Gulf Stream.

And it shouldn’t surprise anybody that animals are adapted to using that to move from good place to good place. Here’s spawning Nassau Groupers, and this happens to be in Mezo-America; but then fueling -- the overlapping slide that I’ve told you was coming.

That’s a Mutton Snapper, and that’s a Black Grouper. This is the same work coming out of Rosenstiel School of Marine and Atmospheric Science as Bob Cowan and others we help fund them, too. And I’ve taken a different view of the same data; that is, to show you where snapper larvae are at the time that they’re ready to settle having

been spawned.

So, in this case, looking at Banco Chinchoro in Mezo-America, plankton -- larvae in the plankton 10 days, 20 days, 30 days, 40 days. They settle generally speaking after three weeks or so -- four weeks or so, right here. So where the purple dots are are our best guess at where those larvae are when they're ready to settle.

And you can see that they are spread quite widely, connecting these places. Not all places are connected as tightly as this, but it's a dramatic evidence of downstream effect on us.

And then in addition, we also share a number of things that people don't know are there in the deep waters -- black bellied Rose Fish on the left, Barrel Fish on the right in the deep waters; currently not managed by anybody -- slow-growing, very susceptible to over fishing.

And in the even deeper waters, an ecosystem dear to my heart, which is the deep water coral ecosystems of the U.S. Southeast. Unbelievable ancient systems. A million-year old coral mounds. One- to two-thousand year old individual animals. New to species being discovered every time a sub goes down.

And if you look at where it's located and where we know it's located in U.S. waters, includes about 23,000 square miles stretching from North Carolina to Florida; where we believe it continues is through the Straits of Florida. We know there's a little bit over here in the very southeastern Gulf. But there's no reason not to think that it doesn't also

occur on the Northern -- the southern margin of the Straits of Florida and elsewhere.

We really need to know for reasons I'll mention in a minute.

This is a recently characterized world-class shared ecosystem.

In addition, you have heard, I know, about the shared energy resources. This is a snapshot of the EEZ on the northwest -- the Cuban exclusive economic zone, the northwest side of Cuba, U.S. neighboring to the north, Mexico to the west. Those blocks that are currently either leased or being considered for leasing there.

If you remember that slide I showed you a minute ago, the Gulf Loop Current goes like this -- like that, and makes those areas directly upstream from us.

We also share those currents as an energy resource. I think you -- I hope you know that the State of Florida is actively looking at harvesting energy from the Gulf Stream. If you even pull three percent out of it, you get billions and billions of watts of potential power there -- billions -- I sound like Carl Sagan -- the darker red being the stronger predictable currents and I hope that connection is obvious to you.

If you haven't seen the Florida Atlantic University animation of what they think a current farm might look like at fau.edu, this is a snapshot out of it. And it’s well worth looking at.

We share regional problems. The solutions also must be

shared, including the emissions of pollutants into the air that end up generating air pollution, but come back down into the surface waters.

This is a -- this picture here shows ozone near the surface, and one of the key precursors of ozone is N-O-X, NOX, the oxides of nitrogen. If you have ozone, you have NOX. If you have NOX, then you have NOX coming out of the air, which means nitrate, which means fertilizer, into coastal waters.

So everywhere where you see that yellow, you also have fertilizer going into the shared ocean resources.

So what? The so what is that that induces algal blooms. This is a picture of a red tide event in the eastern Gulf. It contributes to overgrowth of coral reefs with algae that dramatically impair their diversity and function.

And then as an increment to the riverine -- the river-based nutrient pollution you heard about before. This is actually the other side of that equation.

Yes, it's relatively well controlled acre per acre, but I think everyone has heard about the dead zones in the northern part of the Gulf that have resulted in the shared resources there.

And then finally, it's clear that we will share these global-scale problems, whose implications for us as a Caribbean nation is every bit as severe potentially as for Cuba as a Caribbean nation -- bleaching corals, rising seas, increasing storms, and the interaction among those

things that threaten the integrity of the systems in the long-term.

And I think it's really interesting that you've heard already about Pacific Red Lion Fish, too, because the problems that we face through our southeast Atlantic lens of this exotic species having been released, having become established, having become graciously reproductive, if you'll let me mix metaphors, is largely unknown in the short-term, but in the longer-term scary, because it has no natural predators and it is breeding at depths far beyond its normal range.

This is a shared problem. It's not just from North Carolina -- from Florida to North Carolina -- maybe to Woods Hole in the summer -- it's also now coming in -- common throughout the Caribbean.

So, and I -- but I would like to finish by saying that that the most important shared resource is us; is the people with heritage connections going back for a long time and the potential to build common visions and common dreams that are adequate to the task of meeting these shared challenges.

So when I look out to the future, I can see the scientific collaboration reawakening, bringing back large predatory stocks of fishes, and, in fact, sustainable fishing generally, with Steve's help, across the wider Caribbean basin.

I can ancient coral ecosystems surviving in the face of climate change -- resilient, based on management decisions and plans we have made together. And I see these special places and unusual biota of

the island of Cuba itself flourishing in a habitat that has been planned for as Cuba inevitably changes.

Now I hope you'll forgive me for choosing an ivory-billed woodpecker to close with. But, if, in fact, the ivory bills are not extinct, then it's as likely as not that where they'll be found is this pot of swamp in southwestern Cuba as perhaps in the deep swamps of the Deep South and of eastern North Carolina and South Carolina.

So, for me, another icon, another emblem of the shared potential that we have as a civilization to rise to the challenge, and, therefore, the excitement in this moment and the reason to get on with it.

So thank you, Scott.

(Applause)

MR. EDWARDS: Thank you very much, Doug. It -- I'm clearly convinced that the U.S. is indeed a Caribbean country -- shared problems, shared resources, and shared opportunities.

We're not actually going to be taking a break. We're going to continue on through this, so if you do have to go for a biobreak or whatever, please you're going to need to do it quickly, because we're a little ahead of schedule, but we're still not planning on a break.

Our next speaker I call Senor Havana, Dan Whittle, who's the Director of the Southeast Oceans Program, and certainly thinks Cuba falls within the purview of the Southeast Ocean, which it does; it started in the Southeast Oceans Program.

Dan has been doing work there for a very, very long time, and when I started with the organization talked to me about the dreams that he had for Cuba, some of which we're realizing today, which is really pleasing to me being part of the organization.

He's going to talk -- he's doing a lot of work on environmental law and policy. He works there closely with our Cuban colleagues, one in particular that Vicki mentioned Orlando Rey, who really is one of the most fascinating and most intelligent people that I've worked with not just in Cuba, but anywhere, and just an amazing person.

And Dan has a very good relationship with Orlando, as do I now. So anyway, I'll let Dan -- you have a long presentation, so I should shut up and let you present.

MR. WHITTLE: It's only about an hour and a half.

Thank you very much, Scott. Scott said, I've been working in -- or in or on Cuba issue since the year 2000. And as the organization's -- one of the organization's lawyers -- one of my first preoccupations was wondering how we could justify sending teams of scientists and lawyers to Cuba. And, frankly, for the first six or eight months before we brought on Mews , who's also on the program here, but the legal counsel, the legal opinions came out of my office.

And I remember on my second trip to Cuba, I figured we better be careful because I know they're watching us. So we took a trip to the U.S. Interests Section and got an appointment with Vicki Huddleston,

and she could not have been more welcoming and more gracious and more supportive of the work we were doing.

And that was really the impetus we need at the time to keep working in Cuba and to convince ourselves that it was worth the time and effort to commit to it. So thank you, Vicki, very much.

Also, I wanted to thank Dr. Jane Lubchenko, a former member of our board, who's now at NOAA. And when she was nominated by President Obama, I got an e-mail within minutes from Dr. Julio Baestra, a Senior Fisheries Advisor to the Minister and the top and very famous marine biologist there. And he just -- he could not say how happy he was that Jane had been appointed as the top fisheries official in the United States and saw great promise in that nomination.

And now I just want to jump in and take you back 80 years to the 1930s in Cuba, back on the Northern Coast near Matanzas, which is just east of Havana. There was a French physicist named George Claude, who decided to tap the ocean near Cuba to develop ocean thermal energy, which was truly revolutionary in its day. But he was convinced that he could generate when Noble energy from the ocean, and he succeeded. In 1930, he built the first OTEC, Ocean Thermal Energy Conversion plant in Matanzas, and began generating electricity for that area.

Unfortunately, the waves and the storms in the area are quite dramatic, and his experiment was a short-lived one, and it was

destroyed shortly thereafter.

Fast forward until today. Cuba is experiencing an energy revolution. They are dependent upon Venezuela and other countries for most of their oil and gas needs, and they are very much in the thick of a revolution to become more independent.

And part of that equation is more wind, more solar, more biomass, and they're looking at the ocean.

Just last week in the U.S., President Obama made a major speech on the environment, and he specifically called on U.S. companies to look to the ocean for current, tidal, and other energy. And I know of several companies in the U.S., including someone who's represented here today, who are actively involved in projects to develop OTEC energy in Hawaii and in other parts of the Caribbean.

Over the last 14 months, the Environmental Defense Fund staff, mostly our marine biologists, have been invited to participate with the University of Matanzas scientists to look at the potential environmental impacts of exploiting ocean energy. It's a renewable source of energy, but if you don't do it right, you can impact marine habitats and coastal habitats.

