MOUNTAIN PINE BEETLE: STRATEGIES FOR PROTECTING THE WEST

JOINT OVERSIGHT HEARING

BEFORE THE

SUBCOMMITTEE ON WATER AND POWER

JOINT WITH THE

SUBCOMMITTEE ON NATIONAL PARKS, FORESTS AND PUBLIC LANDS

OF THE

COMMITTEE ON NATURAL RESOURCES
U.S. HOUSE OF REPRESENTATIVES

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JOINT OVERSIGHT HEARING ON "MOUNTAIN PINE BEETLE: STRATEGIES FOR PROTECTING THE WEST'

Tuesday, June 16, 2009
U.S. House of Representatives
Subcommittee on Water and Power, joint with the
Subcommittee on National Parks, Forests & Public Lands
Committee on Natural Resources
Washington, D.C.

The Subcommittees met, pursuant to call, at 10:03 a.m., in Room 1324, Longworth House Office Building, Hon. Grace Napolitano [Chairwoman of the Subcommittee on Water and Power] presiding.

Present: Representatives Napolitano, Grijalva, Costa, DeGette, Inslee, Baca, Herseth Sandlin, Gallegly, McMorris Rodgers, Chaffetz, Lummis, McClintock, Smith of Nebraska, and Pierluisi.

STATEMENT OF THE HON. GRACE NAPOLITANO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mrs. NAPOLITANO. Good morning, ladies and gentlemen. This morning we are holding a joint hearing of the Subcommittee on Water and Power and the Subcommittee on National Parks, Forests and Public Lands headed by my colleague, Raúl Grijalva. The hearing will come to order.

Today's meeting is an oversight hearing on the "Mountain Pine Beetle: Strategies for Protecting the West."

I will recognize all of the Members of the Subcommittee for any statement they may have after my opening statement. Any Member who desires to be heard will be heard, and any additional material may be submitted for the record by Members, by witnesses, or by any other interested party. The record will be kept open for 10 business days following today's hearing, and the five-minute rule, with our timer, will be enforced. Green means "go"; yellow, "near end"; and red means "wrap it up, stop."

It is with great urgency and concern that Chairman Grijalva and I hold this hearing with our respective Ranking Members Cathy McMorris Rodgers and Rob Bishop. The mountain pine beetle, an insect no greater than a grain of rice, has killed millions of acres of pines across the West and continues to spread quickly unabatedly.

The death of those trees threatens the very existence of western communities. While presently most of the mountain pine beetle kill areas are found in Colorado, Wyoming, and even California, we should not make the mistake of thinking that the beetles will not continue to spread, infesting and killing massive numbers of trees in other states throughout the entire West.

We see evidence of bark beetle as far West now, like I said, into California. Even if the mountain pine beetle does not decimate tree populations in other areas, something else will. The United States Geological Survey published a report in January of this year showing evidence that the rate of death of trees in the western U.S. forests has more than doubled in the last two decades. The cause of this death has been linked to higher temperatures and scarce water, both of which are the result of climate change.

Aside from higher temperatures and less water, climate change is conducive to outbreaks of pests like the mountain pine beetle and other diseases. The entire West needs to be on notice: this epidemic is one of many events that we can expect in the coming decades that will cause substantial death of trees in the western U.S. forests.

The death of these trees threatens the safety of communities due to fires. The death of the trees threatens our watersheds, our power grids, transecting forests and other vital infrastructure. The death of these trees threatens the economic viability of the entire region; hence, we need to bring together all stakeholders from the entire region to share information about how best to move forward before we act.

We will today hear from witnesses that the mountain pine beetle cannot be stopped. We will also hear that the damage is so widespread that a fire is inevitable. It is not a question of if, but when.

As we hear from our witnesses today, I must remind everybody in this room that this horrible situation we currently find ourselves in probably will continue to repeat itself over time and throughout our entire nation. We must begin using this experience with the mountain pine beetle as a wake-up call to develop comprehensive strategies to protect western communities from future mass tree deaths in our forests. There are lessons to be learned about prevention of future outbreaks of disease and pests. We need to work cooperatively to develop a clear plan before outbreaks occur to know how to best manage and mitigate the damage.

We must be ready to protect our forests, our western communities, and the livelihood of each and every person in the West.

We will use today's meeting not only to think about how we protect the western way of life in the face of this deadly beetle and protect our forests, but to learn lessons to help us combat widespread death of other trees in the future and to begin to understand how climate change will require us to think out of the box to forge new partnerships to protect the American way of life.

Besides that, Ms. Ranking Member and Chairman Grijalva, I am very seriously contemplating following this hearing with a hearing with the Department of the Interior and other agencies to present the evidence that is given here today to move forward on maybe forging a plan that we can work with.

Thank you. With that said, I am now pleased to yield to my friend and colleague, the Ranking Member of the Subcommittee on Water and Power, Congresswoman Cathy McMorris Rodgers, for her opening statement.

[The prepared statement of Chairwoman Napolitano follows:]

Statement of The Honorable Grace F. Napolitano, Chairwoman, Subcommittee on Water and Power

It is with great urgency and concern that we hold this hearing today. The mountain pine beetle, an insect no bigger than a grain of rice, has killed millions of acres of pine trees across the West and continues to spread unabated. The death of those trees threatens the very existence of Western communities and their residents.

While presently most of the mountain pine beetle kill areas are found in Colorado and Wyoming, we should not make the mistake of thinking that the beetle won't continue to spread, infesting and killing massive numbers of trees in other states throughout the entire West.

Even if the mountain pine beetle doesn't kill trees in other areas, something else will. The United States Geological Survey published a report in January of this year showing evidence that the rate of the death of trees in Western U.S. forests has more than doubled in the last two decades. The cause of this death has been linked to higher temperatures and scarce water, both of which are the result of climate change.

Aside from higher temperatures and less water, climate change is conducive to outbreaks of pests like the mountain pine beetle and other diseases. The entire West needs to be on notice: this epidemic is one of many events that we can expect in the coming decades that will cause substantial deaths of trees in Western U.S. forests. The deaths of those trees threaten the safety of communities due to fires. The deaths of those trees threaten our watersheds, our power grid, and other vital infrastructure. The deaths of those trees threaten the economic vitality of the entire region.

We will hear today from witnesses that the mountain pine beetle cannot be stopped. We will hear that the damage is so widespread that a fire is inevitable. While I accept those facts, I want to remind everyone in this room that the horrible situation we find ourselves in now will continue to repeat itself over time and throughout our entire country.

We need to use this experience with the mountain pine beetle to develop comprehensive strategies to protect Western communities from future mass tree deaths in our forests. We need to learn lessons about prevention of future outbreaks of diseases and pests. We need to have a clear plan in place BEFORE outbreaks occur to know how to best manage them and mitigate the damage. We must be ready to protect our Western communities and the livelihoods of each and every person in the West.

I look forward to learning today about how we protect the Western way of life in the face of this deadly beetle, and the lessons we can learn from this to help us combat the widespread death of other trees in the future.

With that said, I am pleased to now yield to my friend and colleague, Ranking Member Congresswoman Cathy McMorris Rodgers, for her opening statement.

Mrs. MCMORRIS RODGERS. Thank you, Madam Chairwoman. I would first like to ask unanimous consent for my colleague from Utah, Jason Chaffetz, to participate at the dais.

Mrs. NAPOLITANO. Without objection, so ordered.

STATEMENT OF THE HON. CATHY McMORRIS RODGERS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WASHINGTON

Mrs. MCMORRIS RODGERS. Thank you, Madam Chairwoman. I sincerely thank you for holding this hearing on the growing mountain pine beetle problem in the West. Like many areas of the Rocky Mountain West, forests in my district have been hit hard by the mountain pine beetle.

The impacts have been devastating. More than half of the land base in the four northern counties of my district is forest. This is not a small area, considering Okanogan County, the largest of the four counties, is larger than the State of Connecticut. Much of this area is managed by the U.S. Forest Service.

I grew up in Stevens County, one of these four northern counties. I know it well, and I lived with the forest management issues for 10 years as a State Legislator representing this area before coming to Congress. During that time, I was also a member of the Western States Legislative Forestry Task Force.

Damage from the pine beetle can be spotted throughout these northern forests, with the heaviest infestations on the south side of the Methow Valley, which is close to a populated area.

In 2006, 175,000 acres burned in the Okanogan National Forest on the north side of the Methow Valley. Lightning found fertile ground in beetle-killed trees that could not be harvested because conservation organizations assured the Forest Service they would sue to block the sale.

As a result of these and other lawsuits, the Avista cogeneration plant at Kettle Falls, Washington, is hauling most of its fuel out of Canada because it is not available from the forest, although it operates right next to it. They actually haul 70 percent of their waste wood from Canada for this cogeneration plant.

This is a sad commentary when Congress is in pursuit of alternative energy but continues to leave a wealth of energy to burn in wildfires.

In addition, we waste valuable taxpayer dollars fighting wildfires when we could have prevented them in the first place. In fact, over half of our Forest Service budget goes to fighting wildfires that will only get worse if we do not address the root problem: overcrowded forests and diseased and dying trees. We cannot continue to grow over 20 billion board feet of timber annually and only harvest two billion board feet and expect to have healthy forests.

The lack of management also impacts water supplies and the humans and species that depend on water. An unhealthy and overcrowded forest can literally drain our creeks and much of our rural watersheds, which will substantially decrease the water available for human use and can also have serious impacts on the needs of endangered species.

There is much talk about removing the four Lower Snake River dams in the name of endangered salmon protection, yet few focus on managing our forests as a key way to help protect the species.

This hearing is an important first step in managing our forests for the future. We cannot afford to wait any longer.

In closing, I sincerely want to thank the Chairwoman again, thank the witnesses for their testimony and dedication. I look forward to working with everyone on this important issue.

Mrs. NAPOLITANO. Thank you, ma'am, and now we will hear from my good friend, the Chair of the Subcommittee on National Parks, Forests and Public Lands, Congressman Raúl Grijalva, for his statement.

STATEMENT OF THE HON. RAÚL M. GRIJALVA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ARIZONA

Mr. GRIJALVA. Thank you, Madam Chair. Now is a particularly relevant time for us to discuss this problem because in this season many beetles will be looking to infect new areas and new trees.

In addition to describing the mountain pine beetle epidemic, we also need to focus on how to meet this challenge. The few isolated

communities that have had success fighting off the bark beetle have developed extensive action plans combining efforts at every level of government. Some of these efforts were focused on protecting healthy trees while other steps were taken to reduce the risk of wildfire.

There have been some successes on both fronts, but there are also many reasons that the plan of a small community cannot be applied in the entire West. However, we can learn from these successes, much of which are credited to strong community support, private landowners, city officials, and residents all coming together to carry out the necessary work.

We will need to develop an approach at a similar level for support. Let me just note that the level of support will not be easy to come by if cutting corners in the National Environmental Policy Act (NEPA) process is the cornerstone of our plan. Instead, we need to focus on the best strategies for solving this problem without creating another one for future generations.

Are there places we can protect from infestation? What are the options to preventing wildfire? Is it correct to link the beetle infestation to fire? Is it appropriate to say that increased cutting and logging is a preventive tool to the beetle and to the infestation? There are many questions about the best way to respond to this epidemic. I hope we can answer some of that today.

I want to thank all of our witnesses, many from Colorado, for making this trip to D.C., and I look forward to their testimony, and I yield back, Madam Chair.

[The prepared statement of Chairman Grijalva follows:]

Statement of The Honorable Raúl M. Grijalva, Chairman, Subcommittee on National Parks, Forests and Public Lands

Thank you Chairwoman Napolitano.

Now is a particularly relevant time for us to discuss this problem, because this is the season that many beetles will be looking to infect new trees. In addition to describing the mountain pine beetle epidemic, we must also focus on how we respond to this challenge.

The few isolated communities that have had success fighting off the bark beetle have developed extensive action plans, combining efforts at every level of government. Some of these efforts were focused on protecting healthy trees, while other steps were taken to reduce the risk of catastrophic wildfire. There have been some successes on both fronts.

There are many reasons that the plan of a small community can't be applied to the entire West. However, we can learn from these successes, much of which are credited to strong community support. Private land owners, city officials, and residents all came together to carry out the necessary work. We will need to develop an approach that has a similar level of support.

Let me just note, that level of support will NOT be easy to come by if cutting corners in the NEPA process is the cornerstone of our plan. Instead, we need to focus on the best strategies for solving this problem without creating another one for future generations. Are there places we can protect from infestation, and what are the options for preventing catastrophic wildfires?

There are still many questions about the best way to respond to this epidemic, and I hope that we can answer some of them today. I want to thank all of our witnesses, many from Colorado, for making the trip to D-C, and I look forward to hearing their testimony.

Mrs. NAPOLITANO. Thank you, Mr. Chairman.

In the interest of time, we will just ask, if you have statements, let me know; otherwise, we will go straight into the hearing.

Mr. Chaffetz?

Ms. DEGETTE. Madam Chair, may I? I will defer to my colleague.

Mrs. NAPOLITANO. Mr. Chaffetz is next and then you.

STATEMENT OF THE HON. JASON CHAFFETZ, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF UTAH

Mr. CHAFFETZ. Thank you, Madam Chairwoman. Thank you for allowing me to participate. I do appreciate it. I appreciate all of the witnesses and the time that they are taking to be here and the number of Members who are here on our first panel. I think it is a representation of the severity of the challenges and the interests that lie in the many states out in the West.

I would like to ask unanimous consent to offer two documents for the record.

First, I would like to share comments prepared by Iron County, Utah. Iron County is the home to a large percentage of Dixie National Forest, which is Utah's largest national forest, covering nearly two million acres; second, a report prepared by Darren McAvoy, who is a forestry extension associate from the Department of Forest, Range, and Wildlife Sciences at Utah State University.

Mrs. NAPOLITANO. Without objection, so ordered.

Mr. CHAFFETZ. Thank you, Madam Chairwoman.

For those of us who live in the 12 states in the West affected by the mountain pine beetle epidemic and the devastation it has brought to our forests, this problem has been developing before our eyes for years, even decades. The current course we are taking with dealing with the problem is unacceptable. Progress is being made in some areas, most notably in areas of Colorado; however, more can and needs to be done.

The progress being made in Colorado was one in a way no other state, including my State of Utah, has to go through to achieve. The gains being made in Colorado are being made essentially because environmental groups have stopped litigating on trees that have been killed by mountain pine beetles. That same litigation drove 9 of the 10 timber mills in the state out of business. Litigation has stopped in the face of growing public concern over the amount of dead trees in the state.

Of course, groups like Colorado Wild are still suing timber sales in healthy forests like they did two weeks ago, but I am confident they will stop once again. The beetle kill affects the Rio Grande National Forest as well.

This is no different than what is happening on the Dixie National Forest or the Fish Lake National Forest in my State of Utah. It is no different than the lawsuits in California, Wyoming, and Montana or any other state where forests need management.

I believe it is time we looked for a bipartisan legislation that will once again allow forest-management decisions to be made by those who wear the emblem of the Forest Service.

We also need to end restrictions on harvesting biomass on Federal lands created by the 2007 energy bill. I believe H.R. 1190 is a good way to do this. No matter how much grant money we give out to biomass projects, they will all fail unless we can allow a sustainable timber yield to come off of our Federal lands.

Finally, the Natural Resources Committee needs to hold oversight hearings over stimulus spending. Are stimulus funds going to

further the intended mission of the Forest Service to manage our forests, or are they going to other parochial goals?

I am sure we will hear many good recommendations to combat the mountain pine beetle problem, and I am looking forward to the hearing. I thank you, Madam Chairwoman, and I yield back the balance of my time.

[NOTE: Documents submitted for the record have been retained in the Committee's official files.]

Mrs. NAPOLITANO. Thank you very much, and Ms. DeGette.

STATEMENT OF THE HON. DIANA DeGETTE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Ms. DEGETTE. Thank you very much, Madam Chairwoman. I want to thank you for having this hearing, and I want to thank all of my colleagues, mostly from Colorado, but also from the whole West, for being here: Congressman Salazar, Congresswoman Markey, Congressman Polis, also State Senator Dan Gibbs and Representative Christine Scanlan, who are my buddies from the Legislature who are here.

We also have people from the ski industry, water authorities, the Forest Service, and the power sector. I want to welcome all of them.

All of us from Colorado know, Madam Chairwoman, that this is a terrible problem in the West, in particular, in Colorado. I borrowed this poster from our friend, Congressman Greg Walden from Oregon, who brought this to an Energy and Commerce meeting a couple of weeks ago. If you look at it, it looks like a really beautiful autumn scene. The problem is, these are evergreens that have turned this color. This is Grand County, Colorado, and all of us from Colorado know this level of devastation.

It is a complex problem. It is complex at every level. I am really pleased to tell you that the Colorado delegation has been working closely together, on a bipartisan basis, and also with all of our colleagues in the State Legislature and in the state agencies to talk about what to do with this problem. There are no easy solutions because the magnitude is so great.

So I am looking forward to this hearing. I will tell you, along with Congressman Walden and Congressman Baird from Washington State, we are looking at some amendments to the climate change bill which we expect to have up on the Floor to try to help us get out some of these dead trees from the forests, but the underlying problem remains, and it is complex. It is not easily solved, so I am happy that all of these experts have come today to help us figure out these problems.

With that, Madam Chair, I yield back.

Mrs. NAPOLITANO. Thank you, Ms. DeGette.

With that, we have a statement. Make it a short one, please.

STATEMENT OF THE HON. CYNTHIA M. LUMMIS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WYOMING

Mrs. LUMMIS. Yes, Madam Chairwoman. I would like to make an opening statement. Thank you kindly.

As this body has heard from me before, my home State of Wyoming has many points of pride, but perhaps none rival our

public lands legacy. In addition to the beautiful forests that make up our National Parks in Yellowstone and Grand Teton, Wyoming is home to nine National Forests, encompassing roughly 8.8 million acres of land. Put into context, National Forests in Wyoming cover about a million more acres than the total land areas of Maryland, Delaware, and the District of Columbia combined. Add the vast tracts of state and private forests, and you begin to understand the monumental task of maintaining healthy forests in my state.

Wyoming and her people are proud of the way our state has helped manage and protect our public lands and resources. Good stewardship of the land is a Wyoming value, and I hold it very personally dear.

Unfortunately, Wyoming's Federal partners are failing to carry their own weight when it comes to forest management in the West. I am not laying blame here. Our Federal land managers have struggled with restrictive policies created by Congress, ever increasing costs, droughts, devastating fire seasons, and, in the mountain pine beetle, a devastation of healthy trees like I have never seen before in my lifetime.

While I am hopeful we can begin to dissect and better understand those challenges today, for much of our forested land in the West, it is too late: We have already lost the battle.

Decisions about fuel reduction, beetle prevention and mitigation, prompt harvesting of dead and dying trees, and the overall health of our forests have real tangible effects on the livelihood of my constituents. We live near or even in these forests. We base entire industries off of them. We recreate and enjoy them, and we count on these forests to attract thousands of tourists every year.

As I have testified in the past, we only have one sawmill left in the entire State of Wyoming, so this is not even so much about forestry; it is about recreation.

Healthy forests are integral to our lives and livelihoods. The story you will hear today from Chuck Larsen, general manager of Carbon Power and Light in South Central Wyoming, is a perfect case study for how wide and diverse the effects truly are of this beetle epidemic on the average citizen.

This picture, taken by Mr. Larsen just days ago, tells a story all by itself: Our forests are being ravaged. First managers estimate that, by 2012, every single adult, lodgepole pine in Southern Wyoming and Northern Colorado will be destroyed by beetle kill. This is devastating to our forest economies. We are also one unlucky lightning strike away from a serious threat to human health and safety.

It is time we learned what tools our land managers need to address this epidemic and ensure they have those tools at their disposal. I look forward to making progress on that front today. Thank you, Madam Chairman. I yield back the balance of my time.

[The prepared statement of Ms. Lummis follows:]

Statement of The Honorable Cynthia Lummis, a Representative in Congress from the State of Wyoming

Thank you, Mr. and Madam Chairmen.

As this body has heard me claim before, my home State of Wyoming has many points of pride, but perhaps none rival our public lands legacy. In addition to the beautiful forests that make up our National Parks in Yellowstone and Grand Teton,

Wyoming is home to 9 National Forests, encompassing roughly 8.8 million acres of land. Put into context, National Forests in Wyoming cover about a million more acres than the total land areas Maryland, Delaware, and the District of Columbia combined. Add the vast tracts of State and private forests and you begin to understand the monumental task of maintaining healthy forests in my state.

Wyoming and her people are proud of the way our State has helped manage and protect our public lands and resources. Good stewardship of the land is a Wyoming value I hold very personally dear. Unfortunately, Wyoming's federal partners are failing to carry their own weight when it comes to forest management in the West. I'm not laying blame—our federal land managers have struggled with restrictive policies created by Congress, ever-increasing costs, droughts, devastating fire seasons, and—in the mountain pine beetle—a devastation of healthy trees like I've never seen in my lifetime. While I am hopeful we can begin to dissect and better understand those challenges today, for much of our forested lands in the west, it is too late—we have already lost the battle.

Decisions about fuel reduction, beetle prevention and mitigation, prompt harvesting of dead and dying trees, and the overall health of our forests have real, tangible effects on the livelihood of my constituents. We live near or even in these forests, we base entire industries off of them, we recreate and enjoy them, and we count on these forests to attract thousands of tourists every year. Healthy forests are integral to our lives and livelihoods. The story you will hear today from Chuck Larsen, General Manager for Carbon Power and Light in south-central Wyoming is a perfect case-study for how wide and diverse the effects truly are of this beetle epidemic on the average citizen. This picture, taken by Mr. Larsen just days ago, tells a story all by itself. Our forests are being ravaged.

Forest managers estimate that by 2012, every single adult lodge pole pine in southern Wyoming and northern Colorado will be destroyed by beetle kill. This is devastating to our forest economies. We are also one unlucky lightning strike away from a serious threat to human health and safety. It is time we learn what tools our land managers need to address this epidemic and ensure they have those tools at their disposal. I look forward to making progress on that front today.

Thank you, Mr. and Madam Chairmen. I yield back the balance of my time.

Mrs. NAPOLITANO. Thank you so very much, ma'am, and we now will proceed to hear from our witnesses. We do have four panels, so it is going to be a bit of a lengthy hearing. Witnesses will be introduced before they testify. After we hear from our panel, we will have questions for the panel. All of your submitted prepared statements, of which I have not received any, so I am assuming none of you had one, will be entered into the record, and all witnesses are kindly asked to summarize the high points of your testimony and limit your remarks to five minutes.

Again, the timer before you will be used to enforce this rule. It also applies to all questioning: A total of five minutes for questions, including responses, applies to our Members. If there are any additional questions, we may have a second round, and I do not think today might be the time for it.

For our first panel, we have Congressmen Rehberg, Salazar, Markey, Minnick, and Polis, and I am being very frugal on time. I would like to start with John Salazar, if you do not mind, Denny, for the first testimony. Mr. Salazar, you are on.

STATEMENT OF THE HON. JOHN T. SALAZAR, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Mr. SALAZAR. Well, thank you, Madam Chair and Ranking Member Rodgers and Chairman Grijalva and Ranking Member Bishop, for having this hearing today. I am honored to be a part of it.

I would also like to acknowledge a special person who is here who is the past director of the Colorado Department of Natural Re-

sources, Mr. Greg Walter, here in the back, who has worked on these issues for many, many years.

The mountain pine beetle epidemic in Colorado and throughout the West is devastating, Madam Chair. It is destroying our forests and threatening our communities.

I have some pictures today to show you, some that are up on the screen. I think the first one was shared by Mrs. DeGette. The picture gives you an idea of the magnitude of the problem we are dealing with. The red trees that you see in this picture are dead. Ninety percent of the trees in this picture are dead.

These next two pictures that we will see show the magnitude of the impact on our recreational areas, one of the economic mainstays of Colorado.

This next picture is a picture of one of our campgrounds at Steamboat Springs as the mountain pine beetle began going through it.

Picture 3 shows what it looks like after the Colorado State Forest Service removed all of the hazardous trees.

Picture 4 shows dead trees by a power line. Imagine what would happen to that power line if fire went through it like in Picture 5.

Picture 6 actually is a map that demonstrates how far reaching the epidemic is in Colorado. It is over two million acres and growing.

We have over 633 miles of electric transmission lines just in Colorado that are in the areas of dead or dying trees. We also have over 1,300 miles of electrical distribution lines at risk from falling trees or fire. A large fire could destroy many of these lines, causing power outages for months.

While a wildfire is just a matter of when, falling trees are occurring now on the trails, on ranchers' fences, and on campgrounds and power lines. How long before one of these falling trees kills someone? Already, we have had to close campgrounds and trails because of these hazards.

We need to do something to ensure our communities' watersheds and power and communication infrastructure are safe. We also need to be looking into the future, at the health of our industries, small and large, that utilize these dead trees, and keeping our future forests healthy so that epidemics such as this one are less likely to happen.

Let me show you, in reference to some of the questions that Congressman Grijalva was asking, Picture 7 is a picture that shows where, several years ago, trees were harvested for water-distribution research. The areas that are in green were harvested many years ago and grew back. Those younger, healthy trees were not attacked by the mountain pine beetle. You can almost see a hand print of what happened there.

The areas that are red were not harvested. Those trees were not as healthy, and most of them died.

So, today, I am looking forward to hearing what the second and third panels are doing to avoid the almost certain catastrophe. I also want to hear suggestions for actions Congress should take, and Congresswoman DeGette mentioned that we, as the Colorado delegation, have moved forward in a bipartisan way trying to figure out a solution to the problem. We have been able to address some of

the issues along the urban interface areas, but, as you see, the devastation is incredible in Colorado. Most of the forests are dying up toward the Steamboat Springs are and Northwest Colorado.

I welcome your ideas on the most strategic approaches we can make to protect our communities and natural resources, and I would like to thank the leadership of this Committee for addressing this critical issue, and thank you, Madam Chair, for making it a point that you will present the findings of these hearings to the Department of the Interior, and also I would appreciate it if you could share those with the Department of Agriculture as well. Thank you, and I yield back.

[The prepared statement of Mr. Salazar follows:]

Statement of The Honorable John T. Salazar, a Representative in Congress from the State of Colorado

Thank you Chairman Grijalva and Ranking Member Bishop, and Chairwoman Napolitano and Ranking Member McMorris Rodgers for having this hearing today. I am honored to be a part of it.

The Mountain pine beetle epidemic in Colorado and throughout the West is devastating. It is destroying our forests and threatening our communities.

I have some pictures I'd like to share with you and to submit for the record.

(Picture 1) This picture gives you an idea of the magnitude of the problem we're dealing with. The red trees you see in this picture are dead.

Ninety percent of the trees in this picture are dead.

These next 2 pictures shows the magnitude of the impact to our recreation areas, one of the economic mainstays of Colorado.

(Picture 2) This is the picture of one of our campgrounds in Steamboat Springs as the mountain pine beetle went the area.

(Picture 3) This is what it looks like after the Colorado State Forest Service removed the hazardous trees.

(Picture 4) This picture shows dead trees by a power line. Imagine what would happen to that power line if a fire like this went through. (Picture 5)

(Picture/Map 6) This map demonstrates how far reaching the epidemic in Colorado is.

It is over 2 million acres and growing.

We have over 633 miles of electrical transmission lines just in Colorado that are in areas of dead or dying trees.

We also have over 1300 miles of electrical distribution lines at risk from falling trees or fire.

A large fire could destroy many of these lines, causing power outages for months.

While a wildfire is just a matter of when, falling trees are occurring now on trails, rancher's fences, campgrounds, and powerlines.

How long before one of those falling trees kill someone? Already we've had to close campgrounds and trails because of the hazards.

We need to do something to ensure our communities, watersheds and power and communication infrastructure is safe.

We also need to be looking into the future.

At the health of our industries—small and large—that utilize the dead trees.

At keeping our future forests healthy so epidemics such as this are less likely to happen.

(Picture 7) This picture shows where several years ago trees were harvested for water distribution research.

The areas that are green were harvested many years ago and grew back. Those younger, healthy trees were not attacked by the mountain pine beetle.

The areas that are red were not harvested. Those trees were not as healthy and died.

I am looking forward to hearing what the 2nd and 3rd panels are doing to avoid an almost certain catastrophe.

I also want to hear suggestions for actions Congress should take.

As this committee knows, I, along with several members of the Colorado delegation, have introduced legislation the last several Congresses addressing different approaches to tackle this problem.

Our delegation is currently working on a bill we plan to introduce this summer.

I welcome your ideas on the most strategic approaches we can make to protect our communities and natural resources.

I'd like to thank the leadership on the committee for addressing this critical issue.

Thank you and I yield back the remainder of my time.

[NOTE: Pictures have been retained in the Committee's official files.]

Mrs. NAPOLITANO. Thank you so very much, Congressman.

Mr. Rehberg, Congressman Rehberg.

STATEMENT OF THE HON. DENNIS REHBERG, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MONTANA

Mr. REHBERG. Thank you, Madam Chair and Mr. Chair and Members of both Subcommittees for allowing me this opportunity to testify today.

The forests in Montana are quite different from the forests out East or even in Colorado. On the East Coast, masses of deciduous trees turn a variety of different colors each fall as the leaves fall off to conserve energy. In Colorado, masses of aspen tree growths change to gold each fall.

Montana's forests are primarily comprised of coniferous trees, or, as we call them, "evergreens." With evergreens, nature has a different strategy for surviving the winter. Smaller leaves shaped like needles and sheathed in protective coatings require less energy during the winter months. As a result, as the name implies, our forests remain green year-round, or they are supposed to.

Lately, massive infestations of western pine beetles have left their mark on more than the trees. Like a teenager with a paintball gun in an art museum, splotches of rust, red, and orange, mucous yellow being to corrupt the tapestry of our forests. It started small, a few trees peppered in a forest of millions, but eventually entire mountainsides turned yellow with the infestation. Visitors were forgiven for thinking that they were just seeing the annual life cycle of a deciduous forest, but the locals knew that something was very wrong.

The western pine beetle has infested millions of acres of forests throughout the West, thanks to drought and burdensome litigation. Our forests have been inadequately managed as our local government agencies and timber companies have not been allowed to work hand in hand to combat this destructive insect. As a result, our western forests are now more vulnerable than they have ever been to massive forest fires that can engulf entire communities, undermine energy reliability by burning transmission lines, destroy historical, cultural, and recreational sites; and seriously compromise endangered species and water quality.

While these losses alone are costly to taxpayers, they do not include the vast amounts of money spent every year to combat forest fires and that are fueled by pine beetle-infested trees.

I paint a picture of this vicious cycle where the victims are our once-prestigious, green, western forests and the American taxpayer, and the problem is quickly getting worse.

With the lack of local healthy forest management, the western pine beetle has increased the mortality rate of mature trees in Montana twofold in just the last year, from 735,000 acres in 2007 to 1.8 million acres in 2008. One area, in particular, between Helena and Butte, has reported morality levels three to four times

higher in 2008 than compared with 2007. Additionally, at higher elevations, significant pine beetle-caused mortality has been noted in white bark pine stands on our state park lands and the Yellowstone National Park.

It is no coincidence that as the acreage of infestation has risen, so have the costs of forest fire suppression. The Forest Service has approximately spent $225 million in suppression funds in Montana over the last three fiscal years. The Bureau of Land Management has spent over $33 million in the last three years compared to $24 million in the subsequent three-year period. These costs are only for fighting fires, the forest fires themselves. They do not include loss of infrastructure, wildlife, and fish, and habitat for endangered species and dollars generated from tourism.

Exhaustive research has been conducted over the years to determine the best methods for combating western pine beetle infestation. This research has proven, time and again, that the insect thrives in environments that are overcrowded, dense, and old growth, particularly during periods of drought. Under epidemic outbreak conditions, enough beetles can emerge from one infested tree and kill several trees the following year.

Healthy forest management is best done at the local level by men and women who live in the forest and can read its signs.

As an example of this, I want to tell you a success story near the ghost town of Garnet, Montana, located just east of Missoula. The areas surrounding this historic ghost town had become infested with the western pine beetle. In 2006, as other forest fires raged in nearby forest lands of Western Montana, local Bureau of Land Management officials were convinced that unless they thinned the forests around Garnet, they would lose the ghost town to a forest fire. Then the beetles showed up and infected twice as many trees as they had done in the previous years.

Consequently, the BLM quickly teamed up with Pyramid Mountain Lumber Company to remove up to 60 percent of the standing trees in the 320-plus-acre area in the fall of 2008. The project successfully avoided sensitive cultural areas, saved a historical site, built several handicapped-accessible trails for recreational purposes, lessened the spread of the insect, promoted the diversification and growth of animal populations, including the snowshoe hare and the Canada lynx and utilized every part of the dead trees removed.

From these 320 acres alone, trees were milled into building construction lumber, pulped into paper products, and even used as energy to fuel the kilns where green lumber is dried and cured. While this is just one success story, it is a success story. The view and perspective of what is happening and how it should be fixed looks very different to an out-of-state bureaucrat flying overhead at 30,000 feet. When it comes to forest management, one-size-fits-all solutions can oftentimes cause more problems than they solve.

We have boots on the ground. I only ask that we stay out of their way and let our forest managers do their job. Thank you.

[The prepared statement of Mr. Rehberg follows:]

Statement of The Honorable Denny Rehberg, the Representative in Congress for the State of Montana

Thank you Chairwoman Napolitano, Chairman Grijalva and members of both subcommittees for allowing me to testify today on the Western Pine Beetle Infestation in our Western forests—the forests that many of the people I represent call home. I appreciate the opportunity to share with you what I have heard from Montanans and to explain our approach to healthy forest management.

The forests in Montana are quite different from the forests out east, or even in Colorado. On the East Coast, massive deciduous trees turn a variety of different colors each fall as the leaves fall off to conserve energy. In Colorado, massive aspen tree groves change to gold each fall. Montana's forests are primarily comprised of coniferous trees—or as we like to call them "evergreens". With evergreens, nature has a different strategy for surviving the winter—smaller leaves shaped like needles and sheathed in protective coatings require less energy during winter months. As a result, as the name implies, our forests remain green year-round.

Or, they are supposed to.

Lately, massive infestations of western pine beetles have left their mark on more than the trees. Like a teenager with a paintball gun in an art museum, splotches of rust orange and mucus yellow began to corrupt the tapestry of our majestic forests. It started small, a few trees peppered in a forest of millions, but eventually entire mountainsides turned yellow with the infestation. Visitors were forgiven for thinking that they were just seeing the annual lifecycle of a deciduous forest, but the locals knew that something was very wrong.

The western pine beetle has infested millions of acres of forests throughout the West. Thanks to drought and burdensome litigation, our forests have been inadequately managed as our local government agencies and timber companies have not been allowed to work hand-in-hand to combat this destructive insect. As a result, our western forests are now more vulnerable than ever to massive forest fires that can engulf entire communities, undermine energy reliability by burning transmission lines, destroy historical, cultural and recreational sites and seriously compromise endangered species and water quality. While these losses alone are costly to taxpayers, they don't include the vast amounts of money spent every year to combat forest fires that are fueled by pine beetle infested trees. I paint a picture of a vicious cycle where the victims are our once-prestigious green western forests and the American taxpayer.

And the problem is quickly getting worse.

With a lack of local healthy forest management, the western pine beetle has increased the mortality rate of mature trees in Montana National Forest lands twofold in just one year, from 734,500 acres in 2007 to 1.8 million acres in 2008.

One area in particular, between Helena and Butte, has reported mortality levels 3-4 times higher in 2008 as compared to 2007. Additionally, at higher elevations, significant beetle-caused mortality has been noted in white bark pine stands on our state park lands and in Yellowstone National Park.

It's no coincidence that as the acreage of infestation has risen, so have the costs of forest fire suppression. The Forest Service spent approximately $225 million in suppression funds in Montana over the last three fiscal years. The Bureau of Land Management has spent over $33 million in the last three years compared to $24 million in the subsequent three year time period. These costs are only for fighting the forest fires themselves; they do not include loss of infrastructure, wildlife and fish, habitat for endangered species and dollars generated from tourism.

Exhaustive research has been conducted over the years to determine the best methods for combating western pine beetle infestation. This research has proven time and again that the insect thrives in environments that are overcrowded, dense, and old growth—particularly during periods of drought. Under epidemic outbreak conditions, enough beetles can emerge from one infested tree and kill several trees the following year.

The same research has also shown that the best way to combat the western pine beetle is through healthy forest management. As forest fires thrive in the same conditions as the insect, it is no surprise that we've seen a rise in fires in forests that have become victims of the western pine beetle. This relationship could be changed through healthy forest management such as creating forests with trees of various ages and sizes that are more resilient and less vulnerable to the western pine beetle.

Healthy forest management is best done at the local level by the men and women who live in the forests and can read its signs. As an example of this, I want to tell you of a success story near the ghost town of Garnet, Montana. Located just east

of Missoula, the area surrounding this historic ghost town had become infested with the western pine beetle.

In 2006, as other forest fires raged in nearby forest lands of western Montana, local Bureau of Land Management officials were convinced that unless they thinned the forest around Garnet, they would lose the ghost town to a forest fire. Then, the beetles showed up and infected twice as many trees as they had done in previous years. Consequently, the BLM quickly teamed with Pyramid Mountain Lumber Company to remove up to 60 percent of the standing trees in the 320-plus-acre area in the fall of 2008.

The project successfully avoided sensitive cultural areas, saved a historical site, built several handicapped-accessible trails for recreational purposes, lessened the spread of the insect, promoted the diversification and growth of animal populations—including the snowshoe hare and the Canada lynx—and utilized every part of the dead trees removed. From these 320 acres alone, trees were milled into building construction lumber, pulped into paper products and even used as energy to fuel the kilns where green lumber is dried and cured.

While this is just one success story on 320 acres in western Montana, our forests can be green once again, wild fires can be kept at bay, and every wood product from paper to energy can be produced—but only if our local professionals are allowed to thin the red and grey dying trees that have fallen victim to the western pine beetle. Through local healthy forest management, we can make substantial strides in a short amount of time.

The view and perspective for what is happening and how it should be fixed looks very different to an out-of-state bureaucrat flying overhead at 30,000 feet. When it comes to forest management, one size fits all solutions can often times cause more problems than they solve. We've got boots on the ground, and in the forests of Montana ready to do what is necessary to restore our forests to a healthy, green state. I only ask that we stay out of their way and allow them to do their jobs.

Mrs. NAPOLITANO. Thank you, Mr. Rehberg. Ms. Markey?

STATEMENT OF THE HON. BETSY MARKEY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Ms. MARKEY. Thank you, Madam Chairwoman and Members for allowing me the opportunity to speak to your Subcommittee today.

As you will hear from many members of the panel, the West is no stranger to bark beetle infestations. In the past, native bark beetles have served to renew forest ecosystems by weeding out older, mature trees to allow younger trees to regenerate. Unfortunately, warm winter temperatures, drought conditions, and uniform tree maturity have both stressed trees and created the perfect conditions for the current outbreak.

While I will leave the etymology and ecology of park bark beetles to the experts on the next panel, I would like to stress to the Committee why this issue is important in my district.

Until recently, the eastern slope of the Rocky Mountains in Colorado has fared much better than the western slope in the bark beetle outbreaks. As my colleagues, Congressman Salazar and Polis, can attest, the western slope has seen a large swath of mature trees killed by the epidemic.

The Forest Service expects this bark beetle outbreak will kill most of the mature lodgepole pines covering 2.2 million acres in Colorado and Southeastern Wyoming in the next five years. Some estimates indicate that almost two million acres have already been decimated.

The epidemic can be seen by the characteristic reddish hues that the needles take on after about a year of infection. My district, on the eastern slope of the Rockies, is showing signs that the bark

beetles have made it over the ridge and are now spreading to the eastern slope and the Ponderosa pines in the front range.

Infestation-prevention techniques in Colorado involve spraying individual trees, thinning highly susceptible areas, and monitoring individual healthy trees for infestation. These techniques are very labor intensive and do not guarantee the trees will survive. Therefore, it is important to focus on how to limit the damages brought on by the epidemic and study ways to reduce the intensity of outbreaks in the future.

The Forest Service and Colorado State University are just two of the many entities studying the impact of bark beetle kill on wildfire risk. The Colorado Forest Restoration Institute at the Warner College of Natural Resources at Colorado State University works with other research institutions and private entities to apply field-based evidence to implement healthy forest-management practices.

Catastrophic wildfires can also have detrimental effects on water quality and supply, as Mr. Wilkinson will testify in the next panel. Erosion and debris from wildfires can have long-lasting effects on water quality and incur great expenses to repair.

The two biggest concerns in my district are the increased threat of wildfire due to the bark beetle-killed trees and the impact of the bark beetle infestation on watershed health and water quality.

Colorado's Fourth Congressional District covers part of Rocky Mountain National Park, extends east to Nebraska and Kansas borders, and runs as far south as the Oklahoma border. My district contains mountains, planes, grasslands, and some of the best agricultural land in Colorado.

To ensure our forests and water are protected, it is imperative that we provide a stable source of funding for emergency wildfire suppression, such as provided in the FLAME Act. By creating a separate fund for unpredictable, emergency wildfire efforts, we can ensure annual funding for fire prevention and fuel reduction is not wiped out by sudden catastrophic wildfires.

This bill also requires the development of wildfire management strategies by the Department of Agriculture and the Department of the Interior in addition to establishing wildfire grants to encourage individual communities to develop their own wildfire emergency plan.

I would also like to stress how important it is for wildfire prevention plans to implement protections from hazards affecting water infrastructure and watershed health. These include plans to control debris and sediment accumulation, as well as thinning around potential critical access sites to ensure these control measures can be put in place as soon as possible.

Federal programs like the Colorado Good Neighbor Authority and the pending FLAME Act are making strides in wildfire prevention and mitigation, but Congress can do more.

The number one barrier to implementing wildfire prevention plans and beetle-kill-mitigation programs is funding. I, along with the rest of the delegation, sent a letter to Secretaries Salazar, Vilsack, and Chu and Chairwoman Napolitano urging these agencies to use recovery funds to address the bark-kill mitigation problem.

Finally, I would be remiss if I did not stress the importance of providing the USDA Animal and Plant Health Inspection Service with the resources they need to update the quarantined 37 regulations for the importation of plants into the U.S. While bark beetles are a native species to the West, our forests are prone to invasive species without these updated regulations.

Thank you again for allowing me to speak to the Subcommittee, and I yield back the balance of my time.

[The prepared statement of Ms. Markey follows:]

Statement of The Honorable Betsy Markey, a Representative in Congress from the State of Colorado

Chairman Grijalva and Chairwoman Napolitano and Ranking Members Bishop and McMorris Rodgers, thank you for allowing me the opportunity to testify before your subcommittees today. I also want to thank you for holding this hearing on mountain pine beetles and highlighting what needs to be done to limit the hazards brought about by this epidemic.

As you will hear from many members of the panels today, the west is no stranger to bark beetle infestations. In the past, native bark beetles have served to renew forest ecosystems by weeding out older mature trees to allow younger trees to regenerate. Unfortunately, warm winter temperatures, drought conditions and uniform tree maturity have both stressed trees and created the perfect conditions for the current outbreak. The range of various bark beetles species has been traditionally limited by climate, but warmer temperatures have contributed to the outbreaks spreading into new areas.

While I will leave the entomology (en-toe-maul-o-gee) and ecology of bark beetles to the experts in the next panel, I would like to stress to the Committee why this issue is important to my district. Until recently, the Eastern Slope of the Rocky Mountains in Colorado has fared much better than the Western Slope in the bark beetle outbreaks. As my colleagues, Congressman Salazar and Polis can attest, the Western slope has seen large swaths of mature trees killed by the epidemic. The Forest Service expects this bark beetle outbreak will kill most of the mature Lodgepole pines covering 2.2 million acres in Colorado and southern Wyoming within the next 5 years. Some estimates indicate almost 2 million acres the have already been decimated. In 2007, the Forest Service detected bark activity in 4 million acres of lodgepole and ponderosa pine in the west. Many other states are being affected by beetle infestations.

The epidemic can be seen by the characteristic reddish hue the needles take on after about a year of infection. My district on the Eastern slope of the Rockies is showing signs that bark beetles have made it over the ridge and are now spreading to the eastern slope and the ponderosa pines in the Front Range.

Infestation prevention techniques in Colorado involve spraying individual trees, thinning highly susceptible areas, and monitoring individual healthy trees for infestation. These techniques are very labor intensive and do not guarantee the trees will survive. Therefore it is important to focus on how to limit the damages brought on by the epidemic and study ways to reduce the intensity of outbreaks in the future.

The Forest Service and Colorado State University are just two of the many entities studying the impact of bark beetle kill on wildfire risk. The Colorado Forest Restoration Institute in the Warner College of Natural Resources at Colorado State University works with other research institutions and private entities to apply field-based evidence to implement healthy forest management practices. It is theorized that while canopy fire risks decreases as the dead needles drop to the ground, the threat of fire on the forest floor greatly increases due to the deadwood pile up on the surface. This deadwood can also contribute to increased nutrient loading in water supplies. Catastrophic wildfires can also have detrimental effects on water quality and supply as Mr. Wilkinson will testify in the next panel. Erosion and debris from wildfires can have long lasting effects on water quality and incur great expenses to repair.

The two biggest concerns in my district are increased threat of wildfire due to the beetle-killed trees and the impact of the bark beetle infestation on watershed health and water quality. Colorado's fourth Congressional District covers part of Rocky Mountain National Park, extends out east to the Nebraska and Kansas borders and runs as far south as the Oklahoma border. My district contains mountains, plains, grasslands, and some of the best agricultural land in Colorado. Weld County, in the 4th CD, is the number one ranking county in the state for agricultural products sold

and eighth in the nation. The Eastern Plains of Colorado, including Weld County, depend on the water that flows from the Rocky Mountain forested areas. In the West, and especially in the dry state of Colorado, water is a resource more precious than gold.

To ensure our forests and water are protected, it is imperative that we provide a stable source of funding for emergency wildfire suppression, such as provided in the FLAME Act. By creating a separate fund for unpredictable emergency wildfire efforts we can ensure annual funding for fire prevention and fuel reduction programs are not wiped out by sudden catastrophic wildfires. This bill also requires the development of wildfire management strategies by the Department of Agriculture and the Department of the Interior in addition to establishing wildfire grants to encourage individual communities to develop their own wildfire emergency plans. Being prepared for wildfire activity in advance will inherently reduce the risks of wildfire associated with the bark beetle kill.

I would also like to stress how important it is for wildfire prevention plans to implement protections from hazards affecting water infrastructure and watershed health. These include plans to control debris and sediment accumulation as well as thinning around potential critical access sites to ensure these control measures can be put in place as soon as possible following wildfires. By putting in place infrastructure protections and response programs, we can ensure that should a wildfire take place, communities will be prepared to quickly mitigate the damage to our water supply.

Federal programs like the Colorado Good Neighbor Authority and the pending FLAME Act are making strides in wildfire prevention and mitigation, but Congress can do more. The number one barrier to implementing wildfire prevention plans and beetle kill mitigation programs is funding. I along with the rest of the delegation sent a letter to Secretaries Salazar, Vilsack, Chu and Napolitano urging the agencies to use Recovery funds to address the bark beetle kill mitigation.

Finally, I would be remiss if I did not to stress the importance of providing the USDA Animal and Plant Health Inspection Service with the resources they need to update the Quarantine 37 regulations for the importation of plants into the US. While bark beetles are a native species to the west, our forests are prone to invasive species without these updated regulations. Updating these regulations will ensure we are not unnecessarily exposing our forests to destructive invasive plants.

Thank you again Chairman Grijalva and Chairwoman Napolitano and Ranking Members Bishop and McMorris Rodgers for allowing me the opportunity to speak before the subcommittees this morning.

Mrs. NAPOLITANO. Thank you, Congresswoman.

Next, we have The Honorable Walt Minnick.

STATEMENT OF THE HON. WALT MINNICK, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF IDAHO

Mr. MINNICK. Madame Chairman and colleagues, I was backpacking four summers ago with my fly rod and sleeping bag in Idaho's spectacular Seven Devils Wilderness Area high above Hells Canyon, the deepest gorge in North America. These soaring peaks where snow lasts well into August are the home of the White Bark Pine, a gnarly, slow growing Evergreen which is my state's highest and toughest native tree species.

It was still summer, yet many of the Pine trees were yellow and dropping the needles. On closer examination, their trunks and limbs were riddled with tiny open holes, marks left by thousands of hatching bark beetles flying off to mate and lay their eggs on those neighboring trees still alive. In the four days I spent hiking over mountain passes from lake to lake stalking native Cutthroat Trout, I examined tree after tree and found that none were not dead or dying.

At lower elevations the tree and bark species are slightly different but the results are the same: dead and dying forests. There are over 20 million acres of national forests in my state. They an-

chor a major part of Idaho's tourism economy and supply raw material for lumber, construction and renewable energy. Millions of additional acres are in state and private ownership. Bark beetles are currently wrecking havoc on our healthy forests, damaging our state's economy and increasing the risk and intensity of stand replacement wildfire.

The cause of this epidemic is increasing drought and warmer winters, which in combination can cause a thousandfold increase in the intensity of bark beetle infestations. In recent years, climate change has brought longer, dryer summers which reduce a tree's ability to drown bark beetle larvae, and less extreme winter cold temperatures, which kill bark beetle pupa. Bark beetles can now produce two generations in one summer and overwhelm entire forests instead of isolated trees.

Whole mountainsides that used to be full of lush trees have turned brown and ready to burn. I worked in the forest products industry for over two decades and know that outside of protected roadless and wilderness areas, we need proactive forest management to restore our forests to a more healthy condition and reduce the threat to communities from raging wildfire. Restorative forestry, including thinning of mature and overgrown stands and replacement of forest monocultures with a variety of species and maturities, will help repel future beetle attacks.

Healthier ecosystems can also provide economic and social benefits to both urban and rural communities, including better hunting, increased jobs in the woods, more logs for sawmills, forest residue for energy cogent plants, clean water and improved wildlife habitat. Earlier this year I introduced an amendment to H.R. 1404, the Flame Act, to help protect Idahoans and their communities from some of the dangers caused by the Bark Beetle.

The bill, with my amendment, passed unanimously and directs new emergency funding to address land management costs posed by catastrophic wildfires, including those caused by beetle infestation. More aggressive forest management, together with the Flame Act, will help protected states like mine return to healthier and more productive forests. It is time for the Forest Service to act. Thank you, Madam Chairman.

Mrs. NAPOLITANO. Thank you, Mr. Minnick. We now have Honorable Jared Polis.

[The prepared statement of Mr. Minnick follows:]

Statement of The Honorable Walt Minnick, a Representative in Congress from the State of Idaho

Mr. Chairman, I appreciate the opportunity to join my colleagues in speaking about the danger the Mountain Bark beetle poses to the health of our Western forests.

I was backpacking four summers ago with my fly rod and sleeping bag in Idaho's spectacular Seven Devils Wilderness high above Hells Canyon, the deepest gorge in North America. These soaring peaks, where snow lasts well into August, are the home to the Whitebark Pine, a gnarly, slow growing evergreen which is my state's highest and toughest native tree species. It was still summer, yet many of the pine trees were yellow and dropping their needles. On closer examination, their trunks and limbs were riddled with tiny open holes—marks recently left by thousands of hatching bark beetles flying off to mate and lay their eggs on those neighboring trees still alive. In the 4 days I spent hiking over mountain passes from lake to lake stalking native cutthroat trout, I examined tree after tree—and found none that

were not dead or dying. At lower elevations the tree and bark beetle species are slightly different, but the results are the same. Dead and dying forests'

There are over 20 million acres of national forest in my state. They anchor a major part of Idaho's tourism economy and supply raw material for lumber, construction and renewable energy. Millions of additional acres are in state and private ownership.

Bark beetles are currently wreaking havoc on our healthy forests, damaging our state's economy, and increasing the risk and intensity of stand replacement wild fire. The epidemic threatens to impact Idaho's vital watersheds, key wildlife habitats, destroy old-growth forests and impact popular recreation areas. National Forest Supervisors and private landowners are desperately seeking solutions to an increasingly serious situation.

The cause of this epidemic is increasing drought and warmer winters which, in combination, can cause a thousand fold increase in the intensity of bark beetle infestations. In recent years climate change has brought longer drier summers, which reduce a tree's ability to drown bark beetle larva and less extreme winter cold temperatures which kill bark beetle pupae. Bark beetles can now can produce two generations in one summer and overwhelm entire forests instead of isolated trees. Whole mountainsides that used to be full of lush trees have turned brown—and ready to burn.

I worked in the forest products industry for over two decades and know that, outside of protected roadless and Wilderness areas, we need proactive forest management to restore our forests to a more healthy condition and reduce the threat to communities from raging wildfire. Restorative forestry, including thinning of mature and overgrown stands and replacement of forest monocultures with a variety of species and maturities, will help repel future beetle attacks. Healthier ecosystems also provide economic and social benefits to both urban and rural communities, including better hunting, increased jobs in the woods, more logs for sawmills, forest residue for green energy co-generation plants, clean water and improved wildlife habitat.

Earlier this year, I introduced an amendment to H.R. 1404, the FLAME Act, to help protect Idahoans and their communities from some of the dangers caused by the bark beetle. The bill with my amendment passed unanimously and directs new emergency funding to address land management costs posed by catastrophic wildfires including those caused by beetle infestation. Passage of this amendment, together with the FLAME Act, will help forested states like mine return to healthier and more productive forests.

It's time to act.

Thank you Mr. Chairman.

STATEMENT OF THE HON. JARED POLIS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Mr. POLIS. Thank you, Chairwoman Napolitano and Chairman Grijalva, as well as the Ranking Members, for holding this important hearing and giving me the opportunity to testify before your Subcommittee on an issue that is of enormous importance to the citizens of Colorado's second congressional district, as well as those who visit our Alpine treasures. One of the primary needs in addressing this epidemic is increasing the awareness and understanding of how vast this problem is and what menu of options we have in mitigating its damage.

This hearing will help to highlight the problems that we currently face and continue to bring more minds to the table and a better Federal partnership to join those who are working constantly to promote mitigation solutions and keep our communities and public lands safe.

In my testimony today, I will highlight the sheer scope of this problem and why this outbreak demands the prompt attention of congressional leaders, the Administration, and our local and national land management officials, where we currently stand and what solutions currently exist, as well as what innovations are on

the horizon, and finally, the challenges we face in developing and implementing these solutions responsively and effectively.

Colorado's second congressional district relies on visitors who come to our state to ski, camp, climb, bike, boat and visit the incredible landscapes that define Colorado's second congressional district. In Colorado, the tourism industry provides nearly $10 billion of in state spending annually. In addition to those who come to visit, those who call our district home are always outside enjoying the natural cornucopia of entertainment and adventure day in and day out, part of the fabric of our quality of life.

However, the Mountain Pine Beetle epidemic is fundamentally changing our landscape and with it, both our culture and our economy. We have seen outbreaks in the past, most recently in 1970s and early 1980s, but the combined forces of the current outbreaks make this epidemic the biggest in recorded history by far. For this reason, it demands our proactive attention. The current outbreaks are killing trees in large numbers, at faster rates and over longer periods of time than previous outbreaks.

This outbreak has yet to get natural help that has stopped the past outbreaks from reaching the scale of devastation we see today. It was a severe cold period that was credited with stopping a rapidly growing outbreak in my district in Grand County, Colorado, in the 1980s. Today, temperature trends are pushing us in the opposite direction. In discussing the scope of this problem, the first and foremost concern is the safety of visitors and residents who live and play in the mountains that are being hardest hit.

Fire is, of course, the danger that comes to mind. Research has suggested that large beetle outbreaks tend to happen on a 50 year cycle. Wildfires frequently follow 10 years to 15 years after, and there has been a strong correlation between catastrophic fire events and beetle kills 15 years later. This outbreak has been present in my district for just about 10 years now, and it is growing closer and closer to the time when evidence suggests a strong correlation between beetle kill and wildfire events.

In addition to fire, this outbreak has significant safety repercussions from falling, dead and dying trees. Falling trees pose a hazard to power lines, trails, roads, campgrounds, rivers, ski lodges, infrastructure, as well as the patrons and workers who use them. Our economy also stands to suffer. The communities of Colorado's second congressional district are blessed to have economies directly tied to our landscape and natural resources.

As we move further into this summer, an ominous annual cycle dominates our mind, that of the growing wildfire danger. While there are mitigation efforts underway and programs and services are helping, our current resources are not enough. Trees do not cut down themselves. Broadly put, funding is one of the primary keys to quick mitigation. We are all aware that overwhelming firefighter costs have stifled our Federal land management budget.

I hope that the Senate will act quickly to pass the Flame Act, following the House's lead, and the excellent work of this Committee on passing that legislation. The Flame Act will have a drastic and immediate benefit for our communities and the effective and efficient use of our tax dollars. Our public land managers have project after project of fuel reduction efforts which have passed en-

vironmental assessment but are still waiting for funding to move forward.

Reducing fuels in the wildland urban interface and around the critical infrastructure is critical to solving the safety concerns posed by the Mountain Pine Beetle outbreak. With budget shortfalls and the growing need for funding of hazardous tree removal, we are also looking at creative ways to decrease the cost of thinning responsibly bringing increased value to the wood products removed. Wood products, wood pellets, small scale energy products and other businesses can play a key role in mitigating the damage.

Today you will hear from Mark Mathis, a wood pellet producer in my district, who will talk about the need to help local businesses to reduce the outbreak's impact. I was also able to recently attend a blue stain showroom opening. We think that blue stain is a better name than Pine Beetle kill to market the wood. The Mountain Pine Beetle leaves a fungus that stains the dead trees blue without compromising the integrity of the wood that can be reduced by these trees.

I recently purchased a coffee table that is a blue stained coffee table. The blue stain products and industry and small scale renewable energy are only a couple of examples of community businesses that can play a central role in creating private incentives to reduce fuels and remove hazardous trees in high risk areas. As Congress debates and moves closer to passing a wide sweeping overhaul of our nation's energy policy, new resources of energy—thank you, Madam Chair.

Mrs. NAPOLITANO. That is quite a response. You may wrap it up.

Mr. POLIS. Thank you. I was just going to refer to a woody biomass within a renewable energy standard has additional potential to provide incentives for taking the trees, and there are efforts to work on the upcoming energy bill to include those elements. Thank you.

[The prepared statement of Mr. Polis follows:]

Statement of The Honorable Jared Polis, a Representative in Congress from the State of Colorado

Chairman Grijalva and Chairwoman Napolitano and Ranking Members Bishop and McMorris Rodgers,

Thank you very much for holding this hearing, and particularly the opportunity to testify before your subcommittee on an issue that is of chief importance to the citizens of Colorado's second district and those who visit its alpine treasures. The mountain pine beetle outbreak that is currently expanding throughout the Rocky Mountains, and particularly the Lodgepole pine ecosystems of my district, and Whitebark pine of the Northern Rockies, is a critically important topic. One of the primary needs in addressing this epidemic is increasing the awareness and understanding of how vast this problem is, and what menu of options we have in mitigating its damage. This hearing will help to highlight the problems that we currently face, and continue to bring more minds to the table, joining those of us who are working constantly to promote mitigation solutions and keep our communities and public land's patrons safe.

In my testimony today I hope to highlight: 1) The scope of this problem and why this outbreak demands the prompt attention of congressional leaders, the administration and our local and national lands management officials. 2) Where we currently stand, what solutions exist and what innovations are on the horizon that will mitigate the damages of this outbreak responsibly and effectively 3) The challenges we face in developing and implementing those solutions responsibly and effectively.

How big of a problem is this?

Colorado's Second District relies heavily on those visitors who come to our state to ski, camp, climb, bike and boat the incredible landscapes that define Colorado's Second Congressional District. In Colorado, the tourism industry provides nearly $10 billion dollars of in state spending annually. In addition to those who come to visit, those who call the second district home are outside enjoying this natural cornucopia of entertainment and adventure day in and day out. My district is home to world class ski areas, dozens of fourteen thousand foot peaks, and countless trails, campgrounds and rivers that define our economy and culture as much as they define our landscapes. However, the mountain pine beetle epidemic is fundamentally changing this landscape, and with it our culture and economy.

In the last ten years, more than 150 million acres of trees, from New Mexico to British Columbia, have died as a result of beetle infestation. While my district is most heavily affected by the mountain pine beetle in its Lodgepole pine forests, other states are seeing similar outbreaks involving other species of trees and beetles.

We have seen outbreaks in the past, most recently in the late 1970's and early 80's, but the combined force of the current outbreaks make this epidemic the biggest in recorded history and for this reason it demands our proactive attention. The current outbreaks are killing trees in larger numbers, at faster rates, and over longer time periods; they are happening in numerous ecosystems across the western U.S. and are occurring at the same time.

The scope of this outbreak demands our attention because it has yet to get the natural help that has stopped past outbreaks from reaching the scale of devastation we see today. Beetles are a temperature dependant being, limited by colder temperatures and colder climates. It was a severe cold period that was credited with stopping a rapidly growing outbreak in my district in Grand County, Colorado in the 1980's. Today, temperature trends and drought conditions are pushing us in the opposite direction.

The beetle's life cycles are also greatly determined by temperature. Generally, species that live in colder climates have a two year life cycle, but we're starting to see the beetles at higher elevations reproducing more like beetles in warmer and lower elevations, once every year to even twice a year, greatly expanding the speed with which this outbreak spreads. Regionally, the mountain pine beetle hasn't been found in British Columbia, the Yukon or the Northwest Territories. Now, British Columbia is one of the areas hit hardest by the current epidemic.

In discussing the scope of this problem, the first and foremost concern is the safety of the visitors and residents who live and play in the mountains that are being hit hardest. Fire is, of course, the danger that comes to mind first. Research is still being conducted on the direct influence between beetle kill and wildfires, and I know I speak for everyone here when I say that I hope the links are minimal. I say this because if beetle-killed forests are at greater risk of burning, or fuel more intense fires, then many communities in my district are getting closer to catastrophe every year.

Some research has suggested that larger beetle outbreaks tend to happen on a 50 year cycle, while large wildfire events don't necessarily follow those same trends. However, additional research has suggested that 5 to 10 years after a beetle outbreak there is little correlation between wildfires and beetle kill, while 15 years out the correlation is much stronger. This outbreak has been present in my district for over ten years and is growing closer and closer to the time when evidence suggests a stronger correlation between beetle kill and wildfire events. Our communities, homeowners, ski areas, towns and businesses know all too well the personal effects of major wildfire events, but the sheer scale of dead and dying timber in our surrounding forests speaks to a greater catastrophic potential, and that is truly worrying.

In addition to fire, this outbreak has significant safety repercussions from falling dead and dying trees. Mountain pine beetles attack larger trees more often, as these trees serve as better hosts for the beetle's larvae. When these trees die, the root systems die as well, and the trees and soil around them become less stable leading to larger falling trees. These falling trees pose significant hazards to trails, roads, campgrounds, rivers, ski lodges, vital infrastructure, and the patrons and workers who use them.

Our economies also stand to suffer. The communities of Colorado's second district are blessed to have economies directly tied to our landscapes and natural resources. However, for the many communities who share this trait throughout the region, the mountain pine beetle epidemic poses a threat of disastrous proportions. The visitors that come to Colorado for recreation and tourism drive our economies and sustain our communities. The damage to our tourism industry through threat of fire, dam-

age to infrastructure from falling trees or the damage to our landscape's beauty, give rise to severe concerns about our community's economic and cultural future.

Where are we now and what's on the horizon?

As I'm giving this testimony, Colorado's mountains are drying out from a muddy spring, with snow melting, runoff filling our rivers and creeks and wildflowers dominating the high alpine meadows. However, as our mountains and forests move further into the summer, a more ominous annual cycle dominates our minds...that of the growing wildfire danger. Now more than ever, the pine beetle epidemic has concerns running high about a wildfire season of catastrophic possibilities. Our communities are not as prepared as they could be, and they need federal help to ensure the highest level of safety is achieved.

While there are mitigation efforts underway and programs and services helping a great deal on the ground...broadly put, funding, funding, funding is one of the primary keys to quick mitigation.

We are all aware that overwhelming firefighting costs have stifled our federal lands management budget. I hope that the Senate will act quickly to pass the FLAME Act, following the House's lead, and the excellent work of this committee in passing that legislation. The FLAME Act will have drastic and immediate benefits for our communities and the effective and efficient use of our tax dollars.

When it comes to spending the limited mitigation money we do have, the Wildland Urban Interface and areas around critical infrastructure, where civilization and wildlands come face to face, are the areas where expended funding should be focused to ensure the most effective, efficient and responsible use of our tax dollars. Thinning projects done in the Wildland Urban Interface (or woo-ee) and around critical infrastructure, creates fire breaks between less accessible wildlands and the population centers and infrastructure that we hope to protect when a fire occurs. Additionally, it allows fires away from civilization to run their course naturally, benefiting those ecosystems, without concern of a fire quickly spreading to threaten homes or communities. By maintaining a healthy WUI, we can cut firefighting costs, better protect our communities, and give our agencies the freedom to focus on a mission of lands management and stewardship, instead of constant attention to local and residential firefighting.

Our public lands managers have project after project of fuel reduction efforts, which have passed environmental assessment but are still waiting on funding to move forward. Reducing fuels in the Wildland Urban Interface is absolutely critical to solving the safety concerns posed by the mountain pine beetle outbreak quickly and efficiently. Funding these waiting projects will have a significant and immediate impact on reducing our wildfire risks, reducing the costs of wildfire suppression activities...it is truly the low hanging fruit in addressing the mountain pine beetle problem.

With budget shortfalls, and the growing need for funding of hazardous tree removal and fuel reduction efforts, we are looking at other creative ways to decrease the costs of thinning responsibly, bringing increased value to the wood we need removed. When weighing policy approaches and concepts new and old, we must ensure that in creating value and new markets for this wood, we don't create too great an incentive to where the harvesting of this resource becomes unsustainable in its own right.

Whether including woody biomass in the definition of Renewable Energy and thus allowing for incentives under a Renewable Energy Portfolio Standard (RPS or RES), or through the growing prevalence of "bluestain" wood products as a decorative building material...creating new market demand for the dead and dying trees provides hope to the communities who want to see fuel reduction efforts moving forward.

Wood products, wood pellets, small scale energy projects and other local businesses can play a key role in mitigating the damage and lessening the danger from this outbreak's effects. Today you will hear from Mark Mathis, a wood pellet producer in my district on this subject who can speak to the help that local businesses can provide in reducing this outbreak's impacts. By adding value to beetle kill, we create a new demand for this wood and decrease the cost to our federal land management agencies to remove these fuels from our federal lands.

I was recently able to attend a bluestain showroom grand opening, where more and more individuals are leaning about the bluestain wood products industry, buying bluestain products and bringing value to the trees that we need to have removed. The mountain pine beetle leaves in its wake a fungus that stains the dead trees blue without compromising the integrity of the wood that can be produced from these dead trees. The Bluestain products industry and small scale renewable energy development are only a couple examples of community businesses that

should play a central role in creating private incentives to reduce fuels and remove hazardous trees high risk areas.

The Challenges We Still Face

I've discussed several of the options and needs that we know of with regard to the mountain pine beetle epidemic in the West. However, there are a multitude of unanswered questions, challenges, and bridges that we still must cross.

While funding will go a long way to lessening the risk immediately, we face the need for additional and expanded programs that assist fuels reduction efforts on state and private lands. Nearly 70% of the Wildland Urban Interface exists on private lands, and private property owners must have the knowledge and incentives to maintain a healthy WUI for the benefit of public safety. Programs like the State and Private Forestry program, good neighbor authority, and the community fire planning provisions of the FLAME Act, along with the ability for local community companies to carry out this work are excellent examples of what we need to be promoting.

However, much is left to be done as the public safety is put at risk and more and more federal dollars are spent fighting fires or repairing damage that could have been lessened or avoided all together. Whether on public or private land, we need to promote safety and responsibility first and foremost.

We also want to ensure that the measures we do take to mitigate the effects of this problem don't create other or longer lasting problems. Specifically, we need to maintain a focus on environmental responsibility, particularly when discussing thinning outside the WUI and / or creating a new form of value and increased demand for the dead and dying timber that is produced.

As Congress debates and moves closer to passing a wide sweeping overhaul of our nation's energy policy, new sources of energy will become greatly valued and heavily sought after. A properly crafted, specific and responsible definition for woody biomass within a Renewable Energy Standard has a significant and positive role to play in helping fund wildfire mitigation projects, and relieve the backlog of projects that the Forest Service is waiting to have funded. This definition can also mean that we see an expansion of cleaner and less carbon intensive energy sources, like wood pellet heating, that will help combat one of the primary causes of the beetle epidemic: climate change.

However, it is essential that this definition and the resulting technology and markets are constructed with sustainability as a first priority. Any industry, technology or practice we support must use resources in a manner that will conserve those resources for future generations and will create careers that can sustain communities, not short term jobs that will disappear along with our resources.

Closing Statements

The current beetle outbreak in the west is reaching a scale of epic and catastrophic proportions; it is truly a perfect storm of forest age and health, climate change and drought paired with combined regional outbreaks spreading rapidly throughout the Rocky Mountains. The residents, visitors, communities and economies of my district in Colorado are facing new questions and a more uncertain future because of this epidemic. To address it we will need to employ new policies, provide better funding practices and be sure that as we're addressing this problem we don't create new problems or systems that can't sustain themselves in the long term.

This outbreak will leave a lasting scar on the land for years, but I am confident that the forests will rebound and regenerate. It is our responsibility to be knowledgeable and conscientious of our natural world, ensuring that our wild areas can undergo their process of healing, and ensuring that our communities and visitors aren't put in harm's way during that process.

Thank you again to the members of this subcommittee, and to Chairman Rahall, Congressman Grijalva, Congresswoman Napolitano, Congressman Bishop and Congresswoman McMorris Rodgers for giving your committee's time to the challenges that my constituents face on a daily basis. I also thank you for the opportunity to testify in front of your committee and the opportunity to participate in this hearing.

Mrs. NAPOLITANO. Thank you for your testimony. All of the panel, you are very passionate about the issues in your district and I am very glad that you are joining together. I hope that of this we will continue to not only work on this issue, but look at the solutions to the problem. May I ask that you turn over your testi-

mony since it wasn't submitted for the record, if you would not mind? Members, do you have questions of the panel?

Mr. CHAFFETZ. Thank you, Madam Chair. Quick question. Maybe we can start with Mr. Polis and work our way down the panel. Do you believe that biomass is renewable, and why isn't biomass considered renewable in the Waxman-Markey Climate Bill in your opinion?

Mr. POLIS. Well, we are working for a properly crafted and specific definition for woody biomass within a renewable energy standard and that can have a significant and positive role to play in helping fund wildfire mitigation projects in this case, as well as potentially other cases, and also help relieve the backlog of projects that the Forest Service is waiting to have funding.

By getting the definition right it can also mean that we can have an expansion of cleaner and less carbon intensive energy sources, like wood pellet heating, that will also help combat one of the primary causes of the Pine Beetle epidemic, global climate change.

Mr. MINNICK. The short answer, Congressman Chaffetz, is when we get through with it, it will be. I have been encouraged. I have been working with some members of your panel, Congresswoman Herseth Sandlin and others of us from the northwest, to get that modification made in the bill, and committee staff and the Congressmen have been quite forthcoming, so I am encouraged that by the time the bill is passed we will have that corrected.

Ms. MARKEY. I will echo that as well. As a member of the Committee on Agriculture, we have been discussing this quite a bit and making sure that woody biomass is included in renewable standard definition.

Mr. SALAZAR. I could agree with all my colleagues here. I know that we have been working on it, I know that Stephanie Herseth Sandlin has been working on it in the Ag Committee for several years. If you look at northwestern Colorado and you see all the dead trees, can you imagine what an incredible resource that would be? There are some pellet mills that are going up, there is one pellet mill that is actually working with trying to create an ethanol production facility so that we can use that wood twice, to make ethanol, and then the residue then becomes pellets.

I just want to thank the Chairwoman for flying over the areas in Colorado that she saw the devastation that is happening there. Woody biomass, I think, should be within the climate change bill.

Mr. REHBERG. It is renewable. Cap in tax is not the solution. An all of the above energy policy is the solution. However, if we don't address the litigation, it doesn't matter how much legislation or how much language you include in any comprehensive energy policy, litigation is going to keep you from having access. We can give you example after example in Montana where we have cogeneration facilities attached to schools, hospitals and nursing homes that cannot get access to put their public lands because of excessive litigation.

Mr. CHAFFETZ. Thank you. Thank you, Madam Chairwoman. Appreciate it. Yield back the balance of my time.

Mrs. NAPOLITANO. Wonderful. Thank you.

Ms. DEGETTE. Madam Chair, move to strike the last word.

Mrs. NAPOLITANO. So moved.

Ms. DEGETTE. Madam Chair, as a member of the Energy and Commerce Committee let me take a stab at Congressman Chaffetz's question. In fact, in the current draft of the Waxman-Markey Climate Change Bill woody biomass is included in the renewable electricity standard. However, as I noted in my opening remarks, there are some definitional issues with the way it is defined in there. Mr. Walden and I are trying to expand this standard so that we can get these downed trees out of the forests.

In the current draft of the bill, it talks about old growth forests or established forests and that is the problem that we have in a lot of these forests in the West—in Colorado, Wyoming, Idaho, and other states. Some of this downed wood from pine beetle kill that is in our national forests and our other public lands may not be included. So we are trying to work on language before that bill gets to the Floor.

I am working with every single one of my colleagues here, plus Mr. Inslee, Ms. Herseth Sandlin and others, to make sure that we get a definition of woody biomass that is going to give incentives so that we can get these downed trees out of these forests. Thank you, Madam Chair.

Mrs. NAPOLITANO. Thank you, Ms. DeGette. Mr. McClintock?

Mr. MCCLINTOCK. Thank you, Madam Chairman. Question I would have is how important is tree thinning to combating the Pine Beetle infestation? Yes, Mr. Salazar.

Mr. SALAZAR. Let me just answer by could you put that photograph up, my number seven, the hand? That is the one. That is it. I was accused by Mr. Rehberg, he thought that maybe aliens did this. This is a primary example of how managed versus unmanaged areas. The trees in the darker green areas had been thinned and there is no devastation, there are no dead trees. The brown areas are the ones that have not been managed. So we do have to give our Federal agencies the authority and the ability to be able to manage our forests better.

Mr. MCCLINTOCK. Well, they certainly have the responsibility to manage the forests. What is keeping them from doing so?

Mr. SALAZAR. Well, as Mr. Rehberg stated prior to this, it is lawsuit after lawsuit and then it is very difficult.

Mr. REHBERG. Tree thinning is very important but is just one aspect. If you are going to holistically manage your forests you need to have a grazing policy because undergrazing grass kills it as dead as overgrazing it. Underthinning kills it every bit as much as overlogging it. Fire can be used as a tool. I don't know why we are afraid of using the word logging because logging is nothing more than a tool to help us manage the forests the way we want it to look, and the interesting thing is we use their labor, their capital, their equipment, we tell them what tree to take, when to take it and how to take it.

Mr. MCCLINTOCK. Well, this seems to be a recurring theme before this Committee: litigation stopping vitally needed forest management practices. The absence of those forest management practices are killing our forests. I can't imagine anything more devastating to a forest, environmentally devastating to a forest, than a forest fire.

The pictures that you have presented of beetle-killed trees paints another environmentally devastating picture. According to the testimony here and testimony we have had before other committees on other aspects of this, it is litigation from environmental groups that is impeding the Forest Service from doing its job. What do we do about that, Mr. Salazar?

Mr. SALAZAR. All I can tell you is that the findings of what—I mean, that is what this hearing is all about, and I think we need to present these to our agencies, the Department of the Interior, USDA, and try to figure out what we do. We have a judicial system. We are just the Legislative Branch. We are working together, in fact, with some of the Members from western states, to try to put together and craft a bipartisan bill that will address this issue.

Mr. MCCLINTOCK. I don't recall the exact figures but we had received testimony in another hearing that the commercial value of thinning these forests is rather substantial. We own that timber. We actually sell it to the timber companies. They buy it from us and pay quite a bit for it. On top of that, I assume that the beetle-killed timber also has considerable commercial value and that if we could sell it immediately that it would produce additional revenues which we could then use to better manage our forests. Why aren't we?

Mr. REHBERG. Mr. McClintock, maybe I can put it into perspective. You have used the word immediately and therein lies the difficulty. If we don't get in and get it before there is a period of time where it is destroyed and cannot be commercially viable, then the agency has to make the decision whether it is worth it or not. I might go back to the year 2001. There were fires in 2000.

Dale Bosworth was the head of the Forest Service. He had to make a determination after a Court case said that he could in fact go in, but he had to appeal a part of it. He had to make the decision to settle the lawsuit rather than carry it forward because time is of the essence.

Mr. MCCLINTOCK. And they don't even need to win the lawsuit. All they need to do is delay it substantially——

Mr. REHBERG. That is correct. He would have probably won the lawsuit.

Mr. MCCLINTOCK. We are watching the same tactics in my area, and again, a recurrent theme. The litigation is a creature of this Congress. Perhaps we ought to reign it in.

Mrs. NAPOLITANO. Thank you. Mr. Inslee?

Mr. INSLEE. Thank you. I just want to express the hope that when we get in the next few weeks dealing with a way to really solve this problem that all my colleagues will help to really solve the problem because there is not enough thinning money, or treatment money, or tea to spread in the globe to solve this problem once we get a hand on climate change.

Does everybody on the panel agree? Does anybody disagree with that? Anybody disagree that climate change caused by humans putting CO_2 in the atmosphere is one of the factors for the problem we are suffering here? Does anybody disagree with that? Guess everybody agrees with it. Mr. Rehberg, are you going to support a cap on carbon dioxide emissions so we can save our forests?

Mr. REHBERG. The Devil is always in the details, Mr. Inslee. What is your definition of human impact on global warming? If you are going to suggest that the forests are turning the colors that they are because of CO_2 emissions, I guess I have a problem with that premise.

Mr. INSLEE. Well, that is what I thought I was asking you. Do you disagree that one of the reasons that our forests have such——

Mr. REHBERG. You phrased your question in such a way as you asked if I thought there was a human element of CO_2 and whether it had an impact on our temperature. I cannot either agree or disagree, but if it is the factor that has created the problem that we are discussing today, I would suggest not.

Mr. INSLEE. Well, the reason I asked you that is when I listened to your testimony, it was like the environmentalists are killing the forests. I just want to ask you, do you agree with the proposition that humans' contribution of CO_2 loads in the atmosphere are one of the factors that are causing climate change that are causing one of the factors in the devastation of the forests that we are talking about here? Do you agree with that?

Mr. REHBERG. Why don't we go back to your initial statement, do I think environmentalists are killing our forests? I think they are loving it to death.

Mr. INSLEE. Well, let me just ask you a question. Do you think that human-caused CO_2 concentrations in the atmosphere are one of the reasons these forests are in such terrible shape?

Mr. REHBERG. I would suggest the forests are in such terrible shape because of the lack of management on the part of the humans that are in the agencies that are not given the ability to use their brains to in fact manage it the way it needs to be managed, whether it is selective logging, whether it is grazing management, whether it is prescribed burns. The continuation of the extreme environmental community in the tying up in litigation—and you cannot deny that excessive litigation has in fact kept us from actively managing our forests the way they deserve to be managed.

Mr. INSLEE. What I want to know is—and you can take a stab at a "Yes" or "No" answer because I think this is an important issue in our ability to fashion some bipartisan response to what is really killing our forests. Environmentalists aren't there planting bark beetles in the forests. This problem is caused by climate change where the winters are not cold enough to kill the beetles and causing the drought which is making the trees less healthy and more susceptible to beetle infestations, and until we get a cap on carbon dioxide, this problem is going to worsen.

Mr. REHBERG. I would suggest——

Mr. INSLEE. Let me finish my question. Just let me finish my question. Do you agree that we ought to limit carbon dioxide emissions so that we can hopefully reduce the climate change that is making these forests susceptible to beetle kills?

Mr. REHBERG. I don't think anybody is going to disagree that to the extent possible we, as humans, should eliminate as much pollution as we possibly can, whether it is our air, our water, our ground and such. Nobody is going to deny that. If you are asking whether I think that our forests are mismanaged, I do believe that to be the

case. Nobody asks for cancer, and yet, nobody stands in the way of a doctor trying to go in and take that cancer out.

When you talk about the cancer of a forest, there are people that are litigating their way through the Court system keeping us from going in, cleaning out the dead and dying trees and trying to eliminate the beetle infested trees. That is what the hearing is about today.

Mr. INSLEE. So would you support some cap on carbon dioxide to try to reduce the threat that these forests are having?

Mr. REHBERG. Once again, I am doing everything I possibly can on the Energy and Water Appropriations Committee, as one of the members of that Committee, to fund through the Department of Energy everything we possibly can with sequestration, with biomass. We want a comprehensive energy policy.

I think this Congress ought to spend its time on getting something that clearly understands nuclear, wind, solar, geothermal, oil, gas, coal, conservation and grants the loans to help us invent our way into the next generation rather than spending as much time on a cap and tax policy that frankly isn't bipartisan because a lot of us have not been invited to the table.

Mr. INSLEE. So that was sort of a no. Thank you.

Mrs. NAPOLITANO. Mr. Inslee, thank you. Ms. Lummis?

Mrs. LUMMIS. Thank you, Madam Chairman. My questions are primarily for Mr. Rehberg and Mr. Salazar. Has this Congress, to your knowledge, ever invoked sovereign immunity for a specific purpose, for a specific period of time, to suspend the ability to sue the United States in order to resolve a specific issue?

The purpose of my question, of course, being I would like to see us explore the idea of invoking sovereign immunity, preventing the United States from being susceptible to lawsuits for the purposes of saving our forests for a period of time in a certain geographic area with regard to bark beetle. Your response, your thoughts, please.

Mr. REHBERG. I cannot answer whether that has occurred in any other area—natural resources or others. I am not proposing, nor would I ever suggest, limiting access to the Courts. Everybody has an opportunity to avail themselves through the Court system when they feel they have been wronged. That is just part of our system.

What we have attempted to do, both on this Committee when I served on the Committee and other committees, is try and provide some kind of reasonableness or common sense, whether it is a bond to suggest that you have to have a dog in the fight, a financial interest, it can't just use a stamp and an envelope to stop something that in fact does do damage to our environment, and so it would be a limited access, but not an elimination of access, to our Court system. I would suggest it would probably not be possible, and I am not sure I would support an entire elimination of the judiciary in this process.

Mrs. LUMMIS. Your thoughts, Mr. Salazar?

Mr. SALAZAR. Well, I tend to agree with Mr. Rehberg. I know that we do have a major problem. We have to address it. I tend to also agree with Mr. Inslee. I know all of us have some kind of impact on what is happening through climate change. However, I can't say that that is the entire reason for this happening. I mean,

when Mr. Polis gave his testimony he talked about this cycle happening like every 50 years or so when we have droughts.

We suffered a major drought in Colorado and across the western United States in 2000, 2001, a massive drought, and that is what made these trees more vulnerable, but we do have a problem. I wouldn't support stopping anyone from using our legal system to protect our forests, but at the same time, we need to have some kind of a common sense attitude and figure out what resources we can give our departments to handle this.

The question before was asked, I can't remember by which Member, can we address this issue? I mean, it is such a massive issue right now. We can't just go and clearcut all this wood, take it out. I think it would be devastating to our watershed. We have to figure out some way to manage it and look forward into the future, and, looking at these photographs, how we manage our forests in the future.

Mrs. LUMMIS. Thank you, Madam Chairman.

Mrs. NAPOLITANO. OK.

Mrs. LUMMIS. Madam Chair, Mr. Polis wanted to answer that question.

Mr. POLIS. May I just address something you said in the latter part of the question? You put these out as a way of saving the forest. I just wanted to make a point that in large parts of my district in Colorado it is no longer a discussion of saving the forest. Our forest has died off. Nearly every Lodgepole Pine is dead. It is an issue of dealing with the mitigation, reducing the forest fire impact.

Several of the questions have dealt or people have been thinking about how perhaps to do better forest management and prevent this type of crisis from happening again, but I would just like to remind the Committee that the sheer magnitude of where we are today and the urgent need to deal with that.

Mrs. NAPOLITANO. Thank you very much for that statement. Now we have Ms. Herseth Sandlin.

Ms. HERSETH SANDLIN. Thank you, Madam Chair. I want to thank you and Chairman Grijalva for having today's hearing. Unfortunately, I am very familiar with this problem as well. Black Hills National Forest in western South Dakota and parts of Wyoming has about a million and a half acres. 340,000 of those acres have been infested with Mountain Pine Beetles contributing to the wildfire risk because much of the Black Hills National Forest is typical of wildland urban interface.

It is the most heavily roaded forests in the country. Since 2000, the wildfires have burned 180,000 acres of land. In the Black Hills, going to Mr. McClintock's point and others that the panelists have addressed, thinning has been a key tool. We have been able to use it maybe a little bit more effectively in the Black Hills because of how well our regional advisory board has worked to reduce some of the litigation that we have seen previously in the 1990s and the first part of this decade.

It is a key tool, as I think we all agree, to keep the problems in check, to deal with mitigation, as well as trying to preserve the forests that can be preserved. As Mr. Inslee stated, the funding for thinning and for commercial timber sales hasn't met the demand for the treatments. Now, the partnership that we have between the

timber industry, because we still have one in South Dakota, and the Forest Service has been invaluable to address this problem.

We need to do more and find the strategies, which is the purpose of today's hearing, to address some of the other problems that have come out of my colleagues' testimony. I do want to point out, though, and I respect where Mr. Inslee is coming from, but the line of questioning I felt with Mr. Rehberg assumes that climate change alone is the only factor contributing to this problem. There are several other contributing factors. Mr. Salazar and Mr. Polis both said different cycles who have experienced drought. Those of us in the Great Plains have experienced these droughts before.

We just got out of one in South Dakota. I don't think that we are climate change deniers, but we simply have to look at the other factors, whether it is the fact that with declining timber sales with a declining harvest, particularly when you look at the rate of growth in the forest and what is being taken out, that is contributing to unhealthy forests. You have more trees and overgrown stands that are competing for water resources that are scarce, that are then contributing to the hazardous fuel situation and making them more susceptible to the beetle infestation.

So I hope that as we move forward, whether it is the next week to 10 days or the next many weeks to months as it relates to an energy policy and a climate policy, that we do come to some conclusion on the woody biomass issue because I think that that is a key mitigation issue. Going to Mr. Polis' point, as well as a key to rural economies that can contribute to the solution of renewable energy—whether it is electricity and cogeneration or fuels and cellulosic ethanol—to meet our energy independence goals, as well as through thinning and using wood biomass and making our forests—those that can be saved—better carbon sinks to help address the issue that ag and forestry lands can be utilized to help reduce the carbon in the atmosphere while we develop and deploy new technologies to help sequester carbon more effectively.

So I guess the only question I would have for the panel—given the relative success I think we have had in South Dakota with the regional advisory committee—have any of you had experience with those regional advisory boards? Is that one way, in addition to some of the others that have been suggested, that we can work through this issue in a more local and forest-specific manner to reduce litigation? Mr. Minnick, you have a response I presume?

Mr. MINNICK. From Ms. Sandlin on her side, I think that is the key, and we are currently doing that in my district. In fact, I am starting one in North Idaho in the Panhandle Forrest. We are also doing it in the Clearwater Forrest.

It is the key to bring the interest groups together. We all have an interest in healthy forests. We all love our forests, regardless of our party or ideology; and if we can get people to sit down together and agree on a forest plan, that makes a lot of sense.

I would add, though, a couple of things to what you suggested, based on my 20 years in the forest products industry. It is not just thinning. Beetles attack weak trees, unhealthy trees. So the key is to have a healthy forest. That involves not just thinning. But it also involves getting to a variety of species. Monocultures tend to be weaker and more susceptible to beetles and other pests.

So if you can get a variety of species, if you can get a variety of ages, uniform age forests are also weaker and more susceptible, and then have proper thinning—all of that in combination, which modern forestry has learned a lot about, delivered through a collaborative process, with adequate funding, is the way, I think, we can collectively move forward.

Mrs. NAPOLITANO. Thank you; your time is expired. With that, I believe everybody has spoken to the issue. I do ask unanimous consent that Congressman Gallegly's testimony be allowed to be entered into the record; and without objection, so ordered.

I would also ask unanimous consent that the Members who have testified before us today be allowed to sit on the dias and participate in the Subcommittee's proceedings today; and without objection, so ordered. Any of you are welcome to please sit with us for the rest of the three other panels; thank you very much.

[Laughter.]

Mrs. NAPOLITANO. So we will move on to our second panel; thank you very much. You are now dismissed, and we appreciate your being with us for about an hour and 15 minutes.

Mrs. LUMMIS. Madam Chairman?

Mrs. NAPOLITANO. Yes.

Mrs. LUMMIS. While they are leaving, I would like to suggest that President Obama has appointed a number of czar-type positions.

Mrs. NAPOLITANO. Yes, before you do, can we get the other panels to start coming up, so we do not lose time then.

Mrs. LUMMIS. And I would encourage President Obama to make Representative Minnick the Forest Czar, to address bark beetle issues.

Mrs. NAPOLITANO. Thank you for your comments, Mrs. Lummis.

We now will hear from Barbara Bentz, Research Entomologist for the Rocky Mountain Research Station and the Bureau of Forestry in the Department of Agriculture in Ft. Collins, Colorado; Mr. Rick Cables, Regional Forester for the Rocky Mountain Region, Bureau of Forestry, Department of Agriculture from Golden, Colorado; Dr. Herbert Frost, Associate Director for the National Resources Stewardship and Science from the National Park Service in the Department of the Interior in Washington, D.C.; and Mr. Ronald Turley, Special Programs Manager for the Western Area Power Administration from the Department of Energy in Montrose, Colorado—welcome panel, and we will begin with testimony from Dr. Barbara Bentz; yes, Dr. Bentz?

Mr. CABLES. If I may, Madam Chair——

Mrs. NAPOLITANO. Right; both of you have a joint statement, certainly. You have nine minutes.

Mr. CABLES. Thank you; and thank you, Madam Chairwoman and Chairman Grijalva and Members of the Committee. My name is Rick Cables. I am the Regional Forester for the Rocky Mountain Region, which is five states in the Inner Mountain West. We really appreciate you inviting us here today. I have submitted our written testimony for the record.

With me is Dr. Barbara Bentz from the Rocky Mountain Research Station, who is one of the foremost authorities on bark

beetle ecology. She has over 30 years' experience studying bark beetles; Dr. Bentz?

STATEMENT OF BARBARA BENTZ, RESEARCH ENTOMOLOGIST, ROCKY MOUNTAIN RESEARCH STATION, FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE

Ms. BENTZ. Good morning; as Rick mentioned, I am an entomologist with the Research Branch of the U.S. Forest Service, and it is my job to study and help us better understand the many native bark beetle species that are severely impacting our western forest ecosystems. Forest Health Protection estimates that in 2008 alone, eight million acres have been affected by these native insects.

These native species have historically played very important roles in our forest ecosystems; but with both changing climate and forest conditions, we feel that some of them might be a little bit out of balance.

The mountain pine beetle is the main species affecting the majority of both low elevation pine, as well as high elevation pine systems that are very critical for maintaining the health of high elevation watersheds. They are tiny. They attack trees in mass, and that way they can overcome the defenses of the tree.

Temperature is the driving factor behind mountain pine beetle life cycle survival and timing. They use a very powerful pheromone communication system to attack trees in the summer. They stay under the bark the entire year, and come out and exit the next summer, to go and fly, attack a tree, and kill it.

Trees are not passive, though. Healthy trees have very vigorous resonance defense systems that allow them to, when possible, expel beetles that are attacking them.

However, if you can imagine millions of beetles flying through a forest with all those aggregating pheromones that they are responding to, even a healthy tree is oftentimes unable to fend off the beetles.

After the adults attack the tree, the larvae mine horizontally through the forum around the circumstance of the bowl; and it is that that cuts off the nutrients and water flowing up and down that basically kills the tree.

So we believe that the severity, duration, and extent of these recent outbreaks is heavily influenced by two factors that have to deal with the food supply and warming temperatures associated with climate change.

Those extensive landscapes across the West of healthy lodgepole pine—large healthy pole pine—while stressed trees provide a jumping board for these outbreaks to start, it is these large healthy trees that have the really fat, juicy food that the beetles need to sustain their long-term population growth.

Second, warming temperatures associated with climate change is reducing winter mortality; like everybody said. They have the research to show that. But it is also increasing summer population growth.

So I would just like to end by saying that the research branch of the Forest Service is very well poised, and we have the expertise

to really look at these problems. I would be happy to answer any questions, following the panel.

STATEMENT OF RICK CABLES, REGIONAL FORESTER, ROCKY MOUNTAIN REGION, FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE

Mr. CABLES. Thank you, Dr. Bentz; we are really privileged in the Forest Service to have a world class research organization within our agency.

The story I am going to tell here, really quickly, tells the story about how valuable forests are to so many people. I have been Regional Forester since 2001 in the Rocky Mountain Region; so basically through the whole duration of this episode. I will tell you that it is one of the most profound issues I have ever dealt with in my 30-plus years in the agency.

If you will cycle through this series of slides, it will show the growth. Just watch this picture; watch the explosion of red and blue—red being lodgepole pine and blue being spruce beetle. This has occurred in the last dozen years. That is how fast the bark beetle has consumed nearly two and-a-half million acres in northern Colorado and southern Wyoming.

There are two major public hazards associated with this. One is wildfire. Wildfire peaks—it is a bimodal situation with fire hazard—when the needles are still on the trees. The trees turn red. The needles are the fine fuels which will allow fire to carry from crowns of the trees, from tree to tree.

Then the needles fall off. The fire hazard is reduced for a period of time, until the trees start falling over, which is somewhere between six and twenty years. We are already starting to see trees fall in the forest right now. When the trees get on the forest floor, it is a continuous bed of fuel that carries fire, and particularly potentially high intensity fire.

The picture here shows a sea of black sticks, a sea of dead trees. Most of the public that I talked to really do not like what that looks like. They do not appreciate the effect on wildlife habitat, recreational opportunities, forest products, carbon. And as we get to understand that more, by far the profound, and in my opinion, the most profound influence potentially on these forested watersheds in Colorado and southern Wyoming is on water.

This is a picture of the Hayman fire after it burned in 2002. You can just see the sedimentation and the issues associated with that; and then the Strontia Springs Reservoir, which is a reservoir maintained by Denver water, which has over a million customers, filled up with sediment after the Buffalo Creek fire in 1997. The water literally ran dark and brown in people's taps in Denver, and really got people's attention.

National forests in the West, in particular, are the water towers of the West. These forested headwaters play a huge role in water; and it is an issue of national significance, because as I said, in the nine inland western states, 62 percent of the water comes from these forests.

And the reach, if you wonder whose headwaters we are talking about, both Chairwoman Napolitano and Chairman Grijalva—both

of your states' watershed are these lands we are talking about, with that lodgepole.

So there are 13 western states, 177 counties, and 33 million people served by the water that starts in the national forests of Colorado and southern Wyoming.

The second hazard I want to talk about, in addition to fire, is falling trees; and this is a real and present danger. As I said, the trees are already starting to fall.

Can you imagine two and-a-half million acres of flat trees, and the effects on infrastructure, roads, trails, and so on and so forth? Just yesterday, we had a near miss on the Holy Cross Ranger District, where a tree almost landed on a citizen.

If you look at what we are working on, in terms of clearing, this is 25 years of a trail, and look how labor-intensive that is to clear one area where the trees have fallen down. So it is a massive project for us to work on.

The other issue I want to talk about with relations to both fallen trees and fires is energy security in the form of power lines. One tree falling on a power line means the power is out; and in this particular area, we have distribution lines. We have large corridors with major transmission lines crossing through this area; over 1,300 miles of power lines that are at risk to either fallen trees or fire, if we have a catastrophic burn, which could potentially either burn the poles or melt the infrastructure associated.

We do have plan. We have an incident management covering the three forests in this area. Our focus is on community protection and infrastructure. We are shifting regional funding toward these areas. We have collaborative groups working together. We need a stable forest products industry that is diverse. We need stable markets for this renewable material.

You are going to hear from some folks later on, on the panel, that are going to talk about that. I am really worried about our timber industry today. The situation is dire. They cannot borrow money. They are on the risk of actually going out of business, which is really going to hurt us.

Last, I would say that restoring this two and-a-half million acres in our area, or working toward restoration will take all of us. It will take all of our resources. It will take multiple states bonding together, because multiple states are affected.

The situation is urgent. It is going to cost more later than it will today, and we need to get after it. We are getting after it; but more help would be appreciated. So thank you very much, and we look forward to your questions.

[The prepared joint statement of Dr. Bentz and Mr. Cables follows:]

Statement of Rick Cables, Regional Forester, Rocky Mountain Region, and Dr. Barbara Bentz, Research Entomologist, Rocky Mountain Research Station, U.S. Forest Service, U.S. Department of Agriculture

Madam Chairwoman and Mr. Chairman, thank you for the opportunity to come before these subcommittees and to discuss the impacts of mountain pine beetles on national forests in the West, and strategies for protecting infrastructure and resources from the hazards resulting from millions of acres of dead trees. I am the Regional Forester for the Rocky Mountain Region (Colorado, Wyoming, South Dakota, Nebraska, and Kansas) and with me is Dr. Barbara Bentz, Research Ento-

mologist with the Rocky Mountain Research Station. Thank you for inviting us here today.

The Big Picture

Outbreaks of bark beetles, which are occurring in numerous forest ecosystems across western North America, are the biggest in recorded history.[1] Although western forests have experienced regular infestations throughout their history, the current outbreaks are notable for their intensity, extensive range, and simultaneous occurrence in multiple ecosystems. These beetles are not only attacking forests where they have traditionally been found, but are thriving in some places where widespread infestations have not previously been recorded.[2] The unusual extent of the outbreaks has prompted concern that this loss of trees may impair ecosystem functioning and reduce the ability of our forests to provide future wildlife habitat, to protect watershed quality, to store carbon and to be a source of timber and recreational opportunities. In the western United States, beetle-killed trees cover nearly 8 million acres of the Northern Rockies, the Southwest, and dry forests in the Northwest.[3]

The Bark Beetle

Mountain pine beetles (Dendroctonus ponderosae), a native insect to North America, have co-evolved over thousands of years with their host trees in western North American forest ecosystems and have been a regular force of change in western North America forest ecosystems. Native insects, including bark beetles, are among the greatest forces of natural change in forested ecosystems of North America. Every few decades, depending on weather and local forest conditions, bark beetle populations increase and infest large areas of conifer forest. In doing so, they play an essential role in forest's natural cycle of growth and regeneration.[4]

In a one-year life cycle, bark beetles bore through the bark of pine trees and chew galleries in the inner bark, where they lay their eggs. The beetles carry the spores of blue-staining fungi. As the fungi develop and spread into the tree sapwood, they interrupt the flow of water to the tree crown—and the hatched larvae feed on the tree sapwood. The combined effects of the larvae and the fungi kill the tree. When the larvae grow into adult beetles, they emerge from the bark to attack more trees.[5]

Bark beetle epidemics resulting in acreages of dead trees are natural, cyclic events. Historically, bark beetles have not destroyed entire forests, and can serve as positive forces of change that redistribute nutrients and growing space.[6] Since 2000, the mountain pine beetle affected millions of acres across the Western United States. In 2007, aerial surveys detected about 4 million acres where mountain pine beetles were actively killing trees. (In 2008, aerial surveys detected 6.42 million acres of forests affected—data is as yet unpublished, but has been gathered by the Forest Service Health and Technology Enterprise team) The mountain pine beetle epidemic in the central Rocky Mountains is larger than any previously recorded in the area and is expanding rapidly.[7] However, in the absence of tree ring reconstructions or other spatially detailed information on historical mountain pine beetle outbreaks in Colorado, we do not know if similar outbreaks occurred in the same locations or habitats prior to the past 150 years.[8]

A panel of experts at a recent symposium, "Bark Beetle Outbreaks in Western North America: Causes and Consequences," suggested that two major factors appear to be driving the current outbreaks: 1) forest history and host susceptibility, and 2) changing climatic conditions, especially elevated temperatures and drought.

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[1] Bentz, et. al. (2009)Bark Beetle Outbreaks in Western North America: Causes and Consequences, Bark Beetle Symposium, Snowbird, Utah.

[2] Bentz, et. al. (2009)Bark Beetle Outbreaks in Western North America: Causes and Consequences, Bark Beetle Symposium, Snowbird, Utah.

[3] USDA-APHIS. 2008; Western Forestry Leadership Coalition, 2009

[4] Bentz, et. al. (2009)Bark Beetle Outbreaks in Western North America: Causes and Consequences, Bark Beetle Symposium, Snowbird, Utah.

[5] USDA Forest and Disease Leaflet 2, Mountain Pine Beetle, 1989, reprinted 1990

[6] Bentz, et. al. (2009) Bark Beetle Outbreaks in Western North America: Causes and Consequences, Bark Beetle Symposium, Snowbird, Utah.

[7] Major Forest Insect and Disease Conditions in the United States 2007. USDA Forest Service, FS-919. March 2009.

[8] W.H. Romme, J. Clement, J. Hicke, D. Kulakowski, L.H. MacDonald, T.L. Schoennagel, and T.T. Veblen, Recent Forest Insect Outbreaks and Fire Risk in Colorado Forests: A Brief Synthesis of Relevant Research, p. 3.

A "Perfect Storm"

At the landscape scale including lodgepole forests, a mosaic of stand ages and types helps reduce the susceptibility to mountain pine beetles at one time.[9] Over the past couple of centuries, fire exclusion and natural and human caused disturbances such as stand-replacing fires and mining-era timber cutting have contributed to the existence of large areas of old trees that are very similar in age and size.[10] Many lodgepole pine forests are greater than 80 years-old and thus are relatively even-aged, and are therefore highly susceptible to bark beetles and fire. The size of these old trees makes them an ideal food source for the bark beetles. Increasing winter temperatures associated with climate change are fostering increased survival of bark beetle populations. (Sustained cold winter temperatures are needed to kill bark beetles.)[11] The West's changing climate—rising temperatures and decreasing precipitation—has created weather conditions that are ideal for bark beetle outbreaks. Beetles are extremely sensitive to changes in temperature.[12] Longer, warmer summers have extended reproductive and growth periods, and fewer cold snaps and higher winter temperatures have allowed bark beetles to survive in winter spring and fall.[13] The prolonged drought across the West has also weakened trees and made them more susceptible to bark beetle attacks. Entire forests full of drought stressed trees, combined with a rapidly expanding bark beetle population combine to fuel exponential beetle population growth.[14]

The primary difference between previous beetle outbreaks and the current epidemic is people now live, work and recreate throughout the lodgepole pine ecosystem. Dozens of communities surrounded by dead trees are at risk of wildfire. This area includes world-class ski resorts such as Vail, Breckenridge, and Winter Park. In addition, the forest products industry infrastructure needed to help address some of the potential public health and safety impacts is nearly nonexistent within Colorado. These important differences along with the scale of infestations, requires approaches to reduce the safety threats to people while ensuring that the forests that replace these dying forests are diverse and resilient to change across the landscape.

I'll use the outbreak in northern Colorado and southern Wyoming as a case study of what the Forest Service is facing with large bark beetle infestations throughout the West. The beetle infestation has spread at a rapid rate over the last ten years. Forest Service entomologists forecast that in the next two to five years, if the infestation continues at this intensity and rate of spread, as much as 90 percent of the mature lodgepole will die. The results of our forest health and protection 2008 aerial survey show that we have some level of infestation in most of the lodgepole in the Rocky Mountain Region, coupled with heavy mortality. It is clear that we can't stop this current infestation. Thinning stands has proved ineffective. Spraying carbaryl, an insecticide, is environmentally safe when properly applied, and can be effective in small, high-value areas such as campgrounds, but is far too expensive to use at the forest scale. Pheromone traps are similarly ineffective in reducing the rate of the spread of such a large infestation. Verbenone, a repelling pheromone, failed in the presence of large beetle populations.[15]

When it became apparent that we could not suppress the infestation, we changed our focus from prevention to reducing risks to public safety and infrastructure to restoration of the forest to include a mosaic of tree species and ages classes that may be more resilient to the stresses of climate change into the future.

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[9] Koch, Peter (1996) Lodgepole Pine in North America. Forest Products society, volume 1, P 314.

[10] 2006 Report on the Health of Colorado's Forests, available at http://csfs.colostate.edu/pdfs/06fhr.pdf

[11] Bentz BJ, Régnière J, Fettig CJ, Hansen EM, Hayes, JL, Hicke JA, Kelsey RG, Lundquist J, Negrón J, Progar R, Seybold SJ, Vandygriff JC (2008) Climate Change and Western U.S. Bark Beetles: Rapid Threat Assessment. Prepared for the Western Wildland Environmental Threat Assessment Center; http://www.fs.fed.us/wwetac/projects/PDFs/RTA__Bark__Beetle.pdf

[12] Bentz, B.J., J.A. Logan, and G.D. Amman. 1991. Temperature dependent development of the mountain pine beetle (Coleopter: Scolytidae), and simulation of its phenology. The Canadian Entomologist 123: 1083-1094.

[13] Bentz, et. al. (2009) Bark Beetle Outbreaks in Western North America: Causes and Consequences, Bark Beetle Symposium, Snowbird, Utah.

[14] Bentz, et. al. (2009) Bark Beetle Outbreaks in Western North America: Causes and Consequences, Bark Beetle Symposium, Snowbird, Utah.

[15] Pogar, R.A. (2005) Five-Year Operational Trial of Verbenone to Deter Mountain Pine Beetle (Dendroctonus ponderosae; Coleoptera: Scolytidae) Attack of Lodgepole Pine (Pinus contorta) Environmental Entomology 34(6):1402-1407. 2005

Public Hazards

Several critical hazards to public safety are posed by dead trees: local fire hazards in times of drought, threats to water supplies, and falling dead trees along utility corridors, roads, trails, and other infrastructure.

Wildfire Implications

The relationship between bark beetle outbreaks and subsequent fire at the larger landscape scale is not yet fully understood.[16] Outbreaks in the recent years have provided scientists with excellent opportunities to conduct studies and gather new information about the role of bark beetles in western forests, but much research remains to be done.

At the stand level, both crown and surface-fire hazards[17] change through time after a bark beetle outbreak in a stand of living trees.[18] The fire hazard is high in the period one to two years after pine trees die since the dead needles are retained in the tree's crown, stocking the canopy with dry, fine fuels that can ignite quickly during weather conditions conducive to fire.[19] As the trees lose their needles, the fire risk in the crowns of the trees decreases as fire doesn't spread through standing dead trees with no needles very quickly. Surface fire hazard increases again as dead trees begin to fall and create a heavy fuel bed with young trees growing up through the tangle of down logs.[20] In dry, hot, windy weather conditions, fires burning in heavy surface fuels can move fast, burn extremely hot, and be very resistant to control.[21] An additional significant concern is the safety of our firefighters. Large areas of fallen trees limit escape routes for crews, severely limiting our ability to deploy firefighters in these areas.[22]

Water

The value of water flowing from our public forests is enormous and is a matter of national significance. Forest Service Hydrologists estimate that the forests of the Rocky Mountain Region contain the headwaters for much of the western United States; people in 177 counties in 13 states rely on water from the National Forests of the Rocky Mountain Region. Thirty-three million people live in these counties.[23] Forest Service management analysis indicates that people in Phoenix, Tucson, San Diego and Los Angeles who get their tap water from the Colorado River get one quart of every gallon from the National Forests of the Rocky Mountain Region.[24] The economic value of water flowing from the National Forests of this region numbers in the billions of dollars.[25]

By themselves, insect outbreaks are unlikely to cause erosion or degrade water quality because they do not disturb the forest soil. Unpaved roads and high-severity wildfires can cause much greater effects on runoff, erosion, and water quality. Regardless of whether or not caused by beetle infestations, massive tree mortality can

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[16] Bentz, et. al. (2009) Bark Beetle Outbreaks in Western North America: Causes and Consequences, Bark Beetle Symposium, Snowbird, Utah.

[17] The term Fire hazard as used here refers specifically to the state of fuels in a given stand—independent of variables such as temperature, wind, and precipitation that influence fuel moisture content and fire occurrence.

[18] Bentz, et. al. (2009) Bark Beetle Outbreaks in Western North America: Causes and Consequences, Bark Beetle Symposium, Snowbird, Utah.

[19] Page, W.; Jenkins, M. 2007. Mountain pine beetle-induced changes to selected lodgepole pine fuel complexes within the intermountain region. Forest Science 53(4):507-518.

Page, W.; Jenkins, M. 2007. Predicted Fire Behavior in Selected Mountain Pine Beetle-Infested Lodgepole Pine. Forest Science 53(6):662-674

Hawkes, B. 2008. Effects of the mountain pine beetle on fuels and fire behaviour. In Mountain Pine Beetle: From Lessons Learned to Community-based Solutions Conference Proceedings, June 10-11, 2008. BC Journal of Ecosystems and Management 9(3):77-83. http://www.forrex.org/publications/jem/ISS49/vol9__no3__MPBconference.pdf

Jenkins, M., Hebertson E., Page, W. and Jorgensen C. 2008 Bark beetles, fuels, fires and implications for forest management in the Intermountain West. Forest Ecology and Management 254 (2008) 16-34

[20] Bentz, et. al. (2009) Bark Beetle Outbreaks in Western North America: Causes and Consequences, Bark Beetle Symposium, Snowbird, Utah.

[21] Barrows, J. 1951. Fire Behavior in the Northern Rocky Mountains. Station Paper No. 29. USDA Forest Service, Northern Rocky Mountain Forest and Range Experiment Station, Missoula MT. 133 pages

[22] Alexander, M and Stam, J. 2003. Safety Alert for Wildland Firefighters: Fuel Conditions in Spruce Beetle-Killed Forest of Alaska. Fire Management Today 63 (2) 25.

[23] US Census 2000

[24]

[25] Brown, T.C.; Hobbins, M.T.; Ramirez, J.A. 2008. Spatial distribution of water supply in the coterminous United States. Jour. Amer. Water Resource. Assn. 44(6):1-14. Dec. 2008.

affect watershed quality and quantity.[26] Live trees in high-elevation watersheds provide shade and shelter that help to maintain the winter snow pack and prevent quick runoff during the spring melt and summer storms. While beetle-killed trees do not produce the same level of erosion as a wildfire, large numbers of bark beetle-killed trees within a watershed increase the risk of rapid snow loss and can enhance annual stream flow.[27]

A wildfire burning in the heavy fuels close to the soil that result from a large-scale infestation can literally bake the soil, sterilizing the soil and sometimes leaving a water-repellent surface that sheds rain, leading to severe gully erosion, debris flows into reservoirs and streams, and flood damage. We experienced these effects after the Hayman Fire in central Colorado in 2002. After the Buffalo Creek Fire in 1996, Strontia Springs Reservoir filled with sediment that washed off burned areas after heavy rains, and the South Platte River was running brown with mud.

Falling Dead Trees

Falling dead trees are an immediate hazard. In the beetle-infested area of northern Colorado and southern Wyoming, over 900 miles of trails and 3500 miles of roads are lined with dead trees that will fall. More than 21,000 acres of developed recreation sites—such as campgrounds and picnic areas—have hazard trees.

Powerlines and communication sites are also threatened by hazard trees. There are more than six thousand acres of right-of way corridors for authorized transmission and distribution lines in the area affected by bark beetle infestation in northern Colorado and southern Wyoming.[28] Forest Service resource specialists have estimated this represents over 1000 miles of transmission lines. Dead trees lining transmission corridors can fall on lines, starting wildfires and disrupting power supplies to cities and towns—potentially for days.

Strategies to Protect the West

The scale of the bark beetle infestation and its threats to public safety and infrastructure requires a concentrated response. We established the Bark Beetle Incident Management Team in 2007 to plan and coordinate mitigation work on the National Forests in Colorado and Wyoming most affected by the outbreak—the Medicine Bow-Routt, Arapaho-Roosevelt and White River.

The team produced a five-year strategic plan in 2007, developed in coordination with collaborative groups such as the Colorado Bark Beetle Cooperative—a group comprising federal, state, local, and non-profit members. The plan identifies over 240 projects over the next six years—over 100 thousand acres of treatments involving timber removal of dead or beetle-infested trees, stewardship projects to remove low-value trees, fuel treatments to reduce wildfire hazard, preventive spraying in high-value developed areas, and removal of hazard trees that can fall on infrastructure and people.[29] Regional funding was refocused to enable a sharp ramp-up in work on the national forests affected by the infestation.

The three forests treated more than 24,000 acres in 2008. Fourteen thousand of these acres were fuel reduction in the wildland urban interface. Ten thousand acres included fuels treatment outside the wildland urban interface, hazard tree removal for public safety and infrastructure protection, spraying some trees in high-value areas such as campgrounds to keep some green trees on the landscape, and timber sales to capture economic value. The forests removed hazard trees from 31 recreation sites, and this year the forests are removing hazard trees from an additional 40 sites.

On May 18, 2009 I met with regional utility companies to discuss steps needed to facilitate extensive removal of hazard trees within and outside of the authorized right-of-way of power line corridors. Current permits, easements, memorandums of understanding, and other types of authorizations allow utilities to remove trees that pose an imminent hazard to the safe operation of power line facilities, and I have notified the companies in writing that they may immediately remove them. However, cutting and removal of dead trees in a wider corridor than the currently authorized right-of-way width to provide long-term protection of power lines will require environmental analysis under the National Environmental Policy Act. We have formed an interdisciplinary team, selected a team leader, and started this analysis. We anticipate it will be completed by fall.

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[26] Bentz, et. al. (2009) Bark Beetle Outbreaks in Western North America: Causes and Consequences, Bark Beetle Symposium, Snowbird, Utah.

[27] Bentz, et. al. (2009) Bark Beetle Outbreaks in Western North America: Causes and Consequences, Bark Beetle Symposium, Snowbird, Utah.

[28] Figure derived from data in the Forest Service Special-Use Database System, Region 2.

[29] 2007 Bark Beetle Incident Implementation Plan (updated in 2009), http://www.fs.fed.us/r2/bark-beetle/index.html .

We're making significant strides in protecting infrastructure, using the Colorado Good Neighbor Authority, the Wyden Authority, and the authorities provided by the Healthy Forest Restoration Act to the extent possible. There is much still to do to restore a forested landscape after this infestation of beetles runs its course. This work will encompass engagement with the public to plan for and implement forest restoration projects that may result in a more diverse mosaic of tree species and ages.

The Next Forest

Future forests in the Rocky Mountain West will likely look very different from the vast landscapes of old lodge-pole pine one sees today. We're thinning some stands and conducting salvage harvest of dead lodgepole while leaving understory spruce and fir to grow. (Lodgepole will regenerate naturally—it doesn't have to be planted in most areas.) We're also conducting aspen regeneration cuts to stimulate aspen clones to produce new, vigorous growth, and we're removing conifers from aspen stands to prevent conversion to conifer type.

The effects of climate change are becoming apparent on the forests and grasslands,[30] and must be factored into our planning. The changing dynamics of current outbreaks make management decisions even more difficult. One important aspect of future forest management will be an evaluation of multiple approaches across a range of spatial scales and outbreak severity levels. Many areas will regenerate naturally following a bark beetle outbreak and require no action. In some areas land managers may want to consider the creation of a diverse forest through modifications to species and age classes at a regional scale. Some ecosystems that have highly susceptible forest conditions may benefit from actions to reduce stand density. This is particularly true in lodgepole and ponderosa pine stands where research has shown that thinning can reduce susceptibility.[31]

There are many areas where we are not removing dead trees due to the following: steep slopes, the area is congressionally designated Wilderness, economic feasibility, or for other reasons. In some areas where we don't undertake active management, spruce and fir are already present as understory saplings and will be released to grow as overstory lodgepole pines fall. Where appropriate, fire may play a more active role on the landscape creating a diverse landscape of openings and ages. In the longer term, a bark beetle outbreak that kills many of the conifers may be beneficial to aspen stands, if aspen clones were present before the beetle outbreak. If aspen is not present, then composition of the forest will not change and the conifers that survive—including smaller trees and less susceptible species—will increase their growth rates and replace the large conifer trees that were killed by beetles.[32]

The Challenge: Timber Industry in Decline

The forest products industry is a primary partner in accomplishing work integral to sustaining the health, diversity, and productivity of the National Forest System, and can help us in our work to mitigate the risks of the bark beetle infestation and moving beyond it to restore our forests. The Forest Service recognizes the impact a depressed market is having on the forest products industry in Colorado and Wyoming, and much of the West. We are working to modify down payment and periodic payment requirements, as well as taking other actions to free up capital for purchasers. We are carefully reviewing timber sale design criteria to ensure that projects are economically viable. New forest products businesses are starting up. Two new pellet mills in northern Colorado are using beetle-killed trees to produce pellets for wood stoves. Some dead trees are being used for house logs, furniture, and decorative items. These businesses and others that constitute a viable and diverse forest industry complete with a skilled workforce are important in assisting the Forest Service conduct active forest management in an efficient and cost-effective manner.

That concludes my prepared statement. I'll be happy to take any questions you may have.

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[30] CCSP. May 2008. Executive Summary in Synthesis and Assessment Product 4.3 (SAP 4.3): The Effects of Climate Change on Agriculture, Land Resources, Water Resources, and Biodiversity in the United States, p. 3, P. Backlund, A. Janetos, and D. Schimel, lead authors. A report by the U.S. Climate Change Science Program (CCSP).

[31] Fettig, Christopher J.; Klepzig, Kier D.; Billings, Ronald f.; Munson, A. Steven; Nebeker, T. Evan; Negron, Jose F.; Nowak, John T. (2007) The effectiveness of vegetation management practices for prevention and control of bark beetle infestations in coniferous forests of the western and southern United States. Forest ecology and management. 238(1-3): 24-53

[32] W.H. Romme, J. Clement, J. Hicke, D. Kulakowski, L.H. MacDonald, T.L. Schoennagel, and T.T. Veblen, Recent Forest Insect Outbreaks and Fire Risk in Colorado Forests: A Brief Synthesis of Relevant Research, p. 12.

Mrs. NAPOLITANO. Thank you, sir; and now we will hear from Dr. Herbert Frost.

STATEMENT OF HERBERT C. FROST, ASSOCIATE DIRECTOR, NATURAL RESOURCE STEWARDSHIP AND SCIENCE, NATIONAL PARK SERVICE, U.S. DEPARTMENT OF THE INTERIOR

Mr. FROST. Chairwoman Napolitano and Chairman Grijalva and Members of the Subcommittees, thank you for the opportunity to appear before you today and discuss mountain pine beetles, and the devastating impacts to our western forests.

I am joined today by representatives of other bureaus within the Department of the Interior, who share in the management of public lands affected by the mountain pine beetle.

The Department of the Interior is extremely concerned about escalating mountain pine beetle populations, and the associated disastrous impacts to public and private lands. This testimony highlights the collaborative efforts of the bureaus within the department to combat the immediate threat of the mountain pine beetle, while also promoting the long-term stewardship and sustainability of healthy and resilient forests, which would be better able to endure cyclic mountain pine beetle epidemics and their potential impacts.

Since the Forest Service has already covered many of the facts related to the biology of the pine beetle, I will focus on specific impacts to public lands managed by the Department of the Interior, and the strategies we have undertaken in response to this threat.

Under typical conditions, bark beetles play an important role in forest ecosystems, providing the periodic forest renewal, re-shaping our forest landscapes, and resulting in healthy forest succession.

When trees are killed by the beetle, the resulting impacts are significant. Dead trees produce additional fuel for wildfires that can lead to the destruction of large numbers of natural and cultural resources, including tribal values on Indian reservations, archeological sites in park units, view sheds, and economically valuable timber.

Large scale fires can also destroy high value resources, such as campgrounds and visitor centers, that can quickly spread from our public lands to surrounding communities.

Mortality of these tree stands also negatively affects wildlife. Pine forests offer critical habitat for many wildlife species, providing vital sources of food, protection, and breeding sites. For example, white bark pine produced seeds that are a major source of grisly bears in the late summer and early fall.

No effective treatment for suppression of large scale pine beetle outbreaks currently exists. But many bureaus within the department area approaching this problem in a variety of ways.

Approximately 40 percent of the National Park Service lands in the West are forested; and a significant percentage of those lands are occupied by valorous species or by human settlement.

The National Park Service is approaching this problem by mapping the outbreaks of pine beetles within the park units, which at this time is now occurring in all western states except North Da-

kota. Within these states, 57 national parks have reported elevated populations of beetle infestations.

The NPS is also responding to escalated pine beetle epidemics by providing for visitor safety, minimizing fire danger to visitors in neighboring communities; protecting dependent wildlife species, habitats, and watersheds; and providing for long-term sustained healthy forest eco-systems.

In campgrounds, in visitor centers and other high use areas, a combination of actions are being employed to ensure these goals and objectives are met with highly susceptible trees and hazard trees being removed.

Specifically, with respect to the Rocky Mountain National Park in Colorado, pine beetles are rapidly expanding—with mortality in lodgepole pine approaching nearly 100 percent.

The park has identified more than 350 locations in the park, where life and property are at risk. Current projections indicate the park will need to remove more than one million hazard trees, costing more than $7 million during the upcoming years. In areas where heavy tree mortality is occurring adjacent to towns and communities, fire reduction treatments are planned.

For all parks, much of the beetle-killed trees will remain standing in accordance with NPS Organic Act and management policies, which allow for national recovery of areas, following disturbances such as fires. Less additional action is needed to protect cultural historic resources for park development, or to ensure human safety.

The Bureau of Land Management estimates that up to 800,000 of BLM managed forest land in Colorado, Wyoming, Montana, and Idaho, are infested by the pine beetle and, therefore, at risk of wide spread mortality.

Warm winters, drought, stress, and a prevalence of large amounts of overstock, even age, single species forest present an idea condition for such a severe outbreak. The unhealthy condition of the forest makes it susceptible to a fatal insect attack.

Harmful impacts to BLM are numerous, including tree mortality; which leads to increased fire hazards, degraded conditions for wildlife impact; cultural resources; and negative effects on wood products and declining tourism.

Approximately 50 percent of the 32 million acres of public domain, that BLM manages; and the lower 48 states are vulnerable to over-stock.

Where devastated areas of pine stands occur on reservation lands, under the Bureau of Indian Affairs—for example large pulled pine stances have nearly wiped out the Yakima reservation in Washington.

Tribal, agency, and regional staff at these locations are concerned that the high beetle populations may significantly alter the ecosystem by effectively removing lodgepole pine as a component.

In response to the devastation of Indian lands, BIA and others assisted Reservations in taking steps to protect the remaining stands.

There are also severe issues in Fish & Wildlife Service; and I will conclude my testimony, thank you.

[The prepared statement of Mr. Frost follows:]

Statement of Herbert C. Frost, Associate Director, Natural Resource Stewardship and Science, National Park Service, U.S. Department of the Interior

Chairwoman Napolitano, Chairman Grijalva, and members of the subcommittees, thank you for the opportunity to appear before you today to discuss mountain pine beetles and the devastating impacts to our western pine forests.

I am Dr. Herbert C. Frost, Associate Director for Science and Stewardship in the National Park Service. I am joined today by representatives of other bureaus within the Department of the Interior who share in the management of public lands affected by the mountain pine beetle, including the Bureau of Land Management, the Bureau of Indian Affairs, and the U.S. Fish and Wildlife Service.

The Department is extremely concerned about escalating mountain pine beetle populations and the associated disastrous impacts to public and private lands including the increased risk of wildfires from dead or dying trees, loss of wildlife habitat, impacts to natural and cultural resources, and threats to surrounding communities. This spread, and the related impacts that are currently being experienced, are at epidemic proportions throughout the west, and appear to be the result of a number of factors including natural beetle population cycles, continuous mild winters, and an abundance of uniformly mature pine forest stands.

This testimony highlights the collaborative efforts of bureaus within the Department to combat the immediate threat of the mountain pine beetle while also promoting the long-term stewardship and sustainability of healthy, resilient forests that will be better able to endure cyclic mountain pine beetle epidemics and their potential impacts.

Background

The mountain pine beetle (Dendroctonus ponderosae) ranks first in destructiveness among the tree-killing bark beetles that are native to the west, although there are many native beetle species affecting a host of other pine tree species nationally. The mountain pine beetle affects numerous species of western pine, including ponderosa, lodgepole, and the five-needle white pine species. In recent years, outbreaks have increased mortality rates well above ambient levels within forestlands in the Northern and Central Rockies, in Eastern Oregon and Washington, and as far north as Canada. A current and very visible outbreak is affecting virtually all mature lodgepole pine in Colorado, along with large areas of lodgepole and limber pine in Wyoming. Affected lodgepole pine trees are as young as sixty years old and as small as six inches in diameter at breast height. Tree mortality from this outbreak is estimated to have now occurred on nearly 8 million acres nationwide.[1]

Bark beetles infest pine trees by laying eggs under the bark. When the eggs hatch, the larvae mine the area beneath the bark and eventually cut off the tree's supply of nutrients. The beetles also carry a fungus that causes dehydration and inhibits a tree's natural defenses against beetle attacks.

Under typical conditions, bark beetles play an important role in forest ecosystems, providing for periodic forest renewal. Periodic outbreaks help shape our forested landscapes, resulting in forest succession. The dead trees also provide critical habitat for birds, bats, and other cavity-dependent species.[2]

Although mountain pine beetle outbreaks and associated pine tree die-offs are a natural cyclic phenomenon, the current outbreak is epidemic due to several variables.[3] One variable is that the northern part of the beetle's geographic range has expanded to include high-elevation areas that historically were too cold for the beetle to survive during the winter months. These high elevation pine stands, such as the five-needle pines, do not have an historic evolutionary relationship with the beetles and hence, the beetles act in similar ways to an invasive species. This range expansion may be the result of reoccurring drought and climate change, which contribute to warming trends in mountain ecosystems.[4] Another variable is that certain

[1] USDA-APHIS. 2008; Western Forestry Leadership Coalition, 2009.

[2] Shrimpton, D.M. 1994. A report for Forest Health. DC Ministry of Forests, December 1994; Davis and Johnson. 1987. Forest Management 3rd Edition, McGraw Hill; Bentz, et al. (2005) Bark Beetle Outbreaks in Western North America: Causes and Consequences, Bark Beetle Symposium, Snowbird, Utah.

[3] USDA-APHIS. 2008; Western Forestry Leadership Coalition, 2009.

[4] Logan J.A.; Powell J.A. 2001. Ghost Forests, Global Warming, and the Mountain Pine Beetle (Coleoptera: Scolytidea). American Entomologist. 160-172; Kurz, W.A. et al. Mountain Pine Beetle and Forest Carbon Feedback to Climate Change; Campbell, Elizabeth M. 2007. Climate change, mountain pine beetle, and the decline of whitebark pine, a keystone species of high-elevation ecosystems in British Columbia, Canada. Ecological Society of America meeting, August 2007, San Jose, CA.

species throughout our western forests have been impacted by years of fire suppression efforts, aimed at protecting critical infrastructure and developed areas.[5]

When trees are killed by the beetle, the resulting impacts are significant. Dead trees produce additional fuel for wildfires that can lead to the destruction of large numbers of natural and cultural resources including tribal values on Indian reservations, archeological sites in park units, and economically valuable timber. Large-scale fires can also destroy high-value resources such as campgrounds and visitor facilities, and can quickly spread from our public lands to surrounding communities, causing death and destruction of property. High severity fires can also result in ground surface heating and consequential increased erosion in some watersheds.

Mortality of these tree stands also negatively impacts wildlife. Pine forests offer critical habitat for many wildlife species, providing vital sources for food, protection, and breeding sites. For example, white bark pine produce seeds that are a major source of food for federally listed grizzly bears in the late summer and early fall.[6]

No effective treatment for suppression of large-scale pine beetle outbreaks currently exists, but many bureaus within the Department are approaching this problem in a variety of ways based upon their individual missions, policies, laws, and management mandates under which they operate.

National Park Service

Although there are no current estimates of the potential acres involved, approximately 40% of National Park Service (NPS) lands in the west are forested and a significant percentage of those lands are occupied by vulnerable species. The NPS is approaching this problem by mapping the outbreaks of mountain pine beetles within its park units, which at this time is now occurring in all western states except North Dakota; areas of California, the front range of Colorado, the Black Hills of South Dakota, and the North Cascades are particularly hard hit. Within these states, 57 national park units have reported elevated populations of beetle infestations. An additional 21 units are within the affected area but have not yet reported increased beetle activity.

Outbreaks in the1970's-1980's contributed to the historic Yellowstone fires of 1988, the largest wildfire in the history of the park, which destroyed over 793,000 acres. At that time, dense, 90+ year old stands of lodgepole pine were further stressed by several years of drought, adding to the vulnerability of these trees and leading to thousands of acres of beetle-killed lodgepole in the park. These beetles are now again playing a role in changing ecosystems within the greater Yellowstone area, including Grand Teton and Yellowstone National Parks.

NPS is also responding to escalating mountain pine beetles epidemic by providing for visitor safety, minimizing fire danger to visitors and neighboring communities, protecting dependent wildlife species and habitats, and providing for long-term sustained healthy forest ecosystems. In campgrounds, visitor centers, and other high-use areas, a combination of actions are being employed to ensure these goals and objectives are met with highly susceptible trees and problem trees being removed. These actions are helping to manage existing infestations and protect vulnerable areas. In some parks, targeted insecticides are being used to save high-value trees.

Specifically with respect to Rocky Mountain National Park in Colorado, mountain pine beetles are rapidly expanding with mortality in lodgepole pine approaching nearly 100%. Beetle outbreaks in the park represent only a small portion of the Colorado forests that are a part of this current outbreak. Response to the potential fire and watershed consequences of this outbreak are being coordinated through an interagency task group that includes federal, state, and 22 counties. The goals of the plan at Rocky Mountain National Park are consistent with the task force recommendations: to remove or protect high-value resources in or near park facilities, such as campgrounds, housing areas, and visitor centers. The plan identified more than 350 locations in the park where life and property are at risk. Current projections indicate that the park will need to remove more than one million hazard trees, costing more than $7 million dollars during the upcoming years. In areas where

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[5] Davis and Johnson. 1987. Forest Management 3rd Edition, McGraw Hill.

[6] Felicetti, L.A., C.C. Schwartz, R.O. Rye, M.A. Haroldson, K.A. Gunther, D.L. Phillips, and C.T. Robbins. 2003. Use of sulfur and nitrogen stable isotopes to determine the importance of whitebark pine nuts to Yellowstone grizzly bears. Canadian Journal of Zoology 81:763-770; Lanner, R.M., and B.K. Gilbert. 1994. Nutritive value of whitebark pine seeds, and the questions of their variable dormancy. U.S. Forest Service General Technical Report INT-GTR-309. pp. 206-211; Mattson, D.J., B.M. Blanchard, and R.R. Knight. 1992. Yellowstone grizzly bear mortality, human habituation and whitebark pine seed crops. Journal of Wildlife Management 56:432-442; Robbins, Charles T.; Schwartz, Charles C.; Gunther, Kerry A.; Servheen, Chris. 2006. Grizzly Bear Nutrition and Ecology: Studies in Yellowstone National Park. Yellowstone Science, Volume 14, Number 3, pg. 19-26.

heavy tree mortality is occurring adjacent to towns and communities, fire reduction treatments are planned.

Even with the aggressive plan at Rocky Mountain National Park, approximately 95% of the park lands will not be treated. Unlike other agencies, commercial timber sales are not authorized on NPS lands. Consequently, much of beetle-killed trees will remain standing. In accordance with our the Organic Act and our National Park Service Management Policies, NPS allows natural recovery of areas following disturbances, such as fires, unless additional action is needed to protect cultural and historic resources, protect park developments, or to ensure human safety.

Bureau of Land Management

The Bureau of Land Management (BLM) estimates that up to 800,000 acres of BLM-managed forestland in Colorado, Wyoming, Montana, and Idaho are infested by the mountain pine beetle. Warm winters, drought stress, and a prevalence of over-mature, over-stocked, even-aged, single species forests present ideal conditions for such a severe outbreak. The unhealthy condition of the forest makes it susceptible to fatal insect attack.

Harmful impacts to BLM lands are numerous. Increased tree mortality leads to increased fire hazards, degraded conditions for wildlife, negative effects on wood products industries, and declining tourism. In some areas of high tree mortality, fire suppression will be difficult and dangerous.

BLM is approaching this epidemic by treating, in Fiscal Year 2009, 9,500 acres to mitigate impacts of the mountain pine beetle outbreak. The treatments are focused on protecting high-value recreation sites through placement of pheromone traps to prevent tree mortality, and reducing the risk of catastrophic wildfire events by reducing fuels through salvage of dead and dying trees. Some challenges to conducting treatments of additional acreage include poor markets for treatment byproducts, limited inventory data, limited numbers of contractors to perform the work, steep and/or inaccessible site conditions, and time required to complete the necessary National Environmental Policy Act (NEPA) processes.

While this hearing is focused on the mountain pine beetle outbreak, there are other insects that could create similar impacts in crowded, drought-stressed forests. Creating resilient landscapes is one possible long term solution to addressing outbreaks of insect infestation. Approximately 50% of the 32 million acres of public domain forestland that BLM manages in the lower 48 States are vulnerable due to overstocking and are therefore at great risk of increased insect and disease attacks and catastrophic wildfires. To restore forest health, projects are planned to achieve the correct density, species composition, and stand structure for a given site, so that insect and disease agents will remain at endemic levels as opposed to epidemic levels now seen in pine beetles.

In Fiscal Year 2009, BLM is also thinning 25,000 acres to improve forest health via commercial timber sales, service contracts, and stewardship contracts.

Bureau of Indian Affairs

Some of the most devastated areas of pine stands in the west occur on reservation lands under the management of the Bureau of Indian Affairs (BIA). In the Central and Northern Cascades (Northwest Region), the Warm Springs Reservation in Oregon has experienced mortality in some of their lodgepole pine stands due to mountain pine beetles—69,000 acres are infested, of which 40,000 acres are completely dead. Similarly, the lodgepole pine stands have been nearly wiped out on the Yakama Reservation in Washington. In many of these areas, the beetle has run its course, with few healthy lodgepole pines left.

Tribal, agency and regional staff at these locations are concerned that the high beetle populations may significantly alter the ecosystem by effectively removing mature lodgepole pine as a component. They are also concerned that the resulting extremely high fuel hazards will create a catastrophic wildland fire risk that could not only endanger the lodgepole pine areas, but the surrounding forest and its multitude of tribal values as well.

In response to the devastation on Indian lands, BIA has assisted reservations in taking steps to protect the remaining pine stands. At the Colville Indian Reservation in Washington, 8,000 acres of lodgepole pine stands are at high-risk for mountain pine beetle infestation. The main treatment is a regeneration harvest and conversion to a different species, mostly western larch. About 10,000 acres have been converted since the 1970's.

At the Rocky Boys Indian Reservation, the reservation has been successful in timber harvest salvaging of the mortality, but is still facing ongoing infestation. Noncommercial stands have been affected as well. On other reservations, the incompati-

bility between salvage operations and reservation uses, and proximity to markets are restricting large-scale salvage operations.

U.S. Fish and Wildlife Service

Mountain pine beetles are not a significant issue on lands managed by the U.S. Fish and Wildlife Service (USFWS), specifically National Wildlife Refuge System and National Fish Hatchery System lands. Very few USFWS lands have significant forested habitat and thus the Service only administers small amounts of acreage of western pine forest, most of which consists of ponderosa pine, not the mature (and over-mature) lodgepole pine that has, to date, suffered from the most intensive beetle infestation.

Leadville National Fish Hatchery (NFH) in Leadville, Colorado, is an exception. NFH lands total over 3,000 acres of timber, including 2,500 acres of mature lodgepole pine. The hatchery is near the epicenter of the severe beetle infestation in the Colorado High Country and beetle infestation is an active management issue at the hatchery. The majority of this timber is in the Mt. Massive Wilderness Area; approximately 500 acres of the hatchery's timbered areas lie outside the wilderness.

The hatchery manager first observed beetle kill on hatchery forests in 2006 and has tasked staff and volunteers to remove dead/infected individual trees on an annual basis. Pheromone packets are applied each year to protect individual pine trees in the hatchery headquarters area, and in 2008, the Service participated in an interagency effort with the Bureau of Land Management to thin lodgepole and to encourage aspen, spruce, and fir regeneration on hatchery lands. Additional pine thinning partnership projects are planned for 2009 and beyond.

While the USFWS does not anticipate these efforts will completely prevent beetle-kill of the hatchery's lodgepole forest, the Service is hopeful the efforts will help reduce fuel loads and stimulate regeneration of other species. It remains unclear if thinning in uninfested forest stands will have any mitigating impact on mortality of mature lodgepole on USFWS or any other infested lands in Colorado.

Department Efforts

In addition to all the actions being taken by specific bureaus, the Department is coordinating several efforts including integrated pest management (IPM), creation of an incident commander for beetle control efforts in Colorado, multi-agency discussions, and blended fuels treatment plans and zones. The Department is also collaborating with the Department of Agriculture (through the U.S. Forest Service) who provides forest health information and support annually to the bureaus.

In the face of rising mountain pine beetle infestations across the west, the Department will need increasing attention and dedicated resources to face this challenge. The greatest need will be for continued mapping and monitoring, fuel treatment around high-value areas, and for careful assessment of stressors such as sustained drought, climate change, beetle spread and impacts to the other integral flora and fauna components that make up a healthy, intact forest.

Conclusion

Mountain pine beetles will continue to be a part of the western landscape. It is an episodic pest reoccurring periodically throughout our western forests. It is currently rapidly expanding to epidemic levels in parts of the west. Some of this expansion is beyond the historic parameter for this species, in part assisted by reoccurring drought, climate change, overly dense mature forests, and changes in the biology of mountain pine beetle.

The Department is committed to continued monitoring of the mountain pine beetle as it spreads to new areas and expands its range. We will continue to coordinate and support our federal, state and local partners to address this issue. The Department is dedicated to the interagency fuels and fire suppression efforts to respond to the inevitable fires and loss of habitat that will occur as a result of this outbreak. Although stopping the mountain pine beetle is not a viable option, management strategies to control its damage in priority areas, and protect resources and communities from catastrophic wildfires are critical. The continued collaboration and support between the Departments of the Interior and Agriculture will help us to face this unprecedented forest health challenge.

This concludes my prepared testimony. I, along with our technical witnesses from the other bureaus, would be happy to answer any questions you or the other members of the subcommittees have on this topic.

Mrs. NAPOLITANO. Thank you; your testimony is in the record. So thank you very much for being here as a witness. It is good to see you, Mr. Turley; you are next.

STATEMENT OF RONALD TURLEY, SPECIAL PROGRAMS MANAGER, WESTERN AREA POWER ADMINISTRATION, U.S. DEPARTMENT OF ENERGY

Mr. TURLEY. Thank you, Madam Chairwoman; good morning Madam Chairwoman, Mr. Chairman, Committee Members, my name, of course, is Ron Turley. I am the Special Programs Manager for Western Area Power Administration.

I am here today to try and provide the technical support that this committee needs to investigate this important issue. I just want to say at the onset though that I cannot speak toward policy. I am more of a technical type.

For those that do not know, Western is a Federal agency. Western owns and operates 17,000 miles of transmission in most of the states west of the Mississippi. In many cases, as in Colorado, Western is the backbone of the electrical grid.

So today, I am talking about transmission and not distribution. Transmission is the bulk of the energy grid. That is what I am speaking to.

Transmission lines, of course, are linear features that traverse great distances across many vegetation types and, of course, of one common one is our western forests. We are all aware that we have unhealthy, unstable forest conditions in many forest types. Today, we are focusing on the bark beetle and lodgepole pine. But there are many forest types that have health and stability issues.

When conditions are right, experience has shown that multiple, large fire events will occur, and they often continue for long periods of time.

Western has concern about the potential for an overlap of multiple, simultaneous fire events on multiple parts of the grid. This could have significant regional and potentially national consequences.

Just very briefly, from a technical aspect, there are two components to vegetation management that utilities face, that relate to the safety, liability, and secure operations of a power grid. The first is tall trees. The second is fire.

Now tall trees are pretty easy to understand. It is traditional. It is well addressed by FERC and NRC mandatory reliability standards that rolled out of the Energy Policy Act of 2005.

Fire, however, is new. It is untraditional. It is more complex. It involves larger areas, and it is not addressed by any standards or any guidelines. Fire, itself, has two consequences for utility operations. The first is smoke. Smoke has short-term impacts to the operation of the power system. the more significant one, though, is the actual physical damage to power facilities; and that potentially could take long periods of time to repair.

Concern for fire has led to a new concept of managing to enhance fire survivability. This involves different thinking by all. To utilities, thinking about adjusting maintenance strategies to manage for fire survivability, it means not only managing for tall trees, but also managing for fuels on your right-of-way.

For others, changes in thinking require that the grid be recognized as critical, wildland-urban interface, requiring priority protection.

As noted, managing for fire survivability often requires treating areas larger than narrow rights-of-way. Survivability, however, does not mean exclusion of fire. It just means managing the intensity and duration of the heat.

Because this involves areas larger than a right-of-way, it requires collaborative partnerships, and a coordination with various stakeholders. It is usually best to integrate these with other management objectives; and unfortunately, this requires time and process.

Western feels we have some good examples to point on the Uncompahgre Plateau project, where we have some power line projection projects on the ground already. One other comment, technically I wanted to give is, the power system has its own communications network. Obviously, there is a lot of information that goes back and forth on the condition of the grid, and a lot of information goes back and forth on controlling the grid.

It is an independent stand-alone system. So when we think about protecting the transmission grid, we also need to remember to protect the communication system that goes with that.

That concludes my opening remarks. I thank you for having Western here today to help, and I am happy to answer any questions that the committee may have; thank you.

[The prepared statement of Mr. Turley follows:]

Statement of Ron Turley, Special Programs Manager, Western Area Power Administration, U.S. Department of Energy

I am Ron Turley, Special Programs Manager for the Department of Energy's Western Area Power Administration (Western). This is my testimony for the June 16 hearing on "Mountain Pine Beetle: Strategies for Protecting the West."

Good morning, Madame Chairwoman, Mr. Chairman, and Subcommittee members. Western is committed to delivering reliable, cost-based Federal electrical power. We do this over an integrated 17,000 circuit-mile, high-voltage transmission system—an electrical Federal highway system—that spans most of the western half of the United States. Our role, as transmission owner and provider, is not only critical to the delivery of Federal power, it is integral to our Nation's interconnected electrical grid and helps ensure reliable and secure delivery of our Nation's power supply.

Given the importance of this role, I appreciate the opportunity to update you on the urgency of real risks to public safety and power system security and reliability resulting from the bark beetle epidemic in the Rocky Mountains. This situation in Western's service area is a great concern. Wildfires in dead and dying timber stands of beetle-infested forests can seriously interrupt power system operations and significantly damage transmission lines. This situation could result in widespread, regional power outages potentially requiring extended periods of repair time.

Today I will provide technical information on the risks that beetle-kill forests pose to Western's power system; the substantially more aggressive vegetation management practices required to reduce these risks; and how Western is taking an active role to address the issue.

Beetle-killed, forested landscapes and Western's transmission infrastructure

Today, the impact to Western's transmission lines and facilities from the bark beetle is concentrated in Colorado. Much of Western's transmission system in Colorado is located on heavily forested lands administered by the United States Forest Service (USFS), as well as on lands under other ownerships (private, Bureau of Land Management, tribal and others).

Dead and dying trees are threats to public safety, reliability and grid security

Our transmission lines cross a variety of vegetation types, but trees are one of the main vegetation management concerns when it comes to ensuring public safety, reliable system operations and grid security.

Today, vegetation management includes more than just cutting danger trees—trees tall enough to either grow into contact with electrical conductors or fall into the conductors or structures. It involves actively managing the plant communities beneath our transmission lines and within our rights of way as well as addressing fire-related impacts that affect the overall ability of transmission facilities to withstand a fire.

Under extreme fire conditions, multiple large, high-intensity wildfire events can simultaneously impact multiple electrical grid components resulting in potentially severe regional consequences.

Direct risks to Western's lines

Many segments of Western's grid-critical transmission system pass through lodgepole pine areas impacted by the mountain pine beetle. The dead and dying trees present multiple risks to transmission lines, including physical damage and operational threats to facilities from falling trees, increased threats to facility operation and physical damage from wildfire events and the possibility of causing wildfire by igniting trees that fall on or near high-voltage transmission lines. Associated power outages could be sudden or extended, or both, potentially jeopardizing public safety. Accordingly, Western is concerned about management implications of forest health not only associated with lodgepole pine but in many other forest types as well.

Indirect risks to Western's lines

In addition, indirect risks in the forested areas—sometimes many miles from Western's facilities—may put Western's transmission facilities at risk. The potential for large fires in beetle-killed timber presents a serious risk to continuous power system operations and the integrity of transmission lines. Fuels treatments in areas both adjacent to and, in some cases, distant from the right of way may mitigate but not completely eliminate the risk presented by wildfires and enhance the likelihood of the operational security of our transmission facilities when fire occurs within these fire-adapted landscapes. As illustrated in the attached photos, managing fuels to enhance transmission line fire survivability is complex. However, utilities' rights and authority concerning vegetation management end at the edge of the transmission line's right of way.

Western's vegetation management program—adapting to new realities

Today, the goal of our vegetation management program is to establish a more manageable, long term right-of-way condition that reduces the build up and concentration of fire fuels and reduces the overall risk of tree-caused outages or fires, increasing public safety and enhancing power system security and reliability.

Program history

Western has always conducted a robust vegetation management program to manage and control vegetation on its rights of way. Historically, we performed maintenance work when vegetation had grown near the point of becoming a problem. We principally focused on managing tall trees, consistent with industry standards.

With the passage of the Energy Policy Act of 2005, the Federal Energy Regulatory Commission and North American Electric Reliability Corporation (NERC) have established mandatory vegetation management standards. The electric utility industry is now required to actively manage vegetation well before it can potentially threaten reliable power system operations. Consequently, Western must significantly change its past practices on some forested transmission line rights of ways "most of which are on National Forest System lands.

Two-phased approach tackles major workload

To meet these new and more stringent NERC reliability requirements, Western undertook an intensive, systematic review of the power system to locate and remove danger trees with the intent to immediately ensure the safety, security and reliability of the Federal transmission system.

Western plans to follow with a second phase of more aggressive treatments to convert heavily forested rights of ways to a more manageable condition of stable, low-growth and slow-growing native vegetation. This conversion process involves removing or grinding previously cut trees and debris, removing standing trees, and actively selecting for native, lower-growth plant species. This approach increases spe-

cies diversity through the establishment and retention of early-succession plant communities that are appropriate to the ecology of the area.

This second phase is pending the completion of an environmental review process co-led by the USFS and Western. Western and the USFS are in negotiations regarding this environmental review process, and we anticipate a lengthy review and analysis. In the interim, trees continue to grow, and Western will continue to annually remove danger trees on previously treated transmission line sections. This is required to maintain the integrity of the Federal power system and remain in compliance with the mandatory reliability standards.

Western's role—solutions to the bark beetle threat

Western provides industry leadership on vegetation management issues related to power grid safety, security and reliability. Western is recognized for collaborative approaches to address today's complex natural resources management issues. As a result, Western sits on the steering committee for the Colorado Bark Beetle Cooperative and has been appointed to Colorado Governor Bill Ritter's Healthy Forest Advisory Council. We have been appointed to the NERC Standards Drafting Team tasked with writing international industry reliability standards for vegetation management.

Expedited environmental review

Western continues to work with the USFS on the environmental review and other steps required to fully implement our vegetation management program. To help address the immediate need created by the bark beetle epidemic, Western is exploring a recent proposal by the USFS to provide an expedited, programmatic environmental analysis for a one-time, limited authorization to treat fuels and mitigate wildfire hazards.

Collaborative partnerships show promise

In addition, Western is encouraged by our participation in the Uncompahgre Plateau Project in Colorado. This project is an example of a collaborative approach to addressing multiple resource objectives, including transmission line protection and fire-hazard mitigation projects, across jurisdictional boundaries using a variety of authorities and funding sources.

The goal of the Uncompahgre Plateau Project is to develop collaborative approaches to improve or restore ecosystem health on various landscapes, using best available science, community and other stakeholder partnerships and adaptive management practices. Principal project partners include: the Public Lands Partnership, Bureau of Land Management, Colorado Division of Wildlife, the USFS, Western and Tri-State Generation and Transmission Association, Inc.

Primary components of the Project include: landscape scale project planning, invasive species management, a native plant program, on-the-ground treatments, and education and technology transfer. The Project directs, coordinates and/or facilitates these activities across jurisdictional boundaries, but does not supersede management authority on any Federal, state, or private lands.

Through its innovative powerline protection projects, the Uncompahgre Plateau Project model works well for protecting transmission resources—critical wildland and urban interface infrastructure traversing these lands. An environmental decision memo further describing one of these projects is attached.

Cooperative effort—key to solution

Many questions remain, but the need is urgent. The solution will involve all stakeholders working cooperatively. Western is committed to being part of the solution, continuing our role as an industry leader in enhancing public safety and increasing the security and reliability of the electric grid.

Thank you, Madame Chairwoman and Mr. Chairman. I would be pleased to answer any questions that you or the Subcommittee members may have.

Mrs. NAPOLITANO. Thank you so very much for your testimony; and we will begin the round of questions. Now I can start off with Mr. Turley. I have been privileged to see the sites that you presented here on the committee today.

And I know in speaking to some of your personnel, some of the impediments on the right-of-ways is permission to be able to go in and do some clearance in some areas. But what are the biggest impediments pertaining to those transmission lines; and getting to

that, whose responsibility should it be or is it for clearing the vegetation outside of the right-of-way?

Mr. TURLEY. Madam Chairwoman, traditional vegetation management practices for a utility involves managing tall trees. Today, we need to think not only about tall trees, but also fuels management; that is a change in management practice that requires NEPA review.

Mrs. NAPOLITANO. Would you explain fuels management?

Mr. TURLEY. The best way to explain fuels management is, there has been an accumulation of biomass. You allow trees to grow. That is traditionally how right-of-ways are managed. It was just-in-time maintenance. When a tree got too tall and became a problem, then you dealt with it.

Fuels management means not only dealing with tall trees, but also dealing with the rest of the biomass that is on that right-of-way. Trees that you may have cut down previously were typically cut, lopped and scattered, and left there.

There has been 50 or 60 years of materials accumulating on these right-of-ways; and in the western United States, this material does not rot. It is good sound wood—good sound fuel. You have re-generation that is coming up through this material. So you have your fine fuels, as well. That needs to be managed.

Fuels management means cleaning up or addressing that entire problem, versus the previous approach of just dealing with tall trees.

Mrs. NAPOLITANO. Thank you.

Mr. TURLEY. Off the right-of-way is an entirely different issue. Tall trees, fuels on the right-of-way, you have tall trees and fuels off the right-of-way, as well. Tall trees off the right-of-way are pretty easy to understand. But it is a matter of risk. The farther the tree gets away from the power line, the more precisely it has got to fall toward the power line to create a problem.

So how far do you go? How much risk do you want to mitigate? How much resource do you have? How much can you really do?

Fuels off the right-of-way is a much bigger problem. We have seen some of the fire photos today, and these are pretty catastrophic events. The utility's responsibility ends at the edge of the right-of-way. That is the cold, hard fact of it. So the utility really does not have the rights, the authority, much ability to work off the right-of-way.

So it really falls to others. When you are dealing with fuels off the right-of-way, utilities do not know what to do. We are not fire scientists. We understand tall trees. We have been doing that a long time. But fuels management is a much tougher nut to crack; and as I noted in my opening comments, oftentimes, it needs to be integrated with other management objectives.

Mrs. NAPOLITANO. How much is your right-of-way; how many feet?

Mr. TURLEY. How wide?

Mrs. NAPOLITANO. How wide.

Mr. TURLEY. It depends on your voltage. Larger voltages have wider right-of-ways. A 354 KV, 345,000 volt, which would be typical or the biggest you would find in the Rocky Mountain Region,

would be about a 150,000/175,000 foot right-of-way. A 115,000 volt would be about 75 foot right-of-way. So you are in that range.

Mrs. NAPOLITANO. Would it make any sense to widen the right-of-way to prevent venue fires adjacent to that right-of-way to the grids from endangering the grids?

Mr. TURLEY. When you are dealing with fire and fuels, again, the areas are so large, I do not know that it would be very effective in dealing with that part of the problem. Perhaps tall trees may be a little better.

Let me note, as well, we are not talking clear cuts. We are not talking going from Point A to Point B and doing everything. We need to have a strategic approach. We just do not have the resources. You need to very strategically get the best bang for your buck; get the highest priority areas.

Mrs. NAPOLITANO. Thank you; Mr. Cables, if a tree standing outside of the right-of-way falls in the line and starts a fire, who is liable for the damages?

Mr. CABLES. I am not completely positive how that would be legally interpreted. I think Ron made a significant point, in terms of this is uncharted territory right now for us; something at this scale, 1,3000 miles all at once.

We had a meeting on May 18th, where we invited all the utility electrical providers that have these transmission and distribution lines. Subsequent to that meeting, I wrote a letter essentially granting permission to immediately remove hazard trees, whether within or outside the right-of-way that were an imminent threat to the power line. And we are also working on a longer term, more robust strategy to consider fuels treatment or anticipating fire effects beyond the width of the right-of-way.

We have right-of-ways that are 15 feet wide for some of these distribution lines, which obviously is not adequate if the trees are 80 feet tall.

So there are a whole series of things that we are working on right now, to try to mitigate this problem and to do it as quickly as we can.

Mrs. NAPOLITANO. There was one of the testimonies in the witnesses who are yet to come, stating that they had been told that they are responsible for any damages within or outside the right-of-way. In the many years the Forest Service has been managing it, has there not been an attempt to clarify this, not only for the benefit of the public, but for the benefit of the grids and others?

Mr. CABLES. First of all, I am not familiar with that particular citation, what the situation was. I think that historically, clearly, we have tried to hold the utility companies or whoever responsible for those area within the authorization.

So they are authorized to cross National Forest System lands, and they have an authorization and some form of special use permit—an easement, a memorandum of understanding—that allows that; and there are responsibilities within that corridor.

Again, I cannot speak to the citation. But your point about, have there not been an opportunity to clarify—probably there have been, or maybe there has actually been clarification that I am unaware of.

But in this particular instance, again, we are just trying to catch up with an event of the scale that we are talking about, and try to do it all together with some consistency across the different jurisdictions.

Mrs. NAPOLITANO. Well, knowing that there are many thousands of miles of grid lines, I think that is incumbent upon the Forest Service to sit and determine what needs to be done and at the table. If it needs us to be able to work with you, I would be delighted to do that, sir.

Dr. Frost, would you provide a little more detail on the specific actions the Department of the Interior has taken to protect isolated tribal lands and communities from the effects of the beetle epidemic?

Mr. FROST. Yes, I can give a couple of examples, and there is not a lot I can tell you, and I may have to get back with you.

But at the Flathead Indian Reservation in Montana, there are 20,000 acres of dead trees, and only 5,000 acres have been able to be treated to date. At the Yakima Indian Reservation in Washington, 14,000 acres are dead, and none have been treated.

In the Colville Indian Reservation in Washington, 8,000 acres of lodgepole pines are at high risk for beetle infestation; and the main treatment there is a re-generation harvest and a conversion to different species; mostly western large. About 10,000 acres have been converted since 1970. I can submit these to you. I can go on, and I have a list here.

So there are a number of activities that are going on. Another one is in Montana. They have been working for 12 years or more at the Rocky Boys Indian Reservation, and they have had a successful program in timber harvesting in terms of salvaging the mortality. But they just cannot seem to get ahead of the infestation.

They have forest health money from the Forest Service. In the past, they have been pheromone traps. So they have tried to do all the treatments. But again, for lack of personnel, lack of expertise, it has been very difficult for them.

Mrs. NAPOLITANO. Thank you; and thank you all for submitting your testimony. I am very disappointed, to say the least, in OMB in the delay; because some of your testimony did not reach me until this morning. I take great exception to that, because I like to read it and be able to formulate the question, based on your testimony, so that I am very much in tune with what we are discussing.

To me, it is unacceptable that they would not release the testimony; whether they are backlogged or whatever. There is a message going to be given to that effect. But thank you for submitting your testimony to them on time.

Mrs. LUMMIS. Well, thank you, Madam Chairman and Mr. Chairman. I would like to ask that a photograph of the slash piles in Wyoming be held up, and I have a question, Mr. Cables. I have seen slash piles like the one that we have here in a photograph.

And these are slash piles from existing and approved operations that would be used as woody biomass, under the RFS or RES wood bi-products that would otherwise go to waste, and we are getting there.

What I am talking about. They are whopping slash piles that are going to be burned as soon as the snow flies or something; and it would be so great if they could be used for creating fuel.

What is the Forest Service stance on the potential of woody biomass gathered on public lands, as a renewable fuel source?

Mr. CABLES. Well, obviously, it definitely has high potential. The USDA proposes to use the definitions of biomass that are in Titles I and III in the 2008 Farm Bill; and have previously testified or made public comments to that effect. That would enable products that come from the public lands and the National Forest Service lands to be considered as part of the renewable biomass standard.

Mrs. LUMMIS. Thank you; my next question is for Mr. Cables and Dr. Bentz. I preface this by saying, I would love it if you or your staff would stick around and hear Mr. Larsen's testimony on the fourth panel later today; and this is about the battle on this epidemic. It has not been successful thus far. I am talking about the pine beetle epidemic.

What specific and immediate steps can the Forest Service take to step up—and I want to emphasize that word—step up the reduction of this growing hazardous fuel load in the west?

Mr. CABLES. Well, thank you for the question. We have specific and immediate steps. We have a five-year plan right now. We have multiple thousands of acres that are NEPA ready, with full concurrence by a wide spectrum of participants and interests. We have a collaborative group, the bark beetle collaborative, and you will hear from members of that group in subsequent panels, and I will stay around for subsequent panels.

Mrs. LUMMIS. Thanks.

Mr. CABLES. So we have a lot of work being done, and we have a lot of work on the shelf; and we are just trying to be as efficient with the money as we can.

One of the dilemmas that we have—and again, within my region, I have shifted funds, to the extent I can. But as Representative Sablan pointed out, the Black Hills are also in our region, the Rocky Mountain Region, which includes parts of Wyoming and South Dakota.

And if we overly shift dollars to Colorado and southern Wyoming for this, away from areas on the Black Hills, then we are going to just be creating a problem in a different place, or accelerating a problem in a different place. Because as the representative pointed out, we have 300,000 acres of bark beetle mortality in the Black Hills.

So again, it is trying to figure out how to put your finger in the dike in different places on this problem; and I am just speaking for our region. There are multiple regions in the West, and even in the east, that had these insect problems.

I think we have the steps, in terms of the projects, laid out. It is again trying to allocate the resources necessary to get the work done.

Mrs. LUMMIS. Thank you, Mr. Cables.

Ms. BENTZ. Could I just make a statement regarding the science part of it? So the mountain pine beetle is undoubtedly changing the fuel dynamics, in lodgepole pine forests.

The issue is that this has happened on such a large scale, that we really do not have any research to say what the intricacies of those changes are. There is a lot of research that suggests that you can do tree removal and thinning in wild line urban interfaces, and really have a big impact on saving infrastructure and homes.

But there is just really hardly any research to say what is going to happen if you try to take out dead trees across large expanses, in terms of the ecological consequences or the changes to the fuel dynamics.

We are talking about things that we really do not know what is going to happen. So I just wanted to make that comment.

Mrs. LUMMIS. Thank you, Madam Chairman.

Mrs. NAPOLITANO. Thank you; Mr. Grijalva?

Mr. GRIJALVA. Yes, Dr. Bentz; thank you for that last comment. I think it is important for all of us to reflect on the enormity of the issue that we are dealing with here today. Simply put, is there a direct correlation between fire and the beetle attack?

Ms. BENTZ. Did fire influence the insect attack, or the other way around?

Mr. GRIJALVA. Vice versa.

Ms. BENTZ. Vice versa?

Mr. GRIJALVA. Yes.

Ms. BENTZ. Well, that was the comment I was just making. We do not have a whole lot of research or really data to pinpoint. But we have information that we have compiled to suggest that it is a very dynamic process.

The potential for crown file will be really high, early on, as all those needles are in the trees; and when those drop and you have dead standing snags, the potential for crown fire goes down. As the snags fall over, which has been mentioned several times in a 10 to 20 year time period, and vegetation grows up, then you get this increase in potential for a surface fire with the ladder fuels that could then go into the crown.

It is a very dynamic process, and it is going to vary from place to place. And I think the overriding factor is the weather. You have to have extreme fire weather to get these fires going, irregardless of the fuel dynamics.

Mr. GRIJALVA. Thank you; Mr. Cables, recently, a report was released indicating that the Forest Service spent only three percent of its money to reduce fire danger in the wildland-urban interface. That was overall. How does that compare in Colorado and other parts of your region?

Mr. CABLES. Thank you, Chairman Grijalva; this report was just released last week. Quite frankly, I was perplexed when I saw it. We got to looking at our data. In our region, in total, it is over 63 percent of treatments that have occurred in the wildland-urban interface; and in the bark beetle area, it is 80 percent, and we are shooting for 90 percent.

So we have very specifically focused our energy—and not just in hazardous fuels money—but the other programs that manage vegetation, in the areas that are what we called the zones of agreements.

Mr. GRIJALVA. Is that percentage based on location or overall budget of the region?

Mr. CABLES. That percentage is based on location.

Mr. GRIJALVA. So overall budget, what would that be?

Mr. CABLES. I do not have the figures by budget. I just have the figures by acreage. But we can get you that information.

Mr. GRIJALVA. OK, I think one of the issues is a resource issue; part commentary, part question, Mr. Cables. Right now, there is not even a sponsor for the Flame Act in the Senate.

I would suggest that particularly in some of these states in the western states regarding the infestation and fire prevention and suppression strategies vital, that it would behoove some of the members of that body to get behind this.

It has already passed the House. I think it is a resource issue that deals with the percentage I asked you about; that deals with community planning; and I think it is an attempt to begin to deal with this issue—not only the infestation issue, but the fire suppression issue.

But anyway, it is based on the resource question, Mr. Cables. The resource needs that you have for your region, in order to carry out some of the strategies that you discussed is, you redirect funds from your existing budget. You mentioned that. But if you were to have resource additions, what would that percentage of that amount look like? Because I think overall, we are still talking about the need to invest some resources in this whole issue; and until we do that, I think we are just going to talk in circles.

Mr. CABLES. Well, let me understand, Mr. Chairman. Are you asking, how would we invest additional resources?

Mr. GRIJALVA. How much more would you need in order to do the job that you were talking about?

Mr. CABLES. That is really a good question.

[Laughter.]

Mr. CABLES. I wrote a letter to the Chief of the Forest Service on June 6th, and requested emergency funding over a three-year period, in an amount of $213 million for Fiscal Years 2009, 2010, and 2011, that would allow us to deal with emergency threats to human life and safety from falling trees; clear the rights-of-ways and ensure that we do not have trees falling on power lines and infrastructure and camp ground maintenance and all those things. So that was just an immediate, short-term burst of a request to deal with the problems of the mountain pine beetle.

In the long run, I would say that most regional foresters, if they were sitting here, would say they would invest the money, working collaboratively with community people, to try to do community protection, watershed protection, and try to keep up with things.

Mr. GRIJALVA. OK, thank you; Mr. Turley, the Western Power Administration—at least from your testimony, and correct me—has now discovered recently the issue of fuel management. That is a question.

Mr. TURLEY. Thank you, Mr. Chairman; I think the whole industry traditionally has managed tall trees. But you had not had the fire incident. You had not had the biomass problems that we are starting to see today.

I think the entire industry is starting to look at the fuels management and the fire survivability part now, and saying, "Hey, we certainly need to be doing something on our right-of-way." That is

just like you would ask a private citizen around their home to be firewise. I think utilities need to be firewise.

But again, that fire problem is so big, so massive, it extends way off the right-of-way. So yes, it is kind of a new concept; not just to Western, but to the entire industry.

Mr. GRIJALVA. And with that fuels management, also I would assume the fire issue is now a more prevalent issue with the Administration than it was, say, previously, as a priority issue?

Mr. TURLEY. That is more of a policy-type question, that I am not sure I can really answer, sir.

Mr. GRIJALVA. OK, I yield back.

Mrs. NAPOLITANO. Thank you; Mrs. McMorris Rodgers?

Mrs. MCMORRIS RODGERS. Thank you, Madam Chairwoman; I mentioned in my opening statement that in eastern Washington, Avista has a biomass facility, 50 megawatts in Kettle Falls, right next door to the Colville National Forest. And yet, they have to import from Canada 70 percent of what they burn at that facility.

I also have a mill, the Vaagen Brothers Mill, in Caldwell, that re-tooled probably 10 years ago now, to really focus on small diameter trees. So it is six inches or less, really. Yet, both of these facilities have trouble getting access to material, despite the fact that we are right next door to the Caldwell National Forest.

I might also mention that there has been a tremendous collaborative effort under way in this region between environmental groups, the industry, and recreational users, trying to come up with a way that locally we could actually move forward.

But instead, we still cannot move forward. The Caldwell National Forest has, I do not know, how many acres in mountain pine beetle and trees that are dead from burns or beetle infestation or other reasons. It needs a lot of attention; and we live in fear of catastrophic fires every year.

So I just wanted to ask, or to have you just talk a little bit, Mr. Cables and Dr. Frost, about the problem we face with the overstocking of our Federal lands; and does it not increase the risk of higher intensity fires? And do you believe that the role of the Forest Service is shifting from management of Forest to simply protecting houses from fires?

Mr. CABLES. Let me start, Representative McMorris Rodgers. Let me first mention that the two mills in our region have re-tooled to do just as we have asked, to deal with smaller diameter material.

Both the Diamond Brothers Mill in Wyoming and South Dakota, and the two mills in Inner Mountain over in Montrose, Colorado, have been very heavily invested in trying to create an industry that actually meets the needs; and I really would like to give them credit for that.

Our issue in our region is not so much access to material. I do not think that you would hear very much from the woods products industry folks. But that is really a huge problem.

I think, right now, the problem is more just the situation with the industry, in terms of the economy, and trying to get cash and the amount of cash that is tied up in some of our requirements in our contracting and they are cash poor. The market is so depressed, and it really started going down in 2004. So I think that is a larger issue.

Has the Forest Service changed priorities? I do not believe we have at all. I believe, at least in some of these cases, the size and scale of the events have become overwhelming, to an extent; and you saw the speed with which this particular issue in the pine beetle in Colorado and southern Wyoming has accelerated.

Again, I think it is working to have the social license from the communities of interest to allow us to move forward and work together; and there are barriers always with that. But I feel like we are making a lot of headway in those particular areas, and that we now do have the social license to practice on the ground what needs to get done.

That is my sense of it, from our field people and talking to folks. So I think our priorities are still looking at maintaining that forest in the way that it is healthy, and that continue to give the benefits that people want; whether it is water, wildlife habitat, recreation opportunities, wood products for society—you name it; and I do not know how Dr. Frost would answer.

Mr. FROST. I would agree with a lot of what Mr. Cables has to say. Availability of wood products may be at different levels across different regions. What I have been told is that in areas like in Colorado, there is more than enough wood products for the mills that are there. So the situation that you are experiencing may be a low cause phenomenon. I do not know what the situation is there.

But again, I think the key to managing the forest to be sustainable over time; and to protect health and human safety in the circumstances that we are now in.

The policies at the Department of the Interior, we have different bureaus, so we have different policies. The Park Service is very different than the Bureau of Land Management. The BLM manages very similar, and the BIA manages very similar to the Forest Service. Whereas, the Park Service, we look at ecosystem function and things like that. So how we manage the forest maybe is very different.

While we want to protect infrastructure and urban interface and heath and human safety, the larger issues for the Park Service is to maintain those healthy systems over time through the national processes.

Mrs. MCMORRIS RODGERS. Just for my own edification, can you give me a sense of the infrastructure that exists in Colorado then, as far as mills or biomass facilities?

Mr. FROST. I cannot. But we can get you that information. I do not have that right here.

Mrs. MCMORRIS RODGERS. OK, that would be great.

Mr. CABLES. We currently have one, what I would call medium to large size saw mill left in Montrose, Colorado; and we have two pellet plants in northern Colorado, in the bark beetle area.

We have a mill that was shut down in Saratoga, Wyoming, which is just north of the Colorado border in Wyoming, that is the company that owns Inner Mountain Resources, that owns the mill the mill in Montrose. It has been trying to invest and buy equipment to start that mill, which would certainly reduce the haul costs of this material and the fossil fuels associated, hauling heavy things like wood long distances.

So that is the current state in Colorado and Southern Wyoming; and of course, there is a mill up in Hewlett, Wyoming, which is associated with the Black Hills. That is in the northeast corner of Wyoming.

Mrs. MCMORRIS RODGERS. Well, just for the committee's information, my region is very concerned about losing what existing infrastructure we have; and the issue of having access to timber has been a huge issue. I think we are fearful that we are going to head down the same path, where we will be in Washington State, saying we have one mill, two pellet plants, whatever it may be.

There was one other question I wanted to ask on the stimulus dollars. Because in the stimulus, I think if I remember correctly, it is $4 billion for the Forest Service for fuel management, fuel reduction. And so far, what I have seen is, the money is going more for roads—either tearing out roads, rather than really addressing this fuel management, fuel reduction issue.

In my region, we are very anxious to have access to some of that fuel right now, because we could use it at the biomass facility to generate electricity; or Vaagens could use it to keep their mill running.

Mr. CABLES. I only wish it were $4 billion. No, the Forest Service received—I believe it was a billion and a half dollars—through the stimulus funding.

And in the Rocky Mountain Region, we have received $26 million to date of approved projects. That was as of June 11th. I would say 90-plus percent of those projects have to do with hazardous fuels work and vegetation management; and we have also just released some wood energy biomass utilization grants—four that total a million dollars.

The stimulus money that we have received, the AARA funding that we have received to date has been heavily oriented toward working on this problem with managing the vegetation to maintain the conditions we want in the forest.

Mrs. NAPOLITANO. Thank you; Ms. DeGette?

Ms. DEGETTE. Thank you, Madam Chair; I just want to emphasize something that Congressman Powell has said, which is in Colorado, at least, we are really in a crisis situation. What we are looking at is, how do we do triage with this beetle kill?

There are a lot of different issues. One of this is, what do we do with the urban interface? What do we do with our power lines? What do we do with our watersheds? You heard about Denver Water, which affects my congressional district directly.

And then the question is, what do we do in the longer range? For example, if we pass climate change legislation today, that is not going to help us deal with this crisis situation; but we hope it will help us in the long run.

When you go beyond that, then you have to ask, what do we do about the moving of this wood, or what do you do about stabilizing these forests for the next century? So I want to ask a few questions about all of those complicated issues.

The first question, I want to ask Mr. Cables; but Dr. Bentz, you might be able to lend some light to this, as well. I hear conflicting information about, we all know that climate change, warm winters and warmer summers cause some of this. And in addition, we have

mature forests that all are roughly the same age, so that the beetles have really been able to go in.

But what I am wondering is, what we can do in the long run. Because it seems to me that this crisis that we are in right now, no matter how we remove this wood, 100 years from now, these forests are now all going to be the same age again, because the forest management techniques we were using 100 years ago made all these forests be this age.

So what can we do to avoid the next generation's inheriting this same problem with our healthy forests; Mr. Cables or Dr. Bentz?

Ms. BENTZ. Thank you; I can start. Again, this is such a new thing. We are kind of like adaptive management at its best, I guess.

But thought is, as many have said, yes, the reason that this is such an explosive problem is because there is a ton of food and favorable weather conditions. So the thought is that on a very large landscape scale, the forests need to be diversified; not only in species, but also in age classes.

Ms. DEGETTE. Now how do we do that, when the whole forest is dying at once?

Ms. BENTZ. Well, I do not think the whole forest is dying at once. I mean, there may be places where lodgepole regenerates naturally on its own. So there may be places where there could be natural regeneration; and maybe we want to go in and plant other species. It is going to take some management to make that diversity.

But I think we also need to realize that climate change is not just affecting the insect. It is not just affecting fire. But the tree species that are growing there may not be the ones that are the best to grow there in another 150 years or 100 years. So we need to factor that into the concept, also, if we are going to plant, what do we want to plant.

Mr. CABLES. It is a great question, and I have thought about this. If you cycle forward 50 years, and if we do get re-generation of lodgepole, and you have this green 50-year-old forest; then we suggest that we need to create a mosaic of age classes and go into some large chunks and put fire on the landscape and flow out 1,000 acres or 5,000-acre chunks so we can get younger age classes—to diversify the age structure. The public may look at us and say, "What is wrong with the situation right now? It is beautiful."

So I think it is going to be a continuing education process. But we need a diversity of species, to the extent we can. So where we have aspen, they are going to flourish right now, because they are going to be exposed to full sunlight.

Ms. DEGETTE. Right.

Mr. CABLES. And I think we need to either, through a combination of mechanical treatments or fire, create some different age classes over this next 50 or 60 years, so that we do not replicate history in 100 years, and find ourselves facing the same problem.

Ms. DEGETTE. Right, OK, I have some other questions. But maybe we can have a meeting, and I will ask you later.

I want to ask you, for the dead trees that we are removing from public lands, I am assuming or inferring really from something you said, Mr. Cables, that is happening under the NEPA process. Is that correct? And so I would assume that any further woody bio-

mass that we are removing from these lands, they would also be doing that under NEPA restrictions, correct?

Mr. CABLES. Yes, that is correct.

Ms. DEGETTE. Thank you, Madam Chair.

Mrs. NAPOLITANO. Thank you, and before I move on to Mr. McClintock, Mr. Turley—before I forget it, it does not stay at home too much—in your testimony on page four, you indicated that Western is exploring a recent proposal by the U.S. Forest Service to provide an expedited programmatic environmental analysis for a one time limited authorization to treat fields and mitigate wild fire hazards.

Can you comment on that? Because we have not really touched upon that. Are there any arrangements for the partnerships that are happening, to be able to begin mitigating some of the issues?

Mr. TURLEY. Thank you, Congresswoman; Western actually has two environmental processes ongoing. I talked earlier about changing practices, from managing tall trees to managing tall trees and fuels on your right-of-way.

Western is involved, as a caudally agency with the Forest Service on an EIS, an Environmental Impact Statement, to review and allow for that change in management practices. That is probably going to be a long-term deal, two to three years out.

Mrs. NAPOLITANO. Right, but I am specifically referring to this one, the one time.

Mr. TURLEY. Right, the one-time one is for utilities treating things off the right of way. That is proposed to be a more expedited environmental review process that will pave the way for utilities to function off the right-of-way. Utilities really do not have the right to be off the right-of-way. It is kind of a question we need to work through.

Mrs. NAPOLITANO. And as you are working on that specific pilot, if you will, because it is a one-time, would you be able then to indicate whether or not that is helpful to be able to mitigate some of the issues that are affecting the right-of-way.

Mr. TURLEY. Well, it is certainly good that there is urgency and we are trying to address issues. But it wrought with a lot problems; as to who has the lead, who has the resources.

Mrs. NAPOLITANO. But how do we get to that? How do we go past all of that and get down to getting it done?

Mr. TURLEY. I am not sure if I have the answer, other than we keep making it a priority and working on it.

Mrs. NAPOLITANO. Well, I know. But if it continues to go back and forth—that, no, you do it; no, I do it, you are still going to go back to the same old argument, which is who is responsible or whose responsibility it is; who will be in charge, if you will. Is this coming to a head; or is this again another delay that is going to not help the process?

Mr. TURLEY. We really have not had that much time to work on it. As Mr. Cables pointed out, we met on May 18th. So we are just 30-some odd days down the road.

Mrs. NAPOLITANO. It is not done yet?

Mr. TURLEY. No; I am sorry, it is not done.

Mrs. NAPOLITANO. OK, never mind; Mr. McClintock?

Mr. MCCLINTOCK. Thank you, Madam Chairman; a lot has been said about the interaction of temperature and water on the beetle infestation. A quick technical question for Dr. Bentz, what has the temperature trend been in that region, over the past couple of years?

Ms. BENTZ. I cannot talk specifics. But again, I know that it is not getting as cold for as long. I mean, this insect is able to withstand temperatures. It produces this anti-freeze compounds; and it is able to withstand temperatures of minus 40 degrees C.

Mr. MCCLINTOCK. Well, I understand that. But the temperature trend itself over the past couple of years—you have testified already that you think a rise in temperature is a major factor. But you are not prepared to tell us what the trend has been over the last couple of years.

Ms. BENTZ. I can say what the trend has been in places that I have studied that trend.

Mr. MCCLINTOCK. No, no, in this region, in the past couple of years—that is what we are talking about.

Ms. BENTZ. Yes, in Idaho, where I have quantitative data I can send you, it has been an increasing trend of, the minimum winter temperatures have been increasingly warmer.

Mr. MCCLINTOCK. In the past couple of years?

Ms. BENTZ. That is a trend since the early 1990s.

Mr. MCCLINTOCK. Well, here is a Fox news report. I mean, you can Google and find a number of reports of similar kind. Now there is word that all four major global temperature tracking outlets release data showing the temperatures have dropped significantly over the last year.

California meteorologist Anthony Watts says the amount of cooling ranges from 65 hundredths of a degree Centigrade to 75 hundredths of a degree Centigrade. It is reportedly the single fastest temperature change ever recorded, up or down.

Ms. BENTZ. I do not know where those temperatures are from. But I am measuring floor temperature, where the insects live, in many, many places throughout the west; and I can send you graphs that are showing that it is in the environment that is important to this insect. It is the trends that we have stated.

Mr. MCCLINTOCK. The most significant testimony we have had today, in my opinion, was the picture presented by Mr. Salazar, I think it was number seven in his series, the handprint, that showed the difference between forests that have been thinned and those portions that had not been thinned.

Mr. Cables, why are you not thinning those forests? I mean, that shows a very, very dramatic solution to the problem. If we thin the forests, they are healthy; if we fail to thin them, they are ravaged. Why are you not thinning those forests?

Mr. CABLES. Two points, Representative McClintock, first of all, we are so overwhelmed with the dead trees, and trying to remove the dead trees from the forest, that our program has shifted from trying to get in front and treat green stands, to deal with only the salvaging of the material or working on the material that is already dead and removing the hazards, as I described. That is point number one.

Point number two, that picture is taken on the Fraser Experimental Forest. It is a research site. That picture was depicting different cutting regimes to do research on water yield; and those are not thinnings. Those actually were where all the trees were cut.

So you could see in fingers of that hand, you could see the younger green trees were areas where we completely removed the trees prior, and left a strip of mature trees, and then cut a stripe completely clean and then a strip of mature trees, so we could measure water.

What the research from that study shows is, in the upper watersheds, we have to remove 25 percent of the tree cover, and maintain it as open, to get an appreciable gain in water, which is a rather significant number.

So we are managing the forest, to the extent we can, within our budgets; and frankly, are overwhelmed with the bark beetle right now.

Mr. MCCLINTOCK. If I could just ask you a final question then. Is there not a great deal of commercial value to trees through thinning, if they are used for lumber production; and second, is there not a great deal of commercial value for the beetle-killed trees, provided that they are salvaged within a year or so of their being killed?

Mr. CABLES. The commercial value of the lodgepole species we are talking about, the size is not great. This is a species that has never been a real high value species; but there is value. We are trying to utilize that value, to the extent we can access the areas we can get to, as rapidly as we can, with the industry that we have.

Your point about thinning, the most active force management we have in the region I am responsible for is on the Black Hills. And as Congresswoman Herseth Sandlin said, we have actually still got a viable industry there, and we have been able to keep up with that system. Now that is Ponderosa pine, which is a very different ecology than the lodgepole system.

In areas like that, where we have industry and we are able to stay ahead of the beetles and the fire issues, we have been able to do that, to some extent. Again, in Colorado and southern Wyoming right now, we have just got so many acres of dead trees, that we are trying our best to salvage what we can.

Mr. MCCLINTOCK. But if we salvage them for lumber, and do so in a timely fashion, is that not a money maker for the Federal Government?

Mr. CABLES. I do not know if it would be construed as a money maker, if you consider all costs. However, it does help defray the costs of treating the acres. So if we can get the private sector to help us in partnership, then the taxpayer does not have to pay—just appropriated funds to treat the acres to remove the wood.

Mrs. NAPOLITANO. I think that is the last of the questions for this panel. We certainly thank this panel for their forbearance and for their testimony. It has been enlightening. And there will be more questions in writing I am sure. We hereby dismiss the panel and bring on our next panel.

This is panel three, Representative Christine Scanlan, John Rich, Commissioner of Jackson County, and Sloan Shoemaker, Executive

Director of the Wilderness Workshop of Carbondale, Colorado, and Eric Wilkinson, General Manager of North Colorado Water Conservancy District.

Please as we are having the transition, a little quiet, please, so we can move on to our next panel. We expect votes shortly, so we may have to recess. We would like to be able to start the questioning. Thank you very much.

Ms. Christine Scanlan.

STATEMENT OF REPRESENTATIVE CHRISTINE SCANLAN, COLORADO 56TH DISTRICT, DILLON, COLORADO

Ms. SCANLAN. Thank you, Madame Chair, and thank you, Mr. Chairman and committee. I appreciate the time today. I will pull some highlights from my testimony that we have submitted. And I would like to recognize State Senator Dan Gibbs, who is here with me in the audience.

Senator Gibbs and I have done some dozen bills in Colorado related specifically to the impacts of the bark beetle infestation.

My district lies within Congressman Polis's district. I am about 70 miles west of Denver. My district starts at the Continental Divide, and runs another 100 miles. We are right in the center of the pine beetle epidemic.

I also am home to seven different ski resorts. So the mountain environment is important to my community.

The Rocky Mountain pine beetle epidemic is changing Colorado and the American West. This transformation is immediately apparent to anyone spending time in the Rocky Mountains. Even a cursory glance from a visitor emerging from the Eisenhower Tunnel heading west on I-70 evokes reaction.

Acre upon acre of orange, red, and brown mingle with green as far as the eye can see. This striking color stretches out in all directions, an eerily beautiful reminder of the permanent change of our landscape, our ecology, and our communities, and what we are currently undergoing.

I would like to talk a little bit about what we have tried to do at a state level with regard to this. Community strategies for living within disturbing ecosystems, such as the Lodgepole Pine Forest of Northern Colorado, must address the reliability and long-term protection of our critical assets.

Essentially, in such environments, policy makers are required to be more flexible and innovative. At the state level we have undertaken vigorous efforts to mitigate the threat with a number of unique collaborations between state and local government and private industry.

Our creativity stems from necessity. Colorado possesses very limited resources to apply toward mitigating the infestation. As such, we focus on passing enabling legislation to empower communities to write comprehensive and integrative fire-preparedness plans, to improve formation and sharing between state, Federal, and local agencies, and to create incentives for private businesses that deforest impact areas and utilize those resources.

As the scale of the infestation has clarified, policy makers have been able to thoughtfully target which were once disparate legislative efforts.

For example, this past legislative session we passed an aggressive agenda that oriented in a special interim committee. The integrative legislative package not only emphasized mitigating the threat, but provided new solutions to assist local and Federal officials to partner more effectively, and to encourage private industry to take advantage of potential economic growth opportunities that may exist.

The capstone of our efforts was a sweeping piece of legislation making $3 million available for a series of initiatives to combat the epidemic. Money from the legislation will assist mountain and front-range communities plan for forest health management activities by addressing what is known as the wildland-urban interface, expanding protection for Colorado's watersheds, local communities and vital infrastructure, and providing grants for market-based solutions to reduce what is the overall threat posed by wildfire.

Where we need help is at the Federal level. And we are very grateful to our delegation which has taken the lead on this issue over the past three years, and worked so collaboratively with us.

We hope the FLAME Act passes the Senate in its current or similar form. And likewise, expanded funding over the past two fiscal years has improved our ability to prevent fires before they occur, and suppressed by us when they happen. But far more is needed.

As Rick Cables noted, we advocated strongly for the $200 million in emergency funding that he requested this past year. This included money for threats to human life and safety posed by falling trees, and emergency and non-emergency hazard mitigation and infrastructure protection.

We know that President Obama has included additional funding for both suppression and prevention in this year's budget. It is absolutely essential that these funds remain within the budget that is eventually passed, and that funds can be distributed in such a way that they reach the state and local officials who can properly apply them.

We hope the FLAME Act reaches President Obama's desk with an extension of the good neighbor policy, which we have used very effectively and quite extensively in Colorado. It is essential that we continue this very basic policy of partnership, granting flexibility to both local officials and property owners to go where they need to go to mitigate fire danger.

Areas where expanded partnerships may flourish also exist. State and local officials must have a proper authority to venture into private land. Likewise, private landowners must be empowered to protect their land when it abuts state or Federal property.

And finally, the epidemic poses a serious challenge to Colorado, but it also poses a unique economic development opportunity. The blue-tinged wood from beetle-killed timber creates a desirable aesthetic. If it is harvested early enough, it may be used for a variety of products, including furniture. The timber may also be ground into pellets that can provide cheap, efficient, and green sources of energy, and biomass can be used for both large-scale and small-scale power production.

We have done a lot to incentivize and foster this industry, but there is more to do. And we hope that we can work with you all in partnership.

Thank you for your time today.

[The prepared statement of Ms. Scanlan follows:]

Statement submitted for the record by Colorado State Senator Dan Gibbs and Colorado State Representative Christine Scanlan

Senator Gibbs' district encompasses lands affected by the Rocky Mountain Pine Beetle epidemic and is a Type II Wildland Firefighter with experience fighting fires in Colorado and California.

Representative Scanlan is a long-time resident of the high country and has worked hard to help lands and communities affected by the Beetle infestation.

Together, the two Colorado legislators have passed more than a dozen laws relating to the Mountain Pine Beetle Epidemic.

TESTIMONY

The Rocky Mountain Pine Beetle epidemic is changing Colorado and the American west. This transformation is immediately apparent to anyone spending time in the Rocky Mountains. Even a cursory glance from a visitor emerging from the Eisenhower Tunnel heading west on I-70 evinces reaction, acre upon acre of orange, red and brown stretch as far as the eye can see, a striking reminder of the permanent change our landscape, our ecology, and our communities are undergoing.

Of the 2.2 million acres of lodgepole pine forest that extend from Wyoming to New Mexico, the Mountain Pine Beetle has already killed 1.5 million, and current estimates indicate that every lodgepole pine forest in the state will be dead within a decade. The sweeping beetle-kill and the specter of fire threatens Colorado's local communities, the region's drinking water, wildlife, landscape and recreation economies, and the country's food supply.

In response, local, state and federal agencies as well as private businesses have joined together to address the growing devastated areas and the threats that they present. The State of Colorado has adopted a number of innovative strategies, including the creation of public-private partnerships and cross-jurisdictional forest management techniques. But the cost of forest treatment is high, and the difficulty of disposing resulting woody material represents a major challenge.

The beetle infestation requires immediate action, and more careful land management in the future. In the short term, the top priorities are to reduce the threat through prevention, and ensuring sufficient fire suppression resources are available when a fire does occur. Our long-term response will emphasize managing the next forest for greater diversity and resilience.

In spite of the state's best efforts, resources are limited, and it is incumbent upon the federal government to act more aggressively to suppress and prevent fires, and to take advantage of a unique economic development opportunity by fostering the growing market for beetle-killed timber.

Specifically, we are asking for the following:

- Increased funding for local, state and federal officials to apply toward fire prevention and suppression.
- Passage of the FLAME Act to decouple fire prevention and suppression funding, and to continue the "good neighbor" policy that has been so effective.
- Follow Colorado's lead to introduce legislation that removes barriers to cross-jurisdictional cooperation and that encourages public-private collaboration.
- Foster the creation of new markets for beetle-impacted blue wood products and wood pellets for woody biomass.

THE THREATS

Unfortunately, many dead tree stands pose grave threats to Colorado's growing mountain communities and vital assets. In 2008, within the five-county epicenter of the infestation:

- 12 incorporated municipalities were within impacted forest, and another 11 adjacent to forest lands.
- 28 incorporated municipalities that derive most of their drinking water from sources that flow through dead and dying forests.
- 2,000 miles of roadways, including many sole evacuation routes, jeopardized by dead trees.
- 1,500 miles of hiking and biking trails spanning three national forests that are in danger of closure this year.

- 52 emergency communications sites at risk.
- The Colorado River, which supplies seven western states and major metropolitan areas including Denver, Las Vegas, Phoenix and Southern California with fresh drinking water.
- 633 miles of electrical transmission lines and 1,300 miles of electrical distribution lines—including major lines that feed power to the entire western United States—at-risk from falling trees and fire.

Tens of millions of people across the west depend on the electricity that travels across impacted lands, and most everyone in the country depends on the water that flows downstream from Colorado, and the food that that water is used to grow. Let us make no mistake: the bark beetle epidemic poses an immediate threat to the United States' national security.

The impact of a regional power and communications network failure resulting from fire would be catastrophic to the entire western United States. According to the Tri State Generation and Transmission Association, if just one dead lodgepole collapses on the wrong transformer or power line, it could cause a fire that initiates an uncontrolled cascading power outage in Colorado and neighboring states.

According to Colorado State Forester Jeff Jahnke, the bark beetle affects more than 100 miles of WAPA, Tristate, Platte River Power Authority and Xcel transmission lines and an uncalculated number of smaller distribution lines. Electricity generation in western Colorado must cross many high-elevation areas to serve Front Range energy demands, and high-voltage transmission lines can be forced out of service by smoke or damaged from the extreme heat of wildfires. Shutting down transmission lines can threaten power in Denver and other Front Range communities, areas throughout Colorado, and neighboring states. More than 500 miles of high voltage transmission corridors—WAPA has a over 350 in USFS Region 2 being addressed in the joint EIS Xcel and Tristate have at least another 150—in both Colorado and southern Wyoming can be affected. And the number of miles of lower voltage distribution lines serving Colorado mountain communities is even greater. A cascading power outage would, at the very least, cost billions of dollars to correct.

The threat to our water is equally significant. The Colorado River's headwaters are located in Colorado, and an estimated 75 percent of the Colorado River's total flow originates in the state. The river's tributaries and transmountain diversions—which cut through thousands of bark beetle-infested areas—serve nearly two million people in Colorado, and tens of millions across the west. Access to the river, which provides millions of acre feet of fresh water annually for agriculture, recreation and drinking in 13 western states, could be crippled by a severe wildfire stemming from Colorado's tinder-dry lodgepoles. If the Colorado River became overburdened with refuse from a fire, the cost to the upper and lower basin states' recreation economies, and the country's agricultural system, is incalculable.

A fire originating from beetle-killed forests would likely burn incredibly hot, increasing the potential for scorched earth. In turn, forest regeneration would take longer due to the destruction of organic matter, increased erosion and flood, and debris flows into our fresh water supplies—including the Colorado River—would greatly expand. This type of devastation is not unknown: the Hayman Fire, which burned more than 138,000 acres along the Front Range in 2002 caused millions of dollars in damage to Denver's water supply in particular, and Colorado's more generally. Indeed, cleanup efforts from the Hayman Fire requiring "substantial expenditures" continue to this day, according to the utility Denver Water.

Moreover, the specter of danger posed to the west's fresh water supplies is far greater today than in 2002 when the Hayman Fire occurred due to the rise in dry and dead forestlands (2.2 million acres).

Additionally, with expanded urbanization comes an unprecedented risk to people living in both rural and urban settings. Today more than one million people live within Colorado's Wildland Urban Interface (WUI). Local communities also face significant economic concerns, as the loss of Colorado's scenic landscapes and injury to the state's world-class ski resorts could eventually cause a decrease in all-important tourism dollars.

Put plainly, the bark beetle epidemic poses a very real threat to Colorado's local communities and economies, but also national food and water supplies, as well as our national security.

LOCAL SOLUTIONS

Community strategies for living within disturbance-driven ecosystems such as the lodgepole pine forests of northern Colorado must address the reliability and long-term protection of assets critical to our way of life. Essentially, in such environments policy makers are required to become more flexible and innovative. At the state level, we have undertaken vigorous efforts to mitigate the threat with a num-

ber of unique collaborations between state and local government and private industry.

Our creativity stems from necessity; Colorado possesses very limited resources to apply toward mitigating the infestation. As such, we have focused on passing enabling legislation to empower communities to write comprehensive and integrated fire preparedness plans; to improve information sharing between state, federal and local agencies; and to create incentives for private businesses that deforest impacted areas and utilize those resources.

As the scale of the infestation has clarified, policymakers have been able to strategically target what were once disparate legislative efforts. For example, this past legislative session, we passed an aggressive agenda that originated in a special interim committee. The integrated legislative package not only emphasized mitigating the threat, but provided new solutions to assist local and federal officials partner more effectively, and to encourage private industry to take advantage of economic growth opportunities that may exist.

The capstone of the General Assembly's legislative efforts was a sweeping piece of legislation making $3 million available for a series of initiatives to combat the epidemic. Moneys from the legislation will assist mountain and Front Range communities plan for forest health management activities by: addressing the population centers along the wildland-urban interface; expanding protection for Colorado's watersheds, local communities and vital infrastructure; and providing grants for market-based solutions to reduce the overall threat posed by wildfire.

This new funding is critical, as we have demonstrated that even small state investments pay large dividends. Each state dollar receives a matching fund, so with just $1 million in state funding, we've been able to treat $5 - $6 million in forest land.

Additional efforts included the following:

- We provided a 5-year exemption from business personal property taxes for qualified businesses that remove trees killed by bark beetles when they assist with forest restoration efforts on the affected land after the beetle-killed timber is removed. Also creates a fund to provide start-up money for new Colorado businesses that process and sell beetle-killed timber and products.
- We expanded the ability of counties to raise money to fight fires. Specifically, the bill removes the limit on property taxes that a county can collect—with voter approval—for forest fire fighting.
- We required the state forester to establish guidelines for Community Wildfire Protection Plans with input from state, local and federal government officials, and other interested parties.
- We streamlined and clarified the roles of state and local emergency personnel when fires occur, specifically allowing sheriffs to develop and update wildfire preparedness plans, and to specify what information should be included in a plan to be effective.

FEDERAL COLLABORATION:

Colorado lawmakers are committed to fighting the fire threat and restoring our forests. However, the need has simply outpaced our financial resources.

We are grateful to our Congressional delegation for taking the lead on this issue to develop new and exciting federal level solutions. For example, we are thrilled that the FLAME Act has already passed the House; recognizing the need to disentangle fire prevention from fire suppression is a huge step forward. We hope the FLAME Act passes the Senate in its current or similar form.

Likewise, expanded funding over the past two fiscal years has improved our ability to prevent fires before they occur, and suppress fires when they happen. But far more is needed to fulfill our priorities.

Last year, Rick Cables and the Regional Forester's Office estimated the cost of mitigating the bark beetle impact effectively at more than $200 million over three years. That includes money for threats to human life and safety posed by falling trees, and emergency and non-emergency hazard mitigation and infrastructure protection.

We know that President Obama has included additional funding for both suppression and prevention in this year's budget. It is absolutely essential that these funds remain within the budget that is eventually passed by Congress, and that funds can be distributed in such a way that they reach the state and local officials who can properly apply them where they are most critically needed.

By disentangling suppression and prevention, and expanding funding overall, we will be able to address our varied needs more effectively. For example, two-thirds of Colorado's fire protection districts are comprised of volunteer firefighters, and many lack adequate wildfire training. Likewise, despite our best efforts to create in-

centives and provide grants for drafting community wildfire prevention plans, many still have not written these very basic documents. Each activity requires a separate funding source.

There are 22.6 million acres of forestland in Colorado. Of this acreage, nearly 70 percent is federally owned, including 49 percent managed by the U.S. Forest Service. Private landowners oversee an additional 28 percent. Fire knows no boundaries. So fire management actions must cross-jurisdictional to be effective.

We hope the FLAME Act reaches President Obama's desk with an extension of the "good neighbor" policy. It is essential that we continue this basic policy of partnership, granting flexibility to both local officials and property owners to go where they need to go to mitigate fire danger.

Areas where expanded partnerships may flourish also exist, but state and local officials must have the appropriate authority to venture onto private land when necessary to squelch wild fires. Likewise, and within reason, private landowners must be empowered to protect their private land when it abuts state or federal property.

Finally, while the epidemic poses a serious challenge to Colorado, it also poses a unique economic development opportunity. The blue-tinged wood from beetle-killed timber creates a desirable aesthetic effect. If harvested early enough, wood from beetle-killed trees may be used for a variety of wood products, including furniture. The timber can also be ground into pellets that can provide a cheap, efficient, and green source of energy. Biomass can be used for both large-scale and small-scale power production.

Colorado has passed various laws creating incentives to help foster this industry. However, we believe that local timber harvesting contractors and wood processing businesses could still better help with management solutions if they had a long term guarantee of a viable market for their products. Additionally, these huge swaths of timber will only be viable for a discrete period of time, as nature and rot eventually take their toll on the integrity of the wood.

We would encourage Congress to create a permanent and viable market by continuing and expanding federal incentives for woody biomass, and creating a new incentive for other beetle-killed wood products.

CONCLUSION:

While we have undertaken vigorous efforts to mitigate the threat with limited resources through a number of unique collaborations between state and local government and private industry, we are not able to address the infestation adequately without further help.

It is now incumbent upon the federal government to act.

Mrs. NAPOLITANO. Thank you very much. Mr. Rich, Commissioner of Jackson County.

STATEMENT OF JOHN RICH, COMMISSIONER, JACKSON COUNTY, NORTHWEST COUNCIL OF GOVERNMENTS, WALDEN, COLORADO

Mr. RICH. Well, thank you for allowing me to come here. I feel that I am really out of my league, from the little county that I live in of one person per square mile.

I don't speak as eloquent as I would like to, and I wish you to kind of bear with me with that. But don't ever question the passion that burns in my heart for the land that I live on and the United States of America.

We live in a small community. There is kind of a mission statement that some of the oldtimers have. They hope for the best, they expect the worst, and they prepare for the impossible. That is what my grandfather taught me.

We can't stop the beetles, but we can get an economic use out of the timber. We can cut some fire control so the catastrophic fire will not kill us, and we can prepare for the future forests.

The threats to my community—it can bankrupt Jackson County. A catastrophic fire can bankrupt it. And you have heard what it

will do to the water, the power lines, the air quality. There is a little local saying that the four-letter word with S rolls downhill.

I live on the Continental Divide, and everything is down. So below me took up when we started having problems, and we do have problems in Jackson County.

The one failure that we have is a failure to move. History shows that the little guy in Rome fiddled while it burned. I don't want to hear the sound of music; I want to hear the sound of chainsaws. We need to get moving on it.

Solutions? You can look at Jackson County for some solutions. Most of our private people who have timber have went on there, and cut it and thinned it, and done what they needed to do.

We have most of our area covered with CWPPs, which is community-wide protection plans. They are trying to make their place firewise. We have a pellet mill that came in without government help. Unbelievable. And then we have a small sawmill.

But we need some more help. We need a biomass. A biomass making electricity in Jackson County would be a godsend. It would solve a lot of problems. It would get rid of the beetle-killed timber.

When that timber falls like jackstraws, the squirrel can go under, the crow can go over the top, but the rest of us are going to have a hard time moving that. Then when it burns, it will sterilize the soil.

We need a biomass generating electricity right in Jackson County, or right near the timber. They tell me that we need energy. We have grids running through there. Local jobs. We just need a little more help. And we need to prove that we can have a reliable source; the businesses that invest $10 million or $12 million can be assured that they can pay their mortgages off. So a lot of our people are private for our pellet mill. That is what he worries about, he is buying timber off of private, and private has supplied it. But he worries about a reliable source.

And just that this is a horrendous problem, it seems to me. And we just need to ask that God would bless us a little bit in our endeavors, too.

And thank you again for listening to an old dog from the mountains.

[The prepared statement of Mr. Rich follows:]

Statement of Judge John Rich, Commissioner, Jackson County, Colorado

Chairman Grijalva and Chairwoman Napolitano and members of the House Sub-Committees on National Parks, Forests and Public Lands and Water and Power, thank you for inviting me to present testimony to you today.

My name is John Rich and I live in unincorporated Jackson County, Colorado. Thank you for inviting me to come to Washington, D.C. to tell you about the impacts facing my family, my neighbors, and my community resulting from the bark beetle epidemic on the Routt National Forest. But, I did not come to talk only about impacts, but to also offer common sense federal actions that can positively address the deplorable situation.

I am here today wearing many hats. First of all, I am a husband, father, and grandfather, working and caring for the same cattle ranch as my Grandfather who came into the valley in 1883. I am a Jackson County Commissioner in my second term of office. I also own a small propane delivery business and drive a school bus when needed. I am an emergency medical technician and serve as the director of the local hospital district. And, I am the municipal judge for Walden, Colorado, the only incorporated municipality in Jackson County. I am here today also representing the Northwest Colorado Council of Governments as a member of the exec-

utive board and the Colorado Bark Beetle Cooperative as its county government representative.

In order to give you a glimpse of where I come from, please allow me to tell you a little about the high mountain valley that I call home. Jackson County comprises a large mountain valley in northern Colorado called North Park. In Colorado, mountain valleys are known as parks. North Park is surrounded by high mountain ranges with the Park Range to the west, the Rabbit Ears and the Never Summer Mountains to the south and the Medicine Bow Range to the east. The Colorado-Wyoming state line is the northern boundary of Jackson County. The elevation ranges from 7,800 to 12,953 feet above sea level. North Park is the headwaters of the North Platte River which flows northward into Wyoming making Jackson County the only county in Colorado on the North Slope of the state. The largest land owners in Jackson County are the people of the United States with their lands managed by several federal agencies; the USDA Forest Service, the Bureau of Land Management, and the U.S. Fish and Wildlife Service. Three Congressionally designated Wilderness Areas are located in Jackson County. North Park has a population of 1,476 people spread over 1,621 square miles. Jackson County is the third least populated county in Colorado, but its people are hard working rural folks who live there because they want to, not because they have to.

Although the mountain pine bark beetle is always present in the Lodgepole pine forests of North Park, the current outbreak that has infected over two million acres of mostly federal forests in northern Colorado began in earnest in 2000. Some areas of the Routt National Forest in Jackson County are experiencing 95% mortality of mature Lodgepole pine. I am not here today to point a finger of blame, but only to say that a combination of federal and state policies, changing social values, economics, and nature itself have all contributed to the dire situation we currently face. Lodgepole pine is a fire dependent, stand replacement species, which simply means that a forest of Lodgepole pine tends to seed, grow, mature and die at relatively the same time. In Colorado, Lodgepole pine matures around 100 years of age and the health of the forest begins to decline around 120 years of age, they are pretty well dead by 140 years of age, and the cycle begins anew. This is precisely the current situation of the Lodgepole pine forests in northern Colorado. Insects, disease and fire are nature's way of renewing a Lodgepole pine forest, while prescriptive thinning, logging, and prescribed fire are the human ways of doing what nature does. Through a combination of decades of aggressive fire prevention and control, disallowing timbering activities in much of the national forests, and the resulting economic collapse of the wood products industry in much of Colorado, we are now reaping what we have sown.

If this were a totally natural cycle with no human presence on the land, then I would not be here today to talk about this because it would not be a problem. But the fact is that humans, beginning with my grandfather and his contemporaries made permanent settlements in North Park. Today, human communities and all of the appurtenances that provide the standard of living that we Americans have come to depend upon are located adjacent to and within the forests that are dying. On a regional basis, in the area covered by Northwest Colorado Council of Governments, here are some of the facts:

1. Nearly 2,000,000 acres of Colorado's high elevation Lodgepole pine forests have been infected by the Mountain Pine Beetle.
2. Over seventy percent of those forests are owned by the federal government and are managed by the USDA Forest Service, the Bureau of Land Management, U.S. Fish and Wildlife Service, and the National Park Service.
3. Twelve incorporated municipalities are located within the dead and dying forest and eleven more are adjacent to the forest.
4. Twenty-eight incorporated municipalities derive their primary source of drinking water from creeks flowing through the dead and dying forests.
5. Seven thousand acres in Summit County and Grand County need treatment to protect Denver Water's supply system.
6. Two thousand miles of roadways, many that would be utilized in evacuation scenarios are in jeopardy due to dead standing trees in the right of way.
7. One thousand five hundred miles of recreational trails on three national forests are in jeopardy of closure due to trees being toppled by the wind in the dead Lodgepole pine forests in which they are located.
8. Twenty-one thousand four hundred fifty-five acres of national forest developed recreation sites, not including ski areas are in jeopardy of closure due to falling tree hazards.
9. More than two thousand miles of national forest grazing fences, which are the responsibility of the rancher permittee, are in jeopardy of damage due to falling trees.

10. Fifty-two emergency communications sites are in jeopardy.
11. Six hundred thirty-three miles of electrical transmission lines are in jeopardy of falling trees and are not survivable in a wildfire.
12. One thousand three hundred fourteen miles of electrical distribution lines are in jeopardy of falling trees and are not survivable in a wildfire.
13. Water is supplied to the major Western metropolitan areas of the Denver Front Range, Las Vegas, Phoenix, and Southern California from the Colorado River which rises and flows through the dead and dying forest.
14. Major electrical transmission lines feeding the Western Grid, serving the entire West run directly through the heart of these same dying and dead forests.
15. These water supply systems and electrical transmission lines are also keys to maintaining the security of millions of Americans in the homeland.

In light of the reality of the statistics, the Colorado Bark Beetle Cooperative, a place based, multi-stakeholder collaborative group in its fourth year of operation has listed its top objectives as:

- Protection of human life.
- Protection of public infrastructure.
- Protection of critical water supplies.
- Development of communities that are resilient and adaptable to disturbance driven ecosystems.

Former Colorado Senator and now Secretary of Interior Ken Salazar has termed the bark beetle outbreak the "Katrina of the West" due to the gravity of the situation and of its potential to severely disrupt the social and economic systems of the West.

Although the magnitude of the bark beetle outbreak can be viewed as overwhelming, especially in light of the serious economic situation facing the nation, I retain a sense of optimism seen through these old cowboy's eyes. It seems to me and many of my Colorado colleagues that there are some common sense actions that can be taken to positively address the situation. Please allow me to share some of them with you.

1. The intent of the National Environmental Policy Act is to make certain that sufficient analysis and public consideration is given to proposed actions on federal lands before decisions are made. As a locally elected official I am painfully aware of the bane of unintended consequences of making decisions without adequate data or public review, but I am also aware of the harm that can occur through inaction of decision makers whose hands may be tied for lack of funding or expertise. Two things need to be applied in this situation: 1) Federal agencies responsible for the application of NEPA need adequate funding and qualified personnel to do the required analysis, and 2) Provisions in the Healthy Forest Restoration Act requiring the analysis of only the proposed action alternative and the no action alternative in qualified projects needs to be aggressively utilized.
2. The Colorado Good Neighbor Program, re-authorized in the 2005 Interior Appropriations Act, has been successful in creating "boundary-less management" along national forest and private lands boundaries. Since the pine bark beetle does not respect property boundaries, we need to extend and expand the use of this valuable management tool that allows for seamless actions between the U.S. Forest Service, the Bureau of Land Management, and the Colorado State Forest Service in order to leverage scarce resources. The Good Neighbor Program is scheduled to expire in September of this year.
3. The Federal Land Assistance Management and Enhancement Act, better known as the FLAME Act (H.R. 1404) needs to become law. Thank you for passing the FLAME Act in the House of Representatives last March and I urge you to work for its passage in the Senate. The FLAME Act is absolutely necessary to protect the budgets of crucial non-fire suppression programs in the U.S. Forest Service. One of the Forest Service programs that is in jeopardy of losing funding due to the increasing costs of fire suppression is State and Private Cooperative Forestry that is responsible for funding significant portions of state forestry agencies, including the Colorado State Forest Service. The efforts of the Colorado State Forest Service are essential in addressing the bark beetle outbreak on private lands adjacent to federal lands.
4. As the American Climate and Energy Security Act (H.R. 2454) is currently drafted, woody biomass from federal lands is disqualified from incentives designed to increase renewable energy production. Utilizing woody biomass in the form of billions of beetle-killed Lodgepole pine on national forests accomplishes three things:
   a. It provides a valuable source of renewable energy.
   b. It reduces hazardous fuel loadings on federal lands.

c. It creates jobs.

I personally worked with the Rocky Mountain Pellet Company, Inc. to locate a wood pellet mill in North Park. The company produces bagged wood pellets for retail home stove consumption as an alternative fuel source to natural gas, electricity, propane, and fuel oil. The pellet mill is currently utilizing dead Lodgepole pine harvested from private lands, but will need to expand to federal beetle-killed pine to meet growing national and international demand for the high quality affordable wood pellet fuel. The mill generated forty-six badly needed jobs in North Park, making them a primary employer in our small rural community. The success of this sustainable mill is crucial to our local economy and the incentives provided in H.R. 2454 if extended to dead federal timber would go a long ways in securing its future. The best way to support a sustainable wood products industry in Colorado is for the federal land management agencies to be able to provide a long-term, reliable supply of timber so small business owners can develop realistic business plans.

5. Currently, the operation of Colorado's last large modern sawmill is in jeopardy due to severe restrictions on cash flow. The company purchased federal timber sales before the economic recession and had to secure them with cash. The U.S. Forest Service is currently holding more than $2,000,000 of the company's cash, creating a severe cash flow shortage to the company in light of the downturn in housing construction. Allowing the company to secure those timber sales with bonds, freeing up the cash seems to make sense in light of our nation's current growing unemployment situation. We could perhaps learn from those who went before us. During the first part of the Twentieth Century farmers were paid for their costs in producing grain even though markets would not support excess grain. Not only did the federal government pay the farmers to keep producing the grain, they also built government storage facilities to store it until the market could utilize it. It seems to me that a similar program to pay the loggers and saw mills the costs of producing wood products, even though the current market cannot utilize the surplus makes sense. We know that one day the housing markets will recover and there will be a demand for lumber. If we do not assist the wood products industry now, the beetle-killed Lodgepole pines will become useless as lumber and we may well lose our last large sawmill in Colorado.
6. Federal contracting is a very complicated process that often dissuades smaller companies from competing in the system, and the terms of the contracts are not long enough for a small business to take the contract to the bank to borrow funds to purchase necessary equipment. There is a type of contract that makes sense and it is called a Stewardship Contract that is multi-year in duration and will exchange goods for services. However, the requirements placed on the U.S. Forest Service to reserve a "cancellation ceiling" to cover contract costs in case of government default is hampering the agency from moving forward with increasing number of Stewardships Contracts due to the fact that the agency does not have excess budget to place cash in a reserve account. By relaxing the requirements for the cancellation ceiling, more Stewardship Contracts could be awarded to small companies to do work on the national forests while preserving and creating jobs.
7. My part of Colorado is known as the Mother of Rivers. The high Rocky Mountains of Colorado give birth to major rivers including the Colorado, the North and South Platte, the Arkansas, the Rio Grande, the San Juan and the Yampa. The birthplaces of these river systems that nourish so much of the American West are in the beetle-killed Lodgepole pine forests. When a watershed burns, the ability of the soil to hold rainfall and snowmelt is severely diminished resulting in floods and mud and the silting up of water reservoirs and clogging water treatment facilities. It is impossible to fire proof watersheds, but if we are diligent and wise we can take actions to control the sedimentation of our built water facilities. I encourage you to:
   a. Approve the use of Federal Emergency Management Agency pre-disaster mitigation funds to pay for the environmental assessment, NEPA analysis, and pre-engineering of appropriate sediment control structures at strategic locations above water impoundment, transmission and treatment structures. The structures would not be built unless a fire burned the watershed. Then, if the watershed is burned, the structures could be immediately built while the ground was still warm to control the sediment that will eventually flow.
8. Finally, the electrical transmission and distribution system is currently at great risk as the lines run though the heart of the dead and dying forests of

Colorado. The U.S. Forest Service has committed $400,000 to expediting the NEPA analysis in northern Colorado required before work can be done reducing hazardous fuels and falling tree hazards, but time is of the essence as trees have already begun to fall and the wild fire season approaches. The electrical providers have funds available to do the work, but need the NEPA approvals to commence. This would also be a source of needed employment for persons willing to do the hard work.

Once again I want to thank you for inviting me to come to Washington, D.C. to talk with you. I know that federal rules and regulations are very complicated things based on the consideration of many factors, but one thing is certain—the beetles do not care about our human rules and regulations. As they continue to do what nature designed them to so efficiently do, the inevitable looms on the horizon like a gathering storm. Shame on us if we do not heed the storm clouds and fail to take the actions necessary to adequately prepare.

Mrs. NAPOLITANO. You are very welcome. And I found your testimony very entertaining, and very helpful. You are welcome, sir.

Mr. Sloan Shoemaker, Executive Director in the Wilderness Workshop.

STATEMENT OF SLOAN SHOEMAKER, EXECUTIVE DIRECTOR, WILDERNESS WORKSHOP, CARBONDALE, COLORADO

Mr. SHOEMAKER. Hi. Thank you for the opportunity to testify, Chairwoman Napolitano, Chairman Grijalva.

I represent the Wildlife, I am the director of a small conservation organization located in the White River National Forest, which is part of the epicenter of the bark beetle outbreak. And I represent the conservation community on the Colorado Bark Beetle Collaborative.

Colorado is pretty unique, I think, in terms of getting diverse stakeholder groups together to hammer through, at the local level, some consensus on what do we do about this, this issue.

Well, at least the conservation community defines the problem. It is not an ecological problem. If this outbreak would have occurred 150 years ago, we would be looking at the regenerated forest. It would have inconvenienced the Indians, but life would have moved on.

But now the problem is we live there, we occupy these forests. And it is clearly a very dire socioeconomic problem. And we are as anxious as Commissioner Rich to hear chainsaws singing in the forest. It is just a matter of where exactly, and for what reasons. And it is a matter of getting, using those very limited resources that everyone has remarked on in a very strategic manner to treat the right acres for the right reasons, to have the right outcomes.

And so that is why we are at the table collaborating with all the different stakeholders. And the Bark Beetle Cooperative or the Collaborative has identified some priorities to protecting life, property, and critical community infrastructure.

Protecting life is like making sure that firefighters aren't put in harm's way to have to do the impossible. Protecting property is clear. There is a large scientific body of literature that tells us how to do that; that the factors that affect how structures burn occur within the 40 meters immediately adjacent to the structure itself. So we know how to do that.

Critical community infrastructure, water supplies, communication sites, roadways, all those things, those are protected at, again,

within those 40 meters immediately adjacent to that piece of, that infrastructure that has been identified.

And these are the priorities of the collaborative, which includes the BLM, Forest Service, State Forest Service, local governments, councils of governments, conservation interests, recreation interests, certainly with WAPA. We support the notion of a very strategic application of our limited resources to ensure that our power lines, our delivery system, our transition system is protected.

And an analysis needs to be done to identify exactly what those threatening fuels are. They are not uniform across the landscape. There are places where it crosses over sage, so it doesn't do any good to do a uniform clearcut across an entire swath.

But there are places where you can identify very threatening fuels, and we must do that. But it takes resources to do that.

I would argue that, that expedited process is collaboration. That sometimes we have to go slow to go fast. And that is what we are doing in the Bark Beetle Collaborative, is that we are bringing stakeholders together, we are coming to consensus, we are identifying priorities. And once we have that buy-in, that social license that Rick referred to, then projects flow out the back side of that process.

And that is what is happening in some account. They are treating thousands of acres at that wildland-urban interface to protect those communities, to protect those water supplies, protect that infrastructure. That has been our experience. And we have had a pretty positive experience with that in Colorado.

I would suggest that we don't forget that bark beetles are part of the forest dynamic in Colorado. The community of Glenwood Springs has had two devastating fires blow through there, with loss of life and homes. There wasn't a bark beetle or a lodgepole pine tree in sight. In fact, it was burning mostly through the shrubland community of Gambel Oak and Mountain Serviceberry. And there is not an ounce of commercial value in any of those things, but they are very threatening types of vegetation clearly, from our experience.

So what can the feds do? We need resources on the ground. We would like to see those resources applied to where we have created this sort of agreement at the local level, where we have come to consensus on what those priority needs and those resources are.

And encourage you to please, if one size does not fit all, different ecosystems have different requirements, different communities have different requirements. Just tie those funds to local consensus-building. Because we think the most durable solutions are the ones we can agree to.

Thank you.

[The prepared statement of Mr. Shoemaker follows:]

Statement of Sloan Shoemaker, Executive Director, Wilderness Workshop

Introduction

Thank you for the opportunity to bring the on-the-ground perspective to DC.

My name is Sloan Shoemaker and I am the executive director of the Wilderness Workshop, a grassroots, place based conservation organization founded in 1964. Wilderness Workshop self-describes as the conservation watchdog of the White River National Forest.

The White River National Forest is the nation's most visited national forest and one of the crown jewels of the National Forest System. The White River's 2.3 million acres contain a dizzying diversity of ecosystems and attractions, from world class ski resorts like Aspen and Vail to a dozen or so of Colorado's 14,000 ft peaks to the highest concentrations of caves in Colorado to what's reputedly the nation's largest elk herd affording world class hunting opportunities. The White River is considered the Cradle of Wilderness because it was here that the young landscape architect Arthur Carhart, sent to the survey Trappers Lake area for vacation cabins, first articulated the notion that some landscapes are too valuable in their wild state to develop. From this seed grew the 750,000 acres of congressionally designated wilderness now on the forest, wilderness containing such renowned features as the Mount of the Holy Cross and the twin peaks of the Maroon Bells.

These superlatives are not without their costs. The WRNF exemplifies the New West as amenity refugees relocate from their former lives to the resorts and communities surrounding the Forest, attracted to the extraordinary recreational opportunities and quality of life made possible by the Forest. This New West demographic, coupled with the easy interstate access to the Denver metropolitan area's 3 million people and the high volume airports servicing the resort communities, recreation management on the WRNF poses a huge challenge.

In addition, the WRNF provides summer grazing allotments for dozens of ranches inhabiting the lowlands around the forest, ranches that contain the critical winter range for the vast herds of mule deer and elk that summer on the Forest and provide unparalleled hunting opportunities in the fall. The WRNF also overlies the eastern edge of the Piceance Basin, a natural gas sweet spot that's seen unprecedented rates of drilling in the last 8 years. Gas leasing and development is a complex resource management issue in its own right, but made even more difficult by the fact that much of the WRNF's gas potential lies in roadless areas, grazing allotments, or trophy hunting range. Further complicating White River forest management is the fact that it is the partial epicenter of the mountain pine beetle outbreak in northern Colorado, which brings us all together today.

I cite this inventory of forest management challenges to give you some background on the breadth and complexity of resource management issues my organization has been deeply involved with for the last 45 years.

Coming to Terms with the Beetle

The mountain pine beetle outbreak is not an ecological problem, but it is a socioeconomic one. One hundred and fifty years ago, the mountain pine beetle outbreak would have run its course as it has for millennia without furrowing a brow. But over the ensuing 100 years, humans have taken up residence in these mountains and now there are densely populated communities embedded in these disturbance dependent ecosystems. Consequently, the pine beetle epidemic has put many socio-economic values at stake.

Interestingly, the beetle outbreak has created a teachable moment. Whereas before, residents old and new had taken the picture-window view for granted, assuming it'd never change, communities are now learning that, not only are forest ecosystems not static, they are subject to rather dramatic and rapid change that we have no control over. That lesson hasn't come easily or painlessly.

As the beetle epidemic has expanded from community to community, I have observed a consistent pattern that closely resembles the classic stages of grieving. At first, people simply deny that it could happen to them. Then, when the evidence is too great to further ignore, they get angry because they love the forest the way it was and don't want it to change. Next comes bargaining when people rather heroically but desperately devise strategies to stop the beetle, saying we're not going to let what happened to the community next door happen to us. In the end, though, comes resignation and acceptance that there are forces at work larger than us and all we are left with is to narrow our focus on identifying what little we can actually do.

Working Together

What's become crystal clear is that none of us can afford to act alone, but that together we can get a whole lot done. This too has presented us with a teachable moment as diverse stakeholders, normally inclined to operate from our own narrow interests, have learned how to sit together at the collaborative table working towards mutually beneficial goals.

I am the Colorado conservation community's representative to the Colorado Bark Beetle Cooperative (CBBC). CBBC started as an intergovernmental group for sharing information on how individual member organizations were approaching the bark beetle issue. Over time it became apparent that a more coordinated response was

needed and that the tent must be enlarged to bring in the spectrum of stakeholders that would have to be dealt with eventually anyway. It took us awhile to learn to share the sandbox and trust each other. Perhaps our biggest lesson was that sometimes you have to go slow to go fast and, at times, it had to be learned the hard way. In everyone's understandable rush to get chainsaws running, little misunderstandings or oversights inevitably grow into broad disagreements and things grind to a halt. On the other hand, taking the time to carefully build trust and consensus pays off, greasing the skids for projects in those zones of agreement to hit the ground running. Collaboration and consensus building provides the social license to move forward expeditiously—it's the ultimate process streamlining.

Another important benefit derived from the hard work of hammering out the zone of agreement is that it creates a very safe and attractive place for decision makers and politicians to focus their attention and resources. It's hard to argue when the enviros and the timber industry, the Forest Service and local government, sportsmen, recreationists, and trade associations all agree on what's to be done. As a result, the CBBC has been extremely successful in capturing the attention of the Colorado delegation who is unified in its legislative efforts to direct relief to the bark beetle affected region.

Prioritizing

As you've heard today, the scale of this outbreak is huge. Conversely though, the resources available to mitigate its effects are quite limited and must be applied very judiciously and strategically where we get the biggest bang for the buck. We simply can't afford to waste precious resources for narrow, marginal or dubious gain. The CBBC's collaborative setting is the ideal venue for diverse stakeholders to come to consensus on priorities, a process that pretty quickly cuts through the rhetoric and grandstanding. CBBC's priorities are the protection of life, property and critical community infrastructure—priorities that transcend this particular disturbance event and strike right at the heart of what it means to sustain mountain communities in the face of disturbance dependent forest ecosystems. Ultimately, our goal is to ensure that, as forest disturbances come and go (fire, bug epidemics, floods, blowdowns, etc), mountain communities remain resilient, insulated from their destructive and disruptive effects. We all recognize that we can't, nor should we, control forest ecosystems. But what we can control is how badly our communities are impacted by them. What does this mean in practice?

Protecting lives means things like:

- Removing hazard trees that could fall directly on people
- Clearing hazard trees from transportation corridors so emergency access and egress isn't impaired
- Protecting homeowners and fire fighters by creating defensible space around homes because no fire fighters life is worth risking to protect an indefensible home

Protecting property means:

- Conducting public education to help homeowners participate in their own rescue by implementing appropriate measures to keep their homes from burning, like:
  - Structures must be constructed of ignition resistant materials...shake roofs guarantee home ignition and loss
  - Reduce fuels creating defensible space within the 40 meters immediately surrounding the structure
  - Scrutinize residences for and eliminate ember traps like needle filled gutters, unscreened roof vents, wood piles under overhanging porches
  - Ensure safe access and emergency egress so that firefighters can get in and get out in a hurry if they need to

Protecting critical community infrastructure means:

- Clear hazard trees from electrical transmission and distribution rights of way
  - Trees can fall on electrical lines causing fires or arcing and blackouts
- Assess wildfire risks along and adjacent to electrical transmission and distribution ROWs and conduct strategic fuels treatments to eliminate the threat of dense smoke caused arcing or heat damage to lines and towers
- Protect water supplies by;
  - removing fuels within the immediate vicinity of water supply delivery system to prevent direct damage from hazard tree fall or direct heat damage from fire
  - conducting watershed risks assessments that identify where mass land wasting events are most likely to occur post-fire
  - pre-engineering and pre-permitting strategically placed erosion catchment structures as informed by the watershed risk assessment—the next fire's location can't be predicted (nor are there enough resources to construct

catchments everywhere) but these catchments are intended to be shelf-ready for immediate implementation the day after the fire passes through
  - strategically fell and leave trees on the contour across slopes where sensitive, erosive soils have been identified to reduce fire severity and to pre-position surface water decelerators
- Protect economic infrastructure
  - Remove hazard trees from public land campgrounds, trails, and roads
  - Mitigate beetle kill impacts to ski areas by removing hazard trees and initiating early establishment of critical forest cover between ski runs by replanting trees
  - Remove hazard trees from recreation sites to protect lives as well as to keep them open and generating tourist traffic
  - Reduce hazard tree, fuel, and erosion threats to agricultural irrigation systems; many ranches have irrigation ditches that originate in or travel through beetle affected forests
- Protect transportation system
  - Remove trees within a tree height of community road networks; even light winds will blow down beetle-killed lodgepole, quickly cutting off emergency access or egress
  - Reduce fuel loads adjacent to roadways to reduce threat that fire will shut off access/egress or will directly injure traveling public or emergency services personnel.

The abundance of so many red and dead trees also makes apparent the ever-present of risk of wildfire. I emphasize ever-present because lodgepole pine is a fire dependent species. It co-evolved with fire which is necessary sustain its presence across the landscape. This ecological reality is often lost upon newcomers to these mountains who misunderstand fire as an alien invader that must be eliminated. Green forests arguably pose a risk of fire equal to and, at times, even greater than that posed by the beetle-killed forest. If there is one lesson painfully clear from the last century, it's that fire suppression and attempts to exclude fire from forest ecosystems backfires, simply putting off the problem until it returns with larger, more severe and more damaging fires than would otherwise have been experienced. Protecting communities from wildfire begins out the back door, not in the back country. The most, if not only, effective measures are those prescribed by USFS Fire Scientist Dr. Jack Cohen (see http://www.fs.fed.us/rm/publications/titles/videos/wildfire.html and http://www.fs.fed.us/rm/publications/titles/videos/protecting.html). Dr. Cohen's groundbreaking research has proven that the factors influencing survivability of homes and structures are within the 40 meters immediately surrounding that structure. Because burning embers or firebrands can launch as much as 2 miles from an active flame front, showering communities and homes with a hail of burning material, it's generally ember triggered fires that cause home loss. If homes are Firewise, meaning built of ignition resistant materials and surrounded by defensible space with discontinuous fuels, they have the highest likelihood of survival.

Resources

As communities grapple with where to start, it's becoming immediately apparent that the there is way more work to do than resources to get it done. As we speak, trees are blowing down across county roads in Jackson, Routt, and Grand Counties faster than limited crews can keep up with. Throwing money at the problem would certainly help get equipment and manpower on the ground. But, even if we could get experienced sawyers and enough saws on site, we couldn't do anything with the trees due to a lack of timber haulers. If a flood of haulers magically appeared, there's no place to take the wood. Colorado's wood products industry is bare bones and, alternatively, there simply aren't enough piling yards available to accommodate the volume of material. And with high fuel prices, the hauling distance to existing mills is simply uneconomic in many instances.

For the first time in decades, Coloradoans are interested in bringing back the timber industry to help us deal with all the wood coming out of beetle-killed forests. The trouble is, there will be a large pulse of wood flowing off the forests over the next 5-10 years as communities implement their priority projects but wood volume will taper off fairly steeply on the back side of that. The concern is that a reinvigorated timber industry be appropriately scaled and flexible to deal with the near term pulse of wood yet not need to maintain the same level of supply over the long term. Simply put, Coloradoans want a tactical timber industry that can scale up for the near term and scale down as supply wanes.

We all agree that a reinvigorated wood product industry is an important part of the solution. However, there's a persistent and vexing barrier to the wood product industry's reestablishment. No one knows what the long term, guaranteed wood

supply is nor where precisely it's located. Given 2 million acres of beetle kill, it may seem a trivial point to get high centered on. However, not all those acres are available or appropriate for harvest. Some are statutorily off limits like congressionally designated wilderness and inventoried roadless areas. There are environmental constraints like steep slopes and wetlands. Finally there are less tangible but equally important constraints imposed by what the public is willing to tolerate. Responsible investors want to know how big is their social license to work in the woods because business plans can quickly run aground when they exceed their social license. Yet, no one has performed the type of comprehensive, state wide assessment of long term wood supply that investors can take to the bank as collateral for loans. And without it, banks are loath to invest in uncertain ventures based on speculative and unsubstantiated assertions of long term wood supply.

We'd all like to see this nut cracked as soon as possible so we can get on with the important business of mitigating the bark beetles effects. Colorado's conservation community is as anxious as the next guy to hear chainsaws in the woods—we just want to make sure that they're treating the right acres. Because durable solutions are rooted in consensus, we are prepared to continue collaborating with all stakeholders to collectively identify what those right acres are. After all, I live, work, play and am raising a family in the midst of this too.

Future Forests

I have appended to my testimony an abridged version the state of the art, consensus science statement on our current understanding of mountain pine beetle ecology and fire behavior. It's a remarkable and ambitious document in the scope of the issues it attempts and diversity of scientific voices it represents. The full report is worth the read and can be found at http://www.fs.fed.us/r2/bark-beetle/mbp6092008.pdf .

Here's my synopsis:

1. The scale and intensity of the ongoing mountain pine beetle epidemic is unlike any outbreak that has been observed before, but that does not mean the end of lodgepole pine in the Rockies.
2. These forests have undergone dramatic change in the past, and they are resilient to mountain pine beetle and other disturbances.
3. Even in the existing forest, variability in age, density, and species composition ensures that there will be different responses to the beetle outbreak.
4. Once an outbreak gets going, there are no known treatments that can influence its spread.
5. Infrequent, large fires are the norm in lodgepole pine forests, as they are likely to be in the future—with or without beetles. There is general agreement that as the dead needles fall from the trees, the probability of crown fire will diminish, but the probability of surface fire may increase.
6. Because mountain pine beetle outbreaks do not disturb the soil, they are not likely to cause increased erosion, though they may increase water yield.
7. Changes such as we are observing in the current mountain pine beetle outbreak are not unlike the changes we should expect from climate change in the decades ahead.

The take-home message is that the bark beetle epidemic is not the ecological Armageddon it's often portrayed as. The future forest is already establishing itself in the understory. And because of the legacy of other tree species in the lodgepole pine forest understory, the new forest will be markedly more diverse than the forest it's replacing. We'll see Engelmann spruce, sub-alpine fir, Douglas fir and aspen trees filling in where previously existed a homogenous sea of lodgepole pine. Contrary to the more hyperbolic rhetoric about the end of lodgepole pine forests in northern Colorado, lodgepole will return, though not exactly in the same density and distribution we are used to.

People often ask what we ought to be doing to accelerate establishment of the new forest. Perhaps a more fundamental question is should we, and if so, where? The first step should be to do a comprehensive assessment of what sort of natural regeneration is already occurring. From a distance, the 2 million acres of beetle kill seem devoid of a green stick. However, if you walk around in the beetle-killed forest, it's apparent that the overstory of red or grey trees disguises the extent of young, vigorous new trees now taking advantage of the reduced competition for water and nutrients. A comprehensive assessment would tell us if the type and location of regeneration matches our desired future conditions and whether intervention is warranted or not. But, because this isn't getting done, time and energy is wasted handwringing about the disappearance of the forest and its calamitous implications for our tourist dependent economies.

(Abridged by Wilderness Workshop due to space limitations)

The Status of Our Scientific Understanding of Lodgepole Pine and Mountain Pine Beetles—A Focus on Forest Ecology and Fire Behavior

A synthesis of our current knowledge about the effects of the mountain pine beetle epidemic on lodgepole pine forests and fire behavior, with a geographic focus on Colorado and southern Wyoming.

Merrill R. Kaufmann1, Gregory H. Aplet, Mike Babler, William L. Baker, Barbara Bentz, Michael Harrington, Brad C. Hawkes, Laurie Stroh Huckaby, Michael J. Jenkins, Daniel M. Kashian, Robert E. Keane, Dominik Kulakowski, Charles McHugh, Jose Negron, John Popp, William H. Romme, Tania Schoennagel, Wayne Shepperd, Frederick W. Smith, Elaine Kennedy Sutherland, Daniel Tinker, and Thomas T. Veblen (complete version available at: http://www.fs.fed.us/r2/bark-beetle/mbp6092008.pdf)

Introduction

Major lodgepole pine forest changes and how they affect us. Mountain pine beetle populations have reached outbreak levels in lodgepole pine forests throughout North America. The geographic focus of this report centers on the southern Rocky Mountains of Colorado and southern Wyoming. The epidemic extends much more widely, however, from the southern Rocky Mountains in Colorado in the United States to the northern Rocky Mountains in British Columbia and Alberta, Canada.

Worries about large-scale tree mortality in lodgepole pine forests have created public concerns across the West. The appearance of red trees during the last decade, a clear sign of recent beetle attack, has been followed by bare dead tree skeletons throughout this large area. Unquestionably, millions of dead trees foretell large forest changes in the near future, and more might be anticipated in areas where the mountain pine beetle has not yet reached epidemic levels.

People are concerned for many reasons. At a minimum, the loss of mature lodgepole pine trees will significantly change the present and future appearance of affected forests for half a century or more. Extensive areas of dead trees and snags are not as aesthetically appealing as live forests. Perhaps more seriously, dying and dead trees raise fears of increased fire danger. Some people worry that the dead needles and wood generated by the mountain pine beetle epidemic will lead, perhaps quickly, to severe wildfires that threaten lives, property, wildlife, and watersheds. Many are concerned that trees not yet attacked will succumb to the epidemic. Some people worry that the forest in and around our communities and recreation areas will become sparse or disappear forever, and that these forest changes will affect timber commodities, game habitat, and recreation resources.

Some contend that the current epidemic with synchronous outbreaks at many locations is unprecedented and a clear warning of global climate change impacts on ecosystems around the world. Scientists and others point to other changes occurring in our region—Ips beetle-caused mortality of piñon pine in the Southern Rocky Mountains, aspen decline, and large fires in Front Range ponderosa pine forests and elsewhere. It is difficult to prove cause and effect, but all of these changes began during the last 10-15 years, coinciding with recent warm climatic conditions, increasing numbers of large trees, and advancing age of many forests. Whether or not the current epidemic is unprecedented is a question to which there is currently no clear answer because of the lack of precise information on extent and severity of beetle outbreaks prior to the early 1900s. Nevertheless, many in the scientific community believe the probability of a similar event historically over at least the past few 100 years is low.

There are many insights and opinions about lodgepole pine being discussed by stakeholders of all kinds—forest managers, agency administrators, researchers, policy-makers, politicians, the news media, industries, and the general public. Some concerns and fears are supported by scientific evidence. Others are probably justified given the current status of our scientific knowledge, but lack clear scientific support. Still others are myths with little or no basis in science. A further complication is that some of the information emerging from the science community has appeared on the surface to be somewhat contradictory.

The reason for this report. This document is written to report our current scientific understanding of the ecology and fire behavior of lodgepole pine, with a focus on the direct and indirect effects of the current mountain pine beetle epidemic that is so dominant in our minds. We recognize that important socioeconomic implications stemming from the mountain pine beetle epidemic exist, and we hope that examining the status of science will aid in addressing these issues. While this document focuses on lodgepole pine and mountain pine beetles, there are also many other forest types and non-forested systems subject to extreme or at least unexpected impacts of climate, other insect and pathogen species, and other disturbances including fire and wind.

This report results from a meeting in January 2008 convened in Colorado by The Nature Conservancy, bringing together expertise of scientists who study lodgepole pine throughout its geographic range. We hope to provide as much scientific help to stakeholders as possible by sorting out what is known with a high degree of certainty, what we are confident about but with less certainty, and what is truly not understood and in need of more research. While our primary geographic focus during the workshop was Colorado and southern Wyoming, some of the findings may be appropriate for lodgepole pine throughout much of its natural range of distribution. *We urge caution, however, in applying our findings beyond our initial area of focus or to other forest types in the region.*

During the workshop and through subsequent email dialogue, the lodgepole pine team reached consensus on nine key points. As always, science is a work in progress, and uncertainties surfaced during discussion of some key points. For some points we provide what is known with adequate confidence rather than waiting for more definitive information, when this information is useful to interested stakeholders. This report provides the nine key points along with explanatory material intended to help the reader understand the degree of confidence we have from scientific study for these key points. To help the reader, we provide a list of suggested reading at the end of this report for more detailed information on many of the topics discussed. We begin with the obvious.

A. Lodgepole pine forests are being heavily impacted by the ongoing mountain pine beetle epidemic.

From British Columbia to Colorado, forests are experiencing high mortality of lodgepole pine trees from attack by mountain pine beetles. An insect epidemic with multiple outbreaks at this scale has not been observed during the last century of scientific study, though small outbreaks have occurred. This mortality is changing forest structure and composition, and modifying fuels in ways that will affect fire behavior for decades.

B. Not all lodgepole pine forests are the same.

Some forests are composed of nearly pure lodgepole pine established following large fires decades or centuries ago. Others are mixtures of lodgepole pine with subalpine species such as Engelmann spruce, subalpine fir, and aspen at higher elevations, or with mixed conifer species such as ponderosa pine, Douglas-fir, and aspen at lower elevations. Each type of forest has unique features of ecology and fire behavior. And lodgepole pine trees in all three types are vulnerable to attack by mountain pine beetles.

C. Forests are living systems subject to constant change.

It is normal and expected that many natural agents, including mountain pine beetles, fire, and wind, change forests over time. Some changes are so gradual that we barely notice them, while others are relatively sudden and extensive.

The forests that are presently losing many trees to insect attack will not look the same in our lifetimes, but healthy and vigorous forests will eventually return in most locations.

D. Lodgepole pine will not disappear from the southern Rocky Mountains.

The make-up of our forests is already changing where mountain pine beetles cause high mortality of lodgepole pine. However, this event will not cause the extinction or disappearance of lodgepole pine, and forests dominated by or including lodgepole pine will persist in the southern Rockies, though they may look different from those of the past due to changing climate. Future forests will continue to provide valuable ecological services and aesthetic and recreational benefits.

E. Active vegetation management is unlikely to stop the spread of the current mountain pine beetle outbreak.

Mountain pine beetles are so numerous and spreading so rapidly into new areas that they will simply overwhelm any of our efforts where trees have not yet been attacked, and no management can mitigate the mortality already occurring. However, judicious vegetation management between outbreak cycles may help mitigate future bark beetle-caused tree mortality in local areas.

F. Large intense fires with extreme fire behavior are characteristic of lodgepole pine forests, though they are infrequent.

Very dry and windy conditions can lead to large intense fires in lodgepole pine forests. Such fires are a natural way for lodgepole pine to be renewed and are largely responsible for extensive pure lodgepole pine forests.

G. In forests killed by mountain pine beetles, future fires could be more likely than fires before the outbreak. Large intense fires with extreme fire behavior are again possible.

There is considerable uncertainty about fire behavior following a mountain pine beetle epidemic on this scale. In pure lodgepole pine forests, crown fires are possible both before an epidemic and after while needles are still on trees. Intense surface fires are possible after most dead trees have fallen to the ground. The probabilities of such fires are uncertain, and more research is needed to learn in what ways and how long the fuels and fire environment are altered by the beetles. Nevertheless, protection of communities and other values at risk continues to be imperative.

H. Mountain pine beetle outbreaks are not likely to cause increased erosion.

Soils are not disturbed and protective ground cover is not reduced when mountain pine beetles kill lodgepole pine trees. If anything, understory plants may grow more vigorously in the increased light and with the higher available soil moisture and nutrients. Where tree mortality is high, annual streamflow may increase and the timing of water delivery may be changed, because of reduced canopy interception of precipitation and reduced water uptake by the trees.

I. Climate changes will most likely contribute to substantial forest changes in the decades ahead.

Given the climate changes in the last several decades and projected changes for coming decades, large fires and other natural disturbances and shifts in vegetation composition and distribution are anticipated in many ecosystems of Colorado and southern Wyoming. These large disturbances and other changes in growing conditions will likely contribute to restructuring many forest landscapes.

J. Summary

The current mountain pine beetle epidemic affecting lodgepole pine forests is an important ecological event with significant socio-economic implications. What will be the consequences for the affected ecosystems? How do we protect our communities and other human values at risk in ways that are socially and economically (as well as ecologically) feasible? These are difficult questions. This report has focused specifically on the ecology and fire behavior issues associated with lodgepole pine and the mountain pine beetle epidemic. We recognize that the socio-economic aspects are as important as the ecological issues, but they are beyond the scope of this report.

Ecologically, much is known about lodgepole pine and mountain pine beetles. Even though the scale of the current epidemic is unprecedented over the past approximately 100 years of reliable observations, beetle-caused tree mortality at some scale has long been part of the dynamics of the lodgepole pine ecosystems. Similarly, fire behavior and its role in ecological processes and fuel management practices are relatively well understood. While we are confident about our general understanding, we have identified at least some scientific uncertainties about lodgepole pine, mountain pine beetle effects, and fire behavior that should be acknowledged and further researched.

We are most concerned about several wildcard issues that create some uncertainty in applying what we know from science. The scale of this epidemic is larger than any mountain pine beetle epidemic studied thus far. We do not fully understand if or how the magnitude of this ecological event will affect future forests in terms of regeneration of the present species or transitions to different vegetation types. Furthermore, there is the question—both tantalizing and troubling—about possible climate change (including its rate, direction and magnitude) and the degree to which scientific findings need to be qualified as they are applied.

If humans were not a part of the equation, forests would simply mature, die, and regenerate or be replaced by other vegetation types, following ecological trajectories over time driven by climate, environment, and species capabilities.

Because humans cause changes in forests by choosing to live there and deriving economic services from them, our communities are impacted by forest changes, whether they are natural or not. Thus both the scale of the mountain pine beetle epidemic and the uncertainties about future forests leave us with questions that are important to us but may not be answerable with the knowledge we have now.

Knowledge from scientific research about lodgepole pine and mountain pine beetles is valuable in two ways. It offers answers to some of the questions we have about forest ecology and provides valuable insight for management of these forests for ecological and community protection purposes. It also clarifies what we do not know. This is valuable not just to direct new research, but also to inform stake-

holders of the degree of confidence they should have as land and natural resource management practices are considered.

As noted in the introduction, science is a work in progress. Many of the scientific uncertainties discussed in this report already are receiving attention in the research community. Even as research continues, however, the scientific knowledge already available is usable by a wide variety of stakeholders and in the collaborative and adaptive management process. Adaptive management is perhaps best described as managing while learning on the fly. In this report, the scientific community provides information to managers and other stakeholders, but the scientific community also will help advance the knowledge base through lessons learned as management practices are planned, implemented, monitored, and evaluated. We humans must decide how to manage forests based upon their intrinsic value and natural processes as well as some desired future condition contingent on human wants and needs. We must be realistic about the degree to which we as observers, managers and stewards of the forest can affect what is happening now and what will happen in the future. Whatever we do from here should be done together.

Authors and their affiliations

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- Thomas T. Veblen, University of Colorado

Mrs. NAPOLITANO. Thank you so much for your testimony, sir. I also thank you for the reference to the full report, the state-of-the-art consensus service statement, and that document apparently is available for the general public. And hopefully we will be able to get it. And your key points were very much appreciated.

Mr. Wilkinson, General Manager of the North Colorado Water Conservancy District.

STATEMENT OF ERIC WILKINSON, GENERAL MANAGER, NORTHERN COLORADO WATER CONSERVANCY DISTRICT, BERTHOUD, COLORADO

Mr. WILKINSON. Thank you, Madame Chairman, Members of the Committee. I am the General Manager of the Northern Colorado Water Conservancy District, and its municipal subdistrict.

I thank you for the opportunity to testify today before the combined Subcommittees on the real threat posed to watersheds and water supplies by the pine beetle.

Northern Water was created in 1937. It is the first water conservancy district in the State of Colorado, as can be seen on Attachment 1 of my written testimony. Northern Water is located in northeastern Colorado, and includes approximately 640,000 acres of irrigated farmland, and a constituency population of about 800,000 people.

In 1938, Northern Water entered into a contract with the U.S. Bureau of Reclamation to become the local sponsor and contract beneficiary of the Colorado Big Thompson project.

The CBT project annually yields an average of 220,000 acre feet of high quality supplemental water from the project's 466-square-mile watershed in the headwaters of the Colorado River. The project then conveys that water under the Continental Divide to the Water Shore South Platte Basin. This water supply is essential to northeastern Colorado.

The municipal subdistrict developed, operates, and maintains the Windy Gap project, designed to annually capture 48,000 acre feet of water, primarily relying on the 313-square-mile watershed of the Fraser River, a tributary to the Colorado River. The Windy Gap project utilizes the excess capacity in the CBT project to convey that water to the eastern slope.

Both the watersheds of the CBT project and the Windy Gap project are heavily infested by the pine beetle, with infestation beginning in the early 1990s. I direct your attention to Attachment 4 of my written testimony, a map showing the extent of the pine beetle infestation in those watersheds. This map depicts the extent of the current pine beetle infestation in the watershed's tributary to both of these projects.

Experts estimate that eventually well over 90 percent of the lodgepole pine, the dominant species in this area, will be killed by the pine beetle.

Pine beetle infestation poses a significant immediate and continuing threat to forest watersheds that produce water supplies, and the associated water supply facilities by dramatically increasing the possibility and potential severity of wildfires and the resulting watershed erosion and sediment deposition. It also causes secondary water quality effects.

In my written testimony I cite the Colorado examples of the Buffalo Creek fire in 1996, and the Hayman fire in 2002, to demonstrate the devastating and costly impact to infrastructure and water supplies caused by wildfire.

Because of the pine beetle infestation in 2006, Northern Water contracted with the U.S. Geological Survey to perform a pre-wildfire study to determine the potential post-wildfire grade flows within the CBT project watershed. The study results were alarming.

In July 2007, the Pinchot Institute for Conservation released a report entitled "Protecting Front-Range Forest Watersheds from High-Severity Wildfires." As a result of that study, the Colorado State Forest Service, the United States Forest Service, and water users began a collaborative effort to define and address problems caused by pine beetle infestation.

Over the next two years, this group developed methodologies to evaluate the vulnerability of, and consequences to, watersheds posed by wildfire, based on the watershed physical characteristics.

These evaluations are used to prioritize those watersheds most threatened by wildfires, and most needing remedial action to reduce the risk. These cooperative efforts to address wildfire risks must continue.

Further, my written testimony contains a number of recommendations needed to deal with the threat to watersheds and water supplies posed by the pine beetle epidemic.

Addressing the threat of wildfires, as well as other water quality and water supply challenges caused by the pine beetle epidemic, is a daunting task, in light of the millions of acres of lands affected, and the cost of implementing adequate and effective measures.

However, the cost of dealing with the aftermath of a wildfire can be magnitudes greater than the cost of proactive preventive measures. We must learn from our experiences, and initiate long-term forest management practices that will lessen the probability of future pine beetle infestation, and will reduce the likelihood of catastrophic fires in the next generation of forest scrub that will follow this pine beetle epidemic.

Thank you.

[The prepared statement of Mr. Wilkinson follows:]

Statement of Eric W. Wilkinson, General Manager, Northern Colorado Water Conservancy District

INTRODUCTION

The Northern Colorado Water Conservancy District (Northern Water) was created by decree of the Weld County District Court in September 1937 as the first water conservancy district in the State of Colorado. Northern Water is located along the northern front range of Colorado, extending from the City and County of Broomfield and Fort Lupton on the south, to north of Fort Collins and Greeley on the north, then extending northeastward along the South Platte River to the Colorado/Nebraska state line (see Attachment 1). Northern Water encompasses parts of eight counties and includes approximately 1.6 million acres within its boundaries, including about 640,000 acres of irrigated farmland. The constituency population of Northern Water is approximately 800,000 people.

The impetus for the creation of Northern Water was to serve as the sponsoring agency to contract with the United States, through the Bureau of Reclamation (Reclamation), for the design, construction, operation, and maintenance of the Colorado-Big Thompson Project (C-BT Project). The 220,000 acre-feet of high quality, supplemental water supplies that are diverted on average each year by the C-BT Project from the headwaters of the Colorado River into the South Platte Basin for use by the constituents of Northern Water, are as important today to the health, economy, and sustainability of northeastern Colorado as they have ever been during the history of the C-BT Project.

An explanation of the background and history related to the development and operation of the C-BT Project and Northern Water is contained in Attachment 2 to this testimony entitled "Background and History of the Northern Colorado Water Conservancy District and the Colorado-Big Thompson Project."

C-BT PROJECT WEST SLOPE COLLECTION SYSTEM

The 220,000 acre-feet of average annual yield provided by the C-BT Project is captured from the 466 square-mile watershed located within the headwaters of the Colorado River. Over the past 15 years, this watershed has been severely infested by the Pine Beetle. The integrity and functionality of the collection system facilities are threatened by the potential consequences of the beetle infestation. Such consequences include the higher risk of catastrophic wildfires and resulting watershed erosion and sediment deposition. The water quality of this valuable supply is already being adversely impacted as a result of the infestation.

A diagram of the C-BT Project's integrated collection system is shown on Attachment 3. The collection system consists of: Shadow Mountain and Lake Granby reservoirs and Grand Lake all within the Colorado River Basin; and Willow Creek Reservoir within the Willow Creek drainage, which is a tributary to the Colorado River. The collection system utilizes two large pumping plants to move water between fa-

cilities. The Willow Creek Pumping Plant pumps water stored and released from Willow Creek Reservoir into Lake Granby Reservoir. The Farr Pumping Plant pumps water stored in Lake Granby Reservoir into Shadow Mountain Reservoir so it can then flow by gravity through Shadow Mountain Reservoir, into and through Grand Lake, to the intake of the Adams Tunnel. Water then flows by gravity from Grand Lake through the 13.1-mile long Adams Tunnel beneath the Continental Divide to the eastern slope, where water continues to be conveyed through C-BT Project facilities, ultimately being delivered to C-BT Project allottees and beneficiaries within the boundaries of Northern Water for beneficial use.

MUNICIPAL SUBDISTRICT AND THE WINDY GAP PROJECT

In 1970, the Municipal Subdistrict of the Northern Colorado Water Conservancy District (Municipal Subdistrict) was formed by a decree of the Weld County District Court and included six municipal water purveyors within northeastern Colorado. The purpose of the Municipal Subdistrict is the development and operation of the Windy Gap Project. The Windy Gap Project was constructed on the Colorado River approximately 1 mile west of the Town of Granby from 1981 to 1985 (location noted on Attachment 1).

The Windy Gap Project consists of a 415 acre-foot reservoir and a pumping plant that pumps water captured by the reservoir into Lake Granby Reservoir. Excess capacity in the C-BT Project, when available, is then used to convey the Windy Gap Project water to Windy Gap Project participants on the eastern slope. The average annual yield of the Windy Gap Project is approximately 48,000 acre feet.

Water yielded by the Windy Gap Project is from the 313 square mile drainage area of the Fraser River Basin. This watershed has also been severely infested by the Pine Beetle.

FORESTED WATERSHEDS

The drainage areas tributary to both the C-BT Project and the Windy Gap Project are heavily forested by predominately uniform-age, high-density, lodgepole pine. Nearly the entire drainage area tributary to the C-BT Project is federally owned and under the jurisdiction of the United States Forest Service or the National Park Service. Lands controlled by the National Park Service are limited to Rocky Mountain National Park. In 2009, Congress passed legislation designating most all of Rocky Mountain National Park as Wilderness. The drainage area tributary to the Windy Gap Project has a higher percentage of private ownership with the federally-owned lands being under the jurisdiction of the United States Forest Service.

PINE BEETLE INFESTATION IN THE UPPER COLORADO RIVER BASIN

In the early 1990's, initial evidence of Pine Beetle infestation was noted in the Upper Colorado River Basin, including the drainage areas tributary to the both the C-BT and Windy Gap projects. Over the next several years, the infestation would reach epidemic proportions, encompassing a majority of the forested areas in the Upper Colorado River Basin. Attachment 4 is a map indicating the extent of the Pine Beetle infestation in the drainage areas tributary to these two projects. It is important to note that to-date over 50% of the respective drainage area tributary to either the C-BT Project or the Windy Gap Project are infected by the Pine Beetle. The area infected continues to grow with many experts estimating that eventually over 90% of the lodgepole pine within the respective drainage basins will be infected by the Pine Beetle. Attachment 5 is an aerial photograph of the Grand Lake, Shadow Mountain, Lake Granby area showing the reddish-colored areas infected by the Pine Beetle.

Pine Beetle infestation poses significant, immediate, and continuing threats to the forest and the water supply originating as run-off from the affected forested areas. Trees killed by Pine Beetles are initially identified by their reddish color. The red needles provide a dry, highly combustible fuel load, dramatically increasing both the possibility and severity of wildfires. Although fire is needed to regenerate forest growth in lodgepole pine forests, uncontrolled wildfires in old, dense, uniform-age forests are not only highly destructive to the forest and its environment, but are also devastating to the water supplies that originate on those forests.

Addressing the threat of wildfire, as well as other water quality and water supply challenges caused by the Pine Beetle epidemic, is a daunting task in light of the millions of acres of land affected and the high cost of implementing adequate and effective measures. However, the cost of dealing with the aftermath of a wildfire may be magnitudes greater than the cost of proactive preventive measures.

The Buffalo Creek Fire in 1996 and the Hayman Fire in 2002 within the upper South Platte River Basin, although not occurring on Pine Beetle infested forests, are outstanding examples of the devastation that wildfires can cause to water supplies and water supply infrastructure. The Buffalo Creek Fire, a relatively small fire, cost

the Denver Water Department (Denver Water) approximately $20 million to protect and restore water supply facilities, including the dredging of a reservoir to remove debris and sediment deposited from the erosion of the watershed following the fire. Significant expenditures were also required to address issues associated with the substantial deterioration in water quality caused by the fire. The adverse effects of that fire on Denver Water's supplies are still being felt. The Hayman Fire burned over 138,000 acres and resulted in costs of over $6.5 million just to protect Denver Water's Cheesman Reservoir in the two years immediately following that fire. The monies expended on Cheesman Reservoir are only a fraction of the total costs incurred by Denver Water because of this fire. Denver Water continues today to deal with the adverse effects of the Hayman Fire.

The debris, sediment, and nutrient loading that are captured by water facilities following a wildfire have the potential to reduce, significantly impact, or even destroy the functionality of those facilities. The resulting adverse effects on water quality are very detrimental and, depending on the characteristics of the watershed, can last for years or even decades. Remediation of the effects of wildfire for facilities associated with the C-BT Project or the Windy Gap Project could easily cost several million dollars for each facility.

If the reddish and dead Pine Beetle-infected trees are not the victim of wildfires, those trees will eventually lose their needles, with a commensurate decrease in the risk of wildfire. In some cases, the decrease in the forest canopy area will result in an increase in run-off from the affected areas, resulting in a benefit for water users. The increase duff on the forest floor resulting from the falling needles and the associated vegetative decaying process may result in higher nutrient loading in the run-off from the previously forested area. This increase in nutrient loading can cause several issues for water supplies including, but not limited to, causing increased growth of algae in the water supply, significantly decreased overall water quality, and greater challenges in treating the water without introducing threats to public health, such as disinfection by-products. Treatment of affected water supplies to drinking water standards may, in some cases, require costly modifications to water treatment facilities.

As these trees continue to deteriorate, they will eventually fall, posing threats to the safety of those in the affected areas. Over time, with increasing deadfall on the forest floor, the threat of wildfire and the associated problems again increases.

NORTHERN WATER AND MUNICIPAL SUBDISTRICT EXPERIENCES

Over 700,000 people in northeastern Colorado depend on C-BT Project and Windy Gap Project water as a source of their drinking water supply. The effects of a wildfire resulting from the Pine Beetle infestation within the two projects' watersheds would be devastating to the quality, quantity, and reliability of this water supply.

As the drainage areas tributary to the C-BT Project became more heavily infected by the Pine Beetle, Northern Water became increasingly concerned about the possibility and the consequences of a wildfire. In 2006, Northern Water contracted with the United States Geological Survey (USGS) to perform a pre-wildfire study to determine the potential for post-wildfire debris flows within the C-BT Project watershed. The purpose of the study was to estimate the probability of post-wildfire debris flows and to estimate the volume of debris flows that might occur. The results were alarming as the study showed significant adverse consequences to the C-BT Project and its water supplies as the result of a wildfire.

In July 2007 the Pinchot Institute for Conservation released a report entitled, "Protecting Front Range Forest Watersheds from High-Severity Wildfires." In an outreach effort, the Colorado State Forest Service and the U.S. Forest Service hosted a meeting with water providers to discuss potential methods to protect Front Range watersheds and their associated produced water supplies from the devastation of wildfires.

Over the next two years, this group would develop methodologies that would be used to evaluate the vulnerability of a watershed to wildfires and the consequences that might result based on the watershed's physical characteristics. Characteristics evaluated include wildfire hazard ratings, watershed steepness or ruggedness, soil erodibility, and water use ranking. These evaluations could then be used to prioritize those watersheds most threatened by wildfire and most needing remedial action to reduce the wildfire risk and the consequences of a wildfire. Preliminary results from the study of Colorado Front Range watersheds have recently been made available. Those study results show: more than 2 million acres are classified as high hazard for wildfire; all major water collection, storage, and conveyance structures are threatened; the current measures being pursued to address the wildfire threat are inadequate; and adequate corrective actions in the form of forest treatments will require considerable increases in funding.

Based on the methodology developed for the evaluation of wildfire risk and prioritization of watershed protection, Denver Water, Northern Water, the Municipal Subdistrict, and other water providers engaged a consultant to evaluate the watersheds in the Upper Colorado River Basin. Watersheds evaluated included those tributary to the C-BT Project, the Windy Gap Project, and facilities owned and operated by Denver Water in the Colorado River, Fraser River, and Williams Fork River basins. Those preliminary results have very recently been released, pointing to the need for remedial measures to protect several vulnerable watersheds.

FUTURE ACTIONS TO ADDRESS PINE BEETLE-CAUSED THREATS TO WATERSHEDS

The Pine Beetle epidemic in Colorado has affected critical watersheds throughout Colorado, raising the risk of wildfires and the risk of the resulting devastating impact to watershed health and to the quality of the water supplies produced. It is important to note that on most infected watersheds where fires have thankfully not occurred and the infected trees have lost their needles, the wildfire threat has, as a result, been significantly reduced. However, the decaying needles on the forest floor are causing, and will continue to cause, adverse water quality effects. The cooperative efforts in Colorado to address the wildfire risks, led by the Colorado State Forest Service and the U.S. Forest Service, must continue with the timely and focused implementation of corrective or remedial measures necessary to address this real threat to water supplies. Scientifically based procedures have been developed to evaluate the threats posed to watersheds and prioritize those watersheds needing immediate remedial action to address the wildfire threat. The following steps are recommended:

- Prioritize watersheds based on risk for wildfire and consequences that may be caused by wildfire. This prioritization can then be used to allocate resources needed to address the wildfire risk in a region.
- Implement appropriate forest management practices to reduce the potential for wildfires. This would include such things as forest thinning, timber harvesting, fuel breaks to prevent the uncontrolled spread of wildfire, prescribed and controlled burning, and the natural use of fire.
- Develop and implement a plan to mitigate the adverse effects of post-wildfire impacts. This could include such things as construction of debris control dams upstream of reservoirs to limit debris flow into the reservoir or emergency action plans to limit erosion within the affected watershed.
- Develop the equivalent of Community Wildfire Protection Programs for the protection and restoration of critical water supply facilities within affected watersheds.
- Develop pre-event permitting processes for emergency corrective measures that would be necessary to implement a Community Wildfire Protection Program or an emergency action plan during and following a wildfire. This would allow the implementation of emergency mitigation measures in a timely, effective, and efficient manner.
- Develop federal funding mechanisms necessary to address and mitigate the threat posed by catastrophic wildfires resulting from the Pine Beetle infestation. Federal agencies should establish an emergency fund that could be utilized to pay for remediation of watersheds, water supplies, and water supply infrastructure during and following a wildfire. These funds would be available for protecting water quality and restoring the functionality of water supply facilities.

CONCLUSION

Addressing the threat of wildfire, as well as other water quality and water supply challenges caused by the Pine Beetle epidemic, is a daunting task in light of the millions of acres of land affected and the cost of implementing adequate and effective measures. However, the cost of dealing with the aftermath of a wildfire may be magnitudes greater than the cost of proactive preventive measures.

We must learn from our experiences and initiate long-term forest management practices that will lessen the future probability of Pine Beetle infestation and that will reduce the likelihood of catastrophic wildfire in the next generation of forest growth that will follow this Pine Beetle epidemic. Testimony Presented by Eric Wilkinson

LIST OF ATTACHMENTS TO WRITTEN TESTIMONY

ATTACHMENT 1 Map of the Northern Colorado Water Conservancy District and Colorado-Big Thompson Project

ATTACHMENT 2 Background and History of the Northern Colorado Water Conservancy District and the Colorado-Big Thompson Project

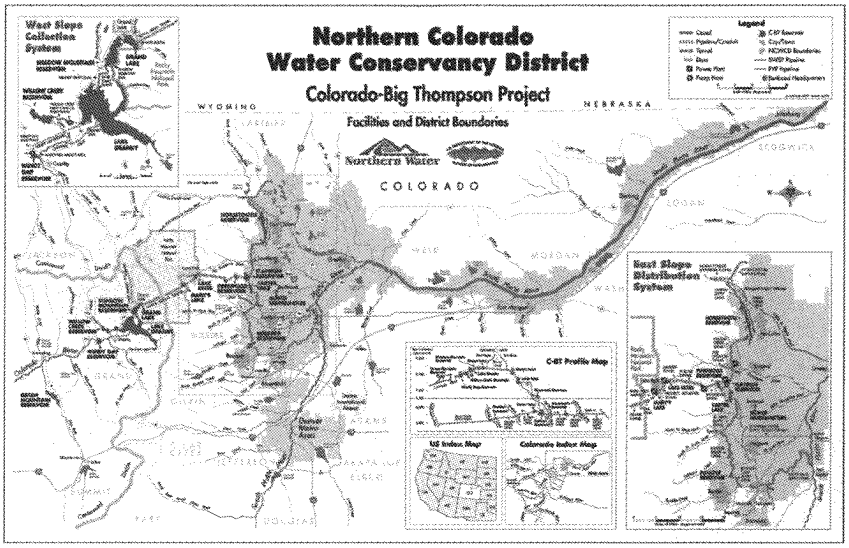
ATTACHMENT 3 Schematic Diagram of the West Slope Collection System of the Colorado-Big Thompson Project

ATTACHMENT 4 Colorado-Big Thompson Project and Windy Gap Project - Drainage Basins Affected by Beetle Infestation

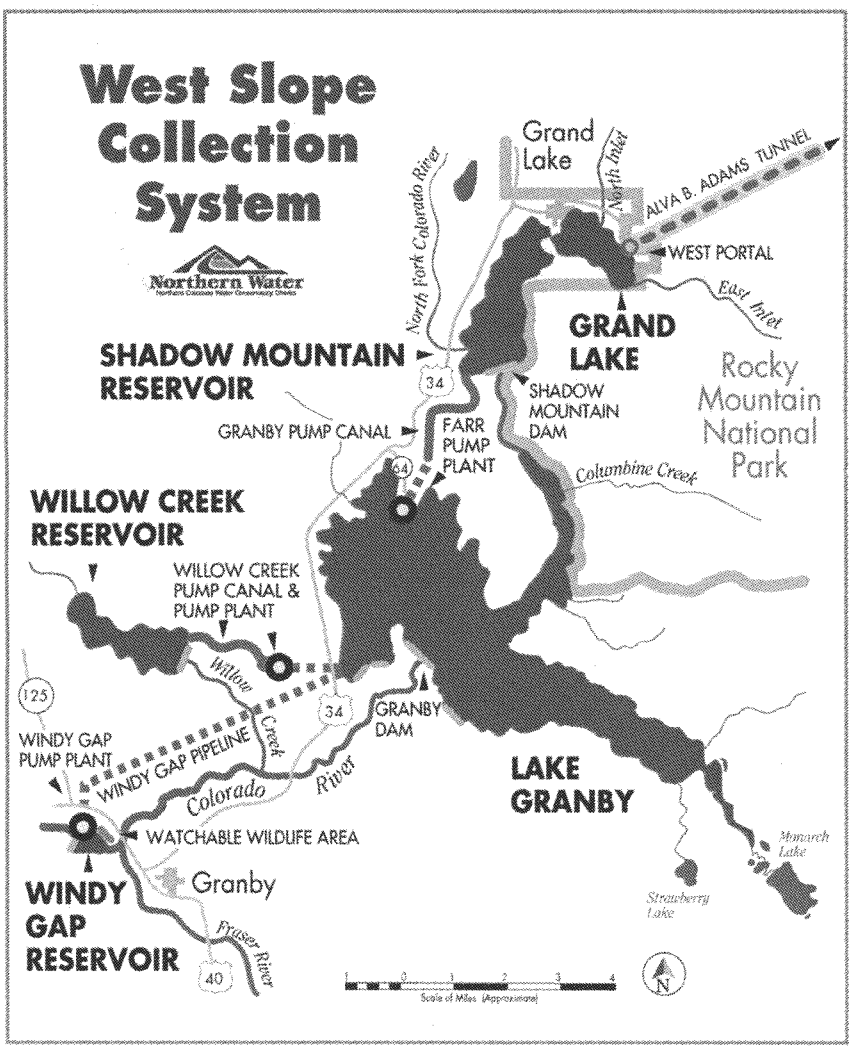
ATTACHMENT 5 Aerial Photograph of Colorado-Big Thompson Project Drainage Basin

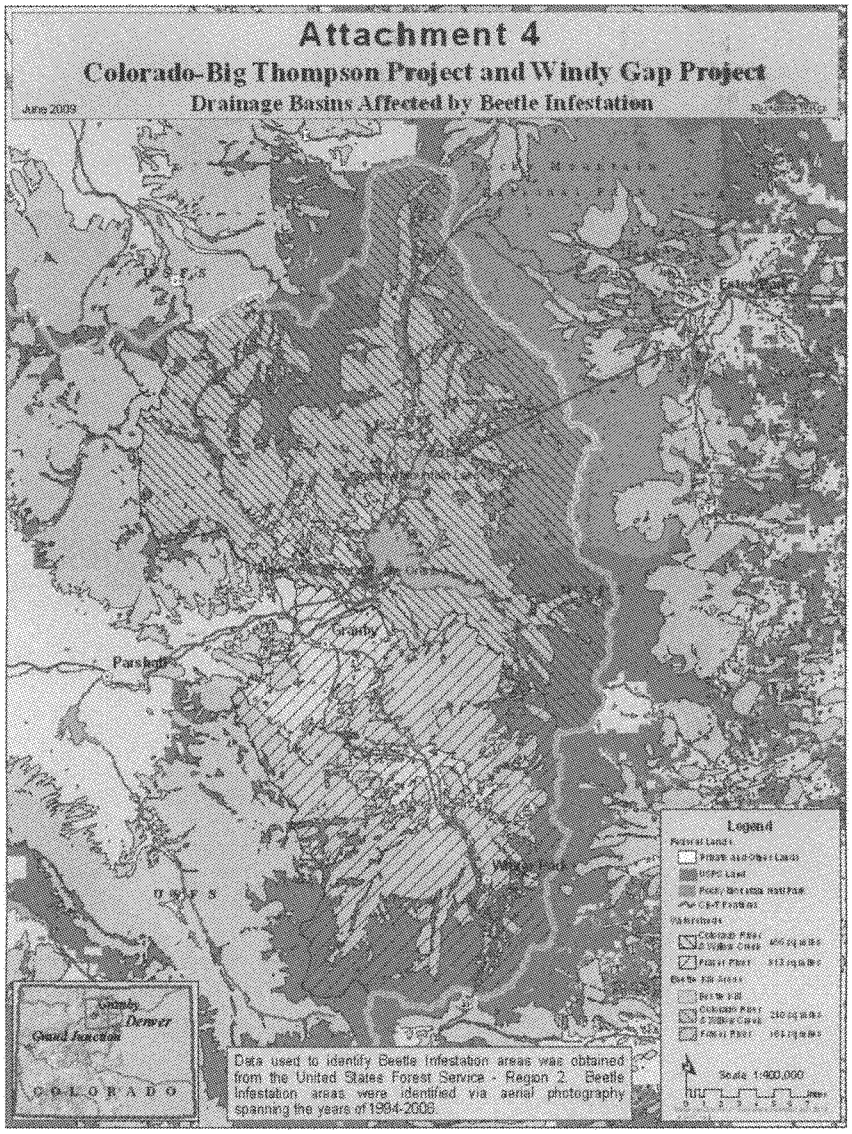
[NOTE: The aerial photograph (Attachment 5) has been retained in the Committee's official files.]

Attachment 1



Attachment 3

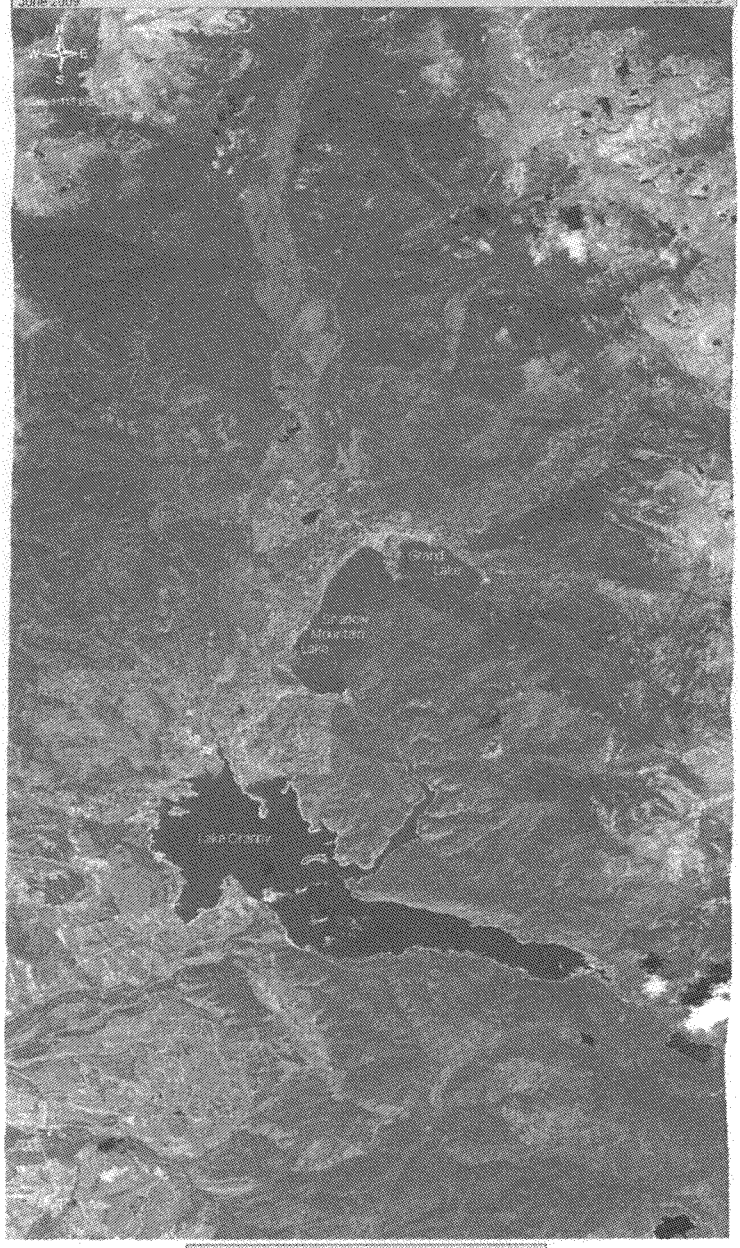



Attachment 4
Colorado-Big Thompson Project and Windy Gap Project
Drainage Basins Affected by Beetle Infestation
June 2009
Granby
Parshall
Legend
Grand Junction
Denver
COLORADO
Data used to identify Beetle Infestation areas was obtained from the United States Forest Service - Region 2. Beetle Infestation areas were identified via aerial photography spanning the years of 1994-2008.
Scale 1:400,000

Attachment 5

Aerial photograph of Beetle Infestation within Colorado-Big Thompson Project Watershed

June 2009



Satellite imagery was obtained from Digital Globe-Quickbird. Image date is 8/20/2007.

Mrs. NAPOLITANO. Thank you, Mr. Wilkinson. And your last comment in regard to the cost, in reading some of the testimony, it is stated that it is prohibitive to be able to do chemical spray over the trees. Prohibitive is the word.

Yet, when you quantify the loss of everything else—the industry, the watershed, the cost of the water districts to be able to clean up the silt, removal of the silt, all of that—we have not quantified that.

And we are saying it is prohibitive. What do we measure it against?

Mr. WILKINSON. The costs that we have heard in initial conversations back in 2007 on the cost of addressing the wildfire examples are in the hundreds of millions of dollars. The effectiveness of spraying, as I understand it—and I am not an expert on infestation prevention—is likewise prohibitive from the standpoint of each tree has to be individually sprayed, because of the way that the insects attack the tree.

It is easy for any individual water supply facility, such as the Strontia Springs Dam that you saw a picture of earlier in the presentation, it is easy to incur a cost of $20 million on remedial measures to dredge out those reservoirs.

Reservoirs associated with the Colorado Big Thompson project, for example, if there is a wildfire above them, would become sediment collection facilities that would obviously require dredging to take care of that, as well.

Costs are indeed prohibitive. If there were, I believe, substantial corrective measures that could be taken, such as spraying, that were economically viable and effective, I think the water users and the community would probably endorse that. But it is my understanding that those really aren't practical or implementable, from either an economic standpoint or from a physical standpoint.

Mrs. NAPOLITANO. But I have yet to hear, sir, of anybody indicating that the research and development has identified a way to cope with it. Or at least to not totally eradicate it, because that probably is impossible, but to be able to deal with the quick production of itself. In other words, it just keeps spreading, and there is really no talk of any other predators that we can look at to address this epidemic.

It has been around for 39 years.

Mr. WILKINSON. Exactly. Your representation is my understanding, Madame Chairwoman.

Mrs. NAPOLITANO. Does anybody know of any research, anything being done on the actual beetle itself, and how to address its demise? And I guess maybe I would go back to a few years ago, when I sat on City Council. The local RECTA control was trying to do away with the mosquitoes that were spreading the—they didn't call it the Nile virus back at that time. We are talking about the 1980's.

And what they did is they were able to get females, and put them through a process. And don't ask me, I am not the researcher that did it. But they would sterilize the females. And that helped the propagation of the mosquitoes.

So I am not sure who is doing any kind of research on the actual beetle itself to be more specific about what other measures can be done. Because we are looking at everything else, or at least talking

about it. And we are not quite sure if anybody knows anything about that.

Yes, ma'am, Ms. Scanlan.

Ms. SCANLAN. Thank you, Madame Chair. In my community, we first focused on prevention, because we saw this happening in a county near ours and didn't want the effects to be the same.

Graham County, Colorado, is the epicenter of the beetle epidemic, and they have tried everything. There is a lot of research going on in terms of pheromone packs that you can put out into trees that will maybe send them elsewhere.

Nothing works with any certainty on a landscape scale. So what we focus on are what we call high-value trees. I know the ski resorts will be here to testify about that later on how you can protect those. Even that is quite expensive to do on private property.

Anything dealing with the National Forest, there is a lot of talk about what you can do. But this is one of the largest infestations of insects ever seen in North America. We don't have any tools that are effective in stopping or mitigating their travel. What we have heard is they will continue at this pace until they run out of habitat, and that is, in fact, what we are seeing.

So when Congressman Polis said we are focused now on triage, that is all we can do. We spent a few years trying to get ahead of it; we are now years behind.

Mrs. NAPOLITANO. What barriers do you see exist on cross-jurisdictional cooperation?

Ms. SCANLAN. Thank you, Madame Chair. We have been really trying to use the good neighbor policy, which allows us access to Federal lands in a way that I am not sure other states need, or need to have as a priority on.

We had to add additional staffing on our State Forest Service Office to do that, though, because it is a fairly bureaucratic process to engage in. And we wanted to support our local citizens and private landowners on how to get that kind of access.

Because if you are in the wildland-urban interface, everything abuts. Ninety-nine percent of my entire district where I live, my county where I live, is in that same interface, so it is surrounded by public lands.

So we have to be cooperative in how we can get easier access.

Mrs. NAPOLITANO. How do you achieve mitigation?

Ms. SCANLAN. Pardon?

Mrs. NAPOLITANO. How do you achieve——

Ms. SCANLAN. I think that enhancing the good neighbor policy, making sure that we still have the good neighbor policy is a first priority that we would like to ask of this body.

But second, enhancing that, maybe taking down some of the bureaucracy associated with it, so that we can have easier access back and forth. That would be a tremendous tool.

Mrs. NAPOLITANO. Thank you. Excuse me. Mr. Shoemaker, you have advocated for some timber harvesting to mitigate the damage inflicted by the beetle. Do you believe in expediting NEPA? And if not, why not?

Mr. SHOEMAKER. Thank you, Madame Chairwoman. We do advocate for chainsaws in the woods to protect those priorities that we have identified collaboratively. And we do not advocate for some

streamlining of NEPA. In fact, the bottleneck for getting projects on the ground is not NEPA. There are tens, if not hundreds of thousands of acres of NEPA-ready projects that just need to be pulled off the shelf and hit the ground. And what is holding that up is the resources to get people into the woods.

Mrs. NAPOLITANO. Thank you. Mr. McClintock.

Mr. MCCLINTOCK. Just to follow up on that point. You say there are plenty of NEPA-ready projects, and yet we have a number of NEPA-ready projects in my district in northeastern California with 33 million board feet already under contract; 31.5 million board feet are tied up in litigation.

We have had testimony with respect to forest fire-killed trees, that these lawsuits are being filed simply to delay the harvesting beyond the point where they are commercially salvageable.

What is your comment on that?

Mr. SHOEMAKER. Well, I restrict my comments to Colorado, where I function and where I study. And the same dynamic is not playing out in Colorado.

We have a fairly healthy collaborative atmosphere in Colorado, where we have regular meetings with my good buddy, Rick Cable, sitting behind me, and others, like local governments like Commissioner Rich. And we come to agreement. We recognize that when there are very limited resources and there is a lot of high-value community infrastructure and lives at risk, that we need to make priority decisions. Where those priorities are is where we all agree, and that is where the projects are hitting the ground.

Mr. MCCLINTOCK. Mr. Rich, you testified that you thought NEPA could be better implemented. What would you recommend?

Mr. RICH. I feel that NEPA has a purpose, but it has been used to slow down—like you said—lawsuits and things like that have slowed down the process to where there is no action, and an alternative speeds it up quite a bit.

As a lawmaker, I need to hear both sides of it, but I hate to be stalled by someone who is using a law to, just for that purpose. And that does happen. There are some environmental people out there who feel that preservation means do not cut a tree. I do not share that concept with them.

Mr. MCCLINTOCK. What would you recommend? What changes ought we to make to NEPA to keep this from happening?

Mr. RICH. I think if we understand that we need to move ahead. They had talked about maybe backing off of some lawsuits, but just don't use it to slow things down. Use it for what it was designed to kind of check out.

I think if the motive is just to stop the process, that is not a good use of the law. Use it as it is appropriate and maybe they won't use it. Maybe they won't sue, but it sure has slowed things down.

Mr. MCCLINTOCK. Let me ask each of the panelists just for the single most cost-effective recommendation you could make to deal with the infestation.

Ms. SCANLAN. Thank you. That is a tough question, because this is a multi-faceted, complex problem. It is, as someone mentioned, a near-term and a long-term issue for us.

Mr. MCCLINTOCK. I also don't want to get bogged down in analysis paralysis, either. We have, I think, established that this is a

very serious problem. What would be the single most cost-effective solution that you could offer us today?

Ms. SCANLAN. I think that we need funding on the ground. We have a list of priority projects in Colorado that are critical to both the public safety and infrastructure that we would like to have——

Mr. MCCLINTOCK. Funding on the ground for what?

Ms. SCANLAN. To do wildfire mitigation.

Mr. MCCLINTOCK. Specifically, removing overgrowth?

Ms. SCANLAN. It is largely removing the fuel-loaded trees out in the forest, yes.

Mr. MCCLINTOCK. All right. Mr. Rich, you talked about litigation. That would be it? The single most cost-effective way to——

Mr. RICH. The most cost-effective would get some money on the ground to Jackson County. To have to place an economic value on the product—whether it is timber or biomass for electricity—we need a little help to get it going. Then it will start rolling on its own.

Mr. MCCLINTOCK. Again, if we sell the timber for lumber production, that actually makes us money.

Mr. RICH. Some of the value of the timber is not worth—yes, the good saw logs, you bet. I mean, there is a lot of solutions. We in the cattle industry used to use a sale market, where we would take our cattle, and then they would sell them. Why not have a lumber, where you take your logs, the 35-acre people take their logs? And then you have got saw logs, timber, all different kinds of logs that you can pick right out of there. And that would be an effective way, an economic way to make it roll. It has got to pay.

Mr. MCCLINTOCK. I will leave Mr. Shoemaker and Mr. Wilkinson to argue with the Chairwoman over time.

Mrs. NAPOLITANO. Well, we have one more panel. We will be going to the votes pretty soon, so we need to really move on. I would appreciate it if you would maybe answer in writing.

Mr. Grijalva.

Mr. GRIJALVA. Thank you, Madame Chairman. Madame Representative, could you please tell us a little bit in your testimony about the incentives created to foster the kind of partnership between a state and private industry?

And specifically, how do you pick a company? And who is in charge of distributing the funding?

Ms. SCANLAN. Thank you, Mr. Chairman. We are working with our State Forest Service Office in distributing those funds. And they do help identify the private folks who might want to come forward and utilize those.

What we have done is a series of tax credits, tax exemptions, anything that we can do at a state level to bolster what is a fledgling industry, particularly in terms of the niche market for bark beetle trees.

Mr. GRIJALVA. Thank you. Mr. Shoemaker, you referred to tactical timber industry. If you could expand on what that would look like, and are there any areas that you know in the country where that has been successful.

Mr. SHOEMAKER. Thank you, Chairman Grijalva. I referred to tactical timber industry, and that is just a term that I came up with.

But the notion is that we have got, we need—industry is part of the solution in Colorado, and we don't have enough of the right industry in the right place to help us move this, this wood from these right acres that we have identified through collaborative process.

And the trouble is that there is a tremendous volume of beetle-kill wood available now, and will be in the short, in the near term. But after that its value is going to fall off pretty quickly, in terms of commercial value.

And so we need a timber industry that is nimble enough to ramp up a way to process this large volume of woods coming off of these thousands of acres of priority protection for communities. And then on the back side, can scale down in a way as the supply of wood scales down, so that it is sustainable in the future.

And really what we are talking about is trying to create a situation where our communities can remain sustainable in the face of the disturbances that keep moving through these forests and so that the timber industry can respond in a way that addresses supply as it ebbs and flows.

Mr. GRIJALVA. Thank you. And as I mentioned in my opening statement, I think the essential part of the response to the outbreak is going to be the kind of extensive coordination and community support that we bring to bear on this issue.

And just for, in looking ahead, what are some of the pitfalls, some of the non-starters, in your experience with the cooperative?

Mr. SHOEMAKER. With the cooperative? The pitfalls as we go forward, we can avoid. Gosh, do it sooner. It took a while for the Colorado bark beetle, it started as a cooperative, then moved into a collaborative. And it took a while to recognize that there are multi-stakeholders that have, that need to be involved at the table, because we all have a stake in the national forest, because that is our livelihoods there.

It took a couple of years of inter-agency or inter-government discussion before they finally realized that our tent is not big enough. So I encourage the opening of the tent earlier in the process.

But there is one pitfall that is kind of outside the spectrum of your question that I would like to address. That is, when the industry goes to the bank to get a loan, they need to demonstrate a guaranteed reliable supply of timber over X period of years until the loan is paid off. Right now, while there is this plethora of wood in the forest, it seems like a minor issue.

However, what has never been done is a statewide comprehensive analysis or assessment of how much supply there is. It has to be done where you remove wilderness, wetlands, the two steepest slopes, and the other areas that are just prohibitive to get into. Then you identify where the local collaboratives, like I sit at the table with, have identified priorities where there is that zone of agreement, where there is that social license, and how much supply is in that area.

Then the industry can make carefully calculated investment decisions based on that quantification of supply. Right now, people are kind of shooting in the dark. The guys who get there early have a more compelling argument because there is more wood.

But as we need more industry to ramp up to help us process the wood out of these interface areas, that question is going to be com-

ing increasingly as the bottleneck, I believe, in developing the infrastructure to deal with it.

Mr. GRIJALVA. Thank you. I yield back.

Mrs. NAPOLITANO. Thank you. Mrs. Lummis.

Mrs. LUMMIS. Madame Chairman, in the interest of time I am going to submit my questions for this panel to you in writing. I have just a couple of editorial comments, though.

Eight months ago Wyoming had three large operating sawmills in our state. Since then, two of them have closed. Roughly 400 employees and contractors were put out of work when those mills shut their doors, further exasperating Wyoming's inability to thin the forests or protect rights-of-way for transmission lines in a way that will address immediate needs on the ground.

If we don't protect these forest industries, to a certain extent we are fueling our own problems.

I also want to stress that it is so good to hear from county commissioners back here, because we need to be coordinating with counties. Not making them cooperate with the Federal government. And it is a coordination effort. The people on the ground are the ones with the expertise to understand how to address issues in their area.

So I want to applaud Commissioner Rich for joining us today. I will submit my questions to you in writing. But thank you very much, all of you, for attending today.

Mrs. NAPOLITANO. Thank you, Mrs. Lummis. We expect the votes within the next 10, 15 minutes, so I would like to—Ms. DeGette.

Ms. DEGETTE. Thank you very much, Madame Chair. I really also want to thank our elected officials for coming today, Representatives Scanlan and Gibbs, and also Commissioner Rich, for sharing your local perspective. It really helps.

I mean, those of us from Colorado, you saw the delegation, we understand the devastation of this problem. We are trying to work with everybody.

It is beyond comprehension unless you see it, and it is beyond avoiding. So now we are trying to deal with it.

Representative Scanlan, I want to ask you, you referenced that the Federal government could help with these collaboratives and break down some barriers. I am wondering if you could tell me specifically what we can do to the Federal agencies to try to put these inter-agency and inter-governmental collaboratives together in a better way.

Ms. SCANLAN. Thank you, Congresswoman DeGette. I do want to acknowledge what Sloan Shoemaker was saying. I do think we have a very healthy collaborative environment in Colorado. Because of the urgency of the situation, it has brought people to the table who are very intent on finding solutions.

I think there are good models in that that could be translated into the Federal level, on how we need to work across agencies in particular. We tend to do shuttle diplomacy, if you will, a bit, as well as when we are tied or hamstrung by levels of bureaucracy from a state perspective. If we could get help in streamlining those processes, that would be terrific.

Ms. DEGETTE. If you could, if you or some of your staff could help us put together some specific recommendations for the Federal

agencies. We will work with Secretary Salazar and Secretary Vilsack and others to make sure we can do that.

Commissioner Rich, one thing that you mentioned really struck me. That is, that it would be helpful to get some of this dead wood out—if we could get some economic incentives to people to come in and take it out.

I am wondering if you or your Northern Colorado Collaborative have looked at some of the economic incentives for woody biomass. If you have any opinions, if there is anything we can do at a Federal level to encourage development of that.

Mr. RICH. I would feel that woody biomass is an economic value. But we have to save our loggers.

One thing that, kind of out of the idea, but during the Depression, farmers were in real trouble, and the U.S. Government stored commodities. Why don't they store two-by-fours, or cants, or something like that until it gets back?

But yes, economics run itself—if we can make it pay.

Ms. DEGETTE. Super, thank you. Mr. Shoemaker, I wanted to ask you a couple of questions. The first one is, I am wondering what the wilderness workshop and some of the environmental groups do on economic incentives for woody biomass are, and if you could talk about that for a moment.

Mr. SHOEMAKER. I tread here very carefully, because I don't——

Ms. DEGETTE. So do I.

Mr. SHOEMAKER. I don't have a tremendous amount of background in this, though having talked to some in that industry, my understanding is that the best, the most efficient use of the woody biomass is for direct heat generation—not for electrical generation.

I think fundamentally that is a sound use of the material. For us, it is more a matter of where it comes from, and an industry that is scaled properly, so that we don't end up with more industrial capacity than we have supply for on the tail end, which is going to create problems, economic disruption and job loss.

Ms. DEGETTE. Well, just to let you know that any removal of the woody biomass would still need to comply with the NEPA rules, just like it is right now, and several witnesses referenced it.

It seems to us as we do this climate change bill, which ultimately can help with the bark beetles, that we might be able to get incentives for folks to remove some of the downed trees, the woody biomass.

I want to ask you one last question, which is a follow-up on the question I had asked to Mr. Cables earlier. I wonder if you can give your brief opinion about how we can find a balance in the future between protecting healthy trees, while allowing the thinning of the dead trees.

I am particularly worried, as I mentioned to Mr. Cables, about what will happen once all of this—Madame Chair, I ask unanimous consent just to finish this question, please.

Mrs. NAPOLITANO. We do have another panel coming up.

Ms. DEGETTE. What we can do to make sure the forests in 50 or 100 years are healthy, that we don't have the same problem now, because all the forests are the same age.

Mr. SHOEMAKER. Thank you, Ms. DeGette. I kind of get hung up on the question and how you define health. Arguably, the next forest is already started. It is in the understory of the dead forest now. One of the goals for diverting this potential in the future is a more diverse forest.

If you get out and walk around the understory of that dead forest, you see spruce, you see fir, you see douglas fir, you see aspen establishing. In some place there might not be any forest; other places there is going to be some lodgepole, thin or thick, depending on the cones.

So before we make assumptions about what exactly is going to happen in the future, I think that we need to make sure we understand what exactly is happening now, and what we are getting set up for.

The future is somewhat unknown because of climate change. We are operating in a world that we do not have experience in. Therefore, the conservation community's perspective generally is that we try to give ecosystems the opportunity to respond in ways that they have the wisdom that we don't.

I think we have tried managing and imposing our human will in forests in the past, and that has led to things like the fire special policy that led to overstocked forests, and therefore ultimately more severe fires.

I would argue that we need to figure out ways that we can restore forests that are degraded because of human settlement, and then have a more observant approach to how those ecosystems are going to respond in the future.

Ms. DEGETTE. Thank you. Thank you very much, Madame Chair.

Mrs. NAPOLITANO. You are welcome. Panelists, thank you very much for your testimony. You have been very patient, and your testimony has been very helpful. Again, we thank you for being here. You are now dismissed.

We would like to call up the fourth panel.

Mr. MATHIS. I would like to give you a pencil made out of beetle-killed wood made in Colorado that I would like to present you as a token from Jackson County.

Mrs. NAPOLITANO. Thank you. I need to know the amount, the dollar amount of the gift.

[Laughter.]

Mrs. NAPOLITANO. I receive it into the record for the Subcommittees' use, either one.

I would like to call up Mr. Mark Mathis, President and CEO of Confluence Energy in Kremmling, Colorado; Mr. Charles Larsen, General Manager, Carbon Power and Light, Inc., Saratoga, Wyoming; Brendan McGuire, Manager of Government Relations, Vail Resorts in Broomfield, Colorado; and Dr. Peter Kolb, Society of American Foresters, Missoula, Montana.

Welcome. Thank you so very much. I would like to now begin to ask Mr. Mark Mathis to begin his testimony. If you will, please.

STATEMENT OF MARK MATHIS, PRESIDENT AND CEO, CONFLUENCE ENERGY, KREMMLING, COLORADO

Mr. MATHIS. Thank you, Madame Chairwoman and distinguished Members of the Committee. I appreciate the opportunity to come

here and speak to you about our current bark beetle epidemic. We believe we have some opportunity to help alleviate this problem and to be a part of the solution.

First, a little bit about Confluence Energy. We are one of the pellet plants, the pellet plants you have heard several people talk about. We produce approximately 100,000 tons of finished products a year. It is enough fuel to heat 30,000 to 40,000 homes. It displaces about 12 million gallons of heating oil with clean-burning renewable energy, reduces carbon emissions by 264,000 pounds by creating a carbon-neutral energy.

We purchase approximately 150,000 tons of green feed stock a year, a fair amount off of Federal land, as well as private lands. We have approximately 30 jobs; we just added six more this week. We create about $10 million in circulating funds within the economy.

Part of the process that we have that I just want to touch base with so that everybody is familiar with what our process is, is that we are the first pellet plant to my knowledge to completely utilize dead and dying pine beetle trees as 100 percent of their feed stock. Most of the pellet plants utilize waste stream from sawmills that are currently, in this environment, hurting.

As a manufacturer, we take that pole tree, grind it up, as well as the flash and the other material, and do chips. We take all the combustibles and produce a bullet-size piece of renewable energy we tend to refer to as a solar battery, as one of my colleagues said.

The pellet itself is very uniform in size, and therefore very easy to handle, transport, convey, and to burn. The utilization in this picture that I have, if you look up at these woods now—and people have much better pictures than I do—this is virtually 90 percent dead. This is taken right outside my house about three years ago.

Currently, the utilization for the material in our area has been non-existent. We put our plants in a little bit over a year ago, and we have been putting value to that material. Currently off of the U.S. Forest Service projects that we do, we pay 25 percent higher price than we do for our product off private land. That is by our own doing just to try to help the U.S. Forest Service, Rick's team and whatnot, spend their dollars a little wisely and help it go a little bit further.

The value, unfortunately, when we talk about the utilization for the higher-value material, only about 15 percent to 20 percent of this material coming off the woods is viable saw material, or has a higher-value use than grinding it into a pellet.

One of the largest impediments that we face, or the largest impediment that we face, is access to the woods. I won't beat that horse, because it seems like it has been beaten pretty well today already. We would like to see some longer term, and right now the best tool that the Forest Service has to do that is long-term stewardship contracts. We would like to see that extended a little, for about another 10 years up to that 20-year level.

It does help us to get access to capital markets when we can show those feed stocks. That feed stock is going to be available now and in the future.

The shelf life on the material is something that you have heard today that is relative. Any action that is going to be taken needs

to be taken now. Every day we go by, it is less opportunity, and the feed stock degrades in value.

People think that the material, I get comments from friends and peers all the time, that they must just be paying you to take this material out of there. It is not the case, and availability is an issue. We actually ran out of material last week. We were shut down for three days for having lack of material, and not being able to get material in.

One of the other pieces, and I am not sure how familiar everybody is with the actual uses for these pellets, here are just some samples of some pellet-stove commercial boilers central heating systems. They are very clean-burning, and they are used by about a million homes and businesses throughout the United States. A third of the consumption of energy in this country is for meeting thermal demands.

Your Honor, just if we could skip to a couple slides forward. I just want to put this slide up there, the existing plants. I thank you for your testimony, and we will move this along because I know you are in a hurry.

[The prepared statement of Mr. Mathis follows:]

Statement of Mark Mathis, President, Confluence Energy

Madam Chairwoman, Mr. Chairman, and distinguished subcommittee members, thank you for the opportunity to discuss the epidemic of the Mountain Pine Beetle and what we can do to help alleviate the problem. This joint hearing is timely as more of our forests are being ravaged by these beetles.

Confluence Energy is helping the State of Colorado with the removal of the effected timber and is putting it to beneficial use. Confluence Energy, LLC was formed in June 2007 and operates a wood pellet manufacturing facility in Kremmling, Colorado, which is 70 miles northwest of Denver.

Our plant is taking advantage of the regional pine beetle infestation to access dead and dying timber for use in its pelletization process. Lodge pole pine is delivered to the Colorado plant where these trees are chipped and then dried using heat from a sawdust-powered furnace. The wood chips are then ground into a course sawdust and sent to the pellet mills. The pellet mills press the wood particles through a die using intense pressure, forming the pellets without using any binding agents. The result is a pure wood product. The pellets are then either bagged in 40 pound bags, or stored in silos for bulk deliveries. The fuel created by the plant is both high in energy value and carbon neutral.

The biomass industry is in need of better access to this type of feedstock. The dead, dying, downed and diseased wood in our forests could be put to beneficial use. The pellet industry, along with other biomass industries, could utilize this feedstock in a sustainable manner, while also helping with forest fire mitigation and suppression.

Pellet fuel is a renewable, clean-burning and cost stable home heating alternative currently used throughout North America. It is a biomass product made of renewable substances, such as Mountain Pine Beetle infested trees. There are approximately 1,000,000 homes in the U.S. using wood pellets for heat, in freestanding stoves, fireplace inserts and even furnaces. Pellet fuel for heating can also be found in such large-scale environments as schools and prisons. North American pellets are produced in manufacturing facilities in Canada and the United States, and are available for purchase at fireplace dealers, nurseries, Home Depot and other building supply stores, feed and garden supply stores and some discount merchandisers. In short, pellet fuel is a way to divert millions of tons of waste and turn it into energy.

As a wood pellet manufacturer, we take ground wood, waste wood, paper, bark and other combustibles and turn them into bullet-sized pellets that are uniform in size, shape, moisture, density and energy content. Their uniform shape and size allows for a smaller and simpler conveying system that reduces costs. Because of pellets' high density and uniform shape, they can be stored in standard silos, transported in rail cars and delivered in truck containers. Of course, in transport as well as end use, pellets pose none of the risk of explosion that fossil fuels do.

About Confluence Energy:

- 100,000 tons of fuel production per year—largest wood pellet facility in Western U.S.
- 35,000 homes and businesses that can be heated with our fuel
- 12 million gallons of heating oil displaced by our clean, renewable pellet fuel
- 264 million annual pounds of CO_2 displaced by our carbon-neutral fuel if heating oil is replaced, thus helping to address global warming and climate change
- 160,000 tons per year of annual wood purchases—approximately 100% beetle kill material, providing valuable market for USFS and private land owners in Colorado
- $10 million annual payroll, wood and materials purchases, circulating in local economy
- Approximately 30 full-time employees and indirect job creation in wood supply, pellet distribution, retail sales
- 25 trucks per day—all through local contract hauling—making wood and packaging supply deliveries, and shipping pellets throughout the region

We are a developer, owner and operator of renewable energy production facilities. Our goal is to generate cleaner, more reliable, cost-effective and sustainable energy by combining a cellulosic ethanol generation facility with a wood pellet production facility. From a single feedstock of timber by-product or woodland waste, we will both power our combined facilities and generate two distinct energy products, ethanol and wood pellets.

Currently, there are a number of opportunities that our business model may be able to benefit from:

- Utilizing dead and dying trees for use of renewable energy product
- Create utilization park that would use 100% of the forest material and create some of the following products:
  - Wood pellets
  - Second generation bio-fuels (ethanol)
  - Electricity generation
  - High value lumber products
  - Landscape products
  - Animal bedding
  - Provide local communities with renewable energy
  - Create energy independence for our local communities
- Most experts have estimated that fossil fuel cost will increase in price over the next five years and most industry experts agree that the cost will continue to move higher over longer periods of time. We believe this will drive consumers and business owners to look for viable alternatives to fossil fuels.

The utilization of the material from U.S. forests and parks will put value to the material which is currently considered a substantial liability to the U.S. taxpayers. Confluence Energy has viewed documents created by United States Forest Service (USFS) personnel that suggest that the cost to treat the some of the existing area in USFS Region 2 would exceed $220 million over the next three years. Confluence Energy suggests that by lowering some of the existing hurdles in accessing the dead and dying trees, private industry can put value to the material and dramatically reduce the cost to the tax payers. Confluence Energy would estimate the saving to be in the range of $75 million over the course of five years.

There is no current access to large volume long-term USFS or Bureau of Land Management Lands (BLM) lands. There is no current legislation that allows the USFS to allow for 20 year stewardship or other agreements to access national forests. Confluence Energy will suggest allowing private industry the access to large volumes of the dead and dying trees over extended periods of time (long term stewardship agreements). The long term access to feed stock supplies will allow private industry accessibility to equity and debt markets that require long term views. Accelerated access to beetle infested material could also be done trough abbreviating the current National Environmental Policy Act (NEPA) process for these infested areas.

There are a few pieces of pending legislation that would restrict access to dead and dying material. As problem grows the liability to the tax payers increases. There is pending legislation (e.g., H.R. 1190) that would allow access to the dead and dying materials that could be used to create jobs and produce renewable energy, building materials, and economic development in rural areas.

The dead and dying trees have a limited shelf life. It is estimated that once the trees die and turn red they have eight to 15 years before they blow over. Once the trees blow over, they will create a jack straw effect which will make it nearly impossible to be harvested affordably. When trees blow over, they rot dramatically faster and remove any value in the wood. Every minute we talk and do not act, not only

are we are losing value, but we are reducing the time private industry has to get a return on their money to justify investing in these types of projects.

Confluence Energy's wood utilization facility can use the material long after there is no value for the high value user (e.g., house logs and architectural beams). Most forestry experts will agree once the beetles kill epidemic moves through a lodge pole pine forest, that the forest will regenerate into what is referred to as a dog hair stand (3,000 to 4,000 trees per acre). A healthy lodge pole forest has approximately 300 to 400 trees per acre. A pre-commercial thinning will be required to accomplish any future commercial value in future generations. Removing 60 to 80% of the small diameter trees in 20 to 25 years will allow the trees to grow in healthy stands for future generations. To summarize, the small wood utilization facility is a good forest management tool, now and for generations to come.

The sizes of the facilities are critical to the success of the forests now and in the future. We suggest that several of these facilities could and should be built in the beetle infested areas. Care should be taken not to make the facilities too large. Over-sized facilities could potentially place incremental demand on the forest that is not sustainable, creating a boom and bust cycle for the local economies. In many of the areas that are predominately lodge pole forests, there is a limited 10 to 15 year window for the higher grade material. This is due to the fact that after the initial beetle kill material is utilized, blown down, or consumed by fire, the pre-commercial thinning projects in the future would not yield large enough trees to yield a high value.

There is currently some USDA programming that is almost available to fund this sort of project. Confluence Energy would require $10 million in grant funding and an additional $20 million in USDA backed loans. The loans and grants would allow Confluence Energy to:

- Build an 8 to 10 million gallon ethanol plant (Confluence Energy has partnership with large U.S. fossil fuel company that is interested in the joint venture project)
- Build a five megawatt power generation system to provide clean renewable energy to meet all the facilities needs. Excess power would meet entire energy needs of the town of Kremmling. Any excess power can be sold back to grid. Excess heat from electrical generation will be used in both the pellet plant and ethanol plant.
- Retrofit and remodel the 50,000 sq. ft. existing facility to manufacture high value wood products
- Renovate existing rail loading facility to transport all finished products to market
- Expand current pellet facility to maximize potential output

The current USDA programs require the participation of a conventional lender. The current credit market makes it very difficult to fund these types of projects. The current USDA programs only cover 75% of such a project. The lenders risk on the remaining 25% is enough to scare away most lenders. The limitations on the grants that we qualify for are $500,000.

The implementation of a wood utilization facility would allow companies like Confluence Energy to place the highest possible value to the existing dead and dying trees. Each and every tree would be sorted in effort to have the tree go to its highest value use. The facility will be designed to utilize 100% of the unwanted biomass material. Confluence Energy can create a system that will not require incremental federal money once the facility is up and running. Confluence Energy would pay a high enough value for the material that the USFS and other agencies would not be required to subsidize the removal of the trees.

It is estimated that the suggested facility would utilize approximately 400,000 tons of material. The estimated feed stock cost is $14 million a year. Confluence Energy estimates that USFS and other federal agencies would realize greater than $10 million in annual savings.

The utilization facility would create over 100 good-paying full time jobs in rural areas. The jobs would include chemical engineers, mill rights, carpenters, managers and operators. Confluence Energy currently employs over 30 people and pays wages that are 25% higher than the average wage in the area.

The biomass industry is virtually not recognized by federal government as part of the solution to help this county realize our energy independence. We would like to see biomass treated on an equal playing field with the other renewable energy industries. The industry would expect to see production tax credits similar to what others receive. In fact, the Pellet Fuels Institute, a trade association representing biomass pellet manufacturers and equipment suppliers, is currently working to make this tax credit a reality. Creating thermal energy using biomass is given no

federal support of any kind, which is inexplicable, given that thermal energy accounts for 32% of this country's energy needs.

We believe that conditions are ripe for expanding our business and co-locating wood pellet, cellulosic ethanol, power generation and high value building products utilization facilities. Our combined facilities could take advantage of all of the opportunities noted above. The implementation of combined facilities would allow us to expand what we can use as raw feedstock and to then allocate our raw feedstock costs across several business streams. The wood pellet plant alone—or a combined facility—is an effective forest management tool. The plants can utilize low or no value material from forests and turn it into high value renewable energy sources. The ethanol processing residue would also be used to provide the process heat requirement for both plants. This results in a processing facility with lower emissions and two fuel streams (ethanol and wood pellets) that are cleaner and more environmentally friendly than their fossil fuel counterparts. High grade logs would be separated on site and utilized to make several building products including flooring, paneling, house logs, architectural beams, round wood products and etc. It is estimated that only 10% to 15% of the standing dead trees would qualify for the high value use.

Our experience suggests that we have solid demand for our existing wood pellet manufacturing capability in both residential and commercial applications. Residential applications have existed for more than 20 years and sales of residential stoves are forecast to increase in popularity. To date, we have had success in securing distribution contracts with hundreds of retail stores. We have packaging capabilities and are readily able to serve the residential market. Moreover, as pellets can be produced, delivered and fired for 50% less than propane, fuel oil or electric heat, this fuel savings is creating fast-growing interest in using wood pellets in commercial applications. With expanded capacity, we intend to focus on the commercial market.

The pellet industry is part of the solution to the Mountain Pine Beetle infestation. These infested trees are a detriment to the health of the forest and can lead to massive wildfire hazards. The pellet industry can use this un-merchantable wood and put it to a beneficial use. This form of renewable energy is a win-win proposition to address this problem. Thanks again for allowing me to testify regarding this Mountain Pine Beetle epidemic and what we can do to help alleviate the problem.

Mrs. NAPOLITANO. Thank you very much. We do have your slides in the testimony for the record, and appreciate your testimony, your verbal testimony, because that adds a little more of the understanding to how you view the issue.

I would like to then move on to our next panelist, Mr. Larsen.

STATEMENT OF CHARLES A. LARSEN, GENERAL MANAGER, CARBON POWER AND LIGHT INC., SARATOGA, WYOMING

Mr. LARSEN. Thank you, Madame Chairman. They tell you when you write testimony that you should really hit them off hard right when you get up front with the testimony. But you have all witnessed the pictures that have been up here today, and there is nothing I can say to you today that would give you a better image of the grave issue that we are facing in the West. These are visions that I get to look at every day.

As it says in my testimony, I am the General Manager of Carbon Power and Light. We are a rural electric cooperative in south central Wyoming. We are a small co-op. We have a large service territory of 3.3 customers per mile, 6,100 meters, and we serve in portions of the Medicine Bow Mountain, the Sierra Madre and the Medicine Bow Range.

In 2006 and 2007 we watched from the valley as it had been moving into the area, but it really seemed to explode, the bark beetle issue really came on strong. As the General Manager of a rural electric cooperative with distribution power lines serving cabin communities, a reservoir providing water to the City of Chey-

enne, communication sites, and Forest Service facilities, we became quite concerned of what the impact would be as these trees died along our power line right-of-ways.

Typically our right-of-ways are 10 to 15 feet either side of center line, or 20 to 30 feet in width. That doesn't seem like it is very much. But with a healthy forest, they have been working quite well for years.

As you can see from these pictures, we have a lot of trees that are dying along those right-of-ways, and we became quite concerned.

At that time, in early 2007, or October 2007, I called a meeting with the Forest Service folks in our area because we were concerned. Two of my staff members and myself met with nine Forest Service officials and expressed our concern, and were asking questions as to what was going to happen.

Much to my surprise, I was informed that there was no budget on the Forest Service side to handle any clearing outside of our existing right-of-ways, and that they would be our responsibility.

In subsequent meetings I was also informed that if one of those trees fell from outside that area, my cooperative would be held liable. This was an extreme concern to us. Our legal counsel approached the Forest Service people in our area and said, where does it say that in our special permits, that we could be held liable.

He asked for a legal opinion; was never given one. Was told that the Forest Service legal counsel could not talk to him on this, and that we would remain liable.

Having been faced with that, we had no decision to make but to move on. We worked with the Forest Service. Our local Forest Service people had been very good about trying to help us get going. They have come up with a streamline approach from the NEPA program; it is called an environmental assessment. But you have to put streamlined in context here.

We started on this process in early 2008. We have not had a complete EA approved at this time. We have not been able to cut a tree, and we are going to more than likely not cut a tree in 2009.

For clarification, our special use permits say that we are responsible for clearing the trees in that permit area. They also go on to say that any tree that is a danger that is leaning in toward the power line, we must contact Forest Service to get permission to cut that tree. If it is an immediate danger we can cut it, but we have 48 hours to notify them that we have done so.

That led us to believe that all those trees outside our permit area were not our responsibility, but now they are. While we go through the EA process and all the rules and regulations, and all the study associated with this project, the clock is ticking, and the liability is still hanging over my head.

At the beginning of this process, I guess one of the biggest problems we had is we were the first guys, to my knowledge, we were the first ones that moved ahead with a distribution power line clearing project. I guess one of the problems with being first is all the rules get created as you go along. That is one of the biggest things that has hindered us in moving forward with this.

I would like to just close, and I thank you for your time. Again, the clock is ticking for us. I still have the liability issue as a cooper-

ative. Many cooperatives in the state, in the states represented here today, have that hanging over their heads right now. We need your help.

[The prepared statement of Mr. Larsen follows:]

Statement of Charles A. Larsen, General Manager, Carbon Power and Light Inc., Saratoga, Wyoming

Honorable Committee Chairmen and Committee Members, my name is Charles A. Larsen and I am the General Manager of Carbon Power and Light Inc.(Carbon), a Rural Electric Cooperative providing distribution electric service to Member-Owners (consumers) of the Cooperative in south central Wyoming. The purpose of my testimony today is to provide you with information specific to Carbon's experiences associated with the impact of the Mountain Pine Beetle (Pine Beetle) infestation and the impact that infestation is having on the Cooperative.

As stated Carbon is a Rural Electric Cooperative and like many Electric Cooperatives our service areas are large and our numbers of consumers are low. Carbon's consumer density is 3.3 consumers per mile of line for a total of 6,100 meters. The geological makeup of Carbon's service territory ranges from grassland, to foothills and portions of the Medicine Bow and Sierra Madre mountain ranges. For the purpose of this hearing, we will be focusing on Carbon's distribution electric system serving within the aforementioned mountainous areas.

In 2006 and 2007 those of us living in south central Wyoming, watched as the Pine Beetle infestation, which was devastating Colorado's northern forests, rapidly spread into our forested areas. Because Carbon has several "Special Use Permits" within the National Forests, which provide right-of-way access and allows us to provide distribution electrical service to numerous cabin communities, communication sites, a reservoir providing water to the City of Cheyenne and Forest Service Facilities we understandably became quite concerned with the inevitable impact that these dying trees would have on our overhead power lines within these permit areas. At the start of this process, it was anticipated that within a 5 year period the mortality rate of the lodge pole pine species in our forested areas will be 90 to 95%—this estimation is proving to be correct.

For clarification, each time Carbon extends its electrical distribution lines within the National Forest, we are required to apply for and receive approval from the U.S. Forest Service (Forest Service), under their permitting process, prior to constructing our facilities. Historically, the Forest Service has granted us right-of-way widths of 20 and 30 feet (10 to 15 feet either side of centerline). Carbon is then required to maintain that permit area, based on a set of guidelines provided for in the "Special Use Permit". As you probably have already noted—20 to 30 feet is not very wide, however under a healthy forest situation, these widths have been adequate for many years. The permits for these right-of-ways are also very clear as to how Carbon must address trees leaning into the right-of way from outside the cleared permit area. Carbon must either notify the Forest Service that a tree is a problem and get permission to remove it or if it is an immediate hazard it can be removed, provided we notify the Forest Service within 48 hours after doing so.

In October of 2007, recognizing the pending impact this tree mortality would have on our power lines; I requested a meeting with the Forest Service to discuss the situation. That meeting was held on October 9th and included myself, two Carbon employees and nine Forest Service employees. After expressing our concerns I was very surprised to learn that—all of those trees—dead and dying—outside our permit area, were now Carbon's future responsibility and expense to deal with. At this meeting and in subsequent meetings we were also informed that Carbon would be liable, if in fact one of those trees fell from outside the permit area, contacted our power line and started a forest fire.

This was the beginning of Carbon's quest to address the Pine Beetle impact—a process that to date has failed to facilitate the large scale removal of any hazard trees adjacent to our permit areas.

Early in this process, it seemed that the existing Forest Service Rules and Regulations were clear as to how to manage a healthy forest and the transition in dealing with a dead forest was something they had not planned for. For my part, I wrote numerous letters and met with Forest Service Officials, Wyoming's Congressional delegates, the Rural Utilities Service, the National Rural Electric Cooperative Association and neighboring Electric Cooperatives expressing my concerns and to attempt to seek some cohesive common ground in addressing the problem. Unfortunately—it was clearly apparent that no one knew just what to do. At this point, I must admit it felt pretty lonely out here in Wyoming.

Since that time, after numerous meetings (12 total), countless phone calls and emails, the Forest Service has worked with Carbon to commence with the process of preparing an Environmental Assessment (EA) which will be required prior to achieving our goal of widening the existing right-of-ways to 150 feet. That process started in November of 2008 and is yet to be completed. There is currently discussion regarding the requirement of an additional "Goshawk Study" under the biological component of the EA. It is now extremely unlikely that Carbon will be allowed to move ahead with any right-of-way widening in the current year.

Carbon currently has 34 miles of distribution power line that must be addressed. To address our potential liability Carbon has increased its general liability insurance amount from $4 million to $10 million. It is estimated that before this project is completed, the general expenses associated with the project, the EA and the actual clearing, Carbon will expend an amount in excess of $1.3 million. In the scope of things currently taking place nationally—that may seem like a small amount, but for Carbon and other Cooperatives facing this similar issue, it is funding that we must borrow and which will be paid back through the electric rates of our current and future Member-Owners.

In closing, there are those who say this is a natural occurrence, those that say it is caused by climate change and there are those who say that it is due to mismanagement of our forests. At this point however, laying blame accomplishes very little. The Forest Service, Environmental Community, General Public, Utilities and our Congressional Representatives must come together to address this issue. For Carbon—and other Electric Cooperatives serving in Pine Beetle impacted forests we need your help—the clock is ticking—and time is running out.

I would like to thank the Committees for your time and your consideration in this matter.

Mrs. NAPOLITANO. Thank you, sir. I appreciate that.

Mr. McGuire, we will finish your testimony. We already have a vote on the Floor, so we will have to leave. There will be no questions directed at you. The committee will submit them to you. If you will respond as promptly as you could.

And your testimony, sir.

STATEMENT OF BRENDAN McGUIRE, MANAGER OF GOVERNMENT RELATIONS, VAIL RESORTS, BROOMFIELD, COLORADO

Mr. MCGUIRE. Excellent, thank you. Good afternoon. Thank you for the opportunity to be here and present the views of Vail Resort on the bark beetle and potential strategies for protecting the West.

Just to dive right in, we really have three main recommendations. This committee should be commended for its work on the FLAME Act, disentangling the fire suppression account from the Forest Service budget, and allowing for increased resources to flow to forest health and recreation operations is a major step forward. It is probably the most important action that Congress can take.

Number two, I think, as you have heard today, this outbreak is beyond the capabilities of any single stakeholder in the forests to deal with on their own. We need to increase the partnerships that we have with all the stakeholders. For the ski resorts, that means increasing the partnership with the Forest Service in terms of increased funding to work on that vegetation management on the ski resorts, which are also basically part of the wildland-urban interface.

Third, other opportunities to respond to the bark beetle include supporting the forest product infrastructure, opportunities in biomass energy, renewable energy standard; providing the Forest Service with increased flexibility to respond to this epidemic; and reforestation where it is appropriate.

A little bit of information about Vail Resorts. We operate five of the most visited of the 10 most visited ski resorts in the United States. In Colorado those operations are Vail Mountain, Beaver Creek, Breckenridge, and Keystone, all located on the White River National Forest. Our fifth resort is Heavenly Mountain Resort in Lake Tahoe, and that is a management unit.

We accounted for 5.9 million skier visits last season. That is the majority of visits in Colorado, about 10 percent of the United States skier visits.

I see that, because I want to emphasize how important recreation is on the forest, and especially to Colorado, it is not only the economic base for our forest communities, but it is one of the economic bases for the State of Colorado. We have the most visitors to our national forests out of any state in the country, just a little bit above California.

Tourism is our second-largest industry, and employs over 143,000 people in our state. There is about $15 billion in annual travel spending.

We do operate our resorts on the national forests under special use permits from the Forest Service. We really do value our partnership with the Forest Service, on the district, forest, regional, and national level. Without this partnership, our critical day-to-day operations really would be negatively impacted. We look forward to continuing to work closely with the men and women of the Forest Service.

Our resorts are fortunate. We do have a diversity of trees. We are not totally dependent on the lodgepole pine. We have aspen and spruce and firs. But the beetle is in our trees. We have seen it before, but the extent this time around is much greater than we have seen before.

It is going to necessitate a continued increased level of forest health work on our part. We need to do this in conjunction with the Forest Service, and we are committed to doing this really for two reasons: the safety of our guests and infrastructure, and to be responsible stewards of the public lands.

The safety of our guests and the infrastructure is our number-one primary driver. To that end, we have to identify and remove hazard trees, much like the transmission folks do. Hazard trees are trees that get too close to the buildings or within our defensible space for wildfire purposes, and also trees that have the danger of dead falling or blowing down onto our lift lines or infrastructure, or onto the trails that our guests use.

Since the outbreak began, we have seen a dramatic increase in the number of hazard trees that we need to take out of the forest. We work closely with the Forest Service to do this. We really appreciate the Forest Service's prompt responses to us. It is just very important that we get those trees down as quickly as possible once they are identified.

With this widespread infestation we have to do more than just sort of look at individual hazard trees. We really need to look at the landscape, the mountain as a whole; looking at the entire stand of trees, and prioritizing treatment options.

We are working closely with the Forest Service. We are consolidating this work into updated vegetative management plans for our

mountains. These are in various stages of environmental review and implementation.

So I am just going to sort of skip to the end. Those two recommendations I have—funding, funding, funding; resources, resources, resources—really is the crux of all the issues—in terms of what we can do, whether it is collaboratively, state, local, private lands. It is especially important for the Federal partnership that we have with the Forest Service.

We would like to do more—leverage our dollars with the Forest Service, leverage the Forest Service dollars to do more work on these recreation areas, where millions upon millions of people visit their national forests every day and really get that good impression.

So with that, I will conclude. Thank you very much for your time. It is an important issue. We look forward to working with you.

[The prepared statement of Mr. McGuire follows:]

Statement of Brendan McGuire, Manager of Government Relations, Vail Resorts

Good morning and thank you for the opportunity to present Vail Resorts' views on the mountain pine beetle (MPB) and strategies for protecting our natural resources.

My name is Brendan McGuire and I am the Manager of Government Relations at Vail Resorts. I also serve on Colorado Governor Bill Ritter's Forest Health Advisory Council.

This hearing is of critical interest to Vail Resorts and the following testimony will focus on these recommendations:

- Disentangling fire suppression costs from the Forest Service budget and increasing funding for forest health and recreation operations is the most important action Congress can take.
- The MPB outbreak has created forest health challenges beyond the capabilities of any single stakeholder and increased partnerships are essential to achieve the desired outcomes.
- Other opportunities to responding to the MPB include supporting forest products infrastructure, biomass energy, providing the Forest Service with increased flexibility to respond to the MPB, and reforestation.

Background

Vail Resorts is the premier mountain resort company in the world operating five of the 10 most visited ski resorts in the United States:

- Vail, Beaver Creek, Breckenridge, and Keystone located entirely or partially on the White River National Forest in Colorado; and
- Heavenly Mountain Resort in the Lake Tahoe Basin Management Unit in California & Nevada.

During the recent 2008/2009 season our resorts drew 5.9 million skier visits (approximately 10% of United States skier visits). In addition to the ski season, thousands of people visit the communities in which we operate to enjoy the beautiful summer weather and multitude of activities including recreating in the woods. These tourism/recreation based activities are the economic base for not only Colorado's forest communities but for Colorado's economy as whole. Tourism is Colorado's 2nd largest industry with over 143,000 employees and $15 billion in annual travel spending.

Vail Resorts operates its resorts on National Forests under special use permits from the United States Forest Service (USFS). Our resorts value the partnership we have with the USFS on the district, forest, regional and national level. This partnership is critical to the day-to-day operations of our resorts and we look forward to continuing to work closely with the dedicated men and women of the USFS.

Vail Resorts Forest Health & Response to Mountain Pine Beetle

This testimony is based on our operations in Colorado where the MPB is currently active. However, at the end of the testimony I will briefly comment on forest health at Heavenly Mountain Resort in Lake Tahoe.

The USFS are the forestry experts in the room so I will defer to them to elaborate on the state of forest health in the west and the MPB. However, for some context in my testimony, the Colorado State Forest Service's 2008 forest health report (to which the USFS contributed) estimates that the MPB has infested a total of 1.9 million acres 1996 when the outbreak was first noted. The MPB are primarily infesting lodgepole pines older than 30-40 years with a mortality rate of 90% and higher.

While our resorts are fortunate to be home to diverse species of trees (including aspen, spruce, and fir), the extent of the MPB activity in aging lodgepole pines at our resorts necessitates an increased level of forest health efforts. In carrying out these efforts, in conjunction with the USFS, Vail Resorts is committed to the safety of our guests and the responsible stewardship of the environment.

The safety of our guests and the resort infrastructure that serves them is our primary concern. To that end the identification and removal of hazard trees is an ongoing initiative. Examples of hazard trees include:

- Trees within the wildfire defensible space of resort structures.
- Trees with the potential to dead-fall or blow-down onto lift lines, buildings, or trails.

Since the MPB outbreak began we have seen a dramatic increase in the number of hazard trees that need to be removed each year.

In addition to hazard tree removal, other forest health efforts are aimed at promoting increased species and age diversity through selective tree thinning, small patch cuts, and forest restoration work where the MPB has had or will have the greatest impact. Vail Resorts has also successfully utilized spraying to protect certain high value trees from MPB.

In the past our forest management was focused on identifying and removing individual trees that had succumbed to insects before the next generation of insects emerged. Now, with a widespread infestation beyond anything we have experienced before, we are shifting our focus to more of a landscape level, looking at entire stands of trees (including what younger vegetation is present), evaluating treatment options for those stands, and prioritizing treatments. Working closely with the USFS, we have consolidated this work into updated vegetation management plans that are in various stages of environmental review and implementation.

This landscape focus is leading to larger projects that accomplish the dual goals of protecting infrastructure as well as promoting reforestation. An example of that work is a project on Vail Mountain carried out in the fall of 2008. Over the course of three to four weeks, 16 acres of infested lodgepoles were treated along the Eagle Bahn Gondola line. Other species and small lodgepoles were retained. This pro-active treatment removed hazard and potential hazard trees as well as encourages accelerated reforestation by creating space for younger trees to thrive.

As the visual impact of the MPB killed trees grew, it was important for us to inform our guests that the changing forest landscape was the result of a naturally occurring MPB. We deliver this message on our trail maps, websites, local resort television, and through the "Ski with a Ranger" program in partnership with the USFS.

Through our charitable giving, employee engagement, and environmental stewardship program, Vail Resorts 360, we have also engaged our guests to actively support restoration work on the forest through a partnership with the National Forest Foundation Ski Conservation Fund. Our guests have the opportunity to support the fund with $1 when they purchase lift tickets, ski passes, or stay in our lodges. The National Forest Foundation uses these contributions for on-the-ground conservation work in the National Forests.

Recommendations for Protecting the West

- *Forest Service Budget Flexibility & Funding*

  First and foremost, the Natural Resources Committee is to be commended for re-introducing and passing the FLAME Act out of the full House. Beginning to untangle the fire suppression budget from the rest of the USFS budget is a critical step to let USFS focus resources on forest health and recreation.

  The need for sustained funding increases to address forest health challenges related to MPB is well documented. The USFS has responded with some additional funds, however the need for additional funding grows every year.

  Congress should consider additional funding for the USFS to specifically address critical forest health issues related to MPB in our region.

- *Partnerships*

  Congress has long recognized the importance of partnering with local stakeholders and prioritizing finite resources for forest health projects that pro-

vide the most "bang for the buck." In that spirit, the USFS should be commended for its existing partnerships in Colorado including its close work with ski resorts.

Given the unprecedented scale of the management challenges facing the USFS and ski resorts, encouraging increased partnerships through greater funding to achieve successful forest management outcomes is warranted. Increased funding to USFS for the development, approval, and implementation of vegetation management plans for special use permit areas will greatly assist the USFS and its partners in managing MPB areas.

- *Safety*

  Vail Resorts would like to thank the USFS for working closely with our mountain crews to facilitate the timely removal of hazard trees presenting safety issues to our guests and infrastructure. The importance of this work cannot be overstated.

- *Timber/Biomass Markets*

  A major challenge facing all stakeholders is what to do with the relatively low value timber coming off the forest.

  To help create and ensure a viable forest products infrastructure in the West, Congress should continue to look for opportunities to promote the use of forest biomass in renewable energy efforts, such as a national renewable energy standard and the Biomass Commercial Utilization Grant Program in the Healthy Forests Restoration Act.

- *Increased Flexibility for the USFS*

  The USFS, operating within the relevant laws and regulations, has demonstrated a great willingness to work with stakeholders in a collaborative and flexible manner to facilitate the response to MPB related forest health challenges.

  However, with the extreme challenge presented by the current MPB outbreak it may be appropriate to consider allotting more flexibility to the USFS to address forest health challenges.

  This flexibility does not need to call the NEPA process into question. Rather, Congress should work with the USFS and other stakeholders to determine if there are very specific areas (such as stumpage fees for MPB killed trees) where the USFS response to MPB would benefit from increased flexibility.

- *Reforestation*

  Ecologically speaking, many western forests have evolved to naturally regenerate after disturbances such as fire, insects, or logging. However, in some cases it is appropriate to aid reforestation through replanting of native species. On national forests, this reforestation must be done with specifically approved species that are ecologically appropriate. The USFS provides these stocks of trees (grown from cones and seeds collected from the local area) from its system of nurseries. Congress should provide the USFS with the resources needed for the collection of cones and seeds and the development of a stock of seedlings for reforestation efforts to help accelerate the natural reforestation.

Lake Tahoe

I would like to briefly comment on forest conditions at Heavenly Mountain Resort in Lake Tahoe.

Currently, forest insect hot spots are developing in Lake Tahoe where a mix of conditions is creating what could be an ideal environment for an insect outbreak. The Lake Tahoe region is experiencing reduced precipitation levels and large swaths of the forest are over-stocked with aged trees in the 80 to 120-year age class. Recognizing these conditions has led stakeholders in the region to look towards increased active management to stay ahead of potential insect outbreaks.

Conclusion

Thank you for the opportunity to present the views of Vail Resorts. I am happy to take any questions that the Committee may have and we look forward working closely with the Committee, Members of Congress, and the USFS on this and other issues.

Mrs. NAPOLITANO. Thanks for your testimony, and appreciate your being so patient. We will be submitting some questions for some answers.

Dr. Kolb.

STATEMENT OF DR. PETER KOLB, SOCIETY OF AMERICAN FORESTERS, MISSOULA, MONTANA

Mr. KOLB. Thank you for the opportunity to testify on behalf of the Society of American Foresters, an organization with over 15,000 professional foresters as members.

I am the Montana State Extension Forestry Specialist. I am also a forest ecologist and management professor at the University of Montana. So I work with practitioners, industry, private landowners. I also do research on larger ecological cycles in the forests of the northern Rocky Mountain ecosystems.

I have a lot of slides. I won't put them up. I encourage you to look at them when you have the opportunity, and I would be delighted to provide a narrative for them. But I will put up this last slide, and I will get to that in a second.

But listening to the testimony today, a few observations and a few comments to make on this.

First off, it is my overall impression that you are trying to deal with a symptom, and not the root cause here. There are multiple pests that are working on forests. In Montana, unprecedented spruce budworm, douglas fir beetle. We also have mountain pine beetle. We have introduced species that are working on there.

These are all symptoms of a changing climate. Whether it is human-caused or non-human-caused, from my perspective it is irrelevant.

There is a plethora of research. Climates have always fluctuated. The current trend and the current predictions under the best scenarios, if it is anthropogenically caused, is that things will get warmer and drier. This will be a benefit to all these pests, and a stressor to our forests.

The problem with our forests is, as you have heard, and I concur with all of the testimony before, is we have large landscapes with similar-aged similar species. What we need to do is bring back the mosaic to these landscapes. This involves proactive management. Again, there are many slides that show that, and I will highlight what the Rocky Boy Reservation, Chippewa Cree Nations are doing, and the Salish and Kootenai Tribes. They have gone through an extensive planning process. They are extensively using harvests to recreate a natural historical mosaic. It is just like investing in a bank portfolio: you diversify, particularly under uncertain times, which is what we are seeing.

Younger trees are less susceptible. We need to have all age classes represented on these landscapes, and all natural species that occur on those landscapes, which we currently do not have.

The long-term implications of these massive scales of mortality is that we have hundred-hour and thousand-hour fuels that end up on the surface. We have new tree species regenerating in those.

In a drier, warmer climate, these hundred-hour and thousand-hour fuels will ignite and will burn, which adds a magnitude of

energy release that is phenomenal. It is the difference between a firecracker and a bunker-buster bomb going off.

Those kill the regeneration. We lose our genetic resource off these sites. That is the long-term consequence that is going on there.

So what do we need to do? I have grown up here, I have had the opportunity in the last six months, as a Fulbright Scholar in Germany, to look at their forest ecosystems. The reason for this is Germany and Montana have similar forest land base sizes.

Montana's annual harvest on average is 750 million board feet. Germany's, off of the same land base, is 12 billion board feet, off a country with 83 million inhabitants. They export wood to the United States.

This map is the state of Bavaria in Germany. Those are all the wood product facilities, in a state the size of Massachusetts. The black dots are wood biomass energy plants, cogent plants. They have a diversified forest parts industry. Lumber and waste products go into bioenergy. That is what keeps their industry robust, keeps it functioning, even during periods of economic downturn.

The other most important factor is their forests are managed for diversity, but overall sustainability, and a predictable wood supply. Investing in a mill requires hundreds of millions of dollars. Investing in modern logging technology requires millions of dollars.

We have loggers in Montana that right now do not have work, and they have a million dollars' worth of ecologically sensitive equipment sitting on their front lawn. This is a very skilled, experienced workforce that we are about to lose, and we won't get back, because there are no schools that teach these skills.

So as you work through these solutions, and I would suggest long-term planning processes across landscapes, a 10-year planning cycle does not work in an ecosystem that cycles in 100 to 500 years.

I would suggest long-term stewardship contracts, 20 to 50 years, where you do the NEPA on an entire watershed. Once you are through that rigorous and painful process, a mill can bid on that, and now they have 20 to 50 years of sustainable management activities that they can conduct, which allows them to invest and pay off their equipment.

These are some real solutions. Collaborative meetings are great if the collaborators must come to an agreement, and people can't come out of left field and suddenly appeal. One of the best forest practitioners in Montana also has his own logging operation, has been now to count 554 collaborative meetings, with no results. He is currently clearing brush under power lines in Kansas instead of working in the forest.

Thank you.

[The prepared statement of Mr. Kolb follows:]

Statement of Dr. Peter Kolb, Montana State University

My name is Peter Kolb, and I am the Montana State University Extension Forestry Specialist and an Associate Professor of Forest Ecology and Management at the University of Montana College of Forestry and Conservation. I'm here today speaking on behalf of the Society of American Foresters (SAF), an organization of over 15,000 forest managers, researchers, and educators. I've been a SAF member for 27 years.

I am here today to offer you my testimony with regard to the bark beetle situation across western forests with specific reference to the conditions across the Montana

with which I am most familiar. My perspective is not that of an entomologist, but that of a forest ecologist and management specialist whose main work objective is to help implement the results and conclusion of scientific research into practical working applications. I work in both academic circles as an applied researcher and educator, and in the forest practitioners' realm, which gives me the opportunity not only to conduct relevant research, but to examine the effects of forestry applications. Just three days ago I returned from a week of working with family landowners and the Cree and Chippewa tribes of central Montana where we examined the forest conditions there and the effectiveness of various forest practices in combating a mountain pine beetle outbreak in the Bearpaw Mountains.

Bark Beetles

The bark beetle outbreak we are experiencing across the entire western portion of North America is the result of multiple ecological factors converging at the same time. Its occurrence is not a surprise for foresters across western forests as the current expansiveness of bark beetle activity has been building for many years. Bark beetles such as mountain pine beetles, one of the main culprits in the current outbreaks, have been extensively studied since the mid 1970s. Its life cycle and ecology are very well understood. It has been a natural part of western forests for millennia and its population cycles are fairly predictable. Under what we would characterize the average forest and climatic conditions of the past century it exists as a chronic population within pine forests, colonizing and killing trees that are unable or incapable of defending themselves due to a variety of physiological, genetic or environmental factors. It may be considered analogous to wolves circling a herd of caribou, culling out the weak, unfit and injured. As with any species, bark beetles have numerous pests and predators themselves including a variety of predatory beetles, wasps, nematodes, mites, fungal diseases, and larger predators such as bark gleaning birds and woodpeckers. Depending on the populations of these predators and pests, chronic bark beetle populations might be kept in check.

Perhaps one of the most important factors affecting bark beetle populations is climate. Typically higher elevation and northern latitude forests experience extreme cold periods where air temperatures hover at minus 30-40°F for several or more weeks in winter. Under such temperatures overwintering beetles or larvae experience significant mortality. Similarly, cool moist summers can inhibit beetle activity and larval development and increase the effects of fungal pathogens. When climatic conditions cycle into warmer and drier trends, beetle populations are favored with less winter mortality and faster and better reproductive cycles. Across higher elevation lodgepole pine forests in Montana for example, mountain pine beetles rarely have been able to expand into larger populations in the past 100 years because of extremely cold winter temperatures. Also, short summers have only allowed the beetles to typically have one reproductive cycle. When warmer winters, earlier springs and resulting longer summers prevail, bark beetle populations gain an advantage. Under longer summer scenarios, such as we experienced across Montana for the past decade, mountain pine beetles may start to achieve two regeneration cycles. Two bark beetles produce an average of 80 offspring on one reproductive cycle. With a second cycle the first generation then can produce 3,200 offspring by the end of summer. Milder winters then allow most overwintering beetles to survive, which means in the second summer the overwintering beetles can produce 128,000 offspring in the first reproductive cycle and 5,120,000 offspring in the second cycle.

An equally important factor that influences bark beetle populations is the availability of suitable host trees. Each bark beetle species has adaptations that allow it to attack and reproduce best in specific tree species, and when those trees are in a certain size and age range. The greater the suitable host tree number, the greater the potential food source and thus the larger the population of bark beetles that can develop. Likewise, the greater the percentage of host trees that are similar in age and size, the greater the probability of bark beetles successfully attacking and colonizing them at the same time.

A landscape such as Yellowstone National Park, that had a large acreage burn catastrophically in 1988, will develop an even aged forest of fire adapted lodgepole pine that are all similar in size equivalent in expansiveness as the area of disturbance. When these trees reach 90-100 years of age, they will mostly become suitable host trees at the same time that under the right climatic conditions can allow an epidemic of bark beetles to develop once again. The epidemic will then persist as long as there are host trees within flying distance of beetles and the climate remains favorable. The same is true, for example, of Colorado and Wyoming's lodgepole pine forests. By and large, these forests are mature, even age forests of lodgepole pine stressed by drought and high densities of trees combined with warmer temperatures that foster mountain pine beetle population explosion.

Since native tree species and their pests have coevolved, trees have natural defense mechanisms against herbivore attacks. Most conifers, the prevalent category of trees in the western United States, produce pitch, which is a viscous liquid and toxic defensive compound (not to be confused with sap, which is the water and nutrient conducting liquid within a tree) and if present in adequate amounts can be used to kill bark intruders such as bark beetles as well as seal off tree wounds. Likewise secondary metabolite products such as terpene and phenolic compounds can be produced as toxic countermeasures to insect or disease attack. The forest products industry processes these very materials out of harvested wood to produce a variety of chemicals we use in our everyday lives as disinfectants, preservatives and even products such as arabinogalactan that is thought to enhance human immune systems. The production of these defense mechanisms, however, only occurs in adequate quantities when a tree has the resources needed to grow well, such as enough sunlight, water and nutrients. Stress brought on by drought periods, mechanical injury, or excessive competition with neighboring trees results in a weakened tree defense capability (Hermes and Matson 1992). The energy allocation within a tree is thought to be prioritized first on maintenance respiration (keeping its cell structure alive), next in adding new growth, and only then in producing defense mechanisms. Thus weakened trees become the natural targets for pests such as bark beetles.

Mature forests with dense canopies have the additive effects of transpiring more water than forests of younger trees with less needle area, and intercepting rainfall and snowfall in their dense canopies that evaporates back into the atmosphere before having a chance to enter the soil where trees can absorb it. The additive impacts of greater water and energy production requirements, less soil water recharge, and limited space for photosynthetic (needle) area leads to significantly weakened trees. At this point the trees in this condition represent a large food source without any defenses, the perfect target for bark beetles and a host of other tree pests and pathogens.

When mild winters, early springs and longer summers, perfect conditions for bark beetle survival and reproduction, are combined with a landscape covered with a disproportionately large population of mature preferred host trees, that are suffering from the stress of overcrowding coupled with drought brought on by the warmer winters and longer summers, the conditions for a perfect bark beetle storm arise. If the climatic conditions that favor bark beetles persist, this storm will last as long as there are host trees available to eat. When epidemic populations develop, trees that originally exhibited resistance to pest attack can succumb to the sheer number of successive attacks. It is not uncommon to find trees that have resisted and survived the first year of a bark beetle attack only to be successfully colonized in the second or third year of an outbreak. This may be a significantly undesirable impact of a forest pest epidemic as the trees exhibiting superior survival abilities and possibly genetically desirable characteristics as the potential seed sources of the future forest are also lost. Local seed sources have their limits, especially when trying to restore ecosystems across broad geographic scales. Diverse seed sources are relevant to restoring vegetation that is resilient, ecologically competent and possesses the evolutionary potential required to meet changing and challenging environments (Broadhurst et al 2008). This can reduce the overall genetic diversity within a population, weaken the robustness and health of a species, and reduce the ability of the species to adapt to new environmental conditions such as may be the case with global climate change. Genetic variation within populations of tree species is a substantial component of biodiversity and appears to be a significant prerequisite for the survival and persistence of forest ecosystems, particularly under heterogeneous and changing environmental conditions. Inbreeding results in weaker individual trees with less stress resistance (Müller-Stark et al 2005).

As long as forests have been a primary provider of resources for human populations, tree damaging agents have been considered unwelcome. Scientific understanding of how forest ecosystems function has progressed to the point in the recent half century to where we understand and appreciate that most organisms perform an important function in keeping forests healthy and in a sense, push species to continue to evolve. Bark beetles are no different and not only continue to help select for genetically strong individuals, but also create habitat and provide food sources or multiple other organisms. As such it would be unwise to eradicate bark beetles and other natural organisms that interfere with our immediate needs from the forest. At some point, however, an organism may reach a tipping point where it gains an unfair advantage against another organism. The result is that the disadvantaged species goes extinct or is pushed onto a small fraction of its former distribution.

German Forests

Across central Europe forests have been harvested intensively and continually for over 2000 years. Many countries there, notably Sweden, Germany, Austria, France and Switzerland have developed forest management practices that maintain forest productivity, biodiversity, scenic and recreational beauty, and that have greatly limited catastrophic disturbances including bark beetle outbreaks.

As an example, the country of Germany has roughly the equivalent land area and forested area as Montana. A greater oceanic effect provides for a slightly milder climate and more evenly distributed annual precipitation. Tree growth rates can be twice as high there as in Montana. Whereas Montana has approximately 950,000 permanent residents, Germany has 83 million residents. Hiking and nature appreciation is a national pastime, and a large proportion of German forests have a primary nature reserve or biodiversity protection designation. Important to note is that forest management including tree harvesting is not viewed as a barrier to such objectives, but rather a tool to help achieve desired conditions for rare and endangered species and recreational quality. Wood has also been identified as a primary mechanism of reducing atmospheric carbon emissions and global warming as it sequesters large amounts of carbon in living trees, wood products, and offsets fossil fuel consumption when used as a primary building material and source of energy. It is a highly valued product in the European carbon cap and trade system. According to the European Forestry Institute, "When wood products are used instead of non renewable materials such as steel or plastics, the carbon is sequestered longer before it is released back into the atmosphere.

On an annual basis Germany harvests 12.6 billion board-feet equivalent of wood, Montana over the past decade has annually harvested an average of 750 million board-feet, most of which has come from private lands, not federal lands even though the later accounts for 67% of the Montana forest land base. To put this in perspective, the height of the timber harvest from national forests was roughly 12 billion board-feet in the 1980s. Now the entire harvest off of national forests is roughly two billion board-feet. For Montana, as many other western states, the repercussions have been devastating to the wood products industry, forestry and logging professions.

Bark beetles are a common problem in all forests in Germany for the most prevalent tree species, yet in the past decades bark beetle epidemics have not occurred, mainly because they have been prevented. The one exception is in the Bavarian National Park, were forest management was excluded as the purpose of the park was for nature to run its course without human interference, and for the dominating native pure spruce forest to grow into ancient old growth character. In the late 1990's a spruce bark beetle population started to build in this forest. In the past decade it has killed 80% of the trees across 60% of the park and is expected to decimate the rest in the next five years. This past year, the Bavarian government agreed to allow foresters to start implementing measures to attempt to control the epidemic as it is now spilling out of the park onto private forested lands. The measures being used, which are successfully used to prevent outbreaks across the rest of the nation are: 1) remove beetle infested trees before the brood hatches out of it, 2) bait and trap beetles, 3) manage surrounding spruce forests with thinning applications to enhance tree vigor and natural resistance, 4) increase non-host tree species diversity in forests around the park to limit beetle food sources, 5) divert planned harvests of green trees to harvesting of beetle infected or killed trees instead, 6) pursue research into other methods for controlling bark beetle outbreaks, 7) manage for tree species that are calculated to be adapted for future (warmer) climate scenarios.

Management Solutions for the US?

Can these management tactics also work for forest across the western United States? Our understanding of tree and beetle biology for our afflicted areas and species, as well as experiential knowledge certainly matches what German foresters have to work with. Multiple studies have shown that thinning forest stands to alleviate the impacts of light and water competition on tree vigor while leaving what appear to be the best trees results in less successful bark beetle attacks (Schmid et al. 2007). It has also been postulated that the greater heating from sunlight increases stress on bark beetles as they seek out trees. Increasing the diversity of tree species in forests that are primarily monocultures, such as the situation we see in Wyoming and Colorado with lodgepole pine, thus reducing contiguous host tree availability also makes for a more difficult environment for bark beetles, and reduces the ability of epidemics to develop. Similarly, decreasing the size of similar tree age and size patches of host trees will have the same effect as increasing species diversity, as younger age trees are not suitable host trees for most of the most prevalent tree killing bark beetle species. Finally, using harvest trees to trap beetles

into, and then processing those trees thereby destroying the brood, combined with the use of synthesized aggregation and anti-aggregation pheromones (attractants and repellents) to manipulate and control populations of beetles. All of these tactics have been used with documented success in western forests. They do require the skill and expertise of forest managers and forest entomologists, as well as a skilled and modern logging workforce. They also require a funding mechanism as the extensiveness of bark beetle mortality and risk is enormous (Figure 1). As a side note, we are quickly losing our skilled logging workforce in Montana (and across the West). Without this workforce and infrastructure to take these materials, we'll lose our ability manage forests.

Another issue is what to do with the significant volume of already dead trees. In Germany much of the beetle infested or killed wood is harvested. Fifty percent of the more than four billion board-feet equivalent annual harvest in the German state of Bavaria, a forested land base of slightly more than 6 million acres, is salvage and sanitation harvest of dead and dying trees. This is all accomplished in a taxable profit generating free market system. What is suitable goes to sawmills and much of the rest is utilized for electricity, steam and home heating (Figure 2) with one third of all households heating with wood. Wood is rated as a renewable biomass source and replaces an equivalent of 396 million gallons of heating oil per year in Bavaria alone. Across the western United States, such utilization also occurs at a small scale in the form of rural home heating and cogeneration "hog-fuel" of some wood products industries. For Montana the calculated home heating oil replacement for national forest private firewood cutting permits is 3.1 million gallons. Several small wood burning school heating systems have been installed in recent years, and several of the few remaining sawmills are considering investing in wood generated power plants as the heat by-product of a wood-to-energy plant can be used heat the dry kilns of the sawmills, thereby increasing the efficiency and output of such a facility. One of the major barriers for such investments remains the availability of wood raw materials where 67 percent of the forested land base, bark beetles and all, is under federal management.

Forests suffering from large scale bark beetle outbreaks accumulate significant amounts of dead wood. Mountain pine beetle-killed trees of ponderosa and lodgepole pine typically topple over within 2-10 years, creating large fuel loading for wildfires. Such heavy fuel accumulations represent challenging wildfire control scenarios, and if the larger diameter stem material dries out sufficiently, as has occurred frequently in the past decade, wildfire severity and intensity is greatly increased, which can result in mortality of beetle surviving trees and their seed source. Such scenarios can further decrease the genetic diversity of forests, particularly during a time when such diversity may be needed to help forests adapt to projected climatic change. Fuel management addresses directly the root of the wildfire problem and when properly designed and implemented increases the effective weather threshold for effective fire control, which is even more relevant in a climate change scenario (Rigolot et al. 2009).

Conserving tree species across their historical range with densities fitting the definition of "forest" both in the short term (next 50 years) and long term (next 50-200 years), that are capable of naturally regenerating and conserving their gene pool will be challenging if the predictions of climate change are realized. In addition, the characteristics and values associated with those forests have a greater probability of being conserved with active forest management than if left to what are deemed "natural" processes and consequences. "Active management" is defined here as the process where forests are inventoried within a reasonable scale for their biological and physical properties, that this knowledge is used to plan and implement landscape activities that provide for greater tree survival and natural regeneration when exposed to significant changes in temperature, precipitation and associated disturbances (wildfires, insects and diseases), and that all management options ranging from benign neglect to commercial tree harvesting are utilized. A thus managed forested landscape would consist of a mosaic of "wilderness" and "old-growth" patches as well as areas with harvests designed to promote tree vigor (thinning) and species and age class diversity (seed tree, shelterwood, patch cutting). In Montana, most Native American tribes have already adopted this management style on their reservation lands. Both the confederated Salish and Kootenai tribes (Flathead reservation) and Chippewa and Cree tribes (Rocky Boy reservation) are using active forest management as well as rapid salvage and sanitation harvesting to stem bark beetle epidemics and reduce the probability of catastrophic wildfire effects in their forests.

Forest ecosystems are an important part of the global carbon cycle since they are estimated to sequester and store approximately 80% of the aboveground terrestrial carbon (Waring and Running 1998) which equates to estimates from 380 to 458 Pg of total global stored biologically based carbon (1 petagram = 1 gram x 1015 or

about 1,100,000,000 tons). These estimates have put forests and their management into the forefront of anthropogenic caused global climate change debates as they may be one of the most efficient and effective mechanisms for offsetting the most common human caused source of atmospheric carbon dioxide: fossil fuel consumption that emits an estimated global rate of 5.5 Pg of carbon per year (Waring and Running 1998). The European Community has instigated policy that offers financial support for afforestation of agricultural lands and silvicultural actions that may increase carbon sequestration (FAO 2009).

Larger disