MARINE PROTECTED AREAS

FEDERAL ADVISORY COMMITTEE

COMMITTEE MEETING

OMNI MARINA HOTEL
700 North Shoreline Boulevard
Corpus Christi, Texas

Wednesday, April 26, 2006
8:27 a.m.

APPEARANCES:

Dr. Tundi Agardy - Sound Seas

Mr. Charles Beeker - Indiana University

Mr. Robert Bendick - The Nature Conservancy

Mr. David Benton - Commercial Fishing (Not Present)

Dr. Daniel Bromley - University of Wisconsin

Dr. Anthony Chatwin - The Nature Conservancy

Dr. Michael Cruickshank - Marine Minerals Technology Center Associates

Dr. Eric Gilman - Blue Ocean Institute

Ms. Ellen Goethel - Fishing and Ocean Education

Dr. John Halsey - Michigan Department of State

Dr. Dennis Heinemann - The Ocean Conservancy

Dr. Mark Hixon - Oregon State University

Mr. George Lapointe - Maine Department of Marine Resources

Dr. Bonnie McCay - Rutgers University

Dr. Steven Murray - California State University, Fullerton

Dr. John Ogden - Florida Institute of Oceanography, University of South Florida

Terry O'Halloran - tourism industry (Not present)

Mr. Lelei Peau - American Samoa Department of Commerce

APPEARANCES (CONTINUED):

Dr. Walter Pereyra - Arctic Storm Management Group, Inc.

Mr. Max Peterson - International Association of Fish and Wildlife Agencies (Retired)

Dr. James Ray - Oceanic Environmental Solutions, LLC

Andrew Sansom - (Not Present) Mr. Jeff Pearson substituted; Texas State University, San Marcos

Dr. Daniel Suman - University of Miami

Ms. Kay Williams - (Not Present) Gulf of Mexico Fishery Management Council

Mr. Jim Woods, Makah Tribe

Mr. Robert Zales, II - Recreational Fishing

NATIONAL MARINE PROTECTED AREAS CENTER:

Mr. Joseph A. Uravitch
Mr. Jonathan Kelsey
Mr. Brian Jordan
Mr. Charlie Wahle
Ms. Dana Topousis, Ms. Bunny Sparks

FURTHER ATTENDANCE:

Mr. Randal Bowman
Dr. John W. Tunnell, Jr.- Texas A & M Corpus
Ms. Katherine Andrews - Coastal States Organization
Mr. Tony MacDonald - Coastal States Organization
Ms. Mary Glackin - Department of Commerce Ex-Officio
Mr. Brian Melzian - EPA

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P R O C E E D I N G S

CHAIRMAN BROMLEY: Good morning. Okay. We do not have anyone for the public comment period. No one has appeared wishing to testify before us. So, we will roll the program forward and it will remain in the same order unless we find good reason to switch. We are going to pull it forward and start now.

There was some E-mail traffic we had prior to the meeting about High Seas MPAs, so Joe is going to open with a brief discussion of that.

MR. URAVITCH: I think Mike Cruickshank will go first with that.

CHAIRMAN BROMLEY: Okay. Mike initiated this discussion, so he will make a brief statement and then Joe will. This is Michael Cruickshank.

DR. CRUICKSHANK: Thank you. I have a statement from Greenpeace.

(Note: Prior to proceedings commencing, reporter was advised off the record by Dr. Daniel Bromley and Joe Uravitch that the reporting of Dr. Cruickshank's statement may be waived due to inaudibility.)

MR. URAVITCH: Thanks. In response to Mike's inquiry, I did talk to people at NOAA International Affairs. The whole question of High Seas, that area beyond national jurisdiction, beyond the EEZ, is certainly an evolving issue.

And it is really not something that obviously this Committee is involved with at this point since we are dealing with what the U.S. can do in U.S. Waters; but there is obviously a relationship between what happens beyond the EEZ and within U.S. Waters.

It's an issue looking at things like seamounts, canyons, thermal vents and the critters that are out there in places that no one has really seen for the most part.

I got drawn into this last December when I was invited to participate as one of two U.S. people on a panel of experts in Ottawa, Canada. Myself and Richard Metho from NOAA Fisheries attended that.

The whole issue is led by the U.S. Department of State. Obviously, this is a major international issue. There's a lot of issues involved and I can get to some of those that I got from our International

office.

But I am now part of NOAA's High Seas team that is out there. It is led by NOAA's Assistant Secretary for International Affairs and NOAA Fisheries. I have been asked to join that team now from an MPA-type perspective.

In regards to that meeting in Ottawa, it was attended by 18 people from 11 countries, chaired by Dr. Jake Rice from the Department of Fisheries and Oceans Canada.

And our Charge was basically to prepare a technical document for a criteria that could be used to identify areas that are important biologically or ecologically on the High Seas. And it was a Charge that came from a whole series of international meetings -- and I won't go into the details of that; but the potential clients through the Canadian Government for this conference were the U.N. Food and Agriculture Organization, which deals with international fisheries issues, International Maritime Organization as well as the Convention on the Conservation of Biological Diversity. Those were three

of the international bodies that were looking for some guidance in terms of how to define or identify the important places out in the far oceans.

What was interesting in the meeting was we did have one lawyer who was there from Poland and by the end, the term "High Seas" was changed to something called "Beyond National Jurisdiction" because "High Seas" basically covered the water, but the experts also believe we need to deal with the seabed and the ocean floor and the subsoil beyond those limits of national jurisdiction as defined in the U.N. Convention on Law of the Sea.

In terms of the U.S. position on all this, what I have been told basically is that, and I will quote: "The MPA must have a clearly delineated impact area, a strong causal link between the management measures and the harm being addressed and enforceable measures with the customary international law as reflected in the U.S. Convention on Law of the Sea."

From the U.S. perspective, the emphasis is on identifying the threat and addressing it with the appropriate mechanism, whatever that be, which may or

may not be an MPA or some combination of tools to address this High Seas threat.

"The U.S. does support action to protect vulnerable marine ecosystems both within and beyond national jurisdictions in accordance with the customary international law as reflected in the Law of the Sea particularly with respect to destructive fishing practices and the U.S. urges Coastal States to take measures to protect vulnerable marine ecosystems within areas under their own jurisdiction, as the U.S. is doing, while also working together to adopt stronger measures for vulnerable marine ecosystems on the High Seas, again especially with regard to harmful fishing practices."

"The U.S. does support the many mechanisms already in place to protect protected areas through marine fisheries management organizations." And that is not our Fishery Management Council. That has to do with international bodies, the International Maritime Organization and other competent international bodies.

And I think that pretty much summarizes what we have heard from the U.S. Government. What I will do

is make sure that a copy of that document that was generated in our December workshop in Ottawa is made available. It was released at the meeting on the Convention of Biological Diversity in the United Nations last month at their meeting. And, so, I will make sure that is available to everybody.

And I will try to answer questions, but I am not sure that I am totally competent to do that.

CHAIRMAN BROMLEY: Good. Tundi.

DR. AGARDY: Tundi Agardy. When are we going to sign the Law of the Sea Convention?

MR. URAVITCH: I honestly don't know.

DR. AGARDY: Why are we talking about High Seas when we are not a part of the --

MR. URAVITCH: Well, that's got to go through the Senate and be approved as, you know, as a treaty agreement. So, that is up to the United States Senate.

MR. ZALES: Bob Zales, II. The United States generally stands out and tries to be the steward of the environment and conservation issues. And every occasion I have seen so far at these international levels, basically what happens is the United States

takes the lead in these efforts and presents its plight to the marine fisheries while the rest of the world says: "Thank you very much for conserving the fish." So, that is just the facts of the way things are. State Department doesn't really want to play in, from what I have seen, and that is the problem.

CHAIRMAN BROMLEY: Any comments?

(No audible response.)

CHAIRMAN BROMLEY: It's right in line behind the Kyoto tree. There is a "sign up" sheet for ratifying treaties.

It is on the other wall from the epiphany sheet. Mike?

(Dr. Cruickshank addressed the committee -- inaudible.)

CHAIRMAN BROMLEY: Okay. Charlie, are you ready to present?

(Dr. Charles Wahle indicated affirmatively.)

CHAIRMAN BROMLEY: Okay. We are at the 9:00 o'clock portion of the program. Charlie is going to give us a presentation about "Understanding What We Have Now -- Analyzing the MMA Inventory."

DR. WAHLE: I had one of those epiphanies this morning, which was: If there is no public comment, I don't have time to practice.

CHAIRMAN BROMLEY: The mike is not on.

DR. WAHLE: Okay. That is good.

(Equipment and microphone adjustment.)

DR. WAHLE: I actually get to do something fun, which is to talk about some preliminary results of some work that we have been doing for a very long time to try to understand what we have in the water right now. We are all focused, as we should be, on developing a National System and on the needs in the future, but I think we all know that the first step in that is to figure out where we are now before we figure out what we need to do.

And the tool that we built to do that is what we call the "Marine Managed Areas Inventory" and that is an effort that has been going on for longer than I would like to admit. It started in 2001 and it is coming to its logical conclusion.

Now, why do this? It's been an incredible amount of work and at times one wonders is there an

easier way.

And the reason we did this, which is even more valid now than it was before, is that we really need to understand what is out there and we need to document in some detail the location, the purpose, the management strategies and regulations of the existing Marine Managed Areas in the U.S. in order to do several things:

One, probably in some ways the most important and the most challenging, is to understand what these areas mean to the ecosystems within which they sit and the users that they may or may not effect.

The second is to identify future place-based conservation priorities using the information we have gleaned from this pattern that we are developing.

The third is to identify with that information the initial suite of the existing MPAs that will become the nucleus or the starting point of our National System.

And then, finally, in response to what the Executive Order tells us, this Inventory provides the list which is the list of MPAs that should be avoided

harm for -- and that is one of its ultimate purposes.

So, there are a lot of reasons for doing it. Some are an approximate and some are longer term.

A quick overview of what it is. Starting in 2001, it has been a federal-state partnership in the true sense of the word really from the beginning with federal agencies both giving us guidance and contributing directly through a working group and state agencies through a state advisory group.

We began this effort very deliberately with a wider net than you might think we needed. We crafted this concept of "Marine Managed Area" as we used it and threw that net out there and pulled in a whole lot of trash fish. There's a lot of stuff in that net.

And then the next job, of course, is to sort through that and figure out which of these sites are MPAs that might go into the National System.

So, it's big. It's got over 1,500 documented sites and it is growing.

For each one, we collected standard data on the site and its programmatic information, it is functional information like level of protection, et

cetera, and the GIS boundaries, which has proven to be very challenging.

Some of these sites, you might be very surprised to learn, are in the desert, some are in other countries, when you plot them out with the GIS that we've gotten. So, we are doing a lot of work to scoot them over a little bit so they are not High Seas MPAs.

And then we are also right now doing a big push to fill some of the gaps in the data. Any of you who work with data know you always have holes -- and we have a lot of holes. So, we are filling them in a lot of different creative ways.

This is just a disclaimer, largely, because this will go up on the web; but I want you guys to understand these are preliminary results from preliminary data. So, this is not the gospel necessarily, although what I have chosen to do here is present those patterns that are so broad and so constant and so probably unchanging in some ways that, even as we add new data and fill the gaps and redo some of the analyses, I don't expect this basic story to

change; but I just want to give you fair warning that if you pull one of these slides and use it two years from now, it is not going to look like the one we are using now.

So, for the results, then, what I will do generally is present a very basic message and at times some data to go with it. If you have questions, I will be happy to talk about them as we go along or at the end, whichever works better for you.

The first is that, as we heard yesterday, MPAs have been around for a long time, dating back to 1911. The interesting pattern here, I think, is that there was a real upsurge in MPA establishment in the early 1970s and that coincided to some extent, it may be truly a coincidence, but it was when a lot of new environmental laws were passed both at the federal and state level.

Now, I have it on good authority from Bob Bendick, who is our historian, that right here during the Civil War that Roosevelt and Lincoln and several people got together and set up this National System and we are just now coming around to ratifying it, so we

are on the right track.

A lot of people think they are all federal, especially people who are outside the federal government, and the fact is that it is exactly the opposite. So far, the data show us that the majority -- over 75 percent -- of Marine Managed Areas in the U.S. are created and managed by state and territorial agencies. Others are managed through -- by local agencies, a few through federal and state partnerships, and only 17 percent are federal sites managed by federal agencies with federal mandates.

And that's significant. I mean it makes sense because a lot of the action is near shore; but it is also meaningful as we think about the National System and how we might evaluate the potentials and some of the challenges of dealing with all of these different authorities.

There has always been a lot of interest in what MPAs are for -- and I think a lot of confusion. And generally the conversation tends to gravitate towards fishing impacts or fishing benefits, presumed or real; and, yet, MPAs and MMAs are for a lot of

different things.

So, we basically divided the world into three bins, three focal areas that the conservation focus of the site might be one or all three of these areas.

The first -- and you have seen this before -- is "Natural Heritage", which has to do with ecosystems, with biodiversity, with ecosystem functions, the ecological processes in the communities.

The second is "Sustainable Production", which has to do with the conservation management measures one would take in order to sustain fishery or other extracted activities.

And then the third is "Cultural Heritage", which is focused largely on the artifacts and places of significance.

What we see when we look in the data is sort of an interesting pattern. It is what I think many of us felt intuitively, but often you hear the opposite when you are in a public meeting or something.

And the pattern is that the majority of MMAs in the United States have at least as part of their legal purpose to conserve natural heritage, values and

services. Seventy-five percent of them are, at least in part, natural heritage sites. Thirty-three percent, which is a large number, are sustainable production sites, at least in part of their mandate. And ten percent of U.S. MMAs include a cultural heritage component.

Now, what makes this picture complicated and interesting to tease out is that a lot of MMA authorities are very broad and tend to have a lot of phrases linked by Congress and those phrases usually say "ecosystems", "fisheries", "cultural heritage", et cetera, so that you have, for example, in the National Marine Sanctuary Program and National Park System sites that fit all three criteria; but there are others that only do one, and the way those fall out in sort of the agency pattern is going to be a very interesting and very important feature of our work in the future.

So what this tells us is that there are a lot of different reasons for doing MPAs. We have a lot of different kinds out there; but the majority of them have at least part of their core purpose to conserve some aspect of an ecosystem.

There are three related features of MPA and MMA design that can be extremely important in their effect on the target resources and on users and they are often, I think, poorly understood.

One is permits. And we completely missed the boat on this one. We understand the concept, but we had no idea going into this how many of the MMAs in the U.S. are permanently established.

At the moment, 98 percent of all of the MMAs in the Inventory that meet the other criteria are there forever. They are, unless they are actively undone through some regulatory process, they provide permanent protection to the site and to its resources. Fewer than two percent of the total are what we call "conditional sites", which are those which after some fixed time period require an act of reauthorization to continue.

So, that is an important finding because that means that, for one thing, going from the MMA wide net to the MPA narrower net is not going to be such a big change, which has implications for all of our thinking about what constitutes the National System. By the

definition, it's got 1,500 sites. So this is something to think about.

The second one has to do with the constancy of protection that the site provides to the area. I think we all intuitively think it is year-round, but that is not always the case.

Ninety percent of MMAs do provide year-round protection, which means the regulations and the management strategy applies constantly throughout the year. Ten percent, however, are designed to protect seasonally important areas or processes or events or populations. That is typically related to fisheries and that number seems to be growing.

The third feature has to do with the ecological scale with which the site was designed. And what we mean by that is: Is it there to protect the one coral species or one threatened fish species or is it there to protect ostensively the entire function of the ecosystem?

Interestingly, most of the MMAs in the U.S. were the latter. They are established on an ecosystem scale to conserve comprehensive aspects of the

ecosystem, both the elements, the species, the habitats, and often the processes and the other environmental qualities that make up the system within which these species live.

Only 25 percent of the sites are "focal sites", we call them, that target a specific species or a habitat or some other feature for protection and those often are sustainable production sites.

So the pattern here is: There's a lot of them; they are forever; mostly year-round; and most -- and I think this is very important -- are ecosystem in scale, in scope.

Now, this is always the "hot" button: What do they do? And we saw and analyzed that they have all these purposes, but what protection does the MPA provide?

And the answer is: It really depends.

There's always a lot of controversy about what MPAs are and are they always "no take" and how many of them are there. What we are finding is what most of us knew -- that they are not always "no take" for sure and that most of them actually are not particularly

restrictive.

Ninety percent -- nine out of ten -- of all U.S. MMAs are multiple use sites, some with zoning, some without, that allow fishing and other extractive activities. So, of all those sites out there, ninety percent of them are places where you can generally do most of the activities that a normal person would do. You might not be able to drill for oil; but, you know, you can fish, you can do other things.

In 10 percent of the sites there are "no take" areas where fishing and other extractive activities are prohibited.

Now, the numbers tell one story and I think it is an accurate one; but the spatial data tell a slightly different story, and that is: How big are these spaces?

This is where the preliminary part of the analysis comes in. The spatial data are lagging behind the numerical data; and, so, we are able to talk about what we have seen on the West Coast, California to Washington, but nowhere else.

What we have seen is that these "no take"

areas that constitute 10 percent of the numbers of MMAs nationwide constitute 1.1 percent of the combined state waters of California to Washington and 0.4 percent of all U.S. Waters out to the EEZ in that same region.

So that clearly is a small area. If it happens to be where you fish, it is a big area; but it is still -- the numbers are beginning to paint a picture that will be important as we think about what is out there and what is the current burden on the users and what might come in the future.

Okay. So, where does this take us now?

So these are the big national scale patterns. What this tells us in very broad terms is: There are a lot of these things out there. We knew it and now we've got the data that actually shows the 1,500 to 2000, probably more by the time we are done.

These areas are everything you can imagine. They vary widely in their size, their purpose, their jurisdiction and, importantly, in the type and level and the potential ecological or socio-economic impacts of the protection that they provide. So what we have in the water right now is a suite of virtually every

conceivable way you could manage a place in the ocean.

The patterns that are emerging from the Inventory Analysis are confirming some of these long-held beliefs and refuting others. They are sort of bringing finally on the table some numbers to some of these issues that tend to be controversial and perennial and tend to derail conversations.

An example of that is that, in general, I think it is fair to say that the most common MMAs in U.S. Waters, if you were to just jump out of the plane and land in one, you would be in a state-managed multiple use site that allows a variety of extractive uses including fishing.

The rarest, which if you jumped out of a plane you would have a hard time finding, are federal MMAs that are fully "no take" that are established to protect natural heritage values.

Now, I would be willing to bet that that is diametrically opposed to what a lot of people perceive to be the situation, especially as you get closer and closer to the backyard.

So, this is important information. And the

insights that we glean from this and what we will glean more in the future is really the foundation for the National System effort that we have engaged all of you and this is the floor that we will use to build, hopefully, something good on.

Now, let's talk just very briefly about how we get there and what that is.

This year, FY '06, which ends in September, we will finish filling these data gaps by hook or by crook, as they used to say, and we will, using that data, analyze the spatial data and with that illustrate some important trends that go really way beyond what I have shown you here to look at differences in MMA and MPA usages among the states -- and they are big. There are very serious differences both in number, size, purpose, level of protection, among different states and among regions.

We will use the data to do those same analyses among agencies -- and they show similar differences, as you can imagine just intuitively. Fishery sites and marine sanctuaries might play out as you look at some of these variables.

We will also be able, using the GIS, to tease out this issue of overlapping jurisdiction, of which there is a lot, especially in Florida and other places where there's MMAs stacked on MMAs stacked on MMAs and some are identical in every way except the name and some are significantly different.

And, so, the analytical challenge is to tease that out and to make a distinction between "That is five MMAs" or "This is one area that has a screen of protection and this is what they are."

So, that will happen this year.

Now, what we do with that information is the important stuff. All of that, as interesting and as fun as it is, does not mean a whole lot without context. It is just information about what the law says the site does -- and we all know that that could be relevant or maybe not.

So, to figure out whether it actually is, we are combining all this information about MMAs with other data on resources, on habitats, on ecological processes and on human uses. And what that will get us ultimately is a comprehensive picture of sort of the

conservation situation and the existing protection.

And that will allow us to do these two things on the bottom, which is what we are all here for:

One is to assess the contribution of the existing MMAs to the goals that you all developed for a National System.

The second is to identify with that information some critical gaps in existing protection for regionally important habitats and resources.

And the way we will do that -- this is just to help you sort of visualize -- is to stack these layers up -- in here we are talking about the second one from the bottom, the contribution of existing MMAs -- so that we can, using the ecological and cultural resource data, get some insight into the state and the distribution of the resources; using human use pattern data and the impacts of human uses, get a sense for what kind of stress those activities may place on those resources; and then using this information about the existing MMAs and the governments that overlies or underlies it, get a sense for what the current level of protection might be, if it were fully implemented.