So our team has been working with this team from the University of Matanzas to figure out how to do it right.

And we are also evaluating the potential impacts of oil and gas exploration and development in the Gulf, and we've been able to

share our research with our Cuban colleagues, including the lawyers who are developing a comprehensive environmental law on oil and gas development -- comprehensive environmental law.

So this cooperative research clearly is just one example of collaboration and cooperation that benefits the people in both countries. It results in cleaner technologies and better environmental policies.

And so what we're all about today is talking about how to facilitate more and more of this kind of joint research on protecting our shared resources and solving our shared problems.

And so today, let me step back again, not quite as far as 1930. I'd like to recognize the work of the Inter-American Dialogue. Scott mentioned them earlier.

Back in the mid-'90s, the Dialogue convened a group of Cuban and U.S. lawyers and scientists specifically to talk about mutual cooperation. In the report they produced is truly remarkable. I'm sorry to say it's in the archives of the Dialogue, and it's somewhat hard to pull up, but we may thus it off and find -- put it on our website.

Its observations and conclusions are extremely relevant today. And basically, what they did is they brought experts in the two countries together to say what could be done.

In the mid-'90s, Cuba was just beginning to develop a brand-new environmental law policy network, and so they were extremely eager to share information with the United States.

So the Dialogue had two meetings, one in New York one in Havana. And they published a report to years later that highlighted the need for cooperation at every level you can think of -- scientists to scientists, universities to universities, NGOs to NGOs, and government to government.

And ultimately what they came up with was that the environment is such a high priority among the two countries that it's critical to de-link, and I'll just quote here, “it’s important for the United States to de-link its political position in relation to Cuba from its environmental policies in order to initiate an open, bilateral relationship with Cuba on environmental matters.”

And then they concluded that the potential economic and environmental damage to the United States that could result from not cooperating with Cuba is just simply too great a risk. And that's really where we are today. And that certainly what's motivating Environmental Defense and our colleagues in this room today to come together.

I would also like to talk a bit about the foundation currently in Cuba for cooperating. Dave Herman that Cuba is very active in multilateral talks in the UNEP and the Caribbean Environmental Program and in various protocols.

I’d like to look a little bit at what’s happening on the ground.

For the last nine years, I’ve been asking the question, “What is Cuba doing to protect the environment?” And what is -- is sustainable

development actually occurring on the ground.

And in my opinion, it is. They are making great, great progress on the ground. Like any country, like the U.S. and certainly most developing countries the challenge is to protect the environment and sustain the natural resources base is tremendous during times of economic crisis. And Cuba certainly had economic troubles since the early 1990s during -- when the Soviet Union pulled out.

So is Cuba, in fact, poised to do anything significant or are the cards stacked against them? So that's been my professional preoccupation. I've been working with the top environmental lawyer in Cuba, Orlando Rey, to identify what's going on.

So I want to highlight just a few of the environmental laws and policies and institutions in place that I think are important as we begin to identify areas for cooperation -- individuals we can work with; institutions we can work with; and to look at whether there is more that can be done through law and policy exchange is to make environmental protections on the ground in Cuba even more significant.

What happens in Cuba doesn't stay in Cuba. As Doug and others have mentioned, we are so ecologically connected that despite the political divorce, there's no way around the ecological connection. And so, therefore, it's very important that what Cuba does on the ground with environmental law and policy is actually carried out.

And that's where I think there's a great opportunity for further

cooperation.

In 1994, the National Assembly of Cuba established the first-ever cabinet-level ministry for the environment. It's called the CITMA, the Ministry of Science, Technology, and Environment.

Before that, it was an ad hoc group of agencies. They have a long history. Cuba has a long history of having environmental agencies and scientific institutions, but they just never were knitted together and never really had much influence over national policy.

In 1994, that changed with an appointment of a very powerful environmental minister, and they got to work right away. The -- in my opinion, one of the most important agencies within the ministry is the Environmental Directorate. That's the hub for the development of new laws and policies. That's the office that Orlando Rey directs, and that's also the office that does most of Cuba's international initiations.

They're the ones that show up at the U.N. and participate in the various protocols.

They also informally serve as a hub for the 20-plus agencies within the ministry, including the Center for Natural -- National Protected Areas -- CENA. That's the agency that we've worked with quite a bit with WWF Canada and others to help design and develop a system of marine protected areas. That's CENA. That's an agency that I encourage much, much greater levels of cooperation with NOAA and others in the future.

They are the ones that are putting together the marine

protected strategy for the future, and they have -- I did want to point out a couple things. We put out a brochure a few years ago on the marine protected system in Cuba. We only had a few copies today. I'm sorry. But this is available on our website.

And you will see a map in here of both existing marine protected area and future ones. I'd also like to recognize the Nature Conservancy that's begun working with CENAP on a future strategy for protected areas, both marine and terrestrial.

Another agency that produces top science, particularly on fisheries, is the Institute of Oceanology. Rudolfo Claro was featured in some of the slides that Steve showed, I think.

They are producing landmark science on the connectivity of fisheries in the U.S. and Cuba. And I can tell you that their scientists are dedicated, hard-working, and they're getting older. And so are-so now is the time really to work together.

But they're extremely motivated, and that is -- that has been one of our closest partners in Cuba. We've also worked with CICA the Center for Inspection and Control. They're the agency that implements Cuba's NEPA. That's the law that requires that an environmental impact statement be done for all new mining development, all new tourism development.

So that's another important agency that we work closely with.

Then there's the Ministry of Fisheries, which has just been merged into the Ministry of Food in the last six weeks, and I cannot tell you what the implications of that merger are yet. But I do have assurances from our colleagues in Cuba that their work will continue.

We've had projects with the Ministry on fishery science around spiny lobster, around the reef fishes, around sharks, and other important fisheries, and we hope to continue and to expand that work in the future.

I'd also like to point out the University of Havana's Center for Marine Research. David Guggenheim works extensively with them.

At a meeting last month in Vera Cruz, Mexico, scientists from that Center brought up invasive species as one of their top priority issues of the moment, including the spread of lion fish in Cuba.

I would be remiss not to mention Cuban NGOs. There's a perception that there aren't any or many in Cuba, and that's not true. There's just a fantastic group of NGOs in and around Havana. The one I worked with most is called the Foundation -- the Antonio Nuñez-Jimenez -- named after a famous naturalist in Cuba, also known as the Foundation for Man and Nature.

And they work on all of the issues I've mentioned already, and have a large scientific collection.

There are several other important agencies and ministries in Cuba of particular interest to what we've been talking about today, and

they are ministries and agencies that are critically important to be involved in any future collaboration.

And I'll mention just a couple. The Ministry of Economics and Planning. Within that Ministry is the Institute of Physical Planning. They handle not only land use plans in the country, but they also are the ones working on adaptation strategies for coastal areas. They are the ones dealing with sea level rise and coastal erosion and relocating entire communities in Cuba to higher ground.

And they have very passionate environmentalists who work for them. The Ministry of Tourism. Needless to say, they're a key player in Cuba's economic strategy. And the Ministry of Basic Industries, which has jurisdiction over oil and gas development and all mining throughout the country, including the renewable energy strategy.

Cuba also has an especially robust system of environment laws and policies. When I first started working there in 2000, I was surprised that Cuba had done so much in so little time to put together its series of environmental laws. In this country it just takes forever to get anything passed, much less I believe over a dozen laws in about six years dealing with the environment. And since then, it's been a much higher number.

In 1992, Cuba amended its constitution, and through Article XXVII of the Constitution required or basically explicitly stated that the state, the government, has an affirmative duty to protect the environment

for its people.

In 1997, the newly formed ministry, after intense internal debate with other ministries, developed Law 81 of the environment, which is an especially ambitious environmental framework law.

Law 81 is the law that positions CIMA as having an input into virtually every decision made in Cuba regarding development. It basically requires that CIMA be consulted, and that they have input and an opportunity to conduct an environment review of plans, strategies, activities, et cetera.

So it's a -- from an environmental point of view, it's quite an impressive law. There have been proposals in Cuba to open up Law 81. My colleagues in Cuba say, wow, we -- you know, if we had known then what we know now, we would do things a little bit differently and make it even stronger.

But like in any country, including the U.S., there's a fear to open up the law because of what might happen to water it down. There's very intense debate in Cuba, a vigorous debate over everything, including environmental law and policy.

And so it's -- I'm happy to say that there's a strong cadre of environmentalists who are running these agencies and have done an amazing job in developing these laws.

A few others I would like to mention are Decree Law 212, Cuba's coastal law. This law was written in 1997, with the assistance of

Professor Oliver Hauk from Tulane Law School. This law is a direct result of collaboration between the U.S. and Cuban lawyers.

Again, it's an especially impressive law on coastal conservation. It has impressive setbacks, and incorporates the principles of integrated coastal zone management.

We co-published with the Cubans just late last year a Cuban Coastal Law and Policy Handbook. Again, only a few copies available. Most of them are in Cuba. It's in Spanish, but it is available on our website. And it goes into not only the Coastal Law, but all of the other laws that I've mentioned and won't mention in the interest of time.

