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MILKEN INSTITUTE GLOBAL CONFERENCE 2009

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LARRY BAND: Welcome, everybody. And thank you for joining us this morning for Innovative Funding for Sustainable Fisheries and Oceans.

My name is Larry Band. I'm the moderator today. I am a consultant for the Environmental Defense Fund where I've spent the last couple of months working with the ocean enterprise effort to think about financing for ocean fisheries.

Before that, I had the pleasure of spending 20 years on Wall Street, including 19-and-a-half wonderful years at Lehman Brothers. So I bring some private-market perspective to this interesting issue of funding in fisheries.

I'm delighted to have with us four great panelists that I'd like to just take a moment to introduce.

Across from me is David Crane. David is the senior adviser to the governor of California for jobs and economic growth. And I guess David, like me, before his career in government, spent a long and successful career in the private sector.

Next to me to my right is David Festa. David is vice president, West Coast, for the Environmental Defense Fund. David joined EDF in 2003 as the director of the oceans program. Recently, David served on the Obama transition team for the Department of Commerce, where he was director of policy and strategic planning during the Clinton administration. And among the many things that David thought about during his tenure there was how to solve the problem of overfishing.

To my left is Jerry Schubel. Jerry is the president and CEO of the Aquarium of the Pacific where he also directs Marine Conservation Research Institute. Jerry has written extensively on environmental affairs, particularly coastal oceans. He's the former president and CEO of the New England Aquarium and the former dean of the Marine Sciences Research Center at Stony Brook University.

And lastly, we have Jason Winship. Jason is a managing principle at the Sea Change Investment Fund. Jason has extensive experience in early-stage private equity as well as corporate MNA and investment banking through his current position as well as prior responsibilities at West Marine Equity Partners, AT&T Wireless and Lehman Brothers.

So with that introduction, let me just spend a moment framing the problem that gives rise to this interesting topic of innovative funding and sustainable fisheries. The problem is simply that conventional fisheries management has proven ineffective. And it's proven ineffective both environmentally and economically.

Environmentally, ocean ecosystems have suffered severely under conventional management practices. They've been overfished to the point where the majority of the world's fish stocks have either collapsed or are categorized as overexploited. And in the process, we've

endangered an incredibly value food supply that represents the primary source of protein to, I believe, over a billion people around the world.

Economically, the current management system has also not worked. And let me give you some thoughts specifically around the U.S. So over the last 20 years, revenues have fallen significantly in fisheries around this country. The industry has been consistently unprofitable to the point where there's really a scarcity of capital to support the changes that are needed in fisheries today. And the quantity and quality of employment have fallen.

And when you look across fisheries, the declines have been anywhere from 20 to 70 percent in terms of employment numbers in today's fisheries. And the remaining jobs are pretty consistently more dangerous, as we all know, from one of the great TV shows today, and low-paying jobs.

So that's sort of a sad backdrop, but the good news is that there's a real opportunity to put in place an alternative management system to replace the conventional management model that's already met success selectively in the U.S. but has also met significant success outside of the U.S. in a number of countries. And I think one country that some of our panelists will talk about is New Zealand.

So with that, let me just say that we'd love to have this be an interactive session. We know we don't have all the answers. This is a fascinating problem and a great opportunity. And please feel free to chime in with questions you have as the speakers go through their thoughts. And we'd love to have any perspectives you all would like to share in terms of your experiences and how they might help us solve this problem.

So with that, I'd like to turn things over to Jerry Schubel to give us a backdrop on the situation.

JERRY SCHUBEL: Okay. And we're going to go to slide 14. Thank you.

I want to use my opening few minutes to describe the human uses of the ocean and our relationship with the Earth because neither of these are sustainable.

If you look at how human activities have affected the planet going back particularly since the industrial revolution, we have set the planet on a new course.

Go to the next slide, please.

And there's no question but that the world is going to be a different world. The ocean is going to be a different ocean within 50 years. It's going to be a warmer ocean. It's going to be an ocean with a higher sea level. It's going it be a more acidic ocean. It's going to be an ocean with less biodiversity. And, therefore, it is going to be an ocean that is less resilient both in terms of dealing with human stresses and with any kind of natural perturbations.

And we'll have an Earth with more frequent and more intense tropical storms. We'll have an Earth with more frequent, more intense droughts. And we are going to leave to our children and our grandchildren a world that is different from the one we have all in this room known.

And most of these changes were set in place by the release of CO2, as I say, primarily since the industrial age. Once it's in the atmosphere, CO2 stays there for about a century. The ocean is the ultimate sink. Once it gets into the ocean, it stays there for at least a millennium. And about half of the CO2 released since the industrial age has been transferred to the ocean.

And when we look at the ocean, overfishing is a very serious problem, but there are other problems that we need to be thinking of; habitat destruction and other exploitation to both renewable and non-renewable sources.

So I want to underscore that we are committed to a different future. There's no question about that. Just how different it's going to be will be a function of the actions of millions, hundreds of millions, maybe billions of people over the next few decades. And population and consumption are the two big drivers.

And while it's going to be a different world, I think we also have to acknowledge that we have the knowledge, we have the technology, we even have the economic resources to make it a better world – better in terms of a more just, more equitable world for humans and for many of the species with which we share the planet.

And so the question is whether we have the political will to make this a better world. I think "Shaping the Future" is a very appropriate title for this conference because we will create the future, and it's a design problem. It's the most formidable design problem ever faced by human beings. But maybe that's appropriate.

We got us into this pickle, and we are the only species that can envision alternative futures and can make plans to avert impending danger and to ensure sustainability. So while overfishing is very important for me, it's not just about fish. It's about people.

And some of the keys to a sustainable use of the ocean are public education. The U.S. Commission on Ocean Policy, the Pew Oceans Commission and the new joint commission have all pointed out that, unless we have an aware, committed public, we're not going to get the actions that we need.

So the bottom line is that creating that better future is not limited by lack of science or understanding or technology or even money. It is driven by the lack of public awareness and understanding of what's happening and the political will.

The ocean project just completed a survey, the largest environmental survey ever done, of attitudes and understanding of the world ocean. And when they compare it to a survey they did a decade ago, they come to the conclusion the needle hasn't moved. The public is no more aware

nor do they understand any more than they did 10 years ago. That's something that should trouble all of us.