When you combine those together, you begin to get a sense for "Where are the gaps?"

Now, the process for going from the colored layers to the right is yet to be determined through the framework process and others; but where we are right now is on the West Coast -- you have heard us mention this concept of the West Coast Pilot -- that is it. Basically what we are doing is developing the data layers that one would need to make the assessment of the current levels of protection, where the gaps might be, and we are doing it in a pilot area which we have chosen to be the West Coast.

So that is where we are and that is the basic steps that we would use, hopefully with your help nationwide and with the help of all the agencies who are doing this and actually implementing it, to begin to figure out where we are going with this National System.

I think that is it for me. I must have time for questions.

(Multiple hands up.)

CHAIRMAN BROMLEY: There is no interest in

your presentation, Charlie.

DR. WAHLE: Good.

CHAIRMAN BROMLEY: Why don't you sit down and --

DR. WAHLE: Okay. All right. John?

DR. OGDEN: I may have missed it, Charlie; but what do the data show about size distribution of the MMAs?

DR. WAHLE: Well, you haven't missed it. That is in the "next two months" category.

DR. OGDEN: Oh, okay.

DR. WAHLE: The GIS data, which is where we are getting the size information from, has proven to be a real challenge. You know, some of the sites say, you know, we are at 2000 square meters or whatever; but until we've got that, we -- I had some slides that I just didn't believe, so -- because, you know, it shows -- it's a real astounding effect to show what you've got.

But what I think -- I will tell you what I think it will show: A lot of little ones, most of the -- most, but not all, of the highly-protected ones

will be small; and then there are a lot of very large fishery exposures in Alaska primarily and other places that are significant areas that I think people do not, other than those who are affected by it, don't fully appreciate that these things are out there and what they might be contributing to the conservation system.

Yes, Tundi?

DR. AGARDY: Charlie, I have two questions. One is: Do you have a sense of what, within multiple use MPAs, how much of the multiple use MPAs are actually "no take"? Because there are "no take" areas often within these.

DR. WAHLE: Yeah, I do. You know, I had a figure that shows that. It is very small.

It is so small that that is why I did not use it. I would say it is in the range of less than five percent.

But the trend that I would expect to see, and that is why we took the data the way we did, is that in time I think most of these -- many multiple use sites evolving toward zoning and within the zoning system are developing "no take" areas.

So, ten years from now when you ask me that, I'm hoping the figure will look like this; but right now it hasn't really changed that much.

DR. AGARDY: The other question I have is that horrible question about efficacy of management and how you can actually get through those data layers without knowing whether, in fact, there is compliance and enforcement and all of that stuff.

DR. WAHLE: Right. Well, that is, of course, the thing that we can't -- well, we can easily extract it from the Inventory. And it is also something that is so specific to the site and it changes so quickly that I think the most effective way for us to capture that information -- and clearly we have to, ultimately -- is in the regional planning process and not from Washington or from Monterrey and say, "Oh, you know, I don't think you are enforcing."

But when you start the conversation with these base layers --

CHAIRMAN BROMLEY: Charlie, I'm sorry to interrupt you. We are having a hard time hearing you. Could you get your microphone closer to you?

DR. WAHLE: Okay. Sorry.

CHAIRMAN BROMLEY: Yeah.

DR. WAHLE: And maybe it was because I was dodging the question.

CHAIRMAN BROMLEY: Yeah, at a little higher volume.

DR. WAHLE: Okay. So, the answer is: "Yes, it is important." "No, we are not able to do it." And we actually, more importantly, think it is more appropriate to do with the management agencies and the stakeholders in the room.

Yeah, Mark.

DR. HIXON: Thanks for that summary. Mark Hixon. Thanks for that summary, Charlie.

Two quick questions about the West Coast analysis. In the percentage of areas, does that include the new large EFH closures on the shelf?

DR. WAHLE: No, they weren't in there.

DR. HIXON: Okay. They are not in there.

And, then, also, does it include the homo-settled MPA closures in Oregon -- or the new system?

DR. WAHLE: In California?

DR. HIXON: I mean not in Oregon.

DR. WAHLE: That is in your dreams.

DR. HIXON: Pleasant dream.

DR. WAHLE: No, I don't think the brand-new ones are in there either. In fact, they are not even established.

DR. HIXON: So all that EFH stuff is not in there now either.

DR. WAHLE: No.

DR. HIXON: Oh, okay.

DR. WAHLE: It will change.

DR. HIXON: Because that really will change these dramatically.

DR. WAHLE: Although those -- I'm not sure those are technically "No Take".

DR. HIXON: Well, they are "No Trawl" zones, so they --

DR. WAHLE: But that is not "No Take".

DR. HIXON: What?

DR. WAHLE: That doesn't make them "No Take".

DR. HIXON: No, I'm not saying "No Take". I'm

just saying --

DR. WAHLE: -- are they in there?

DR. HIXON: You just cited the West Coast as an example. It didn't strike me that .04 percent was accurate.

DR. WAHLE: Well, my understanding of the EFH sites is they only limit the take of fisheries, managed fisheries. That those would not be "no take" and, therefore --

DR. HIXON: Oh, that's right. That's just "no take". Okay.

DR. WAHLE: Yeah. But there's significant areas that address the most significant threats, so it is a meaningful thing.

DR. HIXON: Thank you.

DR. WAHLE: M'hmm. (Nodded.) Steve.

DR. MURRAY: Charlie, I was wondering how easy it was to discern the goals of the different MMAs that you examined, whether there was statements that allowed you to easily classify them and then to go a step further and to look for any particular targeted outcome?

DR. WAHLE: It seems to depend on your tolerance for ambiguity.

Some people find it very easy. Others are still stuck on the first one. It is all there, both in the statute and usually in the implementing regulations of the management plans.

The real challenge is trying to distinguish between the flowery language that virtually all MPA authorities, including now Manguson, have. They are very broad-based; and, therefore, meet all the criteria of what the site is actually doing.

And that is the challenge; but we have gone through it now twice, each one, to tease that out and we are getting more comfortable with it.

DR. MURRAY: One quick follow-up. In terms of the issue of "permanence", could you classify, are any of the natural heritage MMAs that you designated other than permanent?

DR. WAHLE: I believe there were a couple that had renewal mechanisms, State and Federal. I would have to check; but there were a few. But I was very surprised to see how low that number was. Yeah, John.

DR. HALSEY: John Halsey. Charlie, the 75 percent, I assume that was gross numbers, actual numbers of MPAs or MMAs?

DR. WAHLE: Yeah.

DR. HALSEY: How does that equate to the actual area? Does the State have 75 percent of the area represented in that number?

DR. WAHLE: Well, I doubt it; but it looks like they have more than you would think because there are so many of them. This again gets back to the spatial data which is still being cooked; but it looks like the State MMAs are really a significant part.

DR. HALSEY: More than 50 percent area-wise?

DR. WAHLE: Maybe in some places, California; but they are all swamped by these very large sustainable production closures, which are really, really big.

Mike?

DR. CRUICKSHANK: Thank you. Mike Cruickshank. How many of the MMAs are leases under the O.C.S. Land Act?

CHAIRMAN BROMLEY: Did you hear it, Charlie?

How many are leases under the O.C.S. Act?

DR. WAHLE: Yeah, I did. I just don't know the answer to that.

MR. URAVITCH: Charlie, I don't think we got those data yet after the Hurricane Katrina destroyed the MMS office. They were supposed to send us a volume of information. It was right about the time Katrina hit. I don't think those data ever came in.

DR. WAHLE: Yeah, I think you're right. Yeah.

DR. CRUICKSHANK: But they are not included in that purpose?

DR. WAHLE: I would assume so, yeah. And I seem to remember there was a number like 20 or something, but I'm just not sure.

Do you know?

(Mr. Jonathan Kelsey and Dr. Wahle conferred.)

DR. WAHLE: Jonathan says 40, so -- roughly; but they are not in here apparently.

DR. CRUICKSHANK: Because there's more than 2000 in the Gulf alone.

DR. WAHLE: Pardon?

DR. CRUICKSHANK: Because there's more than

2000 in the Gulf alone.

DR. WAHLE: Well, then, we will be looking forward to receiving them.

MR. URAVITCH: Yeah. The data are provided to us by the various bureaus and programs. The National Marine Fishery Service, for example, is the one that provides us with the information on fishery sites.

MMS is providing us with those that MMS believes meets the criteria for Marine Managed Areas. So, whatever we get is what we get from the bureaus.

CHAIRMAN BROMLEY: Bonnie?

VICE CHAIR MCCAY: Bonnie McKay. Your plans for exclusion in 2007 --

DR. WAHLE: Yeah, that pretty well sums up our plan.

VICE CHAIR MCCAY: Your plans for 2007 to actually, I guess, look at all other kinds of information and so forth are very, very interesting and ambitious and impressive. It looks, however, to me, like you're preparing from a top-down process.

So, I would like to know what your plans are for making also a bottom-up one? In other words, is

there a way that you hope to engage other governmental and non-governmental groups in identifying gaps and looking at the system itself?

DR. WAHLE: Yeah. That is a very good question. Thanks for asking, because I have so internalized this stuff that I don't often articulate it.

But for some of it, it is more straightforward if the data exists. Gathering up GIS data on, you know, where are the fish and where are the rocks is not that big a deal.

For others, either the information does not exist or there is a critical need to engage a lot of people in the development of both the design of the study as well as the thing itself.

So, we have started. We are just really starting this piece on the West Coast, but we are going to be convening at -- starting with the agencies, Federal and State MPA agencies on the West Coast in a couple of months, to start with that and say "Help", you know, "How shall we do this?" "How would you like to get involved," et cetera, and "How do we involve

you, as stakeholders, in this process?"

Now, the part that I believe will necessarily be the most participatory is the human use pattern because -- for a lot of reasons; but one of which is the data that one needs just do not really exist.

So, we are going to have to go in some form to users or their representatives and ask to help us figure this out. That is, as you know, in Brian's work plan for -- he's working on it right now, this year, and we hope to scare up some external money to do that work in FY '07. And it is a huge, huge project and a difficult task. If we make any progress, it will be good; but it is largely funding-dependent.

But our overall approach to this will be to include both all the relevant agencies as well as all the relevant stakeholders in designing and then gathering the information and then making sense out of it.

So, really, I wouldn't say it is a totally bottom-up process, but it is definitely not a top-down one.

DR. PEREYRA: Wahle Pereyra. Thank you very

much, Charlie. It was an amazing presentation.

In Alaska, you point out there's some very extensive MMAs up there; but there are also some that are fairly concentrated in areas for the protection of the sea lions. Some of the areas are inside the State Waters and some of it is outside in Federal Waters.

Are you able to sort out, if you have an MMA that goes from the beach out, is your GIS system able to sort that out?

DR. WAHLE: Yes, it can. One of the things we are working on right now is to find ways to carve these out into their different components and to in many cases carve out the land component of the larger MPA that is part of a terrestrial site, which there are many.

It is a bit of a challenge, but it is doable. What it will result in is a very complicated report which will come out toward the end of the summer which will have a lot of that kind of detail in it, where the basic pattern looks like this; but if you really look more closely, it looks like these things.

DR. PEREYRA: Do you have the most recent data

on the Aleutian Islands? Are they in there?

DR. WAHLE: I think it is in there, yeah. We don't have State data on State-managed MPAs.

Yes?

DR. SUMAN: Charlie, just a clarification. Regarding "multiple use" areas that have "no take" areas, these are not counted as "no take"?

DR. WAHLE: That is right. Yeah, those are --

DR. SUMAN: -- "multiple use".

DR. WAHLE: Right, because -- and there again, it is a GIS tech issue. Surprisingly, most of the sites who have those areas do not have GIS for it. So, when we get a GIS trial for the whole Florida Keys Sanctuary, if you were to code that "no take", that becomes a very large "no take" area.

So, we are building on that ourselves, basically.

DR. SUMAN: Okay.

DR. WAHLE: But it is an important distinction.

DR. SUMAN: And regarding other information, does Inventory have any information about existence of

a management plan, budget or staff?

DR. WAHLE: Do you want to --

(Mr. Jonathan Kelsey shook his head.)

DR. WAHLE: It is one of these things: Yeah, there is some information; but I don't think it is reliable. It is old, you know. Most of that stuff was captured in the first round, which was four years ago or so.

And we looked at it very carefully because it is clearly the next step; but we think that a more reliable and probably a better way to do it would be to pose that question to the principals when you get to the planning phase. But it's -- it is not usable.

Joe?

MR. URAVITCH: Joe Uravitch. As mentioned, this was probably an overly ambitious undertaking naively begun in 2001 with up to 80 data fields of information about each site, a lot of which just does not exist. And what Charlie and his team and the inner-agency team for the Inventory are focusing on are a subset of those 80 that are really critical to the kinds of analyses that Charlie's team is beginning to

undertake.

I don't know if you want to cover a little bit of that, Charlie, what your focus is.

DR. WAHLE: Yeah. Okay. We call that thing the "Analysis Database"; but what we did when we finally had the courage to open the box and look inside, we thought: "Oh, my God. What have we done?"

And, so, we went through and very systematically basically evaluated all the data in the database and realized that, say, 25 fields are both relevant and reliable and largely filled in and happen to be corresponding to the classification system and some other Key Questions. So, we built a database that combines that information into more limited fields and that is what we are using to generate this information. It's much more workable.

The original data is still there, should anyone want it; but it is much more complicated to work with.

Any other questions?

(No audible response.)

DR. WAHLE: Okay. I guess we're done.

CHAIRMAN BROMLEY: Okay, Charlie, thank you. That was very nice.

DR. WAHLE: Thank you.

CHAIRMAN BROMLEY: We have been waiting to hear this.

DR. WAHLE: Yes.

CHAIRMAN BROMLEY: We are doing really well. Let's take a short break. We will start at 9:30. This puts us back on our original schedule.

So we will have a short break and then at 9:30 we will move into "Ecosystem Approaches to Management."

(Brief recess: 9:20 a.m. -- 9:36 a.m.)

CHAIRMAN BROMLEY: Can we please reconvene. I'm sorry to have to break up the wonderful conversation, but we are now behind schedule -- which feels normal.

I'm going to ask Steve Murray to introduce the panel. You will notice it is "Ecosystem Approaches to Management" and "Case Studies" and something else.

So, Steve, why don't you please introduce the theme and the speakers. Will you do that for us?

DR. MURRAY: Sure. So, as most of you, I

think, realize, one of the Charges that has been presented this group is to examine the relationships between marine protected areas and ecosystems-based management. Joe put together a panel of three folks to come here and give us some information that we might be able to use as we deliberate on this topic.

So, our speakers are Lance Morgan from the Marine Conservation Biology Institute and Steve Gaines from the Marine Science Institute at U.C. -- Santa Barbara and Ned Cyr from the Ecosystem Observation Program at NOAA. Steve is going to speak first, and then will Lance, and then to Ned.

Steve is a coastal marine ecologist working out at U.C.S.B., University of California -- Santa Barbara. His research program focuses on Marine Protected Areas, their design, evaluation and effects. He has had experience working with the Channel Islands process in California and also has had a real major role working on the Marine Life Protection Act process.

Steve is going to talk about "Tools for MPA design under the Marine Life Protection Act -- A Case Study." Steve?

DR. GAINES: Thank you, Steve, and thank you for the invitation to come and talk on this important topic.

I want to focus most of my time on how science has been used in the Marine Life Protection Act from the standpoint of dealing with some of the complex issues that are inherent to both ecosystem-based management and MPA formation and these deal with things such as multiple species, conflicts in terms of use, multiple scales, how we deal with problems that are operating on different spatial and time scales.

But before that, I want to just give a little bit of an overview of history. I don't want to talk too much about the process of MLPA, although that is a really good thing for a topic of discussion because I think there are a lot of lessons to be learned.

The Marine Life Protection Act was pretty landmark legislation, I think, in terms of its focus on ecosystem-based protection. It was passed in the late '90s and it has had a difficult time getting implemented, partly because of the fact that the process in the initial rounds was not that well thought

out in terms of how to really take advantage of stakeholder input and a variety of other things; but this last round that is now nearing completion for Phase 1 of implementation for the central coast of the State has actually, I think, gone very successfully and a big part of this was the implementation of the process.

The process as it is set up, very briefly, has at the bottom stakeholder groups that involve individuals that use and are concerned about issues related to California's coastal environments from a whole variety of different groups. And we have divided up the State into a number of different subregions. The initial focus is just the central part of the State from Point Concepcion, the bend in the State, up to just south of San Francisco.

The stakeholder groups primary activities in this process were to do two things:

One, to refine the goals; and,

Second, then to come up with proposed plans for implementation of MPAs to meet those goals.

In addition to the stakeholder group, there is

an independent science panel. The science panel includes a broad diversity of scientists from both the physical, biological and social science fields.

And our role in this process was to do two things:

First, to take the goals that came out of interactions with the stakeholders in the Act itself and produce guidelines in those cases where there is a scientific basis or some rational reason for how to meet those goals. So, we had to come up with guidelines.

And then the second thing we did was we provided both feedback and evaluation of proposals that came out of the stakeholder process.

So, the science team was very independent. We did not create any plans for MPAs. All we did was help set up particular guidelines that helped the various groups evaluate things, and then we did scientific evaluations based upon those guidelines.

Lastly, one of the key things, I think, in this round was a Blue Ribbon Task Force. There was a group of individuals who really understood how the

legislative, political and legal process worked, very high-profile individuals in the State of California, who essentially ran the process and made the final decisions in terms of a recommendation of which proposals to pass onto the California Fish & Game Commission as well as to recommend a preferred alternative.

So, that is a real brief overview of the structure of the process. Now I want to focus a little bit more on issues of science and ecosystem-based management.

There are six broad goals in the Marine Life Protection Act. I know you can't read these; but I distilled them down with the bold terms here to have the key phrases that are part of these individual goals.

The first one is to "Protect the natural diversity and function of marine ecosystems." It has a very strong "whole ecosystem" focus to this Act.

The second goal is to "Help sustain and restore marine life population." So, in this case, we are looking at individual species and the diversity of

species within the system.

The third recognizes the diversity of uses in California's coastal ocean, so it is "Improving recreational, educational and study opportunities in areas with minimal human disturbance."

Then, to "Protect representative and unique marine life habitats."

The fifth one is to "Establish clear objectives, effective management and adequate enforcement." I'm not going to talk about that one because that really comes into play next.

And then the last one, which was one of the, also, I think, real landmark pieces of this legislation, was to "Ensure that MPAs are designed and managed as an ecological network." And I will talk a little bit about that.

So, it has a very strong ecosystem-based focus. And if you look at definitions of ecosystem-based management that come out of the U.S. Ocean Commission Ocean Policy or the Scientific Consensus Statement that was signed by several hundred scientists to help define what this is, it has very,

very similar language in terms of its approach.

The major feature of the Marine Life Protection Act, though, is that it is primarily on the implementation side, focusing on MPAs as a piece of getting to ecosystem-based management of California's Oceans.

So, the goals that I showed you before actually break down into a couple of distinct classes in terms of the relevant science from the standpoint of how these ecosystems function and the relevant data and knowledge that is necessary to actually implement them that is there. And, so, two of them, the "Protecting the entire marine ecosystems" and "Representative and unique marine life habitats" really have as a primary focus protecting the diversity of entire habitats within the California system. So this is really capturing a system that is representative of the diversity that we see within California's coast.

Now, in most cases, in terms of thinking about data needs from the standpoint of ecosystem-based management as well as MPAs, the data on the diversity of species and their distributions is often woefully

inadequate in terms of how much comprehensive information we have in terms of across the range of species in the systems; but to meet this goal, an alternative is you just capture the diversity of habitats that, in fact, are critical to this diversity of species. And we have in most cases far better data on the diversity of habitats.

One of the things that came out of this effort in the Marine Life Protection Act was the recognition that habitats doesn't just depend upon what the bottom is. So, it is not just issues of sand and rock and how deep. It also really is critically tied into characteristics of the oceanography that deliver nutrients, that deliver plankton, that deliver young larval stages of fishes and invertebrates. So, capturing the diversity of habitats.

The other is recognizing that, in fact, the species composition in different regions varies. And this is a big challenge in terms of thinking about ecosystem-based management is: What are the boundaries of major changes in the biological composition of the ecosystem?

So, a comp under this was defining where there are locations along the coast where you have relatively large transitions in the composition of species, which is indicative. It is the biology telling us that there are large functional differences in how the ecosystem is working in those different regions. So, an aspect of this, then, is to have representation across this range of different biogeographic diversity.