Another important law is Law 77, which is the Foreign Investment Law. In the mid-'90s, early to mid-'90s, Cuba began emphasizing foreign investment and bringing in foreign investors in all kinds of sectors, especially tourism and mining.

And in Law 77, there are explicit provisions that require the Ministry of Foreign Investment to engage CIDMA in its decision making.

And then finally, I want to mention that Cuba has a relatively new national environmental strategy that has just been translated into English as of today. The cover is still hot. And we are taking a bunch of copies down to Cuba tomorrow actually to the agencies who wanted this document so that they could -- they could take it with them to the international meetings in the Caribbean and in the Pacific, where they have a very active collaboration with the small island Pacific nations.

And in the interest of time, I'm not going to spend too much time on discussing implementation. You know, the big question is, all these great laws -- are they for real? Are they just a series of paper tigers?

Orlando Rey and my colleague in Cuba said, and I won't try to say what he said in Spanish, but he said there's a common saying, and it goes, there's a long distance between saying and doing. So I can -- so I can assure you that despite all these impressive environmental laws and policies that implementing and enforcing them is extremely difficult. It's difficult because of resources. It's difficult because of manpower and political will.

And so much of our work is focused on how to facilitate and improve the implementation and enforcement of laws. There are successes, and there are challenges.

And we're just plowing away. These challenges can be overcome with more and more cooperation, I'm convinced.

And finally, I just want to touch upon recommendations that Environmental Defense Fund and several other conservation organizations and academic institutions made in November of last year, shortly after the election.

A bunch of us met in New York and wondered what we can do collectively to affect the U.S. policy and to enhance our work and bring other institutions into the environment in Cuba.

And we published a letter -- also, I believe available on our website or it soon will be. But the basic recommendations are for the U.S. to use its executive authority -- right now, we're focused purely on the administration to do what it can. And we understand it can do quite a bit to dramatically enhance cooperation between NGOs and NGOs, scientists and scientists, and government to government.

And specifically, we're asking the Obama administration to issue more and more licenses for people-to-people exchanges, including exchanges on the environment. We're asking -- it's a two-way street, as many people have already mentioned. We're asking for increased visas so that Cubans can travel here and conduct research, attend universities; and assist the United States researchers on their projects.

We're also asking that licenses be given so that more international meetings can take place so that groups like Environmental Defense Fund can host Cuban scientists in other parts of the world. We're asking for more educational exchanges that were dramatically cut back in 2004.

And finally, we're asking for a serious dialogue between the governments so that we can take the next step that Vicki was talking about in this continuum toward full constructive engagement.

So thank you very much.

(Applause)

MR. EDWARDS: Thank you very much, Dan. I know you

had more to say, because I saw your talk. But thank you for getting out the most important bits, I think.

We -- I was going to ask for an unorthodox request for everyone to stand, because of the three-hour set of presentations, but if the room doesn't need that, I won't ask the room to indulge me.

MR. WHITTLE: I think it's a good idea.

MR. EDWARDS: You think it's a good idea? Okay. Then let's take -- I'm not going to sing "Take Me Out to the Ballgame," but everybody stand for 15 seconds to 30 seconds and just stretch a little bit. There we go. Thank you, Con, for giving me the courage. Don't leave the room, though, because we're going to start in just a few seconds.

(Recess)

MR. EDWARDS: Please take your seats. Someone finished signing "Take Me Out to the Ballgame" somewhere, so please take your seats. We do have a couple of very interesting presentations that remain. Thank you, Kahn, for indulging me and the group.

Our next panel within a panel I suppose, two speakers, two scientists, Bob Hueter from the Mote Marine Laboratory. He's the director of their Shark Science Center, a research center, and David Guggenheim who is the President of 1Planet1 Ocean. I've messed up my notes here of your bio, so it's all available.

DR. GUGGENHEIM: Don't worry.

MR. EDWARDS: Everyone knows David Guggenheim and Bob Hueter. So you're going to speak on again the opportunities for enhanced scientific and academic collaboration, something that you've already been doing and a program you're going to be talking about, and Bob as well. So please proceed.

DR. GUGGENHEIM: Thank you. Just on that title, 1Planet1 Ocean is a project of the Ocean Foundation where I'm a Senior Fellow. I just want to thank the Environmental Defense Fund for making this happen, and Brookings. This is as timely as it gets and critically important.

I've worked in Cuba about the same length of time as Dan, about 9 years now, and it has simultaneously been the most gratifying and the most frustrating work of my career, gratifying because as Dan alluded to, our partners are first class. These are really truly dedicated scientists. I've never felt as solid in my partnerships anywhere else in the world. Frustrating for obvious reasons. Just accomplishing the smallest of logistics can sometimes be monumental and there are times when there are months long interruptions in your program because of delays in getting licenses, in red tape, et cetera, but little bit little I think we've made progress and I want to share a little bit of that today.

First, I just want to emphasize how biologists see the world. Again we hear all the time about how the Florida Straits separate Cuba and the United States, and to the biologists that's completely backwards. Those straits link us together and there's really no separation. So we look at the Gulf of Mexico, for example, as a large marine ecosystem that's truly integrated. And as we've already heard, Cuban fish group up to be American fish and Cuban sea turtles that nest in Florida waters, forage in Cuban waters and vice versa. Very similar to a slide we saw earlier, some drifter studies, and those drifters made it from south of Cuba to the beaches of Miami within about a month and a half, so pretty swift.

I'm going to back in time further than Dan. I'm going to go 150 years back in time. Cubans are quite proud and justifiably so of the fact that the Cuban Academy of Sciences is the very first academy in the New World. It beat the United States by a year, and there's a very strong tradition of science that has endured all of this time. In fact, I find it quite refreshing especially after the last 8 years to go down to Cuba and see the respect that the science community has in the way science is treated in policymaking. It's very serious and it's done with great respect without undue political meddling, although you'd probably say there's always a little bit of that.

What you see on the screen is simply Cuba's official policy. I think some of these words were in the academy's charter about how they see -- they're very open to constructive international exchanges and they look forward to greater integration, and I've seen them true to their words in these facts.

There is a long history of collaboration with the U.S. Felipe Poey is one of the most famous of marine biologists in Cuba, an ichthyologist. He had a long series of correspondence about different sorts of fish species with members of the Smithsonian. Into the 20th century, a there circumnavigation of Cuba in 1914 and other series of expeditions that involved American scientists working with Cuban scientists. And in the late 1970s there was a Smithsonian visit to Havana which was then reciprocated by a Cuban visit to Washington, and that actually resulted in a pretty significant memorandum of cooperation between the Cuban Academy and the Smithsonian in 1980.

Since then there have been quite a range of organizations involved in Cuba and working in Cuba, too numerous to list all of them here, but it includes the New York Botanical Gardens, the American Museum of Natural History, and the NGOs that we've had around the table today, and a number of universities as well. We already heard about the

Inter-American Dialogue, and I think it would be great to get copies of that available. That was a very significant effort.

That really beings us up to the present. The work that I've been doing over the past 9 years has focused really on getting Cuban scientists back in the water. One of the real challenges of the economic situation in Cuba has been that original science and field work specifically has really suffered. There's a lack of resources and a lack of ability to get the kind of equipment that's needed including things like gasoline to make research work. So beginning several years ago and thanks to support from the Bay and Paul Foundations, and I want to acknowledge Bob Ashton here from there, we have worked closely with the University of Havana and the Centro de Investigaciones Marinas, the Center for Marine Research, to go out and look at Cuba's Gulf of Mexico. This is the most unexplored coast of Cuba and has never been comprehensively biologically explored, so we've been gathering data.

Of course this project is important for a number of reasons. One is just the simple scientific need to gather information about what's there, but the other side of this is the policy ramifications. There's great tourist development. We've already heard about the oil development that's going on. So what we're doing as this project evolves is creating the first detailed maps of the ecosystems of that region and using those to

then inform policy, contribute to the peer-reviewed research and hopefully result in some better policies for protecting these areas and even some marine protected areas as a result.

This photograph every time I look at it floors me. It was not taken that long ago, maybe 10 years ago. This is not from the Gulf of Mexico. This is near the Bay of Pigs on the south side. Anyone who studies corals knows that that site just doesn't exist anymore anywhere else in the Caribbean. That is very healthy elkhorn coral. When I dive in Cuban waters it truly is like rolling back the clock decades to when I first dove as a young teenager in the Florida Keys of what that ecosystem looked like. That is one of the mysteries that we are trying to understand as we've heard earlier. Understanding why Cuba's coral reefs are so healthy can really help us understand more about protecting reefs elsewhere.

The other thing to mention is that the Center for Marine Research at the University of Havana is the only institution in Cuba where marine biologists are trained. I'm happy to say that our project involved and actually provided the master's and doctoral dissertation topics for close to 20 graduate students at the center. So we are helping to train the next generation of Cuban scientists, and of course along the way building very good relationships to work together in the future.