I think it's clear that we need to have more imaginative ways in the ways that we communicate issues to the public. And we here in Los Angeles and Hollywood and the national academies a few months ago announced a new program called the Science Entertainment Exchange which acknowledged that we have to use different ways.

Let's see. And you have to go back to that previous slide. All right. One more. You've gotten ahead of me. All right.

Experimentation and adaptive change is another thing we have to embrace – not just tolerate experimentation. We have to really believe in experimentation and adaptive management. We have talked a lot about it, but we're reluctant to do it.

If you remember Tom Friedman's column on April 5th of this year, he was describing the Obama administration's approach to solving the nation's economic problems, and he quoted FDR from a commencement address that he gave in 1932. And he said, quote, "The country needs and, unless I mistake its temper, the country demands bold, persistent experimentation. It is common sense to take a method and try it: If it fails, admit it frankly and try another. But above all, try something."

In the environmental field, we need to do that because we continue to have framed issues much too narrowly. And if we think that the economic problems are complex and interwoven and that there are these non-linear feedbacks, they don't compare in terms of what's happening to our global environment and how environmental impacts are all tied with social impacts.

So we've got to embrace experimentation. We also need to reframe issues, I think. And while I'm a great believer in incentive-based fishing, it is one tool. It is one tool in what has to be part of comprehensive toolkit that includes marine protected areas and a variety of other things if we're going to change how we deal with fisheries. And sustainable fishing communities are just as important as sustainable fisheries.

We, at the aquarium, have started – next slide please. We're working on a new online experience. It's really a game. It's about rights-based fishing.

Nope, back. I'm sorry. Then my slides are out of order. All right.

We're working on this game with two former Disney imaginers on rights-based fishing, and we're going to do it in the Gulf of California – you can go to the next one, please.

And the Gulf of California is a very interesting place – next one. This is the Gulf of California looking south from California. It's the youngest ocean basin. It's one of the top five in terms of biodiversity and, also, productivity. And it's also one that is threatened with great change because of overfishing, yes, but also it's the threat of development is one of the big

challenges. And most of that development is coming from Southern California. And so we're working that.

And, yes – next one, please. We do need to be able to have stable sources of funding. And you're going to hear later from other people about the California Fisheries Fund. You'll probably also hear about the Ocean Trust which, like education, has been highlighted in all of these ocean reports where we need a stable supply funding source.

So I remain convinced that we have the opportunity to design and shape a glorious new world for future generations, and I think that the challenge really, though, is to look at it as a design problem and stop this nonsense of trying to roll back the clock to recreate what the world was like 50 or a hundred years ago.

Even without human beings, the Earth would have evolved. Nature would have evolved. And so we need to design a better future.

And this is a quote from E.O. Wilson that we have Stone Age emotions, medieval institutions and God-like technology. Well, we need to figure out how to use human being to help create a better future. And that's what I'm hoping we will talk about.

Thank you.

MR. BAND: Thank you, Jerry. Thank you for your thoughts.

And what I'd like to do is now turn the microphone over to David Festa, who will take us through the concept of catch shares as one of the key tools to the better future.

DAVID FESTA: So we're a small-enough group. I'd like to just kind of ask here how many people know about fisheries.

Q: Know what about fisheries? (Laughter.)

MR. FESTA: Know anything – how many people feel like they would know what a fishery is? Oh, okay. All right. So we're not doing too bad.

A lot of times – I was asked during this recent go-round on the transition team by one of the president's senior advisers – I was going into my little spiel and he goes, stop, stop, stop. First, what is a fishery? (Laughter.) I was like, yeah, that's actually a really good question.

If I had to do – if I had to boil everything down to just three basic points, I'd say the three things that I want to say here today is that I'm glad Jerry used an FDR quote because I think we are sitting at the precipice of a period of governmental innovation and entrepreneurialship in fisheries that as significant as the changes that FDR pushed through in things like Social Security; a complete redefinition of our relationship with a natural resource because that's what we're talking about here. We're talking about a natural resource. It's the same thing as trees, as gold, as any other natural resource that we use except that it has the potential to be renewable.

The second thing is that there is a significant – that there is a business opportunity here. We don't know how big it is, but it is potentially significant.

And then the third is that any change in the status quo is really, really hard, and we need your help in pushing forward these changes both in terms of the political process but also in terms of bringing capital to the table to help grease the skids.

So those are kind of my framing messages.

I'm going to just dive right in and talk a bit about – since all of you are so familiar with fisheries – go right into sort of what the problem is with fishing. When are we fishing out the ocean? And the reason is that we have a mining model instead of a renewable-resource model – economic model. And, secondly, the government's approach to regulation is to use behavior controls instead of setting performance targets and doing the policing and then getting out of the way.

So I'm not making this stuff up. This is how fishing is regulated right now. The scientists – the regulators asked the scientists how are we doing. And the scientists say, well, actually, we're catching too much fish; you need to reduce fishing by 20 percent. And the regulators go, well, the guys fish Mondays through Fridays, so let's tell them not to fish on Wednesday – 20 percent fewer days, so we'll be fine, right?

And the guys obey the rules. One of the great misnomers is that, you know, fishermen are rapacious hunters who don't give a crap. That is just totally not true. They obey the rules, and they don't fish on Wednesdays, but they go two hours longer on Mondays and Tuesdays and Thursdays and Fridays.

And at the end of the week, the scientists go, oh, my God, we're overfishing, we're still overfishing by that 20 percent. We're going to have to cut it even further. We're going to have cut it by 40 percent. And the regulators go, okay, Mondays and Wednesdays are out. (Laughter.)

And I'm not – it's funny, but it is true. And you get fisheries like the Alaska Halibut Fishery that had been reduced to a 48-hour season – 48 hours. And it was a crazy, wild derby, and there was a literal starting gun, and these guys would go out on boats and, because there's only 48 hours, what they did was – you know, they would say, okay, I've got to catch everything I can in 48 hours. They bought more boats. I mean, there was two or three times the number of boats that made economic sense in that fishery. They were lined up. They gunned it. They went out. They threw all their hooks in the water, as many hooks in the water as they possibly could. They turned around, and they started picking up the hooks. If there were enough halibut on the line to justify pulling it up, they'd pull it up. If there weren't, they dropped it and they went onto the next one.