So, we compiled a really extensive collection of habitat data. One of the nice things about the California coastline is it is quite well-studied compared to most coastal regions around the world because you have such an enormous world of marine institutions that have been doing work there for a very long time.

So, a big part of this was characterizing the different habitats. Don't worry about what the table is; but the Act listed a number of habitats, the science team expanded that in a very big way, to capture this real diversity of different ecosystems that are found in California's coast, and then we were able to characterize where those different habitats

occur with different levels of resolution and what fraction of the coastline they represent.

And then when any particular proposal comes through for a collection of MPAs, we are able to then score these proposals on the basis of "How much of this habitat diversity they actually capture." So, this is really getting at the issues of holes within ecosystems that are not represented within this network.

So, that is one aspect: Capturing the diversity of ecosystems. "Ecosystem-based management" really deals with ecosystems on a variety of scales. It is often talked about at very large scales in terms of large marine ecosystems like the California Current, but it is subdivided into a whole variety of functional ecosystems that are based upon habitat and their interaction with the ocean system.

The second two groups' goals, that really link together and are very functional and have very important implications for thinking about this connection between MPAs and EBM, are number 2, which was "Sustain and restore marine life populations," and number 6, which was "Design as an ecological network."

These are really focused on enhancing the populations of the diversity of species within the system. Clearly protecting habitats is an important comp under that, but a big part here is really thinking more about persistence of species that are threatened for a variety of reasons. And the "network" aspect is one that played a really fundamental role.

So, what is a "network"?

Well, this is a challenge because it is one of those terms that has all kinds of meanings in general use; and as a result, people translate their perception of what a network is to something that in this case has a fairly specific ecological and scientific definition.

So, there are a whole variety of different kinds of networks. The ones that are probably the most closely related to what I'm talking about in terms of "ecological network" are "social networks", among people, and "computer networks", where they are effectively linking entities in some particular way. You have got individuals or notes within some kind of a computer network that are now connected and play some -- the function of this relies on those

connections.

So, thinking about just from a "social" standpoint, you know, the social networks are always defined as how far away you are in terms of connections from Kevin Bacon.

And, so, here is just an example of people that know each other. And, functionally, you can see that in some cases they are "redundant links" -- that if you break those links, they don't matter. In other cases, they are really fundamentally important links -- that if you break that one link with the "X", then now you have two independent networks; the idea that originates down with the woman down in the lower left-hand corner who doesn't get as easily to Kevin Bacon.

Well, this is functionally a very similar model to how we think about ecological networks; but it is actually even a simpler problem when we talk about it in the ocean because of a couple of features. One is that, for at least coastal systems, which is what we are talking about in California, these networks tend to be somewhat linear. The connections between one place

are strongest with places that are nearby; and you go further away, the connection -- so you don't have to worry about these weird webs of connection.

The last point, though, is that the connections are made by individual movement. Okay? And, so, this has played a really important role in thinking about this because it highlights one of the biggest challenges of both ecosystem-based management and MPAs; and that is, that the answer you get in terms of thinking about whether you are managing the ecosystem or whether it is using MPAs or not is that the answer varies from one species to the next. Okay.

So, how do you deal with problems of diversity of responses that are inherent in the biological diversity we see within marine ecosystem systems?

One of the key things, of course, is related to the fact that individual adults in different species move different distances. Some fish move very large distances. Other ones spend most of their life in a very small area. In some cases, for a lot of invertebrates, they don't move from a single spot after they settle out of the plankton. As a consequence,

MPAs of any particular size or any kind of spatial form of management is inherently going to have to deal with the fact that you have got different scales of movement across different species.

And if we look at it from the standpoint of just some of the key species that came out of the stakeholder process for "Species of Interest", this is what we have pulled together in terms of scales of adult movement among species. It is many orders of magnitude going from essentially immobile things, on the left, all the way up to scales of movement within the life span of a single individual that are over thousands of kilometers. And you can very quickly see with this diversity that any spatial scale you choose is going to have winners and losers in terms of how it impacts this diversity and biology.

So, imagine that you have an MPA that is on the order of 10 kilometers of length scale. Well, that is something that is going to have substantially greater impact on species that are to the left in these two categories because they are going to spend a much larger fraction of their life span within that MPA and

it is likely to have limited benefit to the ones that are to the right.

And, so, a major aspect of MPA design is really focused on "How do we capture as much of this diversity as we can?"

And that fundamentally comes down to affecting the size of MPAs. As you increase the size of the MPA, a larger fraction of the biological diversity is now having movement scales that are appropriate for that particular size.

Now, obviously you cannot capture this entire diversity. And this is a problem that is inherent in ecosystem-based management and Marine Protected Area design in that this is not a comprehensive solution where a single strategy aside from closing entire ocean basins is going to be adequate for the biological diversity we see.

So, there are going to be winners and there are going to be losers in the sense that they are not going to be gaining any of the benefits that you are trying to achieve with whatever that management action is. So this played a huge role in terms of our

guidelines for MPA size -- recognizing that there is nothing that we could do for the species in those right two columns from California's standpoint.

The second aspect of movement is associated with the fact that most marine species, virtually all fish and the great majority of invertebrates, produce young that are microscopic and planktonic and drift on ocean currents for anywhere from minutes to many months -- and they move.

They move just like adults move; but there is a really fundamental difference about this pattern of movement and that is that the threats that they experience in terms of a whole variety of different human interactions are different than the ones that are going to be experienced by adults.

So, movement of young, in this case, actually provides a very complimentary benefit to MPA design that in some ways works in exactly the opposite direction as movement of adults; and this is, that it provides a means of individuals moving from one MPA to the next so you don't have to have all of the benefits being generated by staying within a single MPA for an

entire life cycle.

It allows a way for some of the benefits, whether it is through added production from larger fish, to be able to be transferred to other MPAs; but the scale over which these larvae can move and connect MPAs varies amongst species and it varies by even a larger amount than adult movement varies.

These are data from looking at genetics of a whole variety of different species that allows us to estimate the average distance that marine larvae disperse on ocean currents. You may not be able to see the numbers, but they go from a meter on the left side to 1000 kilometers on the right. So, it is about seven orders of magnitude variability among species.

So that means that the connections between two MPAs that are spaced a given distance apart is going to vary, depending upon the species you are interested in. And it works in sort of the opposite way as the pattern of movement of adults. In this case now, the longest distance dispersing things are going to be more connected because they can make large jumps between protected areas. So, to the extent that they are

dependent upon the benefits from those protected areas, the species with long-distance larval dispersal are going to be more connected between MPAs that are spaced a given distance apart.

Just like with the size criteria which I talked about before, you can establish then analyses on the basis of this diversity of dispersal distances we see within the ocean and use this as a way to create guidelines about who is going to be connected, which species are going to have strong connections between MPAs and which are not, based upon any choice of MPA sites.

So, the biggest part of the guidelines that came out of the MPA design to deal with this issue of "How do you address the fact that there is diversity" really came from putting these two things together, and it is fundamentally that the focus of design of MPA size is largely driven by the movement of adults and MPA spacing is largely driven by the movement of larvae. And playing around with these two guidelines then allows you to capture a large fraction of the ecological diversity which we see within these systems.

So, one of the guidelines that came out of the process here in terms of a preferred recommendation to meet the goals that were put forward to the science team was individual MPAs that were in a preferred size range of up to 20 kilometers of shoreline with maximum spacing between them of 50 kilometers. So there was the guideline that was enacted by the Blue Ribbon Task Force; and then as a part of the process, we were able to look at for each proposal that comes forward what fraction of the MPAs in any particular package meet these various guidelines.

So, for sizing, that is relatively straightforward in terms of ones that are smaller than we recommend. And there are a lot of good reasons for having smaller MPAs for particular things in terms of meeting goals other than species persistence; but primarily it is looking at how many of the MPAs in these packages are actually up in that preferred size range where they are going to start playing a big role in terms of having benefits across that diversity of species.

Same thing comes from the guideline based upon

spacing that was driven by the movement of larvae. What we can do here is now look at, for a whole variety of habitats, we can look at how far apart MPAs are that have that habitat. So, for species that occur in any particular habitat, whether it is a kelp forest or a field grass habitat, you can look at how big of a jump do they have to make between MPAs among the coastline. It is really quantitatively evaluating how effectively this collection of MPAs is going to be able to benefit the diversity of species we see within ecosystems.

Just to show you how this affected the process, this was an analysis between a variety of packages that happened early in the process and our guidelines was in between these two red dotted lines. By the end of the process, this is what the packages looked like.

So, there was dramatic change on the part of the stakeholders to actually try to meet these guidelines by changing the way they designed their different MPA networks. And, so, from the standpoint of spacing, by the end there was no substantive difference between the packages that came out of the

process, even though they came from very, very different stakeholder groups with very, very different interests in what they wanted the MPA network to do.

So that is kind of two aspects that tie into the inherent problem of dealing with diversity. And any time you are going to think about ecosystems, you have to deal with diversity.

These guidelines do not provide perfect solutions for all species, but they were set up to try to capture as much of that ecological diversity in terms of having benefits as we could feasibly do without completely shutting down the entire coastline.

So the other kinds of tools that started to emerge in this process and didn't play as big of a role in this initial process as they will likely in the next one -- I just want to mention this very quickly here because they raise some other important issues in terms of thinking about MPA design -- the first is "socioeconomics".

Everything I have talked to you about so far has been based upon kind of biology and physics and geology and things along those lines. And partly that

is driven by the fact that the way this Act was written, it really does not mandate a strong role for analysis of the socioeconomic impacts of this MPA network. It is really focused on an MPA network that maximizes its ecosystem benefits.

However, that clearly, even if that goal is not explicitly in there, it certainly plays a fundamental role in the process in terms of how you deal with the issue of conflict among users and interests and things along those lines.

So, as part of this process -- and this is the big challenge -- is actually getting the kinds of economic data that will allow us to forecast costs, at least in the short term, of various types of management actions.

I mean the biggest challenges that are there in virtually any system is the accuracy of these data and their spatial resolution.

If we are talking about "spatial management", where we are talking about relatively small-scale areas, in most cases we don't have the spatial resolution and the data to be able to make effective

evaluations about how that impact is going to work.

So, as part of this process, the State commissioned a study that looked at a variety of different commercial fisheries as well as a couple of recreational fisheries, primarily the commercial passenger boats, that tried to estimate what the maximum potential impact could be from these different designs.

So this was one of the ways that we started to incorporate this in the end was trying to also score each of these packages, not just in terms of how they make these ecosystem benefits, but what is their likely potential maximum cost.

One of the interesting things that came out of this process actually came out of a working group that Charlie's group convened which was looking at different aspects of levels of protection. I haven't talked at all about what level of protection these MPAs have.

But one of the analyses that came out of there was looking at the fact that from the standpoint of ecosystem benefits, doing fishing for pelagic fisheries in the water column when the water was deep, in this

case more than 50 meters, had dramatically smaller levels of impact on the bottom, which is where most of the species that are going to benefit from this protection occur.

And, so, one aspect that came out in this process of integrating that synthetic finding into this was that a number of the MPA proposals shifted to having offshore MPAs that allowed pelagic fishing of various forms and inshore marine reserves to try to reduce the socioeconomic impact on those components of the fishery that are mostly pelagic.

What would have been ideal and was not really a part of this would be to really be able to take the opportunity to link together in a very effective way the socioeconomic and biological data to be able to say: If there are a variety of alternatives that can make the ecosystem benefit in similar ways, can we then optimize the system by looking at places where you can maximize those ecological benefits and minimize socioeconomic costs?

There are a variety of different modeling tools that can help do this. One of them is called

"Marxan" and it is being now developed to be able to much more effectively be able to take advantage of a variety of different kinds of socioeconomic data to be able to take this into account. This is something that will likely get a lot more use in the upcoming rounds of MLPA.

And this is just to show you an example of what can happen, is that the left block here comes out of the socioeconomic data for, in this case, recreational fishing effort by these little "1 nautical mile" blocks. This is just an example of an optimized set of locations that can actually achieve the ecosystem goals that were put into this particular run by minimizing the economic costs.

You can see that in many cases the areas of highest use are completely avoided in this output, although there clearly are going to be cases where conflict is unavoidable because there are not substitutable regions where you can minimize these costs.

Lastly -- I don't want to go into this too much -- but the real advances of coming here, I think,

in terms of being able to much more effectively look at modeling ecosystem benefits for populations, instead of breaking the pieces up, as I did, in terms of how adults move and how larvae move, when the real goal is for how all these things affect the populations both inside MPAs and out, is to be able to actually much more effectively model coastlines.

And this is something that came out as a part of science team effort late in the process here, which was essentially to take the coastline where we have maps of the habitats and MPA distributions and convert this into a model where you actually make a distribution where the green, in this case, as we go along the shore is where a particular habitat occurs, and the red is a proposed MPA in a particular package that's been put forward by the stakeholder.

And now, instead of just doing simple analyses about how far apart two individual MPAs are, we can actually do full population models and look at how the populations respond to this particular configuration of size and locations of MPAs. And the other thing we can do -- well, we can do it also for different life

histories where species disperse different distances.

And we can also take this into account of what kinds of management actions are happening outside, so you can look at whether -- how conservative the regulations are outside in terms of regulating fishing mortality outside, because that is a big impact in terms of how critical the MPAs are going to be in terms of guaranteeing persistence for that particular species.

So we can run this, then, for diversity of life histories under different scenarios of management outside and really start thinking about how we can link a complex network of MPAs into a much more functional view about how marine ecosystems could work.

Now, this was done a little bit in this case and one of the things that came out of the initial analyses for a particular habitat, the black bars, the big wide things, are the amount of the coastline that was closed in MPAs for these four different packages. The blue and the red bars are effectively the amount of the coastline where you have got persistent populations that are guaranteed by these MPAs for this particular

habitat.

Under two different scenarios of management outside -- one with the high fishing mortality outside, the blue bars, and one with the lower fishing mortality, the red bars outside -- we can do this for a variety of different habitats.

(Banging noise.)

And what has emerged is, again, it gives us a way to much more effectively evaluate the differences among packages in terms of their collective benefit to cross-species and cross-habitats. And if we look at this for a variety of habitats, I can show you that two different MPA packages --

CHAIRMAN BROMLEY: That is my way of signaling that you are out of time.

DR. GAINES: I'm sorry. I'm almost all done. So, anyway -- anyway, neat stuff. So, here is all the things that we use. This is the diversity of data.

And I think the biggest data challenge that comes out of this, aside from the things I have talked about so far, is the fact that we have virtually no way of incorporating so far market values in the ecosystem

assessments. And that is something that really needs a lot of attention, to couple in with the kinds of activities that are going on on the floor.

And, so, here is where the process has ended up or is a component. Three packages were put forward to the California Fish & Game Commission that are being slightly modified by the Department right now.

The one on the left is the one that was chosen as the preferred alternative. It has something on the order of 18 percent of the State Waters for this region in MPAs. The red areas are marine reserves. The blue areas are other forms of MPAs that allow other kinds of activities.

So, thank you.

CHAIRMAN BROMLEY: Thank you very much, Steve. I'm sorry. I was not meaning to cut you off. The timing was rather good, wasn't it?

Steve, do you want to take questions now or do you want to get all three speakers up?

DR. MURRAY: I think it would be preferable just to have a few questions. If it starts to go a little long, then we'll --

CHAIRMAN BROMLEY: Okay. I will let you control that.

But I do have a question, if I may, to start off.

DR. GAINES: Sure.

CHAIRMAN BROMLEY: I was interested in this Marxan model, probably derived from Karl Marx, I'm sure. But more seriously, could you -- That's why I was interested in it.

Could you give us a sense as to --

MR. URAVITCH: Next question.

CHAIRMAN BROMLEY: Next question, right. To discuss the biology, discovery of Karl Marx.

But could you give us a sense as to, if that is a module or something, if we wanted to do this for the cost minimization or minimize impacts of certain things, could you tell me how hard that would be and how much data it would require?

Is this two weeks worth of work or two years worth of work for an area of some given size? I just would like some parameters here on the calibration of this things and data.

DR. GAINES: Very good question. The analysis that I showed was actually part of a process that a group of graduate students at the Brin School at UCSB did over the course of about four months using the data that we had in hand for other reasons for the MLPA process. So that was three --

CHAIRMAN BROMLEY: You had the data to start with and it was sort of the use of slave labor for about four months?

DR. GAINES: Right. Yeah, exactly. And, so, the critical thing is, of course, that your ability to use this tool is going to be dependent upon how good your data are at the spatial -- you know, the spatial resolution of your data is going to determine the spatial resolution of the analysis you can do.

In the case of California, we were able to -- you know, that was one nautical mile for a whole variety of aspects. We can go way below that resolution. That was just for that presentation. Other cases, of course, it is going to be much coarser than that and that is going to limit the kinds of analyses you can do.

So, in one way, I think, it drives -- it should drive us to think about where we should be focussing attention in terms of increasing the spatial resolution of certain kinds of data. Some of them are spectacularly good already. Other ones are woefully inadequate in terms of being able to effectively utilize them.

CHAIRMAN BROMLEY: Thank you very much.

DR. GAINES: John?

DR. OGDEN: John Ogden. The Scientists Consensus Statement on ecosystem-based management, in my view, for the first time essentially put human beings into the picture as an essential component of the ecosystem and that is really what makes it a useful tool especially for a group like this.

I think what you said was that the California Marine Life Protection Act, in fact, did not take those things into account.

And it strikes me that ergo, in my view, it is not ecosystem-based management. Still you've got the two components, but you haven't merged them.

And it strikes me that it is going to be all

the more difficult because you are coming at this with what amounts to a mature structure from a scientist's perspective of what an ecosystem is and then trying to conform the "human use" portion after the fact, so to speak.

And, you know, it strikes me that we've got -- our Committee has got to do things differently. And maybe you can comment on that.

DR. GAINES: Yeah. I should say that it was probably misleading in terms of how I represented the things.

The Marine Life Protection Act, itself, did not have a strong component of really in any way -- I think they were scrupulously trying to avoid the issue of designing the MPAs to enhance fisheries, which is what -- you know, all of these kinds of efforts come into play.

So, it had an ecosystem benefit. It wasn't that it excluded -- or, you know, it didn't encourage consideration of costs; but that wasn't the primary driver in that particular thing.

There are two other parallel pieces of

legislation in California, though, that you really have to take into account to think about this whole thing, to kind of expand this out -- because I agree with you completely -- and those are the Marine Life Management Act and the -- I can't remember what the -- The Ocean Protection Act, I think is what the third one was. Those much more explicitly consider the linkages between what is going on in this process and a number of other aspects of human use.

So, it is really that comprehensive package that I think is closest to the Consensus Statement view of ecosystem-based management. They were just divided up into three pieces of legislation.

As a practical matter, in terms of the process, that does create some challenges, I think, in terms of how you do the linkages and whether they get done sequentially or as part of the process.

I agree with you completely.

DR. HEINEMANN: Dennis Heinemann. Dr. Gaines, thank you for an excellent presentation.

My question for you: Is it possible to integrate models into this to get answers as to what

affect on fishing mortality rates, stock levels, et cetera, would result from the different packages; and if not, what do you think the impediments are?

DR. GAINES: That's -- I mean that is a very good question in terms of using MPAs to enhance stock assessments and a whole variety of other choices that need to be made in fisheries management.

That has not been done as part of this process, although there are a number of parallel efforts going on in California to really try to do that, and a big focus of that is actually happening right now in the Channel Islands in terms of where you have a collection of MPAs, a network like this, it is a smaller geographical region, 13 MPAs, where there is biological work going on to exactly address this question.

So, again, it is going to be one where I think certain species -- and it is really going to be dependent upon the scales of movement of adults as to whether this is going to be valuable at all in terms of enhancing stock assessments.

So, again, I think it is going to be useful in

some cases and not in others. And it is likely going to be really dependent upon -- in the same ways that MPAs are going to have beneficial affects for some species and not others. Those two things are actually pretty similar in terms of the scales of movement are going to be the ones that are really going to drive whether this is a useful tool at all in terms of stock assessments.

But it does give us a potential way of getting fisheries independent data in terms of stocks or species. We also can get estimates of how those stocks are fluctuating in response to factors that are independent -- well, not completely independent, but less dependent upon direct human interaction, whether it is climate fluctuations or things along those lines.

So that is a big area of research that is going on right now and I think it is an area that needs a lot of attention.

DR. PEREYRA: Thank you for your presentation. Walter Pereyra.

In your work, were you able to -- you use the term of "linkages to the areas outside the MPAs",

obviously not in the desert. Were you able to deal with that in your modeling?