I want to switch now to the latest information which is the Vera Cruz meeting that you just heard about. Starting in 2007 working closely with Dr. Wayne Smith who is here from the Center for International Policy we put together a program with a number of us around the table, with Mote Marine Laboratory, with Environmental Defense and other NGOs and the Harte Research Institute for Gulf of Mexico Policy to meet with our Cuban counterparts and figure out how we could working together elevate our level of collaboration to an entirely new level. We had a kickoff meeting in Cancun in November 2007 and it was very successful. It was not without its bumps in the road as you can imagine, but it went extremely well. We were graced by the presence of Dr. Silvia Earl , and in the foreground that's Fernandez Chamaro from SITMA (?), and there's the illustrious Wayne Smith there as well.

We had representation from all the major institutions and governmental organizations in Cuba. The object of this first meeting was to establish what are the priorities for our collaborative research. I want to stress that from the beginning, all of the NGOs that are represented in this process view working in Cuba as an equal partnership. We're not there to tell them what to do. This is about working with colleagues in a partnership. So this had to come organically from this meeting, and it did. You'll see that the six priorities mirror what's been discussed today. Out of

that meeting there's a final report that was drafted, coral reef research and conservation, addressing many of the issues I just spoke about. Shark research and conservation, and rather than talk about that now, that's the topic of Dr. Hueter's talk. But I do want to talk about that that is just an awesome photograph. I think that is great. I'm sure you've got better ones.

Sea turtle research and conservation. This is actually something that we have been involved in with the University of Havana for the last 9 years, identifying a regionally significant population of sea turtles on the western tip of Cuba in the area called Guanahacabibes which is a biosphere reserve. This is a small green sea turtle. It was so fortuitous that Vicki mentioned Christopher Columbus because I quote him here from his son in his logs, but drawing closer to Cuba in this way they saw turtles 3 to 4 feet long in such vast numbers that they covered the sea. That's an incredible entry into the log because we know now that there are roughly 1 percent of the sea turtles left today that there were in the time of Columbus, and what we're doing is really working to try to understand that population and its significance, and this project has also worked to engage the local residents who up until this project were eating these turtles. It's very common for Cubans to eat wildlife like sea turtles and even

manatees. Now the university brings them food from Havana and they've become partners in the program.

Dolphin research and conservation. This is an issue just like sharks and sea turtles. There are significant populations of dolphins in the waters that we share and understanding where these dolphins go, what they need, where they eat, is critically important.

Number five is the conservation and management of fish resources. As has already been said, Cuba has not been immune from the same sort of overfishing issues that we've seen elsewhere in the Caribbean and Gulf of Mexico. We're also looking at eco-toxicological research, really understanding the links of land-based pollution on some of these species by looking the chemicals in their tissues.

Finally, which is really almost an outcome of all of this other work is the strengthening and extending the system of protected areas. Environmental Defense has been very engaged in this issue and has done an incredible job at pushing this issue forward. Cuba has already announced a program to protect 25 percent of its waters in protected areas which I think still stands. That's real progress and that's actually kind of a nice lesson for us here.

There was an extra priority that was not an official priority but we realized how critical it was. Our ability to work in Cuba is confounded

by awful telecommunications and horrifically expensive telecommunications. We put this on the list because it was significant and one of the basic needs of a scientist to be able to share information with your colleagues. They also pointed out that certain tools such as Google Earth are blocked for download in Cuba. If you have them already they work, but if you try to download it locally you get a pretty user unfriendly message.

From Cancun came a final report which is available online. That report again spelled out the priorities of where we go. I should also point out that you can find coverage of that in "The New York Times." There's a "New York Times" article Christmas Day, December 2007. It's the outcome of those priorities that fed into our Vera Cruz meeting which just took place last month which was to take those priorities and turn them into a plan of action, a blueprint, if you will, for how we will work together on this comprehensive suite of priorities over the next say 3 to 5 years or possibly beyond. I'm happy to say this was also a very successful meeting. The key difference between this meeting and the prior meeting is the fact that Mexico was involved as a full partner, and that's why their flag is so big compared to the American flag and the Cuban flag. We broke into groups corresponding to those priorities and worked through these issues, and we were even treated to a tri-national celebratory cake.

Interestingly, we've heard talk about the lion fish. One of the immediate projects that were born from this meeting was a collaboration to focus on the lion fish. One thing that was shocking to all of us there was the fact that look at all of these dots of where the lion fish has been found in Cuba since 2007. It's a very serious problem. That lion fish is actually in the aquarium on display at the Acuario Nacional in Havana, one of the first ones caught.

So right now we are writing the report based on the Vera Cruz meeting and that will result then in a third meeting which is scheduled for this October in Havana, to then sit down, roll up our sleeves with that plan of action and put together partnerships and projects to make things happen. We all feel we've done the talking and now it's time to get to work. There is a really good spirit that has evolved from this process. I have to say there's great dedication and I'm very optimistic about the changes of actually realizing significant results because people are thinking big. They're not thinking incrementally. This meeting, by the way, is held coincident with one of the worst acronyms ever, COLACMAR Cuba 2009, which is a joint meeting of MarCuba and COLACMAR which is the Latin American Congress on Marine Sciences.

Finally, getting to the next level. What have we learned and how do we really move the ball forward in a big way? One of the biggest

issues we've already heard about is getting visas for visiting Cubans. This has been an awful impediment to our work. We presented for example results of our study at the International Coral Reef Symposium last year in Fort Lauderdale. Only one Cuban out of dozens who tried to get visas was actually given a visa, and we were all shocked that he was actually given a visa.

We need to establish permanent research stations in Cuba. This is something that we need to really look at and I think makes a lot of sense. There's a lovely spot called Guantanamo Bay that would make an ideal joint research center. Don't you? Planting a little seed there. Technology transfer. You can't do good marine science without GPS and a laptop computer. We have to find a way to be able to bring these sorts of things into Cuba. Telecommunications. Student exchange programs. Again these are not only the researchers but the next generation. We were within 2 weeks of creating a student exchange program with Texas A&M. I had already picked out the residents, and the Bush administration announced the change in the minimum amount of time required for an exchange, extending it to 10 weeks which took our 2-week program and all but eliminated it. So that's very, very important.

Believe it or not, Cubans are not allowed to publish in what is the equivalent of "The New England Journal of Medicine" to marine

biologists, "The Bulletin of Marine Science." This is nonsense and this is really backward thinking. Things like that have to change.

Finally, getting NOAA, getting State, getting the other agencies involved. We're at the point where that just has to happen. If we're going to go from incremental change to significant monumental change, we can do a lot. We've done a lot with both hands and one leg tied behind our backs. Just imagine what we can do when we can really work unencumbered by these regulations. Thank you very much. I appreciate your time.

MR. EDWARDS: Thank you, David. Did you want to give Wayne an opportunity to speak or was that going to be after?

DR. GUGGENHEIM: I always would like to give Wayne an opportunity to talk.

MR. EDWARDS: Wayne, did you want to say a few words and come up to the panel, podium, desk, table? Wayne Smith, Senior Fellow at the Center for International Policy and former Chief of Mission at the U.S. Interest Section in Havana.

DR. SMITH: I first went to Cuba in July of 1958 as Third Secretary of Embassy of the old American Embassy and was there until we broke relations, and I've sort of been at it since 1977. I was with the first group of American diplomats back into the island. In 1982 I left the

Foreign Service convinced I couldn't accomplish anything from within, and so I would leave and see if we couldn't influence policy from without. And 27 years later, I'm beginning to have some doubts, but still there's a more hopeful climate now than there was.

I was just going to say a few words about another program. The Center for International Policy is involved with ocean research but none of us are researchers. We're environmentalists. So we can only play a supporting role. But there is another program we have to bring about cooperation or greater cooperation between Cuba and the United States in defending against hurricanes. We had a meeting in Monterrey, Mexico, in 2007 with the Cubans to talk about this. We then took those participants to Havana in 2008, and I just got back Sunday might from taking the mayor of Galveston to Cuba to talk to them about hurricanes. There's a really strong bond there because of course Galveston was destroyed by The Great Storm in 1900, Isaac's Storm they say, and now Cuba and Galveston were the twin victims of Hurricane Ike. So it was a great meeting. The Cubans received the mayor of Galveston I think with a lot of emotion and we had great meetings to talk about how we can cooperate and exchange information more effectively.

We will be taking General Russel Honoré, the hero of New Orleans during Hurricane Katrina, and a delegation mostly from New

Orleans in the next few months and then have a major conference in New Orleans to set up some kind of an organization as they're doing to protect the oceans. This would be U.S.-Cuban cooperation in defending against the hurricanes which are becoming increasingly frequent and violent, and I think it's something that really needs to be done. That's all I have to say, but thank you very much.

MR. EDWARDS: Thank you very much, Wayne. Bob is the shark expert, and I found out last night that he got involved with sharks a couple of years before the movie "Jaws." I'd guessed "Jaws" got him into it, but it wasn't "Jaws."

DR. HUETER: Thank you, Scott. It's fitting that I should follow David and Wayne because both of them were responsible for me getting into Cuba starting in 2005. I'm kind of a youngster not age-wise but in terms of my experience in Cuba compared with the rest of the panel. I want to thank David especially because what I want to talk about is a specific project that's an outgrowth of David's initiatives, the Northwest Coast Project, and then use that as a springboard to talk about some other things that we think should be happening. A lot of this is going to underscore what Steve and Doug and Dave has already said, that's what happens when you're the fourth scientist in the program.