And then they'd race back to the dock, and the halibut would stack up like cordwood. Well, you know, this is a business conference. What happens if you have a year's supply of your product coming out of the factory gate all at once? The price is crap.

And what do you do with thousands and thousands and thousands and thousands of pounds of halibut all at once? You're making cat food and frozen blocks of protein, two highly substitutable goods. So you don't get any price for it.

So this is a beautiful fish. This is an incredible resource, and this is what we were doing with it because of the way we regulated it.

By the way, remember all those lines that are in the water that the guys dropped? Well, when the fishing season is over, you can't go back and pick it up because you're fishing. So they just left them in the water. And that means that you get tons of what is wonderfully called ghost fishing where you have – you know, the fish eats the bait, gets stuck, becomes bait, gets eaten, becomes bait. And this goes on until the hooks and the lines disintegrate which can be years and years and years and years.

So this one fishery was creating massive ecological destruction, and they'll repeat that all around the world. No matter what kind of gear you're using – nets, lines, traps – same thing going on. So what's the solution?

Well, the solution is to say, wait, wait, wait, wait; I don't really care when you fish. I don't really care that it's Wednesday. That has no impact on the environment. You know, in fact, we regulate – we regulate how many fish they can have on their boat at one time. It's called triplinets (ph).

Well, we regulate what kind of gear they can use. We regulate – you wouldn't believe the number of things we regulate all in the hopes that all these combined things will keep the fishing pressure down when we don't really care about that. We just don't want them to catch more than 10 fish.

So the innovation is to say, okay, don't catch more than 10 fish. (Laughter.) What you do is you take – the scientists come back and say fine, here's the quota; it can be a hundred million metric tons or whatever it is. Then you allocate shares to that fish to fishing entities. They can be individual fishermen. They can be a community. They can be an association. They can be a trade group. It can be a consortium. It doesn't really matter.

What matters is that they now have a quota. And for every fish they land, they have to have quota share. And the other innovation is that, because you're going to monitor, your control mechanism is this quota. What really matters is that you have excellent monitoring and policing.

Right now, there is hardly any monitoring and policing except for what happens at the dock, and that's inadequate. Under these systems which are called catch shares, you require that they have onboard monitoring, either a human or technical means. For some fisheries, you can

use digital video. There is all kinds of sensors you can put on board. But you require this onboard monitoring so you know exactly how many fish are being caught.

So what happens when you change out of that? Well, first of all, the whole season opens up. So now the guys can start making rational choices about when to go fishing.

And can I get slide number 9, please?

So this data is for catch-share fisheries that have changed over to catch shares. The first bar graph is how many days they fished on average five years prior to the change. LAPP is what the Congress has decided to call these systems because catch shares, you might kind of understand it. And Limited Access Privilege Programs just sound so much more official. (Laughter.)

But those are catch-share programs. So you can see the only thing – through applying the old-school regulations, you're actually reducing the number of days at sea. You know, so they were catching all the fish in 27 days. Five years after the catch shares went into place, the season was up to 202 days. What that means is when you have a fishery that's 27 days, that's not a full-time job. That means all you have is essentially itinerant labor that bounces around from job to job. It's unskilled. It's unprofessional. It's low paid. There's high drug use. It's a rough life.

It's romantic. You know, you get great bar scenes in "The Perfect Storm." And George Clooney looks really sexy. (Laughter.) Well, speaking – well, anyway. (Laughter.) My wife says that. (Laughter.)

But you get – but the problem is it's not a full-time, stable job. You go to 200 days a year, now, you've got a job. You get professional fishermen who, many of them, start to get degrees, go to college, get advanced degrees in fishery biology and business. They begin to work on different business plans.

In the halibut fishery, what did they do? They stopped selling frozen blocks of protein. This said this is crazy. Why don't we sell a gourmet meal instead? They totally changed the product they were selling, totally changed it.

Ten years ago, you know, you wouldn't go to a white tablecloth restaurant around here and get halibut. That was in a fish stick at best. Now, it's always, you know, a premium, premium product.

So they get smart. They start making – they make good jobs. They're full time. They live in the community, and they stabilize the community.

The second thing that happens is that revenue per boat goes up.

If I could get slide 10?

And this is – again, I'm just going to go quickly over this. You can see basically revenues going down prior to the implementation of the catch shares. Real dollars per boat inflation adjusted up considerably after catch shares.

And if you could just put up any other slide – I don't know, some nice picture. (Laughter.) One of the pretty pictures. We're going to come back to another slide.

All right. So let me tell you something else that happens. They get really good at stopping catching fish that they don't want to catch. Remember that ghost-fishing problem I talked about? That's also called bycatch. And what bycatch is, is when you catch an animal or a coral or anything that you can't sell, it's called bycatch. And about a quarter of the world's fish that are caught are bycatch and have to be thrown back. Mostly, they don't make it.

And in some fisheries like some of the shrimp fisheries in the Gulf of California that you saw up there, bycatch can be as high as nine pounds of bycatch to one pound of shrimp. So it's an incredibly wasteful way of fishing.

But if you think about it, if you pull up an animal that you can't sell, what is that if you're a businessman? That is an expense. It's an expense without an associated revenue stream. So you need to figure out how to either eliminate that expense or create a revenue stream.

And in the halibut fishery, they are now catching the same number – excuse me – the sablefish fishery right next door, same story. The sablefish fishery is now catching the same number of fish that they caught before the catch share except they're doing it with fewer hooks – 52 million fewer hooks in the water.

So you see these systems not only for good for the fish and good for the fishermen, they have great promise for improving the overall – for reducing the overall threats to the ecosystem.

So if these things are so great, how come they're not all over the place? And that is the classic problem. You have the incumbent industries that have figured out how to make money under the existing system. And we see this anytime we want to do any big regulatory change.

David Crane and I were just talking about the Telecommunications Act of 1996. The incumbent industries fought that with a lot of resources, tooth and nail and, of course, since 1996, there have been billions of dollars added to the economy. We enjoy great little increases in our quality of life. Although my wife would also say the BlackBerry maybe isn't an increase in the quality of life. (Laughter.) Great increases in quality of life and more jobs. But we always have that problem the incumbent industry.