DR. GAINES: That is really the attempt of this last model is to really be able to -- you know, a lot of prior evaluations of MPAs have had to look at things that, if you are really setting these up as kind of a guaranteed persistence, they made pretty extreme assumption about the fact they are not getting much contribution from areas outside. Well, of course, for most, that is not going to be the case and it really depends upon the types of management actions that are going on outside as to how much contribution you are going to get outside relative to inside MPAs.

And that is really the focus of this last piece I was talking about is to develop tools that allow us to integrate what the benefits would be from the MPAs with their -- and how they interact than with management actions outside. So those two, the red and blue bars, you know, it is just a real simple example of a case where there was very different level of contribution coming from outside and it has a very big impact in some cases on the function of that network.

DR. MURRAY: I just want to add something real quickly here as a question as well, Steve. This comes back, I think, to one of Dan's comments; but if you look at the data and you look at this from the biological side or the physical side, there is a certain spatial scale which those data are available or are being gathered and I think those data are getting better and better and better all the time with the technologies that we have.

On the social science side, in order to integrate some of the social science information or the economic information, the question becomes: "Okay. What is the spatial scale of the data and how robust are they?"

So, if, in fact, the economic data, the social data that would be plugged into an eventual model that would be a competent model, if the scales of those data were equivalent to the scales of the biological data, how would we be able to proceed from there using Marxan or some model like that?

DR. GAINES: Well, that gives you, I think -- The better your spatial resolution, the more

opportunity you have to achieve a particular ecological benefit at a lower economic cost. Because, in essence, the way these tools work is they recognize that if you have a particular goal, there may be dozens or even thousands of ways to configure MPAs that would meet that goal.

And, so, you are really now trying to assess: "What are the difference costs?" And those can be wildly different in their costs.

And, so, you are going to get more options if you have more special resolution and you are going to get more accuracy in terms of really minimizing costs if you have better spatial resolution.

So, the biological and physical data now are to a point where we have resolution that is substantially smaller than the size of MPAs we are talking about. For most of the socioeconomic data, that is not the case.

And, so, that makes it a challenge because it means you can't say anything about whether shifting an MPA a few miles in either direction would have any implications other than getting feedback from

individuals that are in the room.

So, the better the resolution we can get on the socioeconomic data, the more we can reduce conflicts and the more we can actually, I think, achieve multiple goals with the least cost in areas where there necessarily will be conflicts. Because there's always going to be -- you know, these goals are not going to always be completely compatible; but we can certainly reduce that area of incompatibility -- and the better the spatial resolution, the more options we have.

DR. MURRAY: Thanks, Steve. I think we will move on to the next speaker and if there are other questions, we can pick those up a little later.

Our next speaker is Lance Morgan. Lance is the Chief Scientist for the Marine Conservation Biology Institute. He's a Fisheries Ecologist.

He has put together a Priority Conservation Area Analysis for the region between Baja California to the Bering Sea. I think, as some of you might know, that this is one of the objectives for the Commission for Environmental Cooperation, a NAFTA offshoot,

looking at environmental issues with trade and the region of concern is the region from Mexico up into Canada and Alaska. And, so, Lance is going to talk about priority conservation areas in this region.

Lance?

DR. MORGAN: Thank you, Steve.

Thank you for inviting us here today to talk to you. So, I won't talk much more about the CEC other than to say that they did have a little side agreement. They came out with a side agreement to NAFTA to look at biodiversity between the three countries.

As you might guess, we -- as you may be in the same boat -- got into something we had no appreciation for what the scale of it was when we started in a lot of ways. And partly that was because the size of the area, which extends from the Sea of Cortes, Baja California, up into the Bering Sea.

And what seemed like a fairly simple goal, which I will go through this talk -- and the talk really split into talking about this and then trying to address the questions that came to the panel -- was, you know, "Okay. The goal sounds good. Let's take it

to unique places" -- which I will refer back to the idea, it is different from representative and we should keep this in mind as we go through this.

But that has a lot of hidden discussion and a lot of innuendo underneath it which was very difficult to get at, too. And one of the ways we did it was through a number, not just kind of one set process, but about four different workshops over a three-year period that involved scientists, conservation people, stakeholder groups especially focused, because of the NAFTA role, on federal government employees; but all of that was taken into for the three countries. So, we had rather large and cumbersome workshops from time to time trying to get at this.

So, when I say "unique places", we are talking about things like biodiversity, high productivity, unique habitats for the area, unique species or endemic species to the West Coast of North America.

So, again, the area is very large, something in the order of five million square kilometers.

So, how do we start down this path?

Not that we are going to end up with MPAs at

the end of it, but we are going to start selecting a view of North America where we have these unique places that would be highlights for conservation efforts.

So, as a scientist, the first thing I thought of is: Well, we've got to define the question a little bit better. What is a "priority conservation area" and what do we mean by this?

Let me just kind of briefly go through the methodology that we eventually settled on. We had to develop the methodology, obviously.

We had to determine the data needs, again, over a very large region. It is good to follow Steve. You can imagine the complexities of starting that -- three governments on top of, you know, what was just the State of California coastal region, because we were out with the EEZ as to what the mandated area was to look at.

But we did find information. We did gather it all together and assemble a geographic information system of the information we had at hand, and then do some select analysis of this, but really relied much more on the use of experts who knew something about

different aspects of this work.

And we included an expert class that we called kind of "Coastal Zone Managers," "Ocean Managers," people who had experience kind of across the region from fisheries to land use planning, and the Coastal Zone as part of the expert group as well.

And then, finally, we had what we called the "Consensus Mapping Workshop", which was held in a university up in Canada, where we used the different groups to select areas, and then overlay these different groups upon one another, and then have them through a process of consensus kind of get to these final priority conservation areas.

So, like I said, a whole workshop was basically devoted to this question back in 2001 which said: What is a "priority conservation area"?

And the short answer was: It had to have some ecological value.

"Priority" was implicit in this, so what was "priority"?

"Priority" meant there was some sort of threat or perceived threat to the area that might raise it

above just kind of a background area of ecological value.

And then, also, there might be some sort of conservation opportunity. And this was taken more as: Was there some sort of governmental process involved? Was the community already actively working in an area? Was a previous priority exercise designated? These kinds of things were more the conservation opportunity as well as potentially maybe funding opportunities through the nonprofit role.

Because this was a very heavy top-down effort, as you might guess, we established a few ground rules right off the bat. One was that if somebody else had an ongoing initiative in this region, they were invited in and they were asked to kind of, you know, from the bottom up, submit their information.

We also did not want to get too far down the road with the idea that we had very detailed information on the coast of California and we had almost nothing on the coast of Baja California, at least the Pacific side, and how would we even start to compare these areas.

So we really worked hard at establishing common date themes across these regions and, as you might guess, the Bering Sea as well would be another hard area to get a lot of data.

And then our view was to establish a framework GIS. We had a second workshop -- we called it the "Data Potluck" -- that we were hoping people would bring their data and exchange it with others, where people actually were able to come forth, share their information, whether it was ecological information to their conservation planning information, and put all this into this GIS and start looking at how all these pieces fit together.

This is kind of a follow-up again from Steve's side, where he talked about the different range that you could evaluate, different types of targets and the size of this, because everybody asks: "How big?" "How big?" "How big?" That could have been a whole discussion, whole workshop as well.

In the end, we decided that we were talking about things on the order of 10 to 1,000 square kilometers. And using the types of population level

interactions of that scale, we similarly looked at physiographic targets, again, because we know a lot more about habitat, we know that habitat relates to data levels of species richness.

So, on part of this we have very poor information, again, as Steven said, about where species richness is up and down the coast, but we do have a little better understanding with this. And this is something you can sometimes look at a map of and say: "Yeah, it's a canyon, Monterrey Canyon. It's right there in the middle."

And lastly, of course, the importance of the interaction with the physical features of the oceanographic thing. So, again, some of these features were the coherence of population targets, oceanographic targets, physiographic targets, all coinciding with the areas to come up with an ecological value.

Threats were fairly generically assigned to the six you see here. Again, opportunities are the things like funding vehicles, government engagement, previous identifications of either conservation value or an MPA or something else.

We, through a process of developing a GIS, decided we were going to make everything publicly available that we got. So, some of the data we were able to put together for the region we put on a CD ROM and distributed a few hundred copies of this up and down and still get people asking for it. Mostly, we send them over to Charlie's MP Science Center to see what they have.

On this parallel initiative at the CEC, they came up with North American Species of Common Conservation Concern. So, again, trying to unite some of the program work of their office through this. These species became focals of the project and basically it's all the sea turtles, most of the large whales and a few other sea birds.

And then we kind of went out in kind of a data-mining exercise just trying to look for a larger scale analyses. This was one analysis that was done. Again, it doesn't cover the entire West Coast, but it covered the entire West Coast of the U.S., the contiguous 48 states. And, so, we had things like marine mammal diversity and abundance which is heavy

out in the Channel Islands of Southern California, sea birds which is high off of San Francisco and up the coast.

So there was a little bit of this type of information that we just had available for the people in the workshop to use and all this was integrated again into a GIS. So, at the workshop, people actually were working with the computer screen in small groups with this information and they could flip on and off data layers to examine this.

Some of the other information we brought in. Mexico had done some regional priority setting for themselves, so this was brought forward into the exercise so people would have a feeling for previous groups, capturing information from a broader sweep of people.

And then we did some analyses on our own. One of them we calculated was called "Seamount Density", where we went through the bathymetric data for the coast and then looked at where seamounts kind of were dense or not denser. So this would be dense seamount areas within the region just kind of highlighted here.

We struggled with the idea that all the threat really exists pretty much on the coastal margin very close to shore; but, of course, there is some really fascinating biology in the deeper sea such as seamounts and other things.

So, how do you kind of balance all the threat being in a fairly localized region for something that is 200 miles? We never satisfactorily dealt with that issue, I don't think.

There is more we could do with the data analyses in terms of oceanography. We can look at sea surface temperatures, sea surface heights, current patterns in the ocean, and then also primary production can always be derived by satellite. So you can look at North America and actually get a fairly common view of the entire region versus, you know, something that would have required a comprehensive research program. The satellite looks at everything at once.

One of the things this resulted in that we were able to find and the public found was looking at Blue Whales and their association with areas with really high sea surface temperature, fronts that are

persistent over long periods of time.

This is kind of hard to see; but this is the southern tip of Baja California going out. This is the Channel Islands. The Blue Whales kind of move between these regions, and then further up the coast to Monterrey, but kind of back and forth through this region. They are pretty much on the move between these areas, and then spend a lot of time in them.

So, sea surface temperature is something we could look at from the satellite to derive information.

So, the Consensus Mapper, as I said, basically we had six different teams and they were both split sometimes as experts in a particular theme and, like I said, we had two groups of kind of quasi-manager groups that were incorporated, so an awful lot of different types of people.

But they all worked as groups, sometimes by theme, and then sometimes put back together by regional area so that everybody in Baja California would be brought back together.

They got to basically map these areas themselves, given all that information, given that

criteria we have given them, and so forth.

Then we come back into a plenary session where we show the overlap of all these areas and kind of discuss why sometimes there was multiple overlap and sometimes there wasn't.

And then rearrange the groups, give them a new kind of quest and send them back out.

So, over the course of about three days they came up with a bunch of different views of all this.

So, the idea is basically this: If two groups picked different areas -- like I said, we had six groups -- but there would be some interception. So, this would be the consensus area. But, then, you know, whether it moved back and forth or whether they actually even had an agreement was the source of discussion and integrated into the project.

We had a few areas that showed up in all six theme groups. Magdalena Bay off of Baja California is one of these you can see. The very darkest region was the union of all the groups. I think in the end, we mapped the priorities based on the union of three groups just to kind of get some consistency and

boundaries.

Okay. So 28 priority conservation areas, again, based on "uniqueness" really as the primary criteria. Also shown here, based on the ecoregion that the areas fall into, so one being the Kwigillingok Islands of the Bering Sea and one being the Tres Marias Islands all the way down to Mexico.

The different shadings or different ecoregions, that was also a third joint project of the CEC at the time; so, Bering Sea, the Aleutians, this kind of Alaskan area, the Columbian Pacific, Central Pacific, Montereyan Pacific, Southern Pacific, Sea of Cortes, being the seven areas. So, one of the things you could look at in terms of representativeness is how well do the priority areas fall within those different regions.

We have one offshore site really which was set at sea mass. We call it the "Gulf of Alaska", a U.S. EEZ. And then Guadalupe is kind of offshore there off of Baja California.

Just to kind of give you a sense of what the report kind of came up with was these areas. The

report has been out for awhile. I don't know if you have it. We can certainly get copies to everybody.

Then basically with the "Threat Analysis", we did something. We were just basically -- The color was given in three codes; but the lightest in green. It was a little bit heavier in yellow. It is very heavy in terms of red.

And then the "trend" arrow is down for the pressure of each zone, unfortunately, meaning that things were getting worse. If it was side by side, we didn't have enough information to really say. And if the arrow was up, it means things were getting better. And I just had a couple of these here.

Between Charlotte Islands off the northern coast of Vancouver, in many of these areas things were fairly light, but perceived to be getting worse.

It seemed like the trend was more important, folks, really, in what was happening at the present.

Central California, obviously, is heavier -- things like commercial fishing and land use changes.

And then off the Guadalupe Island, obviously very far off the coast, with some concern for

increasing in commercial fishing.

So, these were the panel questions. And just to summarize them, one is: "Are MPAs and ecosystem-based management" -- basically, how do those two fit together.

And I guess what I did at this point is kind of switch gears a little bit to talk more generally about -- not so specifically about a planning exercise like this, but about some of the other work we've done, moving more towards how, in my view, MPAs could be viewed, if you look at MPAs as multiple use, kind of, lots of different types of activities within them, fitting into some of the other questions which are ongoing in terms of zoning -- How do we deal with fishing? How do we deal with all human impacts on the Ocean? So, I am going to talk a little bit about some work I have done on that direction.

Obviously fishing is probably the main one and the one that many of us are most familiar with. Certainly I am the most familiar with this. Often this is viewed in terms of a lot of different types of impacts, whether it is direct fishing, mortality,

physical impacts from fishing gear, some sort of bicatch or incidental mortality, and then also what fishing will do to the turbid level as well as the habitat on more complex sea floors and the simpler sea floors through time.

It is real easy to see what something like industrialized trawling would do to the sea floor and a lot of these populations and ecosystems we care about. And, of course, one of the things that has not been done a lot of -- and this is a reef off of Florida, the Oculina Reefs that's been damaged heavily. I think you have probably seen this previously at some point -- by trawling. It's not necessarily as big as that, by any stretch of the imagination.

But there is also solutions to fishing and we did an analysis and then kind of put some of the results in front of the discussion of that. But there is other ways of fishing, obviously, that have a much smaller footprint.

I think Mark and Charlie were talking a little bit earlier about some of the actions in the Pacific to freeze the footprint of trawling which has recently

gone on in the Great Lake areas.

Protect pristine areas is another solution to this as well as using less destructive gear.

I worked on a project a few years ago that was essentially dealing with the same question -- not concerned so much with how much fish actually is caught by a particular gear, but what does that particular gear do to habitats and what is the bicatch associated with this gear. Could you consider it a clean gear or gear with a lot of impact to the bottom? And we came up with a relative impact scale.

And, hopefully, I'm not confusing you and I'll bring you back to why I'm showing you this in a moment.

But the idea is that you can start looking at gears from an ecological point of view and it is not just how many fish we catch, but it is how we actually go about catching these fish that is important.

This was based on a survey of experts who are involved in fishery management as well as fishing and other activities related to the fish conservation, fish management, so on and so forth.

You have certainly seen a lot -- and I didn't

really intend for you to read this as much as just to show that there's been a lot of discussion about ecosystem goals moving towards fishery management set into an ecosystem context. A lot of it has to do with defining what food web looks like, but certainly there is a lot that can be done with what are the actual impacts of the way we fish certain habitats and that is where I think MPAs come back into the fishery management in a way that is not normally thought of, I think, as much as it should be, though, EFH designations are certainly starting to crop up and move a lot quicker in this direction.

Of course, in terms of ecosystem management, putting humans back into the picture, we want to look at all human activities, not just fishing. Choose your EBM goal. This one is just maintaining the healthy function of ecosystem populations and being able to extract resources in a sustainable manner, is the way I look at it.

A lot of different recreational activities are known to have various impacts. Aquaculture obviously is something we are looking at, energy production as

well. All these things come back to the idea of can we get to a zoning scheme, which is a place-based management system, in the MPA in the ocean and, you know, trying to reduce conflicts, as we have talked about; but the idea that there are, you know, certain things that are incompatible, certain things that are appropriate to certain habitats, and we should be methodologically conscientiously looking through these things and not just leaving it as an open access frontier to the ocean, which in many regards most of the U.S. EEZ still is.

So, a simple zoning system for the ocean could be seen something as a "No Go" zone, which is an area very prone to disturbance, such as a sea bird nesting colony; marine reserves which would be, you know, some subset of areas which we say the ecological value is quite high and we shouldn't extract any resources; "Buffer" zones, which might be areas that we would say there is no global bottom fishing gear allowed into the area; and then "General Use" zones that allow a wider range of activities. Of course, this is the largest area of the zoning scheme.

This has been the basis of what's been done on the Great Barrier Reef in Australia. And all these color codes around here and little things that show up, it has different management zones within the Great Barrier Reef, obviously, and they have worked out for each of these zones a series of activities guides.

Here is activities. Here are the types of zones. You can see some are allowed, some are not allowed, some are allowed by permit or other types of activities.

And, so, I think as you look at MPAs, I think you need to start thinking more about MPAs as zones that can be managed for a variety of uses. Some of those uses are based on habitat impacts of the activities. Some of them are used on extraction impacts. Some of them obviously can be other things.

So, finally, I guess I would sum up by saying, without it being a perfect rule, the sanctuaries are moving -- the Channel Islands Sanctuary -- towards this model. They already are "multiple use" in terms of their designation, for the most part, and many of them are starting to be zoned into pieces.

It's the idea that some of the areas are going to be reserve. Some of them will allow certain activities. Some of them will incorporate different management.

So, that is it.

DR. MURRAY: Any questions?

MR. BENDICK: Bob Bendick. What is the actual report? What is the title of it?

CHAIRMAN BROMLEY: Bob, use the microphone.

MR. BENDICK: I'm sorry. What is the actual title of the report?

DR. MORGAN: The title of the report was "Priority Conservation Areas from Baja California to the Bering Sea."

MR. BENDICK: Is there a way we can get your power point to --

DR. MORGAN: Yeah. It is on the computer. I will leave it there.

MS. WENZEL: We have multiple copies of that report. Anyone who wants it, we can send it out.

CHAIRMAN BROMLEY: Max.

MR. PETERSON: In both your presentations, I

was interested in what roles or affect endangered species had to play, because there's some indications that endangered species don't necessarily relate to unique places or they don't necessarily relate to type of activity area. So, what role do they play in this whole thing -- endangered species?

DR. MORGAN: Okay. So they came in specifically to the people associated with a threatened or endangered species with a particular area.

The best example is the Baquita, which is the small harbor corpus, related corpus, but lives only in the upper Gulf of California, and the group basically designated what they thought was it's known habitat as a priority area.

For most of the others, there wasn't a lot of it; though, interestingly, off of British Columbia there is a unique strand of glass sponge, which is the only glass spongery known in the world, and they certainly were very concerned about making sure that was a globally unique area as well as something important to British Columbia. You know, it is a habitat.

So, there was a lot of that discussion; but BDB is basically set up I think around the Gray Well, the Bajama Bering. So, you know, that part connects directly, too.

CHAIRMAN BROMLEY: Tony?

DR. CHATWIN: Tony Chatwin. Thanks for the presentation.

I wondered if you guys did, now that you have identified your priority conservation areas for the entire region, if there was any discussion about what action, because the three countries would be involved. I wondered if you guys did an analysis.

DR. MORGAN: There are some -- not an analysis. As an NGO.

And a little bit of a change in direction of the CEC, it is probably better to ask Joe what the CEC's current path is.

And I think they are still moving along with some of these ideas and looking to, I think, develop a better integrated way to look at some of these areas as well as trying to wing some of the social efforts that are blended together.

We are looking at things like the Sanctuary Program. And there are analyses that could take the MMA Inventory, you know, representational areas, the unique areas, kind of overlay these things and do this gap analysis that Charlie was thinking about and looking at how well that would serve on these goals.

CHAIRMAN BROMLEY: Joe, do you want to comment?

MR. URAVITCH: Yeah. I can fill you in a little bit on the management side of all this.

The Commission for Environmental Cooperation for North America has a biological diversity portfolio that is part of it and that includes both terrestrial actions which are really headed by folks at the Department of the Interior as well as the marine side which is headed by NOAA.

There was some question as to whether that was going to disappear as part of a restructuring of CEC's goals which are now focused on three pillars including things like capacity building, et cetera. The decision was recently made to keep that biological diversity portfolio, but as sort of a component working across

these various pillars.

In terms of the marine side, the leader for NOAA is Rebecca Lent, who is now NOAA Fisheries Deputy Administrator for International Affairs, and we are working under her on the U.S. Government lead for development of the North America MPA network. And, so, we are taking this as part of the consideration of moving forward with cooperation across the three countries.

We have done a quick analysis just to show what existing federal sites are already within these priority conservation areas and it is going to be part of the continuing discussions among the three countries as we move forward to figure out where we are going to go next and how we are going to move next.

So, to some degree, you think of how this might overlay with what we are thinking about in terms of the National System of MPAs for the U.S. and how this could form where we might want to go with some of our activities given there was an agreement among the three governments that these sorts of things were important, at least in terms of the report that was

produced, that these were areas that at least need to be looked at in one way or another.

In terms of the work we are actually doing right now, there is a focus on monitoring among the three countries to try and set up a prototype MPA monitoring network in the Baja, the Bering region.

And we just had a workshop about a month or so ago that was helpful by Gary Davis from National Park Service.

We are going to be following up in June with another workshop to see how we move forward.

And CEC has actually put $110,000 of Canadian funds into the new operating year to try and move that monitoring network development forward.

So that is where we are right now.

DR. MORGAN: Dennis, I think you had your hand up.

DR. HEINEMANN: Thank you, Lance. Thinking about the impact scale that you had there at the end of your talk, have you or do you think it is possible to match up priority areas or just the ecological value layers of your GIS database with human activities or

ecological threats along with the locations of current MPAs or prior MPAs or, as you mentioned, sanctuaries, to ask the question of whether or not the activity regulations within those areas are appropriate, i.e., consistent with what you have identified as "low impact" and would be consistent with protection of priority resources?

I hope you do understand that question.

DR. MORGAN: There is a few things. And obviously the -- what I take some of that to mean is can we look at maybe an ecological footprint of human activities and can we use that to help us manage our zoning schemes that worked with sanctuaries a little bit better.

If I'm not close to what you want, reask your question.

Certainly if you look at work like EcoTrust has done and that National Marine Fishery Service is doing along the West Coast where they mapped out what the different fishing activities are and where they are more intense and less intense, you can look at that in terms of where priority conservation areas are, where

are there national sanctuaries, where are there other forms of government. So, we have looked at that a little bit.

And I have looked at it especially because I've been working with deep water corals and where the deep water corals unite to these things as well, whether there is any protection for deep water corals.

Of course, with the recent EFH designation, the Pacific Fisheries Management Council in the region, everything gets a little bit more complicated again because they've got "No Trawl" zones, "No Bump Contact" zones, "No Fishing" zones, completely imbedded within all of these factions; and, so, it takes a little bit to get there.

But I think the point is: Yes, we can.

One of the strengths of the Sanctuary Program is they do have the ability, if they want, to look at what activities are threatening/damaging the habitats within the sanctuary; but to date, they basically kind of passed on actually saying much about fishery management regulations within that. And, of course, it is the fishing gear within the sanctuary that are

probably the biggest source of human activity.

So, there needs to be a much -- well, I know it is an active discussion of NOAA all the time as to which side of that equation the thing is going to work out or how are they going to keep from picking one side of that equation to work things out.

But I think that is certainly something to think about in terms of how we zone activities down the road, who is actually going to be the ones who get to do it -- the Sanctuary Program, whose mandate is to protect habitats and important areas, or Fishery Management Council, who is actually charged with sustaining fish catch.

CHAIRMAN BROMLEY: Tundi and then Bob.

DR. AGARDY: Thanks, Lance. I wondered, since the BDB process was really a departure from other kinds of processes where the focus was on representation, including processes on the other side of the U.S., Canada, going on in the East Coast where the focus was really on representation and defining what representative areas were and then selecting, trying to figure out how many replicates you needed of every

kind, I wondered if you could very briefly describe the kind of idealogy and analytical thinking that went into picking "uniqueness" as a criterion as opposed to representatives.

DR. MORGAN: Well, I wish I could more than I probably can.

It started out really as the first step of a multiple process, which was -- Step 1 was: Think about where your most unique vulnerable habitats are?

Step 2 is: Then imbed that into what is actually protected.

Step 3 is: Can you look more at representation across ecoregions or larger scale areas so that you have captured areas within that.

And then, you know, through the GIS or Marxan or some sort of analysis, say our goal is to get five percent or twenty percent of all this somehow protected.

Then what are the next steps we need to enter between all those pieces?

So, I think it was never kind of viewed as a piece in and of itself. I wouldn't necessarily view it

as conservation strategy in and of itself; but it is the first, a piece of all of it.

MR. ZALES: Bob Zales. Was there anything done with looking at the impact of protected species such as sea lions and stuff like this?

The reason I ask, a couple of weeks ago on public radio I heard a story about the sea lion population in California hitting its historic level. And surely as these protected species get to those levels and exceed those levels, their impact on habitats and also on fisheries -- we are talking about human impact here -- these animals are going to have impacts, too. Was anything done looking at those impacts?

DR. MORGAN: Not -- not specifically like that. What was looked at more than anything were regional areas in which there were high species diversities.

So, an area like the Channel Islands which has six or seven different (inaudible) 20 or something different (inaudible) was picked out as the hot spot for marine mammals. But in terms of -- and you've also

got to realize, you know, we were looking across this region with just a -- Small areas were just kind of -- you know, we couldn't even focus on them.

We had to stand back and just look at everything, kind of a fuzzy wall, and say: "Okay. Here is these concentrations of different types of habitats or species." And that is really how it was driven more than individual smaller focus analysis.

CHAIRMAN BROMLEY: Last question from Wally.

DR. MORGAN: Yes.

DR. PEREYRA: Thank you. Wally Pereyra. A follow-up with the thinking of Bob Zales.

The Bering Sea -- I will lead up in terms of sea here -- there is fairly extensive disturbance created by mammals, great whales and walruses in particular. Are you able to put that data into your GIS network so that, in fact, you can have that kind of an impact properly represented in terms of looking at impacts of the area?

DR. MORGAN: Yeah. I suppose if we wanted to somehow decide on a spatial scale of resolution of which we could then decide on a relative scale of

disturbance, then we could incorporate something like that into a threat analysis. But I mean it would be an interesting kind of GIS to figure out how you could accommodate things like that into it. And then part of it comes down to having enough information to map -- I mean, you know, we have a hard enough time getting good information on what humans do. But I think you could theoretically work on it, figure out a way to do it.

CHAIRMAN BROMLEY: Okay. I think it is time to go on to the next speaker. Thanks, Lance. Appreciate that.

DR. MURRAY: The next talk is going to be given by Ned Cyr. Ned is Manager of NOAA's Ecosystem Observation Program. This is one of nine programs in NOAA's Ecosystem Goals Team. He is involved in coordinating ecosystem approaches to management and he is representing the Ecosystem Goals Team here. He is a Marine Ecologist. He has been at NOAA for 15 years. Ned?

DR. CYR: Thanks, Steve. I guess to be precise, my paycheck actually comes from the National Marine Fishery Service and I'm the Chief of the Marine

Ecosystems Division and The Office of Science and Technology; but in the brave new world of NOAA, who are organizing these matrix programs, and I'm the Manager of the Ecosystem Observations Program under the Ecosystem Goal, so that is what I'm going to be discussing today.

Just two points right up front that I want to make. The first is that ecosystems are complex. And I think that point has already been made very well by the previous two speakers.

The second is that we are sort of making this up as we go along. I don't think that anyone really knows what a comprehensive ecosystem approach to management looks like at this point.

In a few slides, I'm actually going to argue that we are already doing an ecosystem approach to management in some ways; but, in fact, we still probably have a long ways to go until we reach some theoretical fully-implemented ecosystem approach to management.

So, what I'm talking about today is really a work in progress and how NOAA is beginning to organize

itself.

So, I will cover three general areas: The drivers or why we are required to take an ecosystem approach to management or an EAM; how NOAA has organized itself to respond to this new direction; and then how NOAA is now beginning to implement an EAM.

I think one of the most influential drivers in terms of NOAA's move towards an EAM has been the report of the Commission on Ocean Policy. I'm sure that you all know the background. The report was released in 2004. It had over 100 ecosystem-related recommendations, most of them concentrating on better coordination and integration in managing coasts and oceans.

Then the Administration, in response to that, released the Ocean Action Plan in December of 2004 and that is when NOAA really got going in terms of implementing the ecosystem approach. And that is really what is driving our approach at this point.

I should also point out that NOAA has over 90 other laws/statutes on the books that requires us to manage certain coastal and marine resources and areas.

Each of those different mandates has little bits of an ecosystem approach imbedded in them.

And I think the number of mandates that we have is both helpful and challenging to the implementation of an ecosystem approach. It certainly gives us the authority to manage a broad array of parts of the ecosystem, but it also makes it confusing to coordinate.

And many of us have argued that what we need, in fact, is a legislative ecology that follows the biophysical ecology of the ecosystem, something that helps us coordinate all the various mandates. And I think we would like to see that at some point in the future.

Some of you have probably seen this, the report card given by PEW and the Ocean Commission in terms of the Administration's implementation and the report recommendations. All I can say is that no one expected this would happen overnight and I think good progress is being made. None of these grades or the subjects correspond to an ecosystem approach to management per se; but it is sort of imbedded in a

number of those.

What I will describe now is how NOAA has organized itself to better begin to address ecosystem issues. NOAA has a strategic plan that drives our organization and our activities.

The "Vision" is "An informed society that uses comprehensive understanding of the role of oceans, coasts and atmosphere in the global ecosystem to make the best social and economic decisions."

And within that were organized four broad Missions Goals and one of those is ecosystems. And I think this is significant. It is not fisheries. It's not coastal zone management. It is not corals. It is ecosystems. Okay? We are looking at the big picture now and trying to coordinate activities across the spectrum of NOAA's activity in the marine ecosystem. And there are nine programs underneath that ecosystem goal that I will talk about in a minute.

And the "Mission" is "Protect, restore and manage the use of ocean and coastal resources through an ecosystem approach to management."

So, as I mentioned, imbedded within this

Ecosystem Goal are nine programs -- I don't know if you can see them -- "Habitat", "Corals", "Coastal and Marine Resources", "Ecosystem Observations", which is the one that I manage, "Protected Species", "Fisheries Management", "Ecosystem Research", "Aquaculture" and "Enforcement".

And the MPA Center is within the Coastal and Marine Resources Program along with a number of other, I would say, MPA-related activities like the Natural Estuarine Research Reserve System, the Natural Marine Sanctuaries and programs like that.

So you can see even within ecosystems there is a considerable diversity of activity; but, again, for the first time it is all being brought under a single umbrella for the purpose of planning and implementing a unified approach.

As part of this process, NOAA developed a consensus definition for what an "ecosystem" is. And as we all know, there are many definitions of "ecosystems" just as there are many definitions of an "ecosystem approach to management".

This is the one that we have accepted:

"Geographically specified system of organisms including humans, their environment and the processes that control its dynamics."

And this definition is actually being picked up by other groups. The Communication Partnership for Science and Sea Compass apparently has netted this through its member scientists and they are beginning to use it.

I really like this figure that is on this slide. This is a schematic showing the Gulf of Alaska ecosystem and it really brings forth the complexity of ecosystems, everything from physical forcing through upwelling and the hydrologic cycle and currents to primary productivity, secondary productivity, and how all that makes it up through the food web into the organisms that we manage and that we care about as humans; but it also explicitly brings in the human dimension -- subsistence, sport fishing, commercial fishing, recreation and tourism.

In any ecosystem approach to management, we can't leave out the human dimension. We have to understand the motivations and the values of the human

community that interacts with the ecosystem if we are ever going to have an effective approach to management.

So, I think there is also confusion about whether an ecosystem approach can be accomplished in an evolutionary way or whether we are really talking about the need for a paradigm shift. And I think that in some ways this is a false dichotomy because in many ways we are already implementing an ecosystem approach by managing parts of the ecosystem.

For example, under the Magnison Act, we are required to conserve habitat, we are required to reduce bicatch, we are required to manage over fishing, all of which would be considered, I think, elements of an intelligent ecosystem approach for the fisheries. However, that is a far cry from focusing on ecosystem relationships, processes and trade-offs that we would if we were implementing a full blown ecosystem approach to management.

So, I would say that we are in the evolutionary phase of the ecosystem approach right now. We are trying to define what that full future mandate for an ecosystem would look like and that is what we

are doing through the Ecosystem Goal Team.

And I think the Executive Order on Marine Protected Areas is another example of this kind of integration, where it is already beginning to foster an ecosystem approach through the promotion of the use of an MPA approach. MPAs really are an essential tool for the implementation of an ecosystem approach.

NOAA has also defined seven consensus characteristics that we consider to be critical to an ecosystem approach. And that is not to say that you can't be implementing EAM if you are not doing all seven of these; but as our approach becomes more sophisticated, we hope that we are operating more and more along these lines.

We recently held a workshop, just a NOAA-only workshop, to begin to define these characteristics. One of the problems with an ecosystem approach, it is very difficult to define. It is very difficult to communicate to decision makers exactly what it is. So, you have to break it down into its component parts and then sort of begin to explicate what each of those individuals parts is before you can bring it back

together.

And that is what we are trying to do -- looking at each of these different characteristics, trying to develop a good definition, find out how they relate to our programs, and then determine how we are going to beginning to implement them in the NOAA context.

The final point on that list is geographically specified. We have already begun taking this one on. NOAA has adopted eight "regional ecosystems", as we are calling them. These are based on the Large Marine Ecosystem Theory that many of you are probably familiar with. This set of ecosystems was approved by NOAA leadership and these have been officially designated as our regional units for planning and executing our programs.

I think this map indicates the importance of international cooperation. You can see that almost all of the NOAA regional ecosystems extend beyond the boundaries of the U.S. EEZ, and, so, we are going to need to collaborate with Canada and Mexico and other countries in the Pacific and in the Caribbean and

Russia as we go forward with the implementation of this approach.

We are also considering smaller units within these large marine ecosystems or these regional ecosystems. We may indeed have several different scales of ecosystems that we operate on for various management or reporting purposes. And I suspect that what we are going to end up with is actually a next of hierarchy of ecosystems with these regional ecosystems or large marine ecosystems at the larger scale, and then smaller systems nestled within that.

Each of the U.S. regional ecosystems faces its own set of challenges. I know you can't read these; but it is just a set of the issues that you would all understand and know for each of these regional ecosystems.

I think that the good news is that the Ecosystem Goal Team in each of the nine ecosystem programs are beginning to address these issues within each of the regional ecosystems and we are beginning to do this on a regional scale.

Just to give one example, we have had some

talks focussing on the California Current. NOAA has a program called "Pacific Coastal Ocean Observing System" which is a corroborative effort on the West Coast between the Southwest Fishery Center, the Northwest Fishery Center and the National Marine Sanctuaries Program. They are working with the IUS regional associations and states and academic institutions to try to pull together a comprehensive ecosystems observations scheme for the California Current and, based on the information coming in from that, to begin to implement integrated ecosystem assessments for that region. So, we are beginning to move along with these regional approaches.

These are a few areas that I think we are going to be focusing on in the near future. I just wanted to mention that the top bullet, this "NOAA External Ecosystem Task Team," this was a group that was chartered by the NOAA Science Advisory Board and was asked to look at ways that NOAA can begin to organize science efforts from an ecosystem perspective. That group recently finished its report and made some recommendations. There is the URL. This was posted in

the Federal Register last week for public comment. I hope you will all go take a look at it, look at those recommendations and give us feedback on that. It would be very helpful.

The report has a number of recommendations including advancing regional approaches within this national framework, this idea of the regional ecosystems, coordinating/integrating our various observing activities, as I mentioned for the PacOOS project, promoting/integrating ecosystem assessments, ecosystem modeling and regional science planning.

Trying to develop a uniform set of national indicators, this is something that NOAA does not yet have at this point. We have had a couple of workshops to try to define what a set of ecosystem indicators would be that would cover the spectrum of our interest nationally, and then we would probably want to develop region-specific indicators as well, recognizing the heterogeneity of the marine ecosystems that we have to manage.

And then, finally, building more collaboration with partners and stakeholders is key. It is a

fundamental issue with what we are doing here and I think that in many ways your work with MPAs is pioneering that work with your partners and stakeholders, defining what the ecosystem issues are within smaller areas that we can use as a model for what we are doing with an ecosystem approach.

So, specific to this talk: How do MPAs help advance ecosystem approach to management?

And these are some bullets that the MPA Center provided, some ideas for how this is being done, suggesting MPAs can serve as reference sites to look at the effects of management, essentially serving as control areas, to look at the effects of management actions within the broader ecosystem context.

As I said, MPAs are really ecosystem approaches to management on a small scale. You are dealing with a broad suite of complex issues that we are going to have to deal with on a broad scale. Doing that at an MPA scale, there is a lot to learn from that model.

Connectivity between the MPAs, we also need to be concerned with connectivity at the larger ecosystem

scale.

Stakeholder involvement and, of course, integration and networking with all of the involved stakeholders; and, also, trying to integrate better all the information that already exists for the ecosystem, bringing that together into decision framework that we can then use from that.

And I think that is it. I'm sorry. I know that it is a really quick overview; but I will be happy to answer any questions.

DR. MURRAY: Questions for Ned?

MR. BENDICK: To what extent have other federal agencies adopted those same large ecoregions and to what extent is this or could this be the basis for advancing regional governments that was recommended by the Ocean's Commission?

DR. CYR: I'm not aware of any other federal agencies that have explicitly adopted the larger marine ecosystem scale or unit for sort of regional management efforts.

I know that USGS and EPA both participated in the workshop with NOAA that helped develop those units

for our use and I think that is -- I think that is highly likely that eventually those will become probably used by more than one federal agency to begin coordinating more of our efforts on a regional scale.

CHAIRMAN BROMLEY: Joe?

MR. URAVITCH: Yeah. I just wanted to add I believe there was also some State representation at that workshop as well for the interest of this group. So, the States are also involved in helping NOAA think this through.

DR. MURRAY: Jim Ray?

DR. JAMES RAY: Jim Ray. Could you just explain a little bit more what you meant by "ecosystem-specific indicators". I wasn't sure exactly what you meant.

DR. CYR: I think that term is meant to distinguish them from a national suite of indicators. So, for example, we could develop a series of indicators for fishery status, water quality, habitat, that might be applicable on a national basis; but in the Caribbean, we might want to be focused on corals and reef fishes.

So, when we say "ecosystem-specific", we mean specific to a particular regional ecosystem.

DR. MURRAY: Yes?

DR. HEINEMANN: A number of the other formulations by EAM or EEM that are out there in the literature, the Scientific Consensus, for example, have looked at the complexity of ecosystems and the uncertainty of knowledge about ecosystems and come to a conclusion that some sort of precautionary approach or principle needs to be an essential part of the ecosystem-based management. And that in many ways, I think, would require or be part of a change in the way we approach management.

Was this specifically excluded or is it included in one of those characteristics there and just not listed specifically?

DR. CYR: I think the latter. One of the bullets deals with recognizing uncertainty in the system.

DR. HEINEMANN: We've got some noise going on back there.

DR. CYR: Yeah. Recognizing uncertainty in

the system. So, yeah, I think it is included in the uncertainty characteristics.

DR. MURRAY: Mark Hixon.

DR. HIXON: Mark Hixon. Thanks, Dr. Cyr. That was an excellent presentation. I very much appreciate what NOAA is doing in this direction.

I have been experiencing on my own -- this is an observation -- I've been experiencing this issue of whether this is an evolutionary change versus a paradigm shift. And I would just like to call attention that of the variety of people I have discussed this issue with, it seems that much of the resistance to ecosystem-based management is actually within the National Marine Fishery Service within some circles and it has to do with this idea of scale of management.

For example, right now on the West Coast most of the fish stocks are managed along the entire California current system -- Washington, Oregon, California, and increasing data are showing very important subdivisions within stocks along the coast that are not being readily embraced.

So, my sense is that there is going to be actually more of a paradigm shift in some sense, in the sense that if you go back to the original bullet, this idea of resistance by the status quo, and then suddenly, "Okay, fine. We will do it."

I was just wondering if you could offer some observations on that of your own. Thank you.

DR. CYR: You know, I heard an interesting quote the other day I had never heard before and that was "Science progresses one death at a time."

CHAIRMAN BROMLEY: Could you speak up, please?

DR. CYR: Sorry. I was just saying that I heard an interesting quote the other day that "Science progresses one death at a time."

CHAIRMAN BROMLEY: Yeah, funeral by funeral.

DR. CYR: In some ways, I think the ecosystem approach will do the same.

No. Not to be too facetious about it, but I do think that there are sort of entrenched ways of dealing particularly with fisheries management right now and management regimes that have been in place for a long time that do not necessarily consider the full

range of complexity of the issue.

So, I think that we are -- I think we are beginning to see a new generation of, at least on the fishery side, of individuals who sort of embrace these issues and are beginning to be more open to dealing with them on an ecosystem scale.

DR. MURRAY: Tundi?

DR. AGARDY: Thanks, Ned, for your great presentation. I wondered, you mentioned something that you said came from the MPA Center -- that MPAs could be an example of ecosystem-based management on a small scale. And what I did not hear in the presentation and what I haven't heard too much coming out of NOAA NIMS these days is looking at an investigation of how zoning within Marine Protected Areas is an example of ecosystem-based management. And.

I wondered if you could tell us whether you think that is something that this initiative is going to evolve towards? Is there going to be discussion of the full scale ocean zoning at some point with Marine Protected Areas serving as an example of how to do zoning on a small scale?

DR. CYR: I can't give you a specific answer to that, Tundi. It certainly would not surprise me. MPAs are a well-recognized tool for ecosystem approaches to management. I think that whatever scheme we develop is going to include them. Whether these are broad ocean areas, whether this is sort of 20 percent set aside, whether it is more specific protection of essential fish habitat, I'm not exactly sure; but I think some degree of MPAs would certainly be included in the approach. I don't think there is any question about that.

But I would really defer to Lauren or Charlie or some of the other MPA experts here. Lauren actually provided that bullet for me, so she might be able to explain that more fully.

MS. WENZEL: I was just going to say one thing, and then maybe Charlie wants to add, which is, part of that Ecosystem External Task Report -- I mangling the title of it Ned mentioned -- has a white paper included in it on ocean zoning and talks about the potential and where it might go as a future issue. So that is something you might be interested in looking

at since it is out for review.

DR. MURRAY: I have a quick follow-up to something that Tundi brought up. You pointed out on your presentation about MPAs as being, I think, an ecosystem approach to management on a small scale; but I'm wondering whether there is conversation going on at any level about how networking MPAs might elevate their role into larger scale-based issues rather than isolating these, as implied from your talk, as small pieces?

DR. CYR: Right. I will defer that again to Lauren or Charlie.

DR. WAHLE: Mark tells me to say "yes" and I always do what Mark says. Yes.

We are certainly painfully aware of that question and are trying to find ways with the inventory data that we have on Marine Managed Areas to get a handle on that. It is not easy, being it wasn't captured for that reason. You can make some inferences.

In my view, there are very few intentionally designed networks that really function that way in this

country.

DR. MURRAY: Tony.

DR. CHATWIN: Thank you. Tony Chatwin. Could you provide an example for us to understand how putting those programs into that nine-component matrix has actually changed how issues are considered and decisions are made?

DR. CYR: Yeah, sure. We plan and organize our major activities according to that structure and we get together once every two weeks as Program Managers under the lead of Steve Morouski, who is the Ecosystem goal Lead for all of NOAA, and we talk about things like how to better integrate the programs.

We also talk about what budget initiatives we are going to put forward in any given year and how we are going to reprioritize our ecosystem approach, what of that do we want to accomplish in any given year and what is the budget approach going to be.

I'm trying to think of a specific example of that right now. I think the response to Katrina in the Gulf of Mexico by NOAA, but on the ecological side, was coordinated through this Ecosystem Goal Team as opposed

to being coordinated by NOS or NIMS sort of individually. I think that was probably a better rounded effort than it would have been if we had just had the response by the line offices.

But I must say -- and I have been somewhat of a skeptic about the way that this new organization has been done -- but I do think that it has fundamentally changed the way that we do our business in terms of planning our future activities.

DR. MURRAY: Any last question? Bob, last one.

MR. BENDICK: I just thought these three presentations this morning all together were very, very good. Steve, I want to thank you for putting this together. They were very helpful.

DR. MURRAY: Don't thank me. Thank Lauren down there.

Thanks, Ned. Dan, back to you.

CHAIRMAN BROMLEY: Thank you. Bob spoke for all of us. This was wonderful, Lauren, Joe, Steve. Thank you.

Our next speaker is Sally Applebaum,

University of Texas Marine Science Institute. She is going to talk to us about the designation of the "Mission -- Aransas National Estuarine Research Reserve."

Ms. Applebaum.

(Ms. Applebaum approached the podium at 11:28 a.m. and dealt with computer technology.)

MS. APPLEBAUM: Hello. Well, as they said, my name is Sally Applebaum. I work with Dr. Paul Monzania at the University of Texas -- Marine Science Institute on this initiative for "Mission -- Aransas National Estuarine Research Reserve".

And "Mission -- Aransas National Estuarine Research Reserve" or NERR will be designated next Saturday, May 6th. So this is a very new project that has taken a long time to reach the finalization.

This is a partnership among Federal, State, University as well as private organizations. NOAA, of course, is our funding agency. University of Texas -- Marine Science Institute, just north of us, about 30 miles north, is the lead State agency for the National Estuarine Research Reserve. And the Texas General Land

Office is one of our primary partners. They own all of our State submerged land.

There are currently 26 NERR sites around the United States. As you can see by this map, there are none in the western biogeographical region of the Gulf of Mexico, which is one of the primary reasons why Texas was eligible for a NERR site.

And our location, I think, is a little bit too far north; but the white dot is where we are sitting right now.

So, what exactly is a "NERR"?

A "NERR" has several goals: One is to ensure stable environment for research through long-term protection; two, address coastal management issues, and to enhance public awareness as well as conduct long-term research.

The Texas program is a nonregulatory program. And the reason that Texas was eligible for a site is because we have the Coastal Management Program already in place. This means that in our site nomination process we had to prove that there were existing authorities already in place for protection of this

area so that there is going to be no new Federal or State rules to impose.

As I said before, this is a State and Federal partnership. The State's role is land ownership and management as well as staffing and program implementation.

The Federal is funding, about 70 percent, as well as national coordination and technical assistance.

As for national coordination, there is several. There's three main national programs that the NERR program, which is through the Estuarine Reserve Division of NOAA, coordinates. One is the System-Wide Monitoring Program, the Coastal Training Program as well as the Graduate Research Fellowship Program.

To go into some more detail, the System-Wide Monitoring Program primarily looks at abiotic monitoring. Every NERR site in the country has what's called -- it's acronym is "Swamp" -- has a Swamp Program which measures water quality as well as weather parameters. So, every Swamp Program has a minimum of four water quality songs throughout its site as well as one weather parameter. Some have as much as 20, but

the minimum is four.

In the future -- and there is a few pilot projects already at several NERR sites to incorporate ecological monitoring, that looks at habitat change as well as specific problems such as eutrophication. Land use changes will also be incorporated within the System-Wide Monitoring Program throughout the NERR sites as a whole.

The Coastal Training Program or CTP is actually a very unique program and encompasses one of the main goals of the NERR system and this is to enhance the capacity to use scientific information in coastal decision-making and this will increase networking and collaboration among the coastal decision makers.

And one of the ways it does this is, for example, we have to do a "Needs Assessment" within our area, and then we will host several workshops and planning events so that the coastal decision makers have the accurate and most up-to-date scientific information to make the best decisions that they can for our coastal resources.

The Graduate Research Fellows Program provides fellowships to graduate researchers and there's two per site around the country and the only requirement that the NERR sites have is that the research be contained within the actual site. And some examples of projects that have been completed are source pollution, habitat restoration, biodiversity and species, sustain estuarine ecosystems as well as socio-economic applications to ecosystem management.

So, what is having the benefit of a NERR site in the State of Texas?

Well, it is going to be a focal point, as many of you probably well know, and it will bring new money to the State of Texas as well as, since there is no NERR sites within this western biogeographical region, we will be able to participate in opportunities that we are currently excluded from and we will have a seat at the National Table. It will also foster cooperation among universities and several different resource agencies and partners.

We have several different partners. We have lots of Federal, State and local agencies as well as

universities. "TAMU" is the Texas A & M University, University of Houston, University of Texas, which is where I'm from, as well as its components and many others.

We have also partners with nongovernmental organizations such as the Nature Conservancy and other private landowners as well as many stakeholders, recreational and commercial interests, have been involved throughout this process of designation.

This is our designation process. It began in 1999 with a Letter of Interest from the Governor of Texas. It was followed by a site selection and a nomination phase which lasted about two to three years.

We've just finished this past year the Environmental Impact Statement and Management Plan. And currently this next week I think Vice Admiral Martinbaucher of NOAA will sign the Record of Decision and the Designation of Findings and Certificate. And then next Saturday we have our big formal ceremony.

So, to go into a little bit more detail about the site nomination phase, how we actually chose our site, we looked at initially 65 sites along the Texas

Coast and we used the site selection criteria to determine what was the very best site for a NERR.

One we looked at was "Environmental Representativeness" -- Were all these habitats representative of the Texas Coast?

"Value of research, monitoring and stewardship" -- Were these areas available for research and monitoring and were there opportunities for stewardship activity.

Was it suitable for education and interpretation as well as outreach programs?

Is there acquisition potential for conservation of other land properties as well as accessibility and can it be managed?

So, what we did throughout the entire process was we had lots of public input. We had an "SSC", which is a "Site Selection Committee". We sent out over 400 invitations to individuals and we received about 120 people to attend our SSC conference.

And we broke the 65 sites down into the major bays along the Texas Coast with Matagorda Bay as our most northern bay and the Lower Laguna Bay as our most

southern bay, and then they rank these sites on that suite of criteria that I said before, and Aransas Bay came out to be the top choice.

Then, in 2002, September 2002, we had an "SES", which is a much smaller group -- this is the "Site Evaluation Subcommittee" -- of about 15 people that again ranked these bays on a much more detailed set of selection criteria. And, once again, amazingly -- well, I guess not "amazingly" -- but the Aransas Bay Complex came out to be the highest ranking bay system on the Texas Coast.

This is broken down of what we found in that Site Evaluation Subcommittee. Aransas Bay Complex was divided into Mission and Copano Bay. Mission and Copano Bay are primary and secondary bays and Aransas Bay is our tertiary bay for this system. We met again and then, once again, determined that this area was the best site for a NERR.

This recommendation from the Site Evaluation Subcommittee was then brought to the larger Site Selection Committee in 2003 for approval.

And I will go over this site in a little bit.

So this is what we chose. Port Aransas is right here, which is about 30 miles north of the University in Corpus Christi -- which, unfortunately, is off the map.

But it incorporates a very large system. It is 708,000 acres, which also incorporates the primary, secondary and tertiary bay system.

We have Fennessey Ranch, which is in the top quarter, and that is a private landowner ranch. It's about 3,300 acres that we are getting a conservation easement on.

So, it is a very large parcel of area with lots of different habitats.

Our primary land habitat aside from Fennessey Ranch is the Aransas National Wildlife Refuge, which is home to the endangered whooping crane and is run by the U.S. Fish & Wildlife Service as well as part of Matagorda Island.

And you will notice it looks kind of -- there's lots of cuts in it. The big swatch through the center is the Gulf Intercoastal Waterway with barge traffic. That was taken out from our boundary by

request of the U.S. Army Corps of Engineers.

So, our site, it was very representative and we have lots of different habitat types. We have freshwater marsh, saltwater marsh, riparian woodlands, coastal prairie, lots of mangroves, open-water habitats, as well as beaches on the northern Matagorda Island unit, oak motte, seagrass, tidal flats and lots of oyster reefs.

The headquarters will be located at the University of Texas -- Marine Science Institute in Port Aransas. This is our main campus. And we have plans in the future to build a NERR visitor center as well as additional laboratory and research space.

We have lots of partners. The National Oceanic and Atmospheric Administration as well as the National Estuarine Research Reserve Division, as I said before, our funding and coordination agency.

The Texas General Land Office, they own all the State submerged lands and they work in collaboration with the Coastal Management Program.

Texas Parks & Wildlife, the Nature Conservancy, the Fennessey Ranch, the U.S. Fish &

Wildlife Service, Marine Science Institute, Coastal Bend Land Trust, University of Texas at Austin.

The Nature Conservancy owns a small piece of land that they are actually donating to the Aransas National Wildlife Refuge; but they are a partner because we anticipate in the future that they will help us with acquisition.

Fennessey Ranch is our private partner. They are the ones that we are getting our conservation easement on.

U.S. Fish & Wildlife owns the National Wildlife Refuge with the whooping crane.

We're the funding and managing agency.

The Coastal Bend Land Trust is a local conservation group that also does acquisition for conservation.

We have just finished the Final Management Plan that was attached to our Environmental Impact Statement. And our Management Plan provides the structure and order for the management of the reserve.

It is entailed to provide the structure and management for the first five years. Every five years

after that, it will be updated.

And this governs all our actions as well as identifying goals and location of structures as well as legal documents. It has everything in it, really.

So the "Mission" of our Reserve is to "Develop and facilitate partnerships that enhance coastal decision-making through an integrated program of research, education and stewardship." And the research, education and stewardship are our three main programs.

And our "Vision" is to "Create a center of excellence, to create and disseminate knowledge necessary to maintain a healthy Texas coastal zone."

And we are going to do this by improving the knowledge of the Texas coastal zone ecosystem structures and functions as well as promoting the understanding of coastal ecosystems by diverse audiences and to promote public appreciation and support for stewardship of coastal resources.

To go into a little more detail, our research program will achieve this goal by several means. This is where the Swamp Program comes into play, where we

are actually looking at water quality in at least four stations as well as the weather station.

And we are also going to initiate a biological monitoring program with our partners -- we've started doing one with oyster reef management -- as well as initiate a freshwater inflow and groundwater program with partners.

In the South Texas region, freshwater inflow is a hot topic and there is a lot of research that needs to be done.

Within our Reserve, there are core and buffer areas. And this is a NOAA definition. "The 'core areas' are key land and water areas that are ecological units with a full range of significant physical, chemical and biological factors and these are areas that will contribute to the diversity of fauna, flora and natural processes occurring within the estuary."

"The 'buffer zone' is the land and water areas within the NERR boundary that are not defined as 'core' and any facilities that we are going to have for research and interpretation off the buffer areas."

And "buffer areas" are intended to accommodate

for a shift in the core area as a result of any change, such as biological, ecological.

This is our rationale for choosing the core boundary. The map looks quite busy and it is busy because we used the existing resource management codes. So, the Texas General Land Office divides all the State submerged land into State tracts and they apply each State tract a management code or several management codes, which is how you get all the overlays. And each management code are based on things like critical habitat, such as sea grass, marsh, oyster reef or archeological habitat. There is also zones where there is drilling restrictions.

And, so, we looked at the map at overlays and then chose our core areas for research, which are in the light gray.

So, as I said before, we used existing resource management codes to determine this. We also looked at where the location of active oil and gas wells were and tried to pick areas that have an absence of that, as well as long-term research sites.

The University of Texas had several sites in

this region and we wanted to make sure we encompassed those sites to continue our long-term research.

For land core areas we used parts of the Aransas National Wildlife Refuge which are essential key habitats for whooping crane species and they flock to the coastal prairies adjacent to the shoreline, as well as the Island State Park which is in the northern center of our Reserve.

Our education program will expand upon existing programs at the University of Texas as well as create new ones. We have a very extensive education outreach program already in place and this NERR site will provide funding to offer more workshops and conferences and teacher training as well as exhibits trails and other outreach programs.

This first year of funding, we are building a wetland education center. So, they are going to dredge out a marsh directly adjacent to our property and we are providing funding for boardwalks and observation towers.

The stewardship program is something that the University is -- we haven't quite done. So, it is

going to be new; but we are going to implement -- this is where the Coastal Training Program or CTP comes into play -- to provide science and information to coastal decision makers.

We are also going to enhance our site profile. The GIS layers that we are using are quite old for their habitat characterization. So, we are working with some of our partners to get updated information of the habitats as well as do some ground-trooping ourselves.

And one of the new things that we intend to do this year as well, we are working with the Coastal Services Center to do a socio-economic map layer to look at the demographics in our area as well as the historical aspects of it. We are very excited about that as well.

And we are going to develop partners with animal rescue programs. At the University, there is what is called the "ARK", the "Animal Rehabilitation Keep", that houses and helps marine mammals, especially sea turtles. So, we are going to partner with them and provide some support.

In addition, we are going to work with existing cleanup and recycling programs to provide money and expertise in that area.

So, this is what our staff structure will likely look like. We have our Site Manager and our Reserve Advisory Board. I will go over the Board in a little bit.

But the important thing to know is that there is three main programs -- the research, stewardship and education ones. And as we get funding and need, we will fill out the rest of the positions. And I will be the Stewardship Coordinator as well as the Assistant Manager -- which is not on here.

These are some collaborations we are already doing with the University of Houston. We are working with them for the Fennessey Ranch conservation easement that is located in Refugio County north of here.

We are working with Camp Aranzazu. This is a camp for disadvantaged and disabled children and adults. It's directly adjacent to our shoreline. And they are donating some property adjacent to the Camp to the University and we are going to build a research and

education center there.

The Aransas County Navigation District, we are working with them to also build another visitor center in Downtown Rockport, which is just north of Port Aransas.

And the Texas A & M University in Corpus Christi here, they are going to help build the System-Wide Monitoring Program and get it referenced in real time. So that will be quite interesting.

It will also be integrated with their system, which is the Texas Coastal Ocean Observation Network, where you can click on the web site and download all the water quality information for several sites along the Texas Coast.

Aransas National Wildlife Refuge, the photo on that right-hand side is their boardwalk that was hit by a tropical storm; and, so, we are going to provide funding to maintain and upkeep that boardwalk as well as build a new education building on their mainland.

So the Reserve Advisory Board will provide advice to reserve staff for the management and the different programs, the research and monitoring

program, the stewardship and education programs, and these are all based on the programs within our Management Plan.

The "RAB", the "Reserve Advisory Board", is made up of all of our partners. All of our partners are either landowners or have a significant stake in the program.

We will also have three Advisory Committees for each of the three programs -- research, education and stewardship -- and those Advisory Committees will be made up of people from the research and education community as well as agencies, user groups, adjacent landowners, industry, and other groups as appropriate.

We just want to get the broadest public input we can to make sure that our program is reaching and fulfilling the needs of the area.

In the future, we do have some acquisition ideas. And, of course, it will only involve willing sellers. And our key areas will be identified through a scientific-based planning process, probably something very similar to what the Nature Conservancy does.

We will try to gain acquisition areas -- the

Mission River Corridor, which is shaded north on the map, as well as Aransas River Delta. And that is the other river within our site.

We also have some wetland areas that we think we would likely be able to buy a conservation easement or fee simple area. Those are in the north adjacent to St. Charles Bay, which will help the Aransas National Wildlife Refuge to connect to their other parcels and have a better corridor for the whooping cranes and other species as well as the Port Bay area. That area is very rural at the moment, but there is lots of development in this area and we hope to put that under a conservation easement, likely.

We were going through that quite quickly, but are there any questions?

This is our web site and it has all our information on it.

CHAIRMAN BROMLEY: Thank you very much. Steve, do you want to --

(Dr. Murray shook his head.)

CHAIRMAN BROMLEY: Okay. I will run the questions. Tony.

DR. CHATWIN: Tony Chatwin. Thank you very much for that presentation. It has a lot of really interesting material for what type of things we are contemplating here.

One of the Subcommittees of this Committee is looking at incentives and implementation. I work on that Subcommittee. So, I'm particularly interested in one of your first slides where you mentioned reasons for the interest to getting NERR established here. And you mentioned -- let me see if I got it right -- "provides a focal point" and "brings new money".

MS. APPLEBAUM: Right.

DR. CHATWIN: And then you said it allows you the opportunity to participate that you did not have access to before.

MS. APPLEBAUM: Right.

DR. CHATWIN: And then cooperation. So, I just wanted to know if you could elaborate on at least the first two that provides -- the fact that it brings new money.

MS. APPLEBAUM: Well, since Texas currently does not have a NERR site, we can't apply for funds in

the operations budget of the NERR program. And this year it was about a half million, little bit under. So that is new money that will be put towards research and education and stewardship programs.

In addition, there is several other grants that we can apply for that having a NERR site in Texas is a requirement; for instance, the Coastal Estuarine Land Protection Act.

So there's things like that that you have to have a NERR site to even be eligible for that program; but then there's other things where we can collaborate with some of our partners that gives us, being a NERR site and already having funding at the table, we can collaborate with them and pull our money together to bring in additional money.

For instance, there is new funding coming down the pipe in the Gulf of Mexico with the Coastal Impact Assessment Program in, I think, 2007. And we are talking with other partners and agencies to see if we can find ways to generate additional money through that mechanism.

DR. CHATWIN: So, a lot of incentives.

MS. APPLEBAUM: Right.

DR. CHATWIN: Also, as you were getting ready to enter the selection process to list the candidate sites, how much support did you get from the national programs? How much support and what kind of support did you get? Because we are also talking about that in terms of candidate sites for a National System.

MS. APPLEBAUM: For the national program, the Estuarine Reserve Division gave us a liaison to contact and help run the public programs.

And really what they did was give us the most recent NERR site and said: "These are the guidelines. This is what they have used and this is what worked."

And, for instance, the site selection criteria, those are all criteria that the NOAA office had already defined; and, so, it was -- having NOAA there was, of course, extremely helpful and they did also give us some initial funding to get the site selection process going.

DR. CHATWIN: In this initial funding, did that funding tie the preparation or --

MS. APPLEBAUM: No. That ran out, I think, in

the first year. The University fronted the rest.

DR. CHATWIN: How many years did it take to get ready?

MS. APPLEBAUM: The Governor's Office was in '99. They sent the letter. So, seven years -- and that was quick.

DR. CHATWIN: Thanks a lot.

CHAIRMAN BROMLEY: Other questions for Ms. Applebaum?

(No response.)

MS. APPLEBAUM: Okay. Thank you.

CHAIRMAN BROMLEY: I'm afraid we are pushing up against the lunch hour, so people's minds are on other things.

MS. APPLEBAUM: Totally understand.

CHAIRMAN BROMLEY: Thank you so much.

Before we break, if you would look at the agenda, you will see that immediately after lunch you go to your Subcommittees. There is a break at 3:00 o'clock.

So, the essence here is that we come back to this room at 3:15.

Group Number 2 will be in the Duval Room. Lauren has the key.

So, the other two groups will be in here.

The other day I came looking for one of the groups that had disappeared. So, those of you, you camped someplace and I couldn't find you. Was this on purpose?

I want to know where you were?

MR. MELZIAN: In the bar!

CHAIRMAN BROMLEY: All right. Now, Group 2 is in the Duval Room. That means Group 1 and 3 are here.

Okay. What we would like at 3:15 is a maximum of five pages of power point slides, no more than five, and they must be readable from any place in the room. Those are the constraints that you have. Okay?

I would like to have you come back and tell us four things. We are not at all interested in what you talked about, so don't bore us with that. We want to know what you plan to do before the next meeting. We want to know what work products you intend to produce. We want to know the schedule for those work products, understanding that there are three more meetings. We

would like to have ideas for panels at our future meetings that would help you and why you believe those panels or speakers are necessary.

So, those are four things. I want to know your plans, because we have to approve those plans. I want to know the work products and the schedule for them because we have to approve that. I want to know your schedule for those reports. As we indicated, it would be lovely if you could produce some along the way. And then do you have any desires for panel presentations to help you.

Is that clear?

Four pages, five slides at most. Are we clear?

Lauren has an announcement.

MS. WENZEL: Subcommittee 2, I just received word that we are not in the Duval Room. We are in the meat locker -- which is bad.

A PARTICIPANT: Protest! Protest!

MR. URAVITCH: Is that the Committee that sort of vacated the premises yesterday?

CHAIRMAN BROMLEY: This is justice. This is

the Committee that fussed about not getting into the Duval Room -- and now look at them.

DR. CHATWIN: If the meat locker lives up to its name, we will be at the bar.

MS. WENZEL: Okay. Well, the meat locker is next to the Coastline Restaurant. I think it has another name, but --

CHAIRMAN BROMLEY: So, if you wish -- we are basically now into our Subcommittee. So, as a Subcommittee, if you want to try to sit at the same table and do your work, that is up to you; but 3:15 we are back in here. Enjoy.

(Noon recess. Proceedings not reported from 12:00 noon through 3:16 p.m.)

A F T E R N O O N S E S S I O N

CHAIRMAN BROMLEY: Okay. We have three groups to report. We are going to go in a different order because Tony has to leave. I hope that we are finished by the time he has to go, but we will go quickly.

DR. CHATWIN: I'm happy to report -- Is this (microphone) working?

CHAIRMAN BROMLEY: Yeah.

DR. CHATWIN: Okay. I'm happy to report that we have five slides --

CHAIRMAN BROMLEY: Five slides.

DR. CHATWIN: -- of which this is one.

CHAIRMAN BROMLEY: That counts as one. I like that.

DR. CHATWIN: So I think we get bonus points for that.

CHAIRMAN BROMLEY: So we are going to hear from Subcommittee 2. Let's go through it. And unless you have questions, we will move to other Subcommittee reports.

DR. CHATWIN: Okay. Thank you, Mr. Chairman.

So, addressing the four questions that you

posed to us earlier -- we will not divulge what we discussed --

CHAIRMAN BROMLEY: Since you put it that way, maybe you ought to tell us.

DR. CHATWIN: And, so, what we plan to do -- and basically we are focussing between now and the next meeting in October -- we have decided that we are going to have a conference call once a month every month between now and then. We have already scheduled them and that gave us some dates by which we are going to be producing some products and have an opportunity to review and discuss them.

And in the month of June, we might get together -- at least part of us -- in D.C. in person with the other remainder of the Subcommittee on the phone to discuss incentives, as you will see in the next slide.

We are going to work on reviewing and providing comments on the Framework. We are hoping that the Framework will become available to us shortly, as soon as possible. And in particular, we are going to be looking and discussing whether there are criteria

that should be considered in addition to the ones considered in the Framework for inclusion of the sites in the National System.

We also are going to be identifying criteria that could be used to determine different tiers within the system for protected areas.

We are going to be reviewing information on incentives, benefits and costs of creating national systems, operating national systems.

And we plan to develop a draft document that will describe our findings and submit it to the full Committee two weeks before the October meeting.

CHAIRMAN BROMLEY: Coming October meeting, '06.

DR. CHATWIN: '06, yes. And our hope will be at that meeting we will get feedback and hopefully even a decision from the Committee on some of the stuff, some of the material that we will present.

Products, this will give more specifics about what we are going to produce and the schedule.

So that the first thing that I mentioned was "Develop options regarding inclusion of criteria for

entering National System or for the sites within the National System." And a subgroup of the Subcommittee comprised of Tundi, Dennis and Wally, are going to put their ideas down and have a first draft for our first call, which is going to be the 17th of May.

The next item relates to the costs and benefits of the National System. We have separated them. They are going to be addressed separately. In terms of the costs, there's a subgroup of Tundi, myself, Lelei and Jeff, and we plan to develop our concept paper by June '06. We are only going to have another call.

Just for clarification, you see "paper tent" and "canvas tent".

I hope you can read this, Dan. We were very worried about that. Can you read it?

CHAIRMAN BROMLEY: Yes, I can read it, yes.

DR. CHATWIN: All right. But what we mean by "paper tent" and "canvas tent" is that in our deliberations -- that are not relevant, we talked about two different scenarios of National System of MPAs. One is using the criteria that is already established

by the Framework that we haven't seen, but that we are told will reflect what we've agreed to in our document. It seems that it is going to be rather inclusive, so the National System will have a broad composition. So, we just termed that a "paper tent", a large tent.

And then a "canvas tent" -- we were talking about the material of the tent and the size of the tent. And as you become more selective, the size will decrease and maybe the material will improvement. That was just to help us in our expressions.

CHAIRMAN BROMLEY: "Small tent" and "large tent" was too hard for you to get your mind around?

DR. CHATWIN: Well, that just has one dimension to it. There were two dimensions to it -- size and quality.

CHAIRMAN BROMLEY: Sorry for the cheap shots.

DR. CHATWIN: That's a given.

MR. MELZIAN: No, you are not.

CHAIRMAN BROMLEY: I'm rather enjoying it. Yes, I am.

DR. CHATWIN: And then Dan Suman and Lauren are going to try to expand upon the "Benefits" section

that we have already described in our report, see if there is additional information that we want to include there. And that would be for July, the July call of '06.

We did not get an opportunity to talk about -- Oh, I shouldn't be saying this -- as much as we would like on incentives. So, we are going to be addressing incentives throughout the coming five months with -- I think a couple of calls that we are going to address these, the main one being in June. That is why we want to take the opportunity -- there are a number of us located in D.C. -- to get together and have the others come in on the phone to have a more thorough discussion about incentives, which we were unable to do here.

And then the September call, by the September call, which is the fourth -- I think the fourth week in September, we want to be wrapping up all this work that we have done into a document that we can share with the full Committee.

And we would like to have feedback from the Committee as a whole at the October meeting.

And should we take questions at the end or --

CHAIRMAN BROMLEY: Is that your last slide?

DR. CHATWIN: No, that was three.

CHAIRMAN BROMLEY: Okay.

DR. CHATWIN: And then we did try to think about the upcoming -- the following meetings of the Committee, but we felt that what we can promise to deliver by then is going to depend a lot on the type of feedback that we get at the October meeting. But the placeholders are that we would incorporate the feedback from the Committee and shape our documents to reflect those comments by the following meeting, the spring meeting.

And then in the fall we really have to have it all done and have the Committee as a whole agreeing to the various products as well.

CHAIRMAN BROMLEY: Well, let me point out that what I think you have under final product ready for final full Committee review, since you want to back that up to the spring of '07. Okay?

In other words, we do not want to go to the fall of '07 with products that have not been seen and worked through in the spring of '07. So, I hope you

don't take this as a curve ball coming at you later.

But I was sitting in with one of the other Subcommittees and we realized that that Fall of '07 meeting needs to be the second visitation of stuff that we have already seen in the spring and given some thought about going forward.

So, let me just throw that in first. You guys need to pull back to spring '07 some sort of quasi final approval of stuff, you see, so within that period of the spring of '07 and the fall of '07 could be for refinements and fine tuning. Do you see what I mean?

DR. CHATWIN: Yeah. And I think maybe we did not choose the right words here; but that is exactly how we think. That is why we say some products ready for full final Committee review and the summer is a placeholder for -- there may be additional modifications that we would then incorporate by fall. So, total agreement.

And then the final question that you posed to us was whether we had any suggestions or recommendations for speakers or panels. And I think the sense of the Subcommittee was that we, if given the

choice between having panels of our interest or speakers of our interest and getting more time as Subcommittee and full Committee, our preference would be for the latter.

So, we prefer more face time as a Subcommittee and as a Committee as a whole. I think the Committee as a whole is going to have to have more and more time together.

So, if we have to make that choice, that is how we would prefer.

In this same vein, we favor -- if this would gain us more time, we would favor identifying individual speakers as opposed to panels. In the case of talking about incentives and implementation, one speaker that would address that would be satisfactory to us.

CHAIRMAN BROMLEY: Will you bring us names and ideas?

DR. CHATWIN: Oh, yeah. We are getting to that.

CHAIRMAN BROMLEY: Okay.

DR. CHATWIN: Another suggestion was that some

of the speakers -- it wouldn't have to necessarily be during the day, these speakers. Maybe an evening presentation would suffice so that we can during the day be in Committee.

CHAIRMAN BROMLEY: I thought of that myself. We need to keep this group together longer. So, this is good.

DR. CHATWIN: Okay.

(Mr. Peterson indicated thumbs down.)

CHAIRMAN BROMLEY: Lauren and I see some heads down.

DR. CHATWIN: And in relation to subjects that we would be interested in hearing about and some suggestions about people, I think it came out strong that in thinking about incentives and implementation, I think economic evaluation plays a big role and it would be very interesting to hear speakers who have applied economic valuations to the sorts of issues that we are considering. And it could be economic valuations of MPAs or there was an example provided by a Study of the Economic Value of the National Environment -- Brian might be able to speak more to this -- of the national

monitoring system and the economic benefits of this system. There was a study done about that that had some interesting findings which would be good to hear about.

We also thought, given the venue, that maybe hearing more about the wildlife refuges in Oregon and the benefits to local communities, that would be also something relevant to the work of our Subcommittee and the work of the group as a whole.

And then we also thought that presentations, case studies on incentives and benefits, continuing in that vein, that Jim Kirlin --

I think it is "Jim".

A PARTICIPANT: John.

DR. CHATWIN: John. Sorry. -- of the MLPA, the Blue Ribbon Task Force, is very interesting because we've talked about multi-stakeholder group in relation to MPAs and, again, the wildlife refuges.

So, with that, I would open it to members of the Subcommittee to see if I missed something.

But I would also like to end by saying that the Subcommittee is fully engaged and we had a very

interesting and thought-provoking discussion and I think everybody is very motivated to get the products done by the next meeting that we have promised.

CHAIRMAN BROMLEY: Very good. Are there questions for Tony?

Dish it out, Dennis.

DR. HEINEMANN: Since the first task is to look at the criteria in the Framework and look at options for standing on that in a couple of different ways, we are dependent upon seeing the Framework or at least the criteria of the Framework in order to help meet our deadline and have the product for the Subcommittee by May 17th. All the rest of the cards depend on that one.

MR. LAPOINTE: A bit of a follow-up, we did have a fair amount of discussion -- which I can't talk about, at the Subcommittee about the Framework document and that we would hope the federal services when it was released would make sure the comment period, if it's 145 days and it is 160 days until our next meeting, that they would, in fact, extend the comment period beyond our following meeting. And to their credit,

they expressed a willingness to accommodate us.

MR. URAVITCH: We will note we have gone from 90 days to 145 days and counting, so it is getting awful long here, folks.

MR. LAPOINTE: And understanding that, if it takes a little bit longer to help us in our discussion as a group, I think that is a worthwhile extension of time.

CHAIRMAN BROMLEY: Other comments or questions?

(No audible response.)

CHAIRMAN BROMLEY: Is that Dan there in the middle of that slide, Tony?

DR. CHATWIN: That is you. Did you think it was Dan Suman?

CHAIRMAN BROMLEY: Okay. Who is it?

DR. CHATWIN: So, if there are no other questions, I would just leave it with this thought that in the Subcommittee we have put a lot of interest and we are going to be putting a lot more discussion time into what we think the National System should look like, because that has implications for all our work in

terms of incentives, benefits, and all that.

We are doing that, but we recognize fully that that discussion has to have the actual Committee. So we are going to bring our discussion to the full Committee hoping that we can have a full discussion of it at the next meeting.

CHAIRMAN BROMLEY: You will bring us your vision of the National System? Is that your promise?

DR. CHATWIN: Yes, we will bring a clear vision of what our Subcommittee was able to produce.

CHAIRMAN BROMLEY: Any other questions or comments?

MR. LAPOINTE: George Lapointe. We had a lot of discussion about the big tent, small tent. What we meant by the paper tent was the set amount of money to put the system together, you know, small tent, you are going to get tired of rigging and rebuild. You are going to spend more on the tent. But if you have to spend-- if the corners are cut, the bigger tent is going to be lower.

So folks need to think about the discussion you and I had at lunch about the -- I don't remember

what it was -- the distinctive sites --

CHAIRMAN BROMLEY: Unique.

MR. LAPOINTE: -- unique sites -- thank you -- versus representative sites and how many go in. So that is an important topic for everybody to spend some time on.

CHAIRMAN BROMLEY: Yeah. Well, I think what threw me was not only the metaphor of "paper tent", but we heard comments on "paper parks" and "paper" things and I didn't know if they exist on paper, but had no function. So, I wondered whether on "paper tent" --

MR. LAPOINTE: That is what I mean.

CHAIRMAN BROMLEY: They just exist on paper, but they don't work. I think that is my trouble with it.

MR. LAPOINTE: No, no. He is talking about the quality.

MR. MELZIAN: Quality. Quality in that role.

DR. CHATWIN: We have a question here.

CHAIRMAN BROMLEY: Terms don't speak clearly? I'm sorry. That was just a way to convey an idea.

Max?

MR. PETERSON: I wonder if your group gave any thought, when you talk about this system, a lot of systems evolve over 50 years or more. So, I think one of the things you might want to give some thought to is something involving resources to keep up or you can disillusion everybody.

So, I think one of the things you might want to give thought to is how do you sustain this adequate support as you go along rather than sometimes a grandiose scheme and, well, maybe not getting the funding.

I'm just wondering if your group was thinking about that.

DR. CHATWIN: Yeah. I think you will find that there is a meeting of the minds. What we are trying to do is get all the information so that we can have a view of or come up with an understanding of reality.

It is like "wish" and "reality" and where we should be in relation to those two on the scales. And I think that at this stage we are looking at gathering information necessary to start to build a picture.

And we did not talk about temporal components, you know, over time; but I think there are other thresholds and the main one being the types of incentives that you could come up with. And financial incentives, it is going to take time to create those incentives.

So, that is our report.

CHAIRMAN BROMLEY: If I may follow-up, I think Max's question is very good.

Funding is sort of endogenous. You can start out with some really good champions and that can bring forth funding.

So funding levels is an endogenous part of this evolutionary system, which I think is what Max was trying to get at.

Can you give us a vision for an evolutionary system in which funding is endogenous based on good performance and that sort of thing? See what I mean?

DR. CHATWIN: I do. Do you want to comment on that, Joe, at all?

MR. URAVITCH: I hope the Committee, if it decides it really wants to travel down this path, goes

back to the Executive Order and looks at what it says the purposes of the National System are to be and also the practicality of networking in the existing programs with all governmental levels and what it means if you are going to start discriminating among programs, among sites within those programs, and where that leaves the implementability, to coin a phrase, of this if you end up setting up your small canvas tent and alienating two-thirds of the folks that we want to work with us.

So, bear that in mind as you proceed with this thought.

MR. LAPOINTE: And we had that kind of a discussion and, again, we wanted the full Committee to think about that as well.

You know, letting everybody in who wanted to be in, you know, give them -- you know, when the National Wildlife Refuge System has the blue signs, you know, give everybody a green fish or whatever -- you know what I mean -- some symbol of being in the system and then grow from there.

And the analogy was letting everybody in, but meaning not much; and then you go to the crown jewel,

the 20 or 30 where being in means a lot, but nobody is in, so all the small people get ticked off and say: "This is not a system that was designed for a National System as well."

So, we have had some spirited discussion about that. I mean we will address those. One of our sub-groups -- I think it was Tundi and Wally and Dennis -- are going to, in fact, discuss that dichotomy.

And it is important for the full Committee to have the same discussion we had as well.

CHAIRMAN BROMLEY: Max?

MR. PETERSON: I think Joe's comments are right on. If an area met the criteria and goes through that sieve of a self-nominating system where people want to be a part of the system and they understood what they were buying into, that we wouldn't set up an arbitrary thing and say, "No, we are not going to let you in;" but we also -- I think Mike pointed out -- if you have all the areas that are eligible, it could be bigger than the Continental United States and a billion dollar budget probably would not touch it. So, we've

got to be careful.

It might eventually be an appropriate kind of thing, but that may be something to work towards at the end.

CHAIRMAN BROMLEY: Great. Okay. Unless there is something else, Tony, thank you so much.

DR. CHATWIN: Thank you.

CHAIRMAN BROMLEY: I think you did all right. I'm not sure.

All right. I'm outvoted again.

Now who wants to go -- 3 or 1?

DR. MURRAY: We are ready. Three is ready.

CHAIRMAN BROMLEY: Three is ready.

DR. MURRAY: However you want.

CHAIRMAN BROMLEY: Okay. We will save the best for last.

DR. MURRAY: You know, I was thinking there are a few advantages here of having the chair all the way down at the other end of the room. If you put things up really small, you can't see them.

CHAIRMAN BROMLEY: And you probably can't hear.

DR. MURRAY: Right. You know, if your hearing is not so good, there is a long distance between the microphone and all the way to the back.

Okay. So, we were asked to do -- We put our assignments into three categories. And I'm going to start with panel suggestions right away, get that off; and then we are going to talk about our work products and our schedule and plans.

First of all, with regard to the panel, we thought that one of our main contributions would be to work hard to produce an integrated picture of EBM that involved social sciences, natural sciences and addressing the issue of cultural MPAs. And, so, we have four topics that we thought would be suitable for a panel.

And we did not really discuss whether we thought panel presentations were good or bad. I think they really vary depending upon who is here speaking and what kind of information they present.

I think we ought to probably give more attention to who we bring in rather than whether we should or should not have these conversations because

we do get a chance to speak and dialogue with and learn from people who have additional expertise.

So, very quickly, we thought that it would be very important to have someone present to us that would tie in and integrate the cultural heritage concept with EBM. So, we suggested Hans Van Tillberg.

On the economics, natural science integration and EBM, we thought Chris Costello from UCSB would be a good choice. We have Jim Wilen and Aster Schultz also would be candidates.

We thought that the issue of connectivity and boundaries and some of the thinking on that that particularly displayed itself and the size spacing issues that Steve Gaines talked about, there is a lot of science behind that, and I think that we thought that would be important to have a dialogue on that and Steve Palimba would be a really good choice to present that information.

And then the concept of resilience, which you are going to see in a little bit, and a social natural science system's approach to that, Fikret Berkes from Manitoba we thought would be an excellent choice on

that.

So I'm not going to say much more about this other than to point out that we did give some deliberation to the panel and panel members.

We pointed out last time that we did have some decisions that we reached, and, so, we will amplify those.

We are looking at producing targeted reports, reports on specific topics, as our products, our first assignment, and that would be looking at the MPA/EBM issue and we are looking at about a two-page report for that.

And then we have a design and evaluation paper. We are looking at either two or one, depending on how this goes. Roughly about ten pages is what we thought we would try to produce this in.

And our audience -- well, you've got the list here. We talked about that last time. But we are really trying to write for a broad diversity of audiences with these products.

Okay. Let's look at the first assignment, the first report, which are the MPAs and EBMs. We have

broken this down into more detail than you are seeing here; but essentially what we are looking at is dividing this report up, this two-page report, up into first looking at definitions and perspectives.

MPAs, we have some definitions that we have worked out very thoroughly in our own report.

For EBM, we heard from NOAA, the Ecosystems Goals Team. There is a definition.

"Compass statement", there is a definition.

We also know the Commission on Ocean Policy had some statements about EBM.

So, we are looking at putting those together and trying to come up with an articulated definition from different perspectives.

We are looking at EBMs and MPAs, their goals, and particularly how MPAs would be used or could be used as tools to achieve EBM, and then addressing the place-based management issues in terms of information needs and planning activities that relate to EBMs and MPAs, and then coming up with a Conclusion Statement.

Now, what we are going to try to achieve here is to integrate the natural and social sciences as we

walk through these particular elements of the report rather than to have a simple reiteration of what already exists.

Now, this is going to take a little bit longer to explain. And, Dan, sorry, you don't have to read the little stuff on the bottom.

But I think that what really came out of our discussions yesterday was, I think, very good -- and that was an attempt to elevate some of the thinking about MPAs and EBM into a "design" component and "evaluation" component, but concentrating on some properties or some particular focal points that maybe are a little different than what we talked about before. That is particularly on what I'm showing as the "evaluation" side of this.

But on the "design" side, when we think of designing from an ecosystem-based perspective of MPAs that would fit into a National System, well, one of the things that becomes very important is the issue of scale and connectivity and boundaries as we try to connect individual pieces into a larger system sort of approach.

And I think we heard from Dr. Cyr earlier today about how we looked at the existing sort of NOAA efforts as approaching ecosystems, but piece by piece; whereas if we are going to try to do ecosystem-based management and think of MPAs as a system that are connected, individuals connected to one another, that we need to migrate into this larger integrated picture.

And, so, we have a series of things that we have listed here that we want to address including the flow of matter, larvae, juveniles and adults, issues of units, that is, the MPA units themselves, and various kinds of boundaries and linkages that range from those that are historical, cultural, political, community-based regulations and so on. So, this is one effort.

On the "evaluation" side, we are looking at the overall ecosystem concept of stability and sustainability. The components of that involve a variety of things, including a variety of processes and topics including issues such as persistence, constancy, variability, resilience, recovery, vulnerability and issues of changes in human perceptions and values and so on.

So, our second product we see as attacking these two issues from a more system-based approach, one on the "design" side, one on the "evaluation" side, and again with the goal and challenge of integrating the social and natural sciences and giving due justice to cultural and heritage perspectives.

Okay. For our first report, we have laid out an assignment calendar. We are looking at producing a Subcommittee Draft Report by July 1. Mark Hixon is taking the lead on that.

And we are looking at obtaining that Draft Report, circulating it among the Subcommittee Members for comments, getting those comments back by August 1.

Generating a Revised Report that comes from the Subcommittee that would be posted and sent to the full Committee by September 1.

And we would hope that we would have a full draft available for -- hopefully, for full Committee approval, but at least to have before the full Committee by our October meeting in Oregon.

For our second assignment, in Oregon, when we arrive there in October of 2006, we have identified

leads, lead people who are working on the elements of the design and the evaluation report pieces. Those leads would be arriving in Oregon in 2006 with a pretty detailed working outline for each piece and maybe some additional work on those.

And by January 15, we would have a Subcommittee Draft of the design and evaluation pieces.

By February 15, we would be getting and collecting the comments, edits and revisions from the Subcommittee.

By March 15, we would have a full report posted for full Committee consideration.

And by our Spring 2007 meeting, we would hope to have a final draft to the full Committee for discussion and, hopefully, approval with some minor adjustments before our final meeting in October of 2007.

Dan, that is it.

CHAIRMAN BROMLEY: Wonderful. Questions?

(No response.)

DR. MURRAY: Who is next?

CHAIRMAN BROMLEY: No comments. No questions.

Yeah. Okay. There we go. George?

MR. LAPOINTE: This is not a question for Steve so much as a question for the Committee about what we do about the balance of presentations and work time for the Subcommittee.

We bounce back and forth, and especially particularly with the schedule of trying to get things ready for spring 2007. I am leaning towards less presentations and more work time. And, so, after Subcommittee 1, if we can discuss that.

DR. MURRAY: Can I make a comment on that or do you want to go on?

CHAIRMAN BROMLEY: Go ahead, Steve.

DR. MURRAY: Well, I think at least one of the disappointments for me about this process is that when we started out, we really were looking at having the opportunity to have outside experts come in and work with us on different elements of our work scope and we have lost that and we have clearly lost it with the budget as it is.

So, the question for me is: How can we get that contact with some outside folks who can really

bring some good ideas to us and at the same time give ourselves enough time to do the work that we need to do?

Presentations give us some opportunity to learn; but the presentations, I think, need to be focused that best meet our needs and, you know, are delivered in a way that we can really maximize our information gained from them.

That is not criticizing anybody. It is just a matter of how -- because I think what George is saying and what Tony said was that, you know, we need to maximize the best use of our time.

And I think that we would probably all agree that if we look at all the time we've spent, yeah, we could have some presentations that maybe we could have omitted and used our time better to do other sorts of things. And maybe there were some presentations, we would agree, that were really good uses of our time.

With that, I'm going to hand the microphone to Max.

CHAIRMAN BROMLEY: Well, let me comment on that, Steve. That is exactly right and that is why I

asked you in the past. The Subcommittees need to tell us who it is they would like to hear from, how they would like to have that structured. Do you want one person to come in your area and talk to you? Do you want a panel?

So, I fully support you. We have had eight-and-a-half hours worth of Subcommittee meetings this time -- unless I counted wrong. Okay? I just tallied it up while Steve was speaking. I can listen and count at the same time. I tallied eight-and-a-half.

So, we can have programs and have it be structured in the way the Subcommittees want it to be structured; but we want specific recommendations from the Subcommittees about essential people with essential information, and then we can build our program around that. It's your program.

So, Max -- Well, just a second. Wally?

DR. PEREYRA: Wally Pereyra. I would just like to underscore George's comments. This was an important issue in our Subcommittee. And my perspective, the reason why I think we need to spend

more time together, both the Subcommittee and in full Committee level, is because I am reminded of the difficulties we had in reaching the Consensus Document. We almost did not have one until at the last minute. I would hate to see us get rushed into the same sort of situation.

So, there are several contentious issues that we have to deal with in terms of scope of the network, how it is structured, how you get in and get out. I think that is going to take some time on our part.

That is why I think we need the time -- not that I don't think we need to have experts give us their advice; but if I had to choose, I would urge toward Committee time.

CHAIRMAN BROMLEY: As it has been said, when we started out we thought we had money for working groups and scientific subcommittees and blah, blah, blah. And not only don't we have that, we have lost one meeting a year, I think. So, we are having to reboot this thing as we go.

Dennis?

DR. HEINEMANN: I think the concern in our

Subcommittee was that although we need the input from experts who have expertise that does not exist on the panel, that the time for substantive discussion both in the Subcommittee and full Committee was more important.

There may be a way to get both and that would be to have one member or two members of the Committee work with an outside expert and leave the group in discussion. That way, you would get the advantage of having the outside expertise contributing to the discussion, if they can help facilitate that and lead it, and it wouldn't have to be sort of a dead time for formal presentations as such. But you would have to have them working with somebody on the Committee so it would be structured to provide the best benefit.

CHAIRMAN BROMLEY: Well, this is an alternative model. Outsiders could come in and meet with particular Subcommittees rather than tying up the whole Committee. Is that what --

DR. HEINEMANN: In either sub or full.

MR. PETERSON: I guess if you want to discuss this some more, I'm interested -- or if you would like me to go ahead and make the presentation.

It seems to me we ought to have criteria that anybody who comes this fall or spring ought to be considered essential to us completing our product for next year -- not just somebody who we would like to hear from, but it should be related to the work you need to do or we need to do and we are trying to do.

Bob is going to lead off our presentation. Bob Zales.

MR. ZALES: Thank you, Max. I will stand over here so everybody can see one of our Charges.

This is the report from our Subcommittee and you can see everybody that is on there.

I guess I just hit the "down" arrow?

MR. JORDAN: Yeah.

MR. ZALES: The Key Question for our Subcommittee was: "How should planning for the National System of MPAs be done in a way that encourages cooperation and coordination among the different approaches to marine management at the regional, national and international level?"

With the sub question of: "What are some examples of where governments and stakeholders organize

or work together at the regional and/or ecosystem level to enhance resource management and/or conservation?"

And the way we are going to get there is to identify and examine nature of experiences and lessons learned from existing regional efforts with a questionnaire for people and interviews and to draw on these experiences to develop best practices that can help with the implementation of the National System at the regional level.

And we have a set of questions that, if you all want to see, we can show it to you; but that kind of exceeded our five slides, so that is just as an extra.

The selected case studies that we are going to look at and which have been assigned to various Subcommittee Members is:

The South Florida ecosystem, which would be me and Bob Bendick.

The Great Lakes Shipwreck Preserve System, which is going to be Charlie.

North Pacific Fishery Management Council effort to establish cold water, coral habitat

protection in the Gulf of Alaska. We assigned that to Dave Benton since he wasn't here. He should know that.

The Gulf of Maine Council will be the MPA Center. The Great Barrier Reef will be the MPA Center.

Appalachian Trail Conference will be Max. Wild and scenic rivers will be Max.

Gulf of Mexico Alliance will be Bob Bendick.

And the World Heritage Transboundary Sites will be Eric.

And the Tribes in Washington Marine Co-Management System will be Jim Woods.

So, with that, the products and our schedule. The products are to draft a report of the various case study experiences and report on the regional coordination and planning of the lessons learned and best practices.

And the schedule is that we develop this to finalize a questionnaire by mid May, and then Jonathan is going to take the lead. He will be the central communication point. He will send all this out to all the Subcommittee Members.

And then we will complete the case study

questionnaires by the end of July, which everybody who has their particular assignment will be contacting various people in those areas to get their opinions on how things work with cooperation and the development of those areas.

We will have a conference call in August to review the synthesis of the case study.

Then draft a Case Study Report by the October meeting.

And at the October meeting, we will review the draft report and begin the analysis.

And then we will draft the Analysis Report by the spring '07 meeting.

Hopefully, we will have a Final Draft Report for the full Committee by the end of the spring meeting.

So, Max, do you want to do the last part of this or --

MR. PETERSON: Yeah. We thought there were a couple of people, if we could get access to, that would help us complete the final product.

And Mark Hixon has been looking a lot at the

experience to date with MPAs, keeping up with the literature and so on, and he offered to kind of do a synthesis of that and tell us what we know from the literature on MPAs.

And the second part of it, Mark Hirshman, who I believe is at the University of Washington, is an expert in -- he has done quite a few studies of the whole idea of regional planning and regional government, what we have learned by other experiences with regional planning and regional government.

And then we might have one or two representatives locally there, if we wanted to, to tell us what is happening in Oregon.

But the first two are primary recommendations.

And we, again, thought that, quite frankly, there is a lot of expertise on this full Committee. And at times we would have liked in our Subcommittee to get somebody that is on another Committee to come in and sit with us, and so on, which might be better than having somebody from the outside come in.

For example, Dennis from the University of Indiana has had a lot of experience and so have some of

our other new members like Ellen. We would like to be able to pick their brains on our Subcommittee.

So, we would like a little more time in Subcommittees rather than use it up with what may be very interesting presentations.

Okay? Thanks. Any questions?

CHAIRMAN BROMLEY: Any questions of Max or Bob? Ellen?

MS. GOETHEL: Hi. Ellen Goethel. At the risk of sounding stupid, I was curious to know why you were going to contact the Gulf of Maine Council for information on MPAs.

MR. PETERSON: Because of the ongoing work there.

MS. GOETHEL: What are they doing?

MR. PETERSON: Well, George is sitting there next to you. He can probably answer that better than I can.

MR. LAPOINTE: I'll show you my draft work plan for the Gulf of Maine Council.

Gulf of Maine Council is a group, for folks who do not know, who represent the states from

Massachusetts through Maine and then Brunswick and Nova Scotia, two federal governments as well, and a public member jurisdiction, and they've got an ongoing interest in the whole MPA issue as well. They have some interest in the regional governmental issues as well.

I don't know specifically on MPAs what they have been doing; but in terms of just the regional coordination and "outside the box" thinking, I think that would be their value.

MR. ZALES: Yeah, Bob.

MR. BENDICK: Bob Bendick. Not all the examples of their case studies have to do with MPAs.

CHAIRMAN BROMLEY: Bob, can you use the microphone, please?

MR. BENDICK: Not all their examples have to do with MPAs. They are different forms of regional governments. Like we picked the Appalachian Trail Conference which obviously doesn't deal with MPAs -- yet!

CHAIRMAN BROMLEY: Is that the one started during the Civil War, Bob?

MR. BENDICK: No comment.

Because that is a voluntary regional association, so they are not as tied to MPAs.

MR. PETERSON: I've got to take Bob off the hook on the Civil War. Did you know that two things that Lincoln did, he established the U.S. Department of Agriculture in the middle of the Civil War and created the Historical Biological Survey. Did you know that? Both were done during the Civil War.

So Bob was right in saying that Lincoln did some important things. His timing was a little off, but that's okay.

CHAIRMAN BROMLEY: And Max knows because he was there!

MR. PETERSON: I got to deliver the papers.

CHAIRMAN BROMLEY: Max, when do we hold the historians accountable for their timing?

MR. PETERSON: Not very often.

Ellen, does that answer your question? What we are trying to do there is look at the evolution of planning on regional efforts and ask them: What can you tell us about what worked well? What did not work

well? How did you start it? Who was involved? What was the purpose of it as it evolved -- to try to just understand this whole regional idea. Because when we get to the idea of regional MPA efforts, quite a bit has been done on the natural science part of this. We are interested in both sides as well, the social science of it. How did they work together to do something? Okay? Did they have a legislation that told them to do it or did they just decide to do it and so on.

Yeah, Lelei.

MR. PEAU: Max, I would like to recommend that perhaps you might want to consider the (inaudible) as a case study. They did a great job on coming together during the U.S. Korean Task Force for a regional area, including the State of Hawaii, to develop a plan which was used as a model for the U.S. Korean Task Force to become organized and take it among themselves.

It is a true example of a bottom-up approach in which the full jurisdiction took it upon themselves to develop an excellent plan, to organize and to provide guidance to the U.S. Korean Task Force in terms

of the significance of their existence, getting the stakeholders involved in the participatory planning process.

I will be glad to submit that for your review.

MR. PETERSON: Well, between you and Mike, would you be able to answer our questions that say how this evolved and so on? I think it would be real helpful. We just sort of ran out of time in thinking how many we can handle.

But, Lelei, if you can do that, maybe that information at the tip of your pencil, if you can do that for us, it would be helpful. Okay?

(Mr. Lelei Peau nodded.)

MR. PETERSON: Anything else?

CHAIRMAN BROMLEY: Wonderful. Max, Bob, thank you.

Okay. Any closing? Before we go into the logistics for the future meeting, are there any comments you would like to make about this particular site?

Yes, Steve?

DR. MURRAY: I assume that all these plans

have been ratified.

CHAIRMAN BROMLEY: Well, let's see. Yeah. You mean you want to vote on them?

DR. MURRAY: Yeah.

CHAIRMAN BROMLEY: To the extent I can read them, I would say so.

Lauren, would you help us in making a few comments before we adjourn?

CHAIRMAN BROMLEY: I just actually have a couple of things about the next couple of meetings. I think everyone has heard that we are talking about our next meeting being on the Oregon Coast October 10 through 12. Just to remind you that Monday is Columbus Day, so it does involve traveling on the holiday. Necessary evil. So I just wanted to remind people about that. The meeting will be the 10th through 12th of October.

CHAIRMAN BROMLEY: The 10th is a holiday?

MS. WENZEL: The 10th is our first meeting day. The 9th is Monday, Columbus Day. So it means travel on a holiday.

And we will let you know as soon as it is

settled where on the Oregon Coast it will be. We are looking at Coos Bay or Newport. So we will let you know about that.

And then I think it would be a good idea for us to set our spring meeting pretty soon, so I will E-mail you all about dates. I think probably in the April time frame.

CHAIRMAN BROMLEY: May is pretty bad for everybody. So, I think April.

MS. WENZEL: Looking at the April time frame, is that pretty good for most folks?

DR. CHATWIN: I think April is fine as long as it is not during School Spring Break. And, so, this timing, this time of the month is fine; but earlier, it gets complicated.

MS. WENZEL: Stay between Easter and Spring Break. All right. Good to know.

So we will canvas you pretty quickly about April. And we are looking at the Great Lakes. I know we keep saying that. John does not believe me anymore; but the Great Lakes.

I'll have to say D.C. would be a fall-back

depending on budget views, but we would like it to be in the Great Lakes.

CHAIRMAN BROMLEY: Especially if you are in a canvas tent or a paper tent.

MS. WENZEL: And then, lastly, on the logistics, those going on the field trip, what we're going to do is meet in the Bayfront lobby at 7:45. So, please check out and be ready to go. And then what we are going to do is we have some rides and Bonnie has a car. We will drive over to the estuarine reserve site, take a boat ride for a couple of hours, see the reserve, hear from the staff there, and then they are going to be able to open the cafeteria so we can have a quick lunch, and then take us to the airport.

So, that is the plan. If anybody has any questions about it, they can get with me.

MR. MELZIAN: Do we bring our luggage with us?

MS. WENZEL: Yes.

CHAIRMAN BROMLEY: Well, I want to reflect a minute. I think in the fall when our regional meeting was canceled when the budget came down, I sensed a lot of despair and frustration and resignation -- not

literally, but figuratively.

And I must say I found this meeting to be infectious in its enthusiasm and commitment. I think we have regained the ground we lost in the fall.

We have some new members. Ellen said to me: "Geez, this is not nearly as bad as I thought it would be" -- which is always a good sign.

I haven't pinned Dennis down on what he thinks. And Jim and a few other new ones, I'm sorry if I skipped the new ones -- but, again, our charm.

I think we have our momentum back. I believe that our operating style is evolving and will evolve.

I took very seriously the discussion about speakers and as soon as we adjourn I'm going to sit with Joe and Lauren for a minute and we are going to try to rethink the model for the meetings so that outside speakers come in last, if you want that, and devote more time to Subcommittees rather than the Committee as a whole. That means we wouldn't have speakers for the Committee as a whole; but it seems to me like you people are saying you would like some experts, some wisdom, some outside perspective in your

specific subcommittee group. That will be fine. So, anyway, that's --

(Dr. Chatwin raised his hand.)

CHAIRMAN BROMLEY: Just a minute, Tony.

So, I think we are past -- I think we are better off than we were back in the fall and I think we are re-energized. And I want to thank all of you for your commitment and enthusiasm.

Now, Tony, what were you going to say?

DR. CHATWIN: Sorry to interrupt.

CHAIRMAN BROMLEY: No problem.

DR. CHATWIN: I interpreted it a little differently. I think it would be interesting hearing speakers who have things to say that are relevant to the Subcommittee work, but their presentation does not have to be made in Subcommittee. I think everybody can benefit from it.

CHAIRMAN BROMLEY: I appreciate that. Could be either way, because there might be some people who think "We don't have to work on this."

DR. CHATWIN: But we need time as a committee, not only as a subcommittee.

CHAIRMAN BROMLEY: I know. I hear you. We don't want to swing too hard.

Are we adjourned? Who adjourns us -- Lauren?

MS. WENZEL: I do. Does anyone else have any other business?

(No audible response.)

MS. WENZEL: All right. Thank you all very much -- especially thanks to our new members.

CHAIRMAN BROMLEY: And thanks to our reporter and everybody else.

(Whereupon, at 4:15 p.m., the proceedings were adjourned.)

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