I'm going to speak from the standpoint of a scientist from an independent nonprofit marine organization called Mote Marine Laboratory and point out to you that Mote is located on the west coast of Florida in Sarasota only about 282 miles due north of Havana. So we truly are connected to Cuban ecology. On top of that, we have a field station in the Florida Keys. So truly what happens in our back yard affects the back yard of Cuban waters and vice versa as the others have said. The animals that I work on are sharks, and we have taken this expertise into the initiative on the Northwest Coast to start this project as part of David's initiative.

It's a fair question to ask why in the world would we pick sharks as a sort of launching pad to work with Cuban scientists. Many of these points have been touched on. As a matter of fact, many of these criteria really apply to all the projects that have been discussed, the very rich biodiversity and ecological importance of shark species in Cuba, the fact that this is a shared resource. They're highly migratory animals. We know through tag returns that these animals go back and forth between the U.S. and Cuba all the time. The importance of this group of animals in fisheries both commercial and recreational. The conservation urgency. Doug showed you a slide showing the depletion of one species of shark, depletions as much as 75 to 99 percent. Then something that David

touched on, the scientific legacy that Cuba has a very rich history in the study of fishes including the study of sharks.

In this project we chose a number of key questions. I'm not going to go through all this detail, but it revolved around the populations status of sharks, exactly what's there, what the abundance levels are. The question about landings. What the impacts of Cuban fisheries are on the landings of this shared resource with the U.S. Importance aspects of the life history of these animals especially the early life history, nursery areas in Cuban waters where more sharks are produced. And finally, the regional connectivity question, how connected are areas like Cuba to U.S. and Mexico in terms of the exchange of these shark species?

Most of our work has been with the University of Havana group that you've heard about, a wonderful group of scientists and students, and this goes back to 2005. We've had all these various activities, meetings, workshops, providing them with scientific literature which they desperately needed, providing them with equipment to do field work, then starting that field work. I'm happy to say that all of this momentum is now leading up to a major expedition that we're going to conduct in Cuban waters next month for 10 days down the northwest Cuban coast with another one to follow in October.

Prior to this we've held classes to train our students and the Cuban students in aspects of shark biology and other aspects of marine biology. This is a photo from one of those classes. Honestly, you don't have to know any detail, you don't have to know anything about science, and you certainly don't have to know anything about politics to see that this is a group that has bonded together and found a common cause in both the discovery of nature and having fun in their work, and this has been the essence of what we've been doing with the Cuban people.

The expedition next month is going to take place on this posh vessel. It looks really nice and it's wonderful. David helped us arrange for this. It's still a little bit small. We really aspire to one day having a true research vessel that we can take down into Cuban waters and do this kind of work in a proper way. I don't know where Steve went, but for Steve at NOAA. Our expedition next month is going go down this coast from Havana west to the western tip. We have other expeditions in the future.

One of the things that we do see in this coast in the fall is a species of shark known as the whale shark which is the largest fish, actually the largest species of fish and for about 6 years now we've been conducting work down off the Yucatan Peninsula of Mexico looking at an aggregation of whale sharks that are found in tremendous numbers down

there, we estimate anywhere between 1,000 and 2,000 whale sharks coming there every summer, and by tagging these animals we look at the ranges and where they go after the feeding aggregation. We're seeing that they're spreading out throughout the Gulf of Mexico into the waters of Mexico, the U.S. and into Cuba, and many other areas beyond that. So once again, this one species of conservation concern shows that to simply study them in U.S. waters or in U.S. and Mexican waters isn't good enough. We cannot treat Cuba as if it doesn't exist.

Another project that is on the board which would involve some changes with how we deal with Cuba and Cuban scientists is called the Ocean Tracking Network. This is a worldwide project that's championed by Dalhousie University in Canada to put out strings of underwater sensors on the bottom of the ocean in key places around the world to pick up the movements of marine animals back and forth between ocean bodies. One of these curtains they're called is planned for across the Straits of Florida from the Florida Keys to Cuba. Another one later on is planned across the Yucatan Channel from Mexico to the western tip of Cuba. If we can get this done, we will have the capability of monitoring all animals moving in and out of the Gulf of Mexico that are carrying the kinds of tags that these underwater sensors listen to. It would be a tremendous asset, a tremendous scientific tool in looking at things like blue fin tuna,

spawning migrations of blue fin that Steve Morowsky mentioned, sea turtles, marine mammals, and of course sharks and the other migratory fish. But clearly this is going to take a real paradigm shift in how we deal with the Cuban government and how we are able to conduct science collaboratively with our Cuban colleagues in order to put these kinds of sensors down on the ocean all the way up to their coastline.

Let me just go from sharks and just mention a couple other areas that we see as important growth areas, important opportunities for us to explore, and a lot of this was touched in David's overview, marine mammals and sea turtles again being highly migratory species threatened or endangered, the fact that a lot of work on sea turtles has already taken place especially in collaboration with our Mexican colleagues working in Cuba. There's a marine mammal action plan that's being formed for the entire Caribbean. This has to include information from Cuba. And when you look at specifically at things like cetaceans, bottlenose dolphins, there's a great need for looking at the population status of these animals in Cuban waters, these various other kinds of things, and one thing to keep in mind is that Cuba today is one of the largest exporters of wild caught bottlenose dolphins to the aquarium industry and there's an interest to try to work with them to develop an alternative to that and look at captive breeding programs that are done collaboratively with them.

Again on the connectivity issue just to show you this quick data slide that shows that a species of dolphin, actually a number of animals that were stranded in the Florida Keys back in 2005, when they were released healthy again and tracked, look where they went. They went right down to Cuba. Certainly we cannot ignore Cuba as being important for this species group.

Going into fisheries and aqua culture, we haven't mentioned I don't think aqua culture too much today, but it's important we believe. First looking at habitat studies, and someone mentioned the importance of mangrove habitats in Cuba and how pristine they are. Especially working together with Cuban scientists for regional management of these shared stocks, it just doesn't make sense that we're trying to subdivide our management into three parts when these fish are moving back and forth, so doing things like stock assessment together with the Mexicans and Cubans is vital. In this picture down here this fellow is one of the scientists at Mote and he's working down in the Zapata Swamp, his name is Dr. Aaron Adams, and working with Cuban colleagues down there looking at the stock status of the bone fish, a very important recreational fish that has been beautifully protected down in that part of Cuba.

Then into aqua culture, the fact that as has been mentioned especially on the north coast many of the stocks have been overfished

and depleted calls for an alterative. There are a lot of plusses and minuses to aqua culture no doubt, but we believe we're on the right track at least at my institution to develop environmentally responsible aqua culture practices, and Cuba being a nation of 11 million people needs to feed its people and as wild caught fish become more and more scarce, aqua culture is an alternative. We would like to teach them how to environmentally sustainable aqua culture so that they can raise fish both for consumption and for enhancing wild stocks.

Coral reef biology, we've already heard about this, the importance of comparative studies with the fact that we have pristine reefs on the south side of Cuba but overfished and depleted reefs on the north side makes a beautiful living laboratory for us to understand why this is, why the south side has been protected in a way, why these beautiful stands of elkhorn and staghorn coral still exist there and compare it to our experience say in the Florida Keys. Then connectivity, monitoring coral health and so on as has been mentioned.

Ecotoxicology. The presence of marine contaminants and toxins in the marine environment is very important potentially in Cuba. Us in the U.S. very little about the state of this in Cuban waters and in Cuba sediments and I can tell you that the Cuban scientists that I've worked with are quite concerned that after the period of the Soviet era down there that

a lot of plants were built especially on the north coast and potentially left contaminants in their marine environment, something that they have asked for help to assess. Toxins such as caused by harmful algal blooms and the disease ciguatera need to be studied. And developing biomarkers of environmental health is something that we would like to do working together with our Cuban colleagues.

Finally as has been mentioned, the marine biodiversity issue particularly from the standpoint of invasive species, up to now the Florida current in the Straits of Florida has been a pretty effective barrier for preventing a lot of exchange that may have occurred, but as things change, and as has been said a number of times, they will, we will have increased maritime traffic back and forth between Cuba and the U.S. and that could very well bring invasive species in the ballast of those ships and so on. So we need to get down to Cuba and catalogue the biota that's there now and look for the presence of these invasive species and work with our colleagues down there to chronicle this.

Here is my list. Everybody has produced a list, so here's my list. It's very similar. Mine is I think perhaps a little bit more direct. Number one, we must ease restrictions on travel back and forth for bona fide academic scientists and licensed projects. We have been able to get down to Cuba fairly successfully of course with all the logistical issues that

are involved, but getting our Cuban colleagues up to the U.S. to our labs to immerse them in what we're doing in the U.S. is very vital to us and it just hasn't been possible in the last 8 years or so. I'd like to see at some point easing restrictions on the use of public and private funds. Right now a lot of our projects depend on the philanthropy of private organizations which have obviously taken a brutal beating in this last 6 months or so. It would be nice if some source of public funding were made available of course for approved and for licensed projects that had some oversight. Encourage collaborations involving the federal agencies. Let's get NOAA more directly involved. Work with the Cuban government to permit approved vessels from the U.S. to be able to conduct these projects down in Cuba. One sort of dream that a number of us have some day is to have a research cruise that will circumnavigate the entire island with a full crew of U.S. and Cuban marine scientists perhaps taking as long as a year to chronicle exactly all of the things that are in Cuban waters similar to or growing out of the Northwest Coast project that David mentioned.

Finally in our work that's pursue a tri-national approach that would bring in Mexico because in fact just as we are ecologically linked with Cuba, so are we linked both of our nations to Mexico as well. Good science doesn't operate in a vacuum. It requires communication,

collaboration and teamwork. That's what we've started with in this project and we certainly hope to continue it. Thank you.

MR. EDWARDS: Thank you, Bob. So while it takes a scientist to do a lot of the work in Cuba, it doesn't take a scientist to figure out that we do need to work in Cuba. It's imperative that we work in Cuba, and I think we've pretty clearly demonstrated that over the last couple of hours. But working in Cuba with scientists is not all we need, or to work with Cubans. David mentioned that it's been one of the more rewarding times of his career and also one of the most frustrating, and I can second that. It's not easy for obvious reasons on the Cuba side and on the U.S. side. It's not just the U.S. to blame. But we have had a guiding hand to help us, the EDF and I think other organizations as well, by working with Bob Muse who is an old lawyer in Washington, D.C. and has been since 1984. I don't know when you started your own practice, but he has his own practice now and has been working with us since 2001 to help us navigate the sometimes murky waters of dealing and working in Cuba. So I think Bob is going to give us a little more clarity and light on what you need to do, what can be done under current regulations with Cuba. Bob?

MR. MUSE: Thank you. As Vicki Huddleston said at the outset, President Obama has enormous discretion to authorize U.S. environmental programs in Cuba. So I'll begin by describing how the

embargo affects these programs, how it operates. Then secondly I'll make some specific recommendations for how the Obama administration can take some Executive Branch actions that will actually facilitate environmental programs in Cuba over the life of his presidency.

The current embargo on Cuba operates in two important ways in terms of environmental cooperation between the U.S. and Cuba. First, all transactions involving Cubans or the Cuban government require Treasury Department licenses. Those licenses cover the travel of scientists to Cuba, the purchase or renting of equipment in Cuba for these projects. There are a couple of categories of Treasury Department regulation that authorize these things. One is professional research, licenses available to institutions that enable them to collect data and information in Cuba. However, the problem with those license categories is they're specific. The organization has to apply for the license which is time consuming, often expensive and the outcomes uncertain, and they're not guaranteed. During the Bush administration, many licenses for environmental projects in Cuba were refused, and they were refused as almost a demonstration of the administration's noncooperation with Cuba on virtually anything, so unfortunately, these environmental programs suffered.

The first thing I would propose is to create general categories of licensing. I won't go into how this can be done. Take my word for it, it's simple. But convert specific licenses into general license categories. That would mean any environmental organization can embark upon a program in Cuba, expend necessary funds in Cuba without specific authorization from the U.S. government. A general license is essentially preauthorization, so instead of spending time in applying for Treasury Department licenses, environmental organizations can just get on with their projects in Cuba.

The second area of governmental involvement, economic regulations that impact environmental projects in Cuba, are the necessity of Commerce Department licensing. So any equipment that's sent to Cuba for the purposes of environmental monitoring or conservation in general has to get a license from the Commerce Department. Again it's a time-consuming, tedious process, and I would propose that President Obama amend the Commerce Department regulations to allow for the export of equipment to Cuba under the same terms that agricultural commodities are currently going to Cuba. In that case, in the case of agricultural commodities, the exporter notifies the Commerce Department that it intends to ship a product to Cuba. The Commerce Department has 9 days in which to circulate that notification to the State Department and

the Department of Defense, and the only grounds on which those two agencies can intervene and stop the export is to say that the products are going to a terrorist-sponsoring instrumentality of the government of Cuba which is improbable that they would be ordering chicken thighs and corn from Midwestern suppliers. So never has one of those licenses actually been denied. But the critical point is it's again mandatory that the licenses are issued within 9 days after the notification is put in, so I would propose again an amendment to the export administration regulations that allows simple notification and then mandatory licensure of this technology.

I'll be happy to take any questions on this, but those are the principal recommendations I would make, facilitate travel to Cuba and facilitate the export of equipment necessary for environmental projects in Cuba. There are other things the administration can do that are nonlegal but are purely policy. For example, much has been said about denying licenses to Cuban scientists to come to the United States to participate in conferences. Again that's not legal. That's a policy determination and I hope that this president is going to be more facilitative of those exchanges than his predecessor. Those are essentially my recommendations, and if anybody has any questions about the topic of the embargo, I'll be happy to answer them in the discussion period. Thanks.

MR. EDWARDS: Thank you, Bob. We're going to do one thing. We're going to open up the floor to questions for the panel. We have really I don't want to say an unlimited amount of time, but we have quite a bit of time. We also have fruit juice and other types of drinks. No adult carbonated beverages unfortunately. I'm sorry, that wasn't possible. But we do have other types of libation that you can help yourself to after we have Q&A. The Q&A will wait until we get a certain point, probably 5:30 if not sooner depending on how questions go. I will open up the floor to questions. First question?

SPEAKER: I'd like to ask Vicki and Bob Muse how Vicki's earlier recommendation that the civil society sector in the United States just go and start opening offices in Cuba jibes with your remark about the concentration on general licenses. That still sounds like of murky to me. Can you go over the distinction between a general license and a specific license, how they are procured and whether or not they would relate to Vicki's recommendation?

MR. MUSE: The regulations that relate to travel to Cuba and spending money in Cuba are one of the few instances where the president's authority is somewhat circumscribed. Congress in 2000 in passing the legislation that allowed farm sales to Cuba codified the regulations on travel, so there are 12 existing categories of approved

travel to Cuba. President Obama can't change the categories. He can't add to those categories. For example, tourism is prohibited by the statute so it's a case of congressional preemption. They've taken that Executive Branch authority away from him. But within each of the 12 categories there are either general licenses or there are specific licenses. Journalists travel under general licenses. It's a preauthorization. If you're a journalist and it's defined in the regulation that you have to be a full-time employee of a news-gathering organization, you just go to Cuba. When you come back, the customs officials or the INS people or whatever they're called these days can ask under what authority did you go to Cuba, and typically at that point the journalist knows to produce a press pass, a letter from his employer saying that he is on assignment in Cuba. That's a general license. A specific license is an application filed with the Office of Foreign Asset Control at Treasury which is a complex and time-consuming endeavor to apply for that license. So that's what a general license is. It's a preauthorization. Let's take Environmental Defense for example. They have currently a specific license. Every year they have to renew it. It's good for 12 months. Instead of going through that, and parenthetically I'm going to talk about funding for NGO projects in a moment and how licensing impacts that, instead of filing these applications every year, Environmental Defense or any other environmental organization would

simply institute a program in Cuba and expend the monies necessary for those projects they've undertaken. It's always open to the government to audit an environmental organization and determine that the programs are legitimate and the money is spent on those projects, but that's the best we can do right now because of the codification of the travel regulations. Any further relaxation of those regulations is going to require an act of Congress, but it is open to President Obama now to convert specific license categories into general categories of license. And as far as what Vicki Huddleston was saying, I'm not sure I understand the connection between civil society and environmental projects.

SPEAKER: The means by which and the ease by which those means could be secured for a nonprofit organization in the United States, a 501(c)(3), to open an office in Havana.

MR. MUSE: For environmental purposes?

SPEAKER: For environmental purposes.

MR. MUSE: Do it. It's a general license.

MR. EDWARDS: The gentleman behind you.

SPEAKER: My question I guess is for Ms. Huddleston or for Mr. Whittle, and it deals with the politics of this. First, I'm operating from personal experience as well as generally under the assumption that the general U.S. policy and particularly the policy of the Cuban-American

interests in the United States is toward more openness and democracy in the politics on the island. My question is how that plays against the environmental interests for governance in Latin America because generally speaking I think we've seen the societies that have moved toward democracy in Latin America have suffered tremendously from governance issues and the environment being one of those areas where governance is ultimately in terms of the implementation as Mr. Whittle was saying is ultimately so important. My experience has been in the Dominican Republic where despite how many laws you can get passed, nothing gets done, but in Cuba currently it's easier to get things done because the power structures are more centralized, my question being, how do you reconcile, and you mentioned reconciliation in your original speech, the general U.S. political policy toward Cuba and toward a more open, more democratic, less centralized society with what I would presume would be the environmental lobby's interest in a more centralized government that can be more effective in implementing environmental policy?

MS. HUDDLESTON: There's a lot of question there. First of all let me just begin by saying that I don't think there are too many people in this room or in general that wouldn't want to see a more open society in Cuba. And of course, in all societies that are tradeoffs and in certain

societies that are more authoritarian such as Cuba you might have some limited benefits in that you might be more efficient or more effective in certain areas, but I wouldn't say that that would in any way compensate for the lack of human rights and freedoms and the right of assembly and speech that is lacking in Cuba.

That goes to the second part, that if Cubans themselves have a better opportunity to participate in their government, then I would think that you would actually have more a effective environmental outcome. We were talking today about bringing food down to Cubans so that they wouldn't eat the turtles. I would think that if these people had the opportunity for better jobs, to move around Cuba, to travel freely, maybe we wouldn't have to be supporting them. But then if you want to go to the second part of the question about the United States policy, obviously our policy is desirous of and focused on bringing democracy to Cuba has been unsuccessful and being unsuccessful has also has contributed to isolating the Cuban people and giving them less opportunity to actually become agents for change in their own country. So I'm very hopeful that we kind of separate the democracy and the environmental issues although they obviously have links and move ahead with the environment which is very much in our interests and in the interests of the Caribbean and the interests of the Cuban people.

SPEAKER: Let me just weigh I there as well. Thanks for the question. That's a great question. In 2006, Orlando Rey, the chief environmental law in Cuba and I wrote an article for the University of Pittsburgh's Cuban Studies Journal and we wrote about the environmental law and policy in Cuba and on the challenges and opportunities in the future specifically on implementation. One argument we dispelled pretty early on is that environmental protection does not depend upon the type of governments. In other words, we dispelled the notion that socialism and environmental protection inherently go hand in hand and there are scholars who have proffered that theory for years, and you only need to look at Eastern Europe and the former Soviet Union republics to know that's not true. You only need to look at the U.S. and other Western nations as well to show that a free market economy and a democratic society doesn't always work perfectly well for environmental protection either. So our focus in Cuba has not been on governance per se. We've looked at the environmental law infrastructure, many laws of which are based on U.S. law, the NEPA law, the environmental impact assessment law, the coastal zone management law, and others are modeled after laws in the U.S., Mexico and the European Union, and our basic premise is that regardless of how the Cuban government evolves over time, and there are all kinds of scenarios, regardless of how fast it opens up to the U.S., it is

absolutely critical that you have an environmental legal infrastructure in place that's robust and that will survive whatever changes occur, gradual or quick.

Finally, I want to mention that we have worked with SITMA to discuss civil society and particularly public participation in environmental decision making, and we've written about it expensively. The first ever public hearing that the Cuban government held on an environmental project was in 2003 near Via Clara on the northern coast, and the Cuban specialist who held that public meeting got to the site, got everything prepared, it was 8 o'clock at night and it was getting dark and the electricity went out. She was really quite upset and anxious about it. Three hundred people came out to this public hearing on a waste water treatment plant and illuminated the building with candles and spent hour after hour debating this project. My point in telling that story is not that public participation on environmental projects is alive and well in Cuba because it's not, but that there is forward movement and there is a recognition among the colleagues I work with that the public's input into the environment is absolutely essential.

SPEAKER: That's exactly my point because ultimately that structure of governance which doesn't exist or didn't exist prior to Chavez in Venezuela or in Ecuador, and you've seen these movements in Latin

America back toward more centralized government structures for many reasons and particularly mostly as actually you can see in Miami, too, for lack of good governance in Latin America in general. Those structures are at least partially responsible for the effective environmental management in parts of Cuba. The elimination of those structures and the introduction potentially if the U.S. policy is followed of a freer policy, more capitalist principles, open markets, et cetera, would only probably serve to endanger those markets further. I would imagine that without government control or as effective government control you would have what happened in Haiti or in the Dominical Republic or in Jamaica where you have had a lot of good written law but a lot of ineffective action on a host of issues.

MR. EDWARDS: Michael?

SPEAKER: Quickly on that point, I'm Michael from WWF Canada, we've been in Cuba working there since 1987, on your point, what you're basically saying is that a communist dictatorship is good for the environment. We used to say that in the in the past. It can be true, it cannot be true. It depends on the context. We have places in eastern Cuba where clearly yes we have sort of Eastern European situations there with pollution and runoff and so on. On the other side of the country we have very good management. When you talk about governance and democracy building or all these concepts we're talking about, in the case

of Cuba we always trying to differentiate between getting rid of the revolution and changing the way the government works. There's a big difference there. What we've done for example in some of our sustainable fisheries projects in northern and southern Cuba is convincing the government to change some of the more restrictive practices and allow the population to participate or to allow the private fishing cooperatives, because they do actually exist, very little, very small and very few, but to allow them to actually participate in some micro-capitalist initiatives. The Cubans resisted originally, but then they see that there's a certain benefit. Of course, we don't want to get rid of the government, Raul is still going to be there, but there are a few things that we can chip away at slowly and nicely and that the Cuban government realizes will benefit the general environmental management and the communities.

So it's not like it's all white. It's a gray zone. I think the big example that everybody uses, once the embargo goes and everything there's going to be this huge invasion of American tourists who are going to destroy all the beaches and build hotels all over the place. That's doubtful that's going to happen. The Cubans have a very clear zoning mechanism that tells everybody where to put hotels and where not to put them and they're going to do it with or without Americans.

The question is good but the answer needs to go really deep and it requires a good understanding of how the Cuban government and its environmental protection mechanisms actually work. I'm quite optimistic in that sense. The mechanisms that the government have established will survive no matter who's in charge or no matter who comes in, Canadians, Spaniards, Americans.

SPEAKER: I had a big picture question and then a small question. The small question would be to ask a little bit more about the Cuban NGOs and if there are things about the U.S. government policies that specifically make life difficult for Cuban NGOs. Maybe it's the same things there are made difficult for U.S. NGOs that would like to fund operations in Cuba or that would like to contribute to what's going on in Cuba.

The big picture question is I wonder if anyone from this really great depth and breadth of experience that we have on the panel has an example of perhaps another country with which the U.S. has had a rocky relationship that has since evolved into a more constructive relationship and whether you see a model out there that you might -- obviously in some sense you can't compare one country to another, but if you look as a person at your past relationships, you hope to learn from them and maybe we can do that as a country as well.

SPEAKER: I thought I would jump in on both the little and the big question at least to get the conversation started. On the little question about Cuban NGOs, there's another one that's more closely related to the work that we're doing called Pro Naturalesa . What we've found is that the U.S. government doesn't separate between NGOs and governmental organizations in Cuba. Their position is that anything in Cuba is connected to the government. That's been our experience. So basically it would disqualify them from any sort of public aid or whatever.

On the other question of other examples, the one that comes to mind for the marine environment is Israel and Jordan and the creation of an international peace park in the Red Sea which was specifically set up with research and conservation goals. This is even something that we talked in our big dreaming phrases in at Cancun and Vera Cruz about the Gulf of Mexico, three countries, doesn't it make sense that we establish some sort of mechanism in a formal way for us to really get beyond politics and work on the heavy lifting of research and conservation on a resource that has such huge implications for all three nations?

SPEAKER: On the big picture question, I think maybe a more parallel interaction is with the country of Vietnam. We've got substantial government-to-government relationships there. We're running marine protected area training sessions and we've got a number of things

like the Global Ocean Forum that was run there last year. So I think our relationship there even though it is a communist country, certainly we've gotten over some of those issues in terms of government-to-government collaborations.

MR. ERICKSON: Thank you. Dan Erickson with Inter-American Dialogue. First I just wanted to congratulate Brookings and EDF for putting on this panel. I think if there are a few area where is perhaps some hope for constructive relations between the U.S. and Cuba, the environment is one of them simply for the reason that it's somewhat apolitical given other topics and it's something that's so clearly in the interests of both countries.

My question kind of flowed off a comment actually one of the other questioners made when he said there is not going to be this massive influx of American tourists in the future that will wreak havoc on the Cuban environment. Of course, if you predict nothing is going to change in U.S.-Cuban relations, 99 percent of the time you're right, but there is a chance of course that the U.S. could lift the travel ban or you could have a much greater American presence in the Cuban tourist industry. My question for the panel was to what extent are Cuban environmental scientists or who are working in ecological systems thinking about managing the threats that could come from increased tourism? Is this something that's really

being actively analyzed by the Cuban government or is it something that they just see as so hypothetical that they're not really engaging the issue? Thank you.

SPEAKER: Back in 2001 on Cayo Coco we helped produce an international symposium on the protection of coral reefs and the vice minister of tourism happened to drop in on that event, and off the top of his head he rattled off the numbers of amenities of different types necessary to convert a tourist economy based on the European model which is basically an all inclusive resort model to the American model which is offsite restaurants, offsite golf courses, offsite recreational amenities, et cetera, ad nauseum. Some of the numbers, I wish I remembered all of them, I don't, but the number that stuck in my head was that they expected at some notion of build-out that it might require as many as 2,000 additional golf courses. It's interesting in that landscape with the water the way that it is and fertilizer in the current competitive state and prices around the world and other things how one would even think one might do that without those kinds of effects. But it is clear that they were thinking about how you could meet that demand in a way that was still consistent with the mandates of the constitution the laws. So I think they are very much concerned about it.

SPEAKER: Let me add to that that I agree with that. The answer I usually receive is that because we have good centralized planning, because we have a system of tourism -- zones that are identified for development, because we're planning a 10 percent growth rate, we believe that we can accommodate over the long term American tourism. That's sort of the standard stock response. Everyone that I talk to is extremely worried about it for the reasons Doug said, they don't have enough rooms, they don't have enough infrastructure, certainly don't have enough infrastructure to accommodate the kind of tourism boom that could occur. It's the wrong model. Americans are higher end tourists. They demand a different kind of tourism including golf courses. I think there are four or five in the country, and Doug said as many as 2,000. You can envision that traveling around the country. Marinas and small airports would also probably factor in in the costal areas. Most of the tourism would be on the coast.

But they also see this as an opportunity. Doug and I used to work closely with the director of development for the Ministry of Tourism and he's written a book or a couple of books on nature tourism and they see the higher end American tourism demand as a real opportunity for nature tourism, agriculture and nature and eco-tourism, bird watching, diving, et cetera. So they see that as a potential opportunity for economic

development much on the Costa Rican model as opposed to the Yucatan model.

MS. HUDDLESTON: I just wanted to add there that that to me is the huge opportunity of integration of tourism in the Caribbean because so many of the other islands are just scared to death that they're going to lose all their tourism because of Cuba. But if you do it like the level such as Dan is suggesting, Cuba could go toward the high end, you could have your golf courses various other places, and that really means that this kind of planning both for tourism and for ecology should begin now.

SPEAKER: I'm just surprised that the Cubans have embraced tourism as much as they have. It's not a model for prosperity. It's a lot of low-wage jobs. But they're trapped in a decision Fidel Castro made in the mid-1990s. He essentially bet the farm on tourism. Now they've got low-end tourism, principally French Canadian. It's almost lost leading in the sense I don't believe they profit very much from it. The inputs are more or less equal I think what the revenue from it is. But what I've seen in Cuba, and again it has something to do with the political structures of that country, if Fidel has decided, Fidel has decided, so my great concern, and Dan Whittle and I have talked about this often, can the environmental function in Cuba withstand the pressures to develop an

industry that are coming from the central committee? I think Dan could expand on why he's hopeful that they can. I think the interesting question is why the hell are they in the tourist business anyway particularly with their much touted education system and so on? You'd think they would be a little more original in their macro planning than that.

SPEAKER: Gary -- I was the counselor for political and economic affairs in Cuba just before Vicki's tour there in 1997 and 1999. On the tourism issue, I really wasn't going to talk about that, but I have the same question the speaker did about why Cuba's interested in tourism and particularly American tourism because I think other than the high end of the nature tours, the Costa Rican type of tourism, I think that it will be very politically disruptive in Cuba. The nature of auxiliary tourist facilities you need when you're getting away from the packaged model substantially increases individual income to individual Cubans apart from the central government and that's antithetical to the type of control that the government exerts in Cuba, and I think there will be a reaction in Cuba to it if that began to develop.

But I had another question. I'm delighted to hear about the cooperation that's going on on environmental issues right now and I support all the recommendations I've heard so far. But I haven't heard much about the blocks that the Cuban government puts to this

cooperation. I don't know how it exists, things may have changed a lot in 10 years, but we used to have in the 1990s an agreement that allowed for oceanographic vessels to go into Cuban waters and allow their vessels to come into our waters. We often had as you were talking about visitors and researchers from U.S. universities on U.S. ships and vice versa, private -- I don't know about public, but at least in private vessels. In 1998 they stopped granting that permission and I went in at least half a dozen times to the Ministry of Foreign Affairs trying to get permission and ask why our messages were simply not being answered. I wasn't like they were denying it, they simply refused to answer the mail. We never got an answer, so I don't know if that has changed. Maybe somebody up there on the panel knows that or maybe could tell me what happened and why because I'm still curious to this day. Thank you very much.

MR. EDWARDS: Who would like to take on that question? David?

DR. GUGGENHEIM: I think it's changed back. We've been in touch. In fact, Bob during his presentation showed you an image of the Marina Bella which is actually an Argentine vessel and Marina Hemingway, and we know the commodore there who has made it very clear that he gets a regular stream of U.S. vessels coming down there to this day. I don't know anything else about them. I don't know their names

or their registration numbers, and I have no photographs of any of these vessels. The point is they are very welcoming of U.S. vessels to my knowledge. Something higher up like a NOAA vessel, that of course would take some more paperwork.

My understanding is that the real crackdown has come on this side. It would make logistics much easier for us to be able to bring vessels down from say Mote Marine Lab or from other places in the Keys, and it became clear after the first few years of the Bush administration that it would be fruitless to even go there. I think from the Cuban perspective though it's really much less of an issue until you get into either a government vessel, or say if Mote were going to bring its vessel down you would need some special permissions for that, but I think the biggest challenge would come on the U.S. side and not on the Cuban side.

MR. EDWARDS: Dan?

MR. WHITTLE: I wanted to add that I think it's kind of a mixed bag. The mechanics of working in Cuba from the Cuban side are that U.S. groups such as ours typically need to receive a working visa. If you attend a conference or a workshop, you typically can travel on a tourist visa with absolutely no trouble whatsoever. That's how many American NGOs attend international conferences. If you plan on working or collaborating with an NGO or a Cuban agency or scientific institution,

you are required to get a visa. There's typically a person within the ministry or the institution you work with that's in charge of international collaborations, and frankly it's just mixed. Sometimes things appear to be going very well, and other times not, so our experience has been somewhat mixed there.

Also, special use permits are required for access to natural areas and other field expeditions. They're typically issued by SITMA. They're revising their manual as we speak to try to make the process more streamlined. But also I just want to say that there are a lot of American NGOs that would like to work in Cuba on their projects and the Cubans are really interested in your working with them on their projects, so there are many times in developing a relationship with a Cuban agency it's important to be flexible enough to work on recycling even if recycling is not your expertise in addition to the costal zone or the protected area work that you want to do or the fisheries work. So you do have to be a bit nimble. There are some issues on the Cuban side. For the last several years, David is absolutely right, the Cuban colleagues that we've worked with have embraced collaboration and cooperation and that seems to be continuing.

MR. ALLEN: Good afternoon. I'm Greg Allen from the IUCN. We heard a lot today about the connectivity between Cuba and

Spanish-speaking neighbors in Mexico and Florida. I'm just wondering what sorts of relationships Cuba has, environmental or scientific or otherwise, with their English and French-speaking neighbors to the east because those ecosystems we learned about today certainly stretch in those directions as well and affect Southern Florida as well.

MR. EDWARDS: Michael? You're the expert of the region.

SPEAKER: I'm not part of the panel but I think I can answer --

MR. EDWARDS: Do you want to say who you are, actually?

SPEAKER: I am Michael -- with WWF Canada. We've been there for a while. Cuba, the Dominican Republic and Haiti signed I think it was last year a high-level political agreement that was government to government to government called the Biological Corridor within the three countries. It is a very specific environmental agreement. The three governments have agreed to work together. I think right now it's mostly coastal and marine, but they have agreed to work together on developing NPAs, sustainable fisheries and costal communities and extrapolated exchange experiences within the three countries.

We were a bit doubtful in the beginning because it sounded more like one of those very political declarations between three governments that really don't share much and don't have much in

common and have all their own problems, but we've seen in the last few months that there is really a very strong momentum between the three governments to develop something, and right now it seems that NPAs and costal sustainability and fisheries is the main topics, so apparently there is some funding available and there are things going on.

Another topic that I know from our own practice is -- the Lesser Antilles with Cuba is turtle migration through the -- protocol and through -- probably you know more about that. So there's a few things going on. Yes, there are a few things. Actually, I think there are quite a few things going on more than between Mexico and the U.S. and Cuba.

MR. EDWARDS: Doug?

DR. RADER: On the ecological side, the linkages do exist at a variety of scales around the Caribbean but they're complicated in the same way that if you -- or modeling work from the -- area to Miami it looks like a straight line, it is way more complicated. On the southern coast you have big -- that operated a lot of the time. The drift from the Lesser Antilles to the west is slow and irregular and -- results and larvae all over the place, so it really depends very much on which kind of critters you're looking at. Nonetheless, in a perhaps longer than ecological timeframe, it's all part of the same grand system and therefore solutions can be developed at that scale. I would suggest that there's an interesting little

sociological or maybe it's governance experiment going on that has to do with the island of Navasa. I hope you all know about the guano act from the 1850s that allowed the United States to steal islands all over the world and we did some really grand things including in the last administration through the Antiquities Act to preserve some of those fabulous places that we stole. Navasa is one of them. It's equidistant roughly between the western tip of Haiti, the eastern tip of Jamaica and the southern tip of Cuba, and it's hours at least we say -- there are some disagreements about that, but it's a world treasure, natural treasure, both on the island and around it. Most of the waters remain largely unexplored, although the U.S. Caribbean Fisheries Management Council working with NOAA is trying to address some of that. So there's a real interesting -- if we could get sort of past the governance problem of who owns the damn thing, we could really make some interesting progress on finding out about a scientific treasure for which there's not really much economical value. There aren't going to be any golf courses on Navasa Island.

MR. EDWARDS: Do we have one more question? If not, we can close. I'd just like to close by thanking the presenters very much. I'd particularly like to thank Vicki Huddleston. You do a lot of these and we really appreciate that.

MS. HUDDLESTON: I think this has been a very patient audience. You've been wonderful. Thank you.

MR. EDWARDS: Thank you, Vicki. Lastly but not least, our funders, the MacArthur Foundation and the J.M. Kaplan Fund, and Conn Nugent is here from the fund. Thank you very much for making this happen.

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