The other problem we have here is that the fishermen, particularly in these small communities – and, remember going back to, you know, who are they. They're these guys that are just trying to make ends meet, following these crazy, insane laws, patching together a career through a series of part-time jobs either along their coast or sometimes they move all over the U.S. to put these jobs together.

The problem is they have to cross this valley of death. So they've got the current system today. There's a promise of a better future some number of years hence. But they don't have the capital resources to bridge that gap. And that's where we started to think, hey, you know, is there a role for private capital here because it's just like a factory. Right? I look at a factory, it's like making a decent product but it's, you know, the workers are undertrained and the equipment is out of date and the marketing plans suck.

You know, so how do I – you know, but I know that if I fix all that, I can be profitable in the future. So I pull together investors and I buy the factory and I sink a whole bunch of money into it and, you know, retrain workers and then get paid back on the profits on the other end.

Well, why can't we do that with fisheries? Well, first – and I hope David will address some of this – first, we have to have commitment from the government to the regulatory change. And then, second, we have to have capital. And that's where I think public-private partnerships come in because the government has the mandate and the authority to change the rules, but it doesn't have as much capital as it once had.

The private sector has the capital but, of course, doesn't have the responsibility of defending the public trust way the government does. So it's a perfect partnership.

So that's the second thing that I think needs to happen.

How much money is to be made out there, and how do we think about the risks associated with this? You know, that's where we need your help.

Just one statistic, in all of the catch-share fisheries that have transitioned over, the value of that fishery tends to increase by – or the shares in that fishery tend to increase by a factor of four. That's an average. The current U.S. industry is a $5 billion industry.

So, you know, it's not – it's not telecommunications-size money, but it's real money.

So I'm going to stop there. Oh, let me do one other thing, if I could.

Could you pull up slide 8?

The other reason why I think this is a very exciting time is that we are at this sort of New Deal or Reagan Revolution, depending on your political – we're at a moment in time where big change can happen fast. And the new administration that has come in – first of all, the Bush administration was very positive on the catch-share agenda. They were good allies of ours, and they have laid – they laid a lot of the groundwork that we need to have laid for a paradigm shift.

The new administration has come in. There was a high-level task force chaired by former Secretary of Interior Bruce Babbitt and former Congressman Jim Greenwood, a Republican from California, all-star cast. They basically said the next president, whoever it is, has a chance to redefine fisheries and create an economically and ecologically prosperous future for us all through catch shares.

Jane Lubchenco was on that panel. She was one of the scientists on that panel. She now is the head of the agency that regulates fish, the National Oceanic and Atmospheric Administration.

So I think we're at that little point in the curve there where we can start to see a huge ramp-up and a lot of opportunity happening over the next three years.

MR. BAND: Thank you, David.

Now, I guess we'll go to David Crane who David has done a good job of prompting.

DAVID CRANE: Good job, I don't know. (Laughter.) Does someone else want to follow him? (Laughter.)

Could you put slide 22 up for me, please?

This is how I see my job. (Laughter.) I am constantly on the hunt for new ideas that come in from outside government that government can seize and adopt and implement and scale. And that's exactly what happened here. So there are four things that I want to mention this morning.

This whole idea of managing resources for the future and doing so in a way where you're aligning human incentives with the way humans really behave rather than trying to do so in some sort of command-and-control mechanism is something that at least our administration has been keenly interested from the when we first took office in 2003; looking for lean and efficient ways to use resources for the future while boosting economic growth and jobs.

So this catch-share idea or LAPP – (laughter) – how terrible is that? – is just the sort of experimentation and innovation that government needs. I'm, fortunately, joined by my former colleague from the Schwarzenegger administration, Bonnie Reese, who truly is the governor's senior adviser and still is even though she's outside the administration.

And Bonnie would also tell you that there are very few good ideas that actually come from inside government, and we rely upon people from outside government to come in and give us fully fleshed-out ideas that we can then debate and seize and change as need be. But that's where the great ideas come from.

So take a lesson here from us and keep bringing us ideas like EDF brought us here.

The second point I want to make is it's a very good example of a public-private partnership where at least this governor and, increasingly federal officials like President Obama and Speaker Pelosi, were also keen to combine the resources of the private sector and, in particular, the efficiency and the innovation as well as the capital of the private sector with the regulatory and legal powers of the state government.

So we love seeing public-private partnerships where they work. So bring us more of those.

Thirdly, it's oriented towards jobs and economic growth. All too often, environmental policy has been dictated by just environmental policy without regard to something which is basic. People need to earn a living. And 3 billion people on this planet are just emerging from poverty and presumably have no interest in not emerging from poverty. They want the kind of living that we have.

So nothing will work unless we come up with innovative ideas that solve the environmental problem while allowing people to earn great livings. So these programs have to be oriented towards jobs and economic growth or else they won't work.

And last – and this is probably where personally I get the most excited – our generation has used resources for itself in a horrible way. And this is not just natural resources but financial resources. And we find this with government budgets. And one of the reasons that the governor right now is working so hard to pass the initiatives on May 19th is because California regularly has surges in revenue that politicians then use and spend even though those surges will turn into desurges within two years.

And we found the same thing with respect to promises for, you know, health care benefits and retirement pension benefits that are encumbrances on the future using current resources, getting the benefit currently and using up these resources so that our children and grandchildren and others can't use them.

So it's financially true, and it's true when it comes to tangible resources. This is a very good example of an idea where we're going to use resources – save them for the future while using them for the current generation in a way that generates jobs and economic growth both currently and long term.

So I mean, this one – this is a wonderful idea. We'd love to see it scale up. I was pleased to see – and I hope there's an impact here that yesterday California got awarded $22 million from the federal government under the economic stimulus plan for improvements to fisheries and wildlife reserves in California. So we'll see if maybe there's some element there that can be joined with catch-share or LAPP.

But we need to scale these ideas up, so keep bringing them to us.

Thank you.

MR. BAND: Great. I'd like to turn now to Jason Winship, who's been actively investing in the sustainable seafood sector for a while now, to share some of his perspectives on both how capital was raised for the opportunity and how he's put it to work.

JASON WINSHIP: Thanks, Larry.

I'll limit my comments to two primary topics; one, what Sea Change is and does, and the second, why catch-share systems matter to an investor such as ourselves.

Sea Change is about four years old at this stage. We are a relatively unique partnership between a source of philanthropic capital – in this case, the David and Lucile Packard Foundation, who is likely the – certainly, the largest funder of marine-related conservation initiatives in the United States – and a series of high-net-worth individuals who very much care about our conservation mandate but see this space as a great way to potentially make a good deal of money.

Sea Change does two things with one particular focus. We primarily invest in companies who buy and sell fish. And the two things that we do are, one, evaluate the conservation or environmental merits of the practices of those companies. And, two, we look for their financial prospects and we try to determine how much bang for the buck we can get with an investment in any given company on both the conservation and the financial fronts.

To that end, we use a series of experts – David is gracious enough to serve as one of those experts – to help us evaluate those conservation merits first. If an investment opportunity that we see doesn't pass muster on that front, then we're not able to take it any further, and then we – if it does pass muster, we take it to a group of financial types who are able to help us evaluate the commercial merits of the investment opportunity.

To the extent that we move forward with an investment opportunity in our fund, we do something that I think is pretty unique and pretty important. And that is that we create a roadmap for companies in our portfolio to improve their practices over time. It's not enough, in our minds, to go find the best actors in any given business and put money towards their efforts. We don't see a lot of change in that model.

Instead, we look for ways, primarily, to help transition sourcing practices – so buying environmentally preferable fish where once a company was buying those from fisheries that are not sustainable – and also helping connect entrepreneurs with relevant advocacy efforts that matter in their business.

We've recently helped connect CEOs of companies in which we've invested to folks like EDF for the ocean conservancy or other organizations that are focused on issues that touch the business of these companies. And we find that, frankly, the best advocates for conservation are the entrepreneurs who are putting their risk capital towards these efforts. Their voice tends to matter more.

At this stage, we've invested in six companies, and five of those companies are seafood products companies. They are primarily companies who are designing products, branding and marketing those products, selling them in grocery stores and in restaurants throughout the country. We're primarily U.S. focused. And that's the long and short of what we do.

Catch shares are a critical tool to help us understand a couple of things. One, when we look at the environmental merits or drawbacks of a company's business activities, it's helpful for

us to have frame of reference or shortcuts to understand if what they're doing is sustainable. And there are lots of different ways to get at that.

A critical tool, though, is these catch-share systems. If a company is sourcing heavily from a fishery that is regulated under the sort of structure that David Festa describes and we can look at those regulations and we can understand that it's a well-designed catch-share fishery, we know that there is a much greater chance that the fishery is being prosecuted in a way that has a bias towards conservation than if that regime wasn't in place.

And that helps us understand if that's a – you know, if the company is operating in a sustainable manner or if there are opportunities to shift their business towards those type of fisheries in the long run.

It also does a key thing for us on the commercial side, and that is basically to help us understand the risks associated with that company's business operations. David used a great example with respect to the halibut which was to sort of elucidate the very poor quality that was coming out of that fishery before it was transition to a catch-share fishery.

Well, that poor quality filters all the way up the supply chain. And if the fishers aren't making much money on that product, nobody else in the chain is going to either. We invest primarily in companies, as I said, who are buying that fish and getting it its end markets. And halibut is a key example.

If you can add value to the fish when it comes out of the water based on the regime that's defining how it comes out of the water, you can add value all the way through the supply chain and put a superior product on people's plates. And there's money to be made there.

An emerging topic that we're keeping a close eye on is how to make direct investments in catch-share systems. All of what has been outlined on the transition to catch-share systems requires the application of capital. And also requires some other key things like government to step in and create the right playing field for investors to operate on.

But we do see a significant opportunity – David, once again on the stat of the four times increase in value pre-rationalization to post-rationalization and the transition of these catch-share systems – means that many is making money in that process. Someone has to finance of acquisition of those permits and speed that transition along.

We think there is a very, very solid rationale for investors to step into that capital void and provide the means by which that transition can be facilitated and make money at the same time. And that's a pretty critical opportunity for us.

And I'll stop there.

MR. BAND: Great. Thank you, Jason.

I'll just take a few minutes to talk about some of the work that I've been doing with colleagues at EDF, specifically our ocean enterprise effort, to continue this process of thinking about how we can bring capital into fisheries and specifically focus on what we can do to bring capital into fisheries in a way that is actually going to accelerate the catch-share implementation process.

It was interesting, I think, when I first started thinking about this issue, it became pretty clear that there is a need for capital all over the place. But what we spent a bunch of time trying to do is figure out where specifically are the investment opportunities. How could we take the concept of capital shortage and translate it into really specific needs that ultimately could become business plans backed by real business people that could be presented to sources of capital and actually raise money?

And we had a number of interesting conversations, particularly for someone like myself who spent his career on Wall Street, walking around talking to fishermen and understanding really what the problems were. And we came up with five or six that we're targeting as potential opportunities to raise capital around.

And I'll just share a couple of them with you that I think are particularly interesting and compelling to this transition process or getting support for catch-share implementation. The first one is we need capital to rationalize the fishing fleet. And the simple point is – that I think most of the speakers have touched on – is there are too many people on the water competing for a resource that doesn't justify all the fishers and all the boats that are on the water.

And there's, I guess, two thought processes of how you deal with this. One is the nature of economics will take its course, and the weaker performers will be competed out over time and will get rationalization. Unfortunately, as you deal with the reality of getting catch shares implemented, it's a very democratic process with the voices of people on the water an important part of whether or not catch shares move forward.

And one of the things that has selectively worked successfully is actually buying back portions of the fleet, ideally targeting the more marginal performers, giving them an honorable exit from the industry and boiling the number of people who are competing for the scarce resource down to the top performers who can best make a living not just under the conventional management model but a better living under the catch-share model.

Historically, fleet rationalization has happened primarily through government-funded buybacks, but our hope is to figure out how to either get private capital to fund fleet buybacks or to have a partnership between government or foundation financing and private capital to achieve that end.

The second interesting opportunity that we're looking at is figuring out how we can raise money to build up infrastructure for fishermen to use in a catch-share world. And I think the thing that really hit me in my early exposure to this issue is that catch shares, yes, are a regulatory change. They're a change in the way that fisheries are managed from a regulatory

standpoint. But that regulatory change implies all sorts of changes in terms of how fishers actually do their business.

So what do fishermen need that they don't particularly have today to be successful under catch shares and really take advantage of all the economic benefits that David laid out in his vision? Well, they need far more sophisticated data-management systems than they've ever had before. They need systems that keep track of what they catch, what they bring to dock, where they harvest, how effective their harvest mechanisms work. And today, those systems don't exist in any scale.

Fishermen also need effective trading and brokerage operations. So the idea is that, with catch shares, you have quota and that that quota is tradable and that, by fishermen trading quota to make sure they have the right to catch what's coming up in the lines that they pull out of the water, that's how they optimize the profitability of their fishing effort.

And they can only do that if they have good trading and brokerage systems where they can real-time acquire the quota to catch the fish that are coming out of the water.

The third big infrastructure need out there is monitoring. So to manage outputs, to tell people how many fish they get to catch and to have confidence that they're actually going to catch those number of fish, there needs to be a good monitoring system on board and at the docks. And, again, there's small amounts of investment in that opportunity today but not at the scale that needs to happen to have the fishermen have a plug-and-play solution to operate effectively and maximize their profitability under the new catch-share model.

So that's a second example of where there's an opportunity for capital that we are looking to figure out how to get good business plans together that will attract not just the traditional foundation money but also private capital to solve that problem.

You know, the good news is that catch shares really offer something valuable in that capital-raising process. I think of catch shares like a financial security. They offer a lot of the benefits of financial securities that allow traditional businesses to raise capital at lower costs more frequently. They are tradable. They are theoretically liquid. They are potentially a source of collateral in raising money from private sources that haven't been tapped into in the past.

So there's a lot of great things about catch shares that look like financial securities that should enhance financing. On top of the numbers that David gave of, you know, the history of like financial stocks, catch-share stocks showing appreciation over time where, I think, four times is the average, some fisheries have seen as high as 10 or 20 times multiples on the initial valuation of the catch shares.

So in all of that, in catch shares, there's a lot of stuff that speaks to the private sector, speak to sources of capital and, hopefully, will help us raise money more effectively.

The trick here is that – and to take the two needs of capital that I pointed out – is money needs to come into fisheries ahead of catch shares being in place. So all those great things I said

about catch shares you don't get without the capital to make the change happen. So you're in a little bit of a chicken-and-egg situation that we're, right now, trying to figure out how do you crack that. How do you raise money with the promise that you're going to have catch shares, not with the actually catch shares in place?

And there's a bunch of other risk that's we have to deal with. There's all sorts of interesting work that's been done that shows the dramatic rise in the profitability of fishermen once they're in a catch-share world, but that's on the come. That's selling the hockey-stick projections that investors don't really like to buy today.

The history that investors have to look at is a history of not a lot of profitability and downward trends in revenue. So interesting challenges for us; how to use the promise of the future, the promise for which there's good precedent as you look around fisheries in the world, but still selling a promise ahead of realizing that reality.

So I'll stop there and would like to open it up to people for questions to use the rest of our time.

Yes?

Q: First of all, I want to thank Larry and the whole group. I'm Glen (ph) Diego from the institute. I apologize for coming late. We're juggling lots of different panels and management.

We're very excited about this initiative by the Environmental Defense Fund since it fits so squarely into the effort that we try to make in doing exactly what David was asking; trying to craft financial innovations to apply to longstanding social and environmental problems.

And the examples that – so when we first met when Patty and Larry – we all got together to start talking about this panel at the global conference and the possibility to work this out through that setting is to use this format to do so. And it seems like we've got people in the room, but some of the many thoughts that spring to mind, but having worked with the state in the past and worked with the European and the Chicago Climate Exchange as well in the whole climate change world, the analogies are quite there in terms of the elements of market microstructure that have to be put in place, the information and databases that have to be – all these types of market infrastructure costs that can start to be put into place and then the just classic economic development finance tools.

If we look at our toolbox, everything's from, as you're mentioning, well, gosh, we've got, you know, forward contracts we could craft on this but, obviously, the bridge from – it's interesting how the same terminology appears over and over again in the work we do on life science to deal with the validity of death on R&D and patents and intellectual property or with national assets like in fisheries or in oceans to bridge those periods of having more fixed-rate, long-term capital come into the space in a way that does that.

And also transition – it seems like you've got equipment – alternative uses of equipment. We had in this very same room yesterday one of the totally unrelated but related in every way in

the sense that it deals with national and international heritage with the U.N. World Heritage sites and discussion of antiquities and the whole archeological profession was here from the American Institute and – (inaudible) – institute here to look at the ways that there's insufficient money and there is the same problem.

You know, there's just wanton looting, you know, wanton waste and destruction of archeological sites all over the world. So what do you do in order to create economic incentives to align interests that you can finance those outcomes? And, okay, so in California, we've got the – in the Treasury, in the treasurer's office, you've got the California authority on pollution control – industrial pollution control issues bonds, does for equipment all of the time. We're involved in setting up in the CAP program – the Capital Access Program small-business oriented loan loss reserve pools in order to make unbankable loans bankable. Right? That worked.

So it's a specialized application of the people that are in those industries right now. But in the archeology one, it was very interesting. We need to be looking – a fellow here from the Research Triangle who handles this out of the business school at University of North Carolina for world heritage sites. There, you've got a great case where you have all these alternative sources of revenue that aren't directly related to the fisheries. I mean, boats that can – I know when I go out to Channel Islands, there's an old fishing boat for an ecotourism tour of the Channel – alternative use for those boats.

And Jerry's always pointed that out running the aquariums and getting people into the type of ecotourism that's involved with – that has a conservation element to it. Those are all sources of revenue that could be built into the model.

So I think our task in this mini pre-lab session of the panel would be maybe to identify what those would be. What's in the tool chest in terms of the other discussions we've had at the global conference and we'll have today on the world hunger crisis with the international food and the Gates Foundation is, again, you know, how do you remove the volatility out of the market and the unpredictability by trying to bridge this set of circumstances to the circumstances that we all – of the world we want to live in and what those instruments are. Get the credit enhancement. It seem like there's enough foundations left that would want to be credit enhancers of such facilities and to come up with a catch-and-share or whatever we're calling it facility which would actually then finance the projects that create the infrastructure for the industry and the market.

So I think we've started to list those types of instruments and projects, and maybe just with the people sitting around the table, we could target some more.

Q: I have a specific question as a native Cape Cod'er who grew up in a boatyard.

First of all, I don't remember too many of my classmates looking like George Clooney, but then again I didn't get into the industry. (Laughter.) And also, for those of you who don't have the lifestyle improvement that is a BlackBerry, Obama has 60 votes. Specter switched about an hour ago. (Laughter.)

But my question is where does the money come out? Like I know – I can see where the money goes in. But you're talking a lot of independent contractors. Are you pulling it from the owners' share? I mean, when it comes down to it, you're talking to a guy with a big ice room and, you know, a big scale. And that's an independent contractor standing there. There's an owners' share. There's, you know, the share in the boats.

Where does the investor get their money back from? I see that there's increased money in the cycle, but I haven't quite seen – what are the examples where your money is coming back out?

(Cross talk.)

MR. WINSHIP (?): You can clearly see in this slide – (laughter) – the two classic way that you get your money out are, one, particularly where, in Cape Cod, for example, where the preferred method of doing a catch share is through an association, so a group of fishermen will form an association. There's one Cape Cod Hook Fishermen's Association is a classic one. It's about 70 vessels. They are going to get an allocation. They're going to get a quota share, and they're responsible for managing that share. Sector management is the other term that it's called.

And if they go over their share, nobody in that – nobody in that association, in that sector can go fishing. Other people can go fishing if they haven't busted their quota. So it's sort of a self-policing system.

But then the association is responsible for returning revenue to the government in this instance through landings fees. They have a self-imposed landing fee. They know how much money they have to return, and they do a landing fee on their guy. It's essentially a membership fee.

So landing fees are the simplest and most common ways that the money comes back out of the system.

Q: Are there other alternative revenue streams, too, that could come into it? I mean, like in climate change, you get offsets and you get other sorts of – other income streams that start to look at – and the other question I'd ask organizationally because you say association, and I know nothing about the fishing industry.

But we've been doing a lot of work with the rural utility services and electrical cooperatives and the farmers with USDA. And it seems the co-op models are kind of – and there's the co-op banks that have got about 12 billion (dollars) in financing as a resource.

Or we've had in the state of California Valley Nitrogen and producer companies that were owned by producers for inputs into their production.

So I'm wondering if there are ownership models where the income stream – the revenue streams are maximized and you'd fill the –

MR. WINSHIP (?): I think there's a lot of interesting alternatives. Only the landing tax model has really been demonstrated. But I'd say there's sort of debt-like returns which are the landing-tax model.

And, by the way, the reason there's that much to come out – I mean, it's interesting if you look at the early numbers on the change in profitability of a fishermen – assuming he doesn't catch a pound more of fish under catch shares than he did under the conventional model – is increases in profitability as much as 40 percent – realizing as much as 40 percent increase in profit margins because he can fish much more efficiently.

And I think David gave a lot of the good examples. So the conversion to catch-shares can be funded by a landing tax which people can pay because they actually operate a whole lot more efficiently. And I'd call that debt-like returns.

Other things we thought about is the opportunity for people who provide capital to get equity returns by taking quota back. So they would take a portion of the quota that's in the system back in return for the capital that they invested. So I would consider – they'd be taking an equities stake in the fishery in return for their capital.

The other thing that's really interesting – I'm sorry? Yeah. The other interesting option – the other interesting way to think about this is there are ways to take option value in return for lending money to the industry. And what I would say by that is, you know, there are interesting conversations with fishermen who want capital to come into the industry. They don't believe that catch shares will necessarily increase the take from the fishery over time.

Science says in a lot of cases it will. They're happy, in many cases, to give away the upside in the fishery if the fishery happens to recover and the take doubles. I think there's all sorts of interesting agreements you could make with fishermen to take that upside if you just let them operate sustainably with their current take levels.

MR. : People on the ground are willing – want their kids in the business and know what, unless we do something, they won't.

Q: Larry, are there ecotourism or any real estate plays within that, too?

MR. BAND: You know, we've talked – we've talked about some it. I mean, one of the concepts that we've talked about is there are a lot of people who are interested in taking quota shares and actually putting more significant environmental limitations on how those catch shares are fished.

And, you know, it's not clear whether or not you can put the equivalent of easements on catch shares that would generate further economic benefits, but I think it's an interesting concept to think about.

Q: Can I just interject something here? I only heard it once, the word "pollution." I don't know whether any of you saw the "Frontline" PBS show last week "Poisoned Oceans."

And it talked about Chesapeake Bay, the fish have turned into hermaphrodites because of runoff of chicken manure. They then talked about Seattle and Boeing stuff which has wiped out the orcas. And then they went down to the Tasmanian Sea and showed how some of these creatures have turned into monsters.

And it seems to me that, you know, we're going to have less and less fish to go after, and you really need state and national policy which is really part of the whole global thing to just save the place where the fishermen go fishing. And I don't know whether you have enough emphasis on that in your policy.

We need not only public funds, but we need public policy.

MR. : Could I say a word about that? And I mentioned the phrase habitat destruction. And I think we have to focus on habitat destruction. Important nursery and spawning areas, we have to also look at, controlling non-point sources. We've done a good job in this country of controlling point sources and a very poor job of controlling non-point sources.

And so, again, I think we have to look at all of these together – marine-protected areas in California. And I think we also need to frame it in the context of, looking forward, the demand for seafood. And I think catch shares is a very powerful tool that will help us stabilize and rebuild some stocks, and we may increase the global yield of wild-caught fish, but we're never going to come close to meeting the global demand for seafood. And so we need to figure out how do we do aquaculture sustainably. We have a lot of bad mistakes, but we do know how to do it right.

California is one state where we ought to be able to have a thriving offshore aquaculture industry. We had a forum not too long ago that demonstrated that, in 1 percent of the Southern California bite, you could have a billion-dollar-a-year industry. And I won't dominate, but there's much to be done.

And if you're worried about imports, if you're worried about carbon footprint, Southern California has twice the national per capita demand for seafood. Seventy percent of it comes from Asia. Fifty percent of that total comes from aquaculture. Every year, we turn away 400 shipments of seafood from China because of health implications.

So you have to look, I think, at all of these together.

Q: Hi. My name is Isabel Maxwell. I'm president of Blue World Alliance, which is a 501c3 plan for operation out of California. And I'm actually delighted to be here today with my team, and we'd like to possibly speak to some of the speakers and the interested parties here afterwards.

I was very pleased to hear about the ways that you're calling for the catch shares and the ways of raising capital. And another way – one that we've created – a really very innovative methodology to actually use prize-based and grant-based competitions to get to actually bring capital in for these solutions such as the ones that you've proposed.

And I'm thinking as I'm listening here that, for example, if you use – again, it's all about the Internet and using crowd sourcing in an innovative marketplace to find people to have, for instance, ideas what to do with that bycatch because the bycatch is an enormous quantity of fish and detritus basically that is left.

So could we have a competition, prize-or grant-based, to actually find out how to commercialize, for example, bycatch? In using this cross-disciplinary, in 1983, you know, when the Exxon Valdez fell aground, as you know, and all that terrible oil spilled into the sound, they couldn't find a way – the oil congealed in the winter, and they couldn't find a way to get that oil out in the winter, and they put out, finally, a prize – $20,000 prize – for somebody that could find a way to do that.

And where did that idea come from? It came from a man in Des Moines, Iowa, who was in the concrete business who thought about that little vibrating tool that stops the concrete from setting. And that, in fact, was what was used to help the oil – to get it out when it was congealed in winter.

So these are the kinds of things that we think about. And this brand-new methodology is about to start up, and we actually helped mentor and funded. And then we want venture capital to come in after us to actually commercialize the best products.

But these solutions come from absolutely vetted ideas that have already been done. The government and everybody is great with giving entire lists of what's wrong with the oceans or what's wrong with the planet. But they're very poor at actually implementing them. And the amount of money that's used to implement them is very small as well.

So you want to really galvanize that and bring it, and I'd be really delighted to talk to Mr. Crane and to others about how we might help you with the ideas that you have here today.

Thank you.

MR. CRANE (?): That would be wonderful. Thank you for the offer.

MR. BAND: Yes?

Q: My perspective is that – (off mic) – aquaculture that this approach is basically focusing on managing the system supply as opposed to promoting additional supply.

I'm just wondering how you see the prospects for large-scale aquaculture like, for example, Chilean salmon or tilapia and what the share of the fish consumed in the world, let's say, in 5 or 10 years that might represent.

MR. WINSHIP (?): Well, we're very bullish on the potential for aquaculture for all kind of reasons you can imagine. It's more like farming than it is running around after wild animals.

The two massive problems that need to be solved before aquaculture actually works are what do you feed the fish and what do you do with their poop. You know, you've got to solve the front-end and the back-end problems.

And the front-end problem is that fish eat fish. And you can wipe out the ocean just as fast going after little forage fish that feed salmon or any other fish as you can going after the salmon themselves. And, in fact, our scientists did an input-output analysis and showed that, actually, a farmed fish right now – a farmed fish like a salmon carnivore – eats more ocean fish than its wild counterpart. So we're currently on a trajectory with aquaculture that isn't a good one in terms of the input-output balance.

Through Sea Change, we've been looking at – but there are solutions here. The problem is you've just the got to get the right protein and amino acid balance for the fish. And genetic engineering, microbial systems are part of the keys to that so you can supplement soybean-based products with all these amino acids.

And through Sea Change, we've been trying to find some companies that are doing that. So I think that's really promising.

And then the pollution – managing the pollution, it's just managing pollution. We know how to do that. That's not that hard. It just has to – you know, it has to start getting written into regulations. That's the government's role to say, look, you know, here's the standards; now, industry, you know, you can go innovate and meet those standards.

And that's not that hard. The harder nut is getting the right feed ratios, and there's progress being made on that. But those are the two key limiting factors.

MR. : Can I just add a footnote because I would agree with David. There's a lot of progress being made. And, also, the species you choose to raise that are herbivorous fish so you can – catfish, for example. You don't feed them animal feed.

And where people are developing diets that have more vegetable matter and less meat, fish meal in it for aquaculture – there are solutions. And, again, if you look at the amount of fish oil and fish meal that we have used over the past hundred years throughout the world, it hasn't changed very much. And most of that goes to feeding chicken and cattle. So there could be a reallocation of having more of that go to seafood because seafood is a far more efficient converter of energy than a chicken or a cow or a pig.

And so I think there's a lot to be done there.

MR. BAND: One last question.

Q: (Inaudible, off mic) – with the mayor's office. And so we're understanding the auction process and all that. And fish shares was on our list and we hadn't gotten there yet. And I just wonder is that some kind of an auction system? Are you auctioning allocations out there? How is that regulated? Is this across borders? Is this under Kyoto?

And it's a longer conversation we should have started earlier but – I mean, how are they handed out?

MR. : Okay. So in two minutes – so the question is great. So you're going to have shares. These guys are never had shares before. They've just been able to go out and catch fish. And if too much fish is caught collectively, the government shuts down the fishery.

But now they're going to have shares. How do they get these shares?

Historically, they have been allocated based on your – how much you've caught in the past. So everybody gets together around a big table and says, well, I caught this amount and I caught that amount. And then hand them out – a lot – if you are familiar with the acid rain trading system, pretty much the same way they handed out SO2 allowances back in 1990 based on how much you polluted, and then they said, okay, well we're going to cut pollution by whatever it was, 50 percent –

Q: (Off mic) – baseline of 1990 –

MR. : Yeah. So there's baselines and averages. So that's how it's classically been done.

One of the things that we've been talking with Larry and others and Patty Debenham, who runs our Ocean Enterprise Unit, is looking at different ways of getting the shares into the system.

Back to the revenue projections or how do you get your money out. One way is through auctions. So we say, okay, you know, we're going to auction off these things. Who wants them?

There's a host of other ways of getting them into the system but, right now, we have dealt with the political nut of how do you get – how do you get the incumbents to – the session is now over – (laughter) – how do you get the incumbents to buy in. We haven't asked them to pay for the quota shares as of yet.

MR. : Now he says one more minute. (Laughter.)

MR. : A quick logistical thing. Glenn (sp) handed these out about a partnership meeting tomorrow with Wall Street without Walls and Milken. You're all invited. And basically Doctors without Borders for Investment Bankers and we match financial minds to interesting projects including we worked with EDF for a little while on this. So this kind of thing.

MR. BAND: Thank you very much for all your thoughts and questions. Thank you to the panelists for great insights. And we look forward to hearing from – (ends in progress).

(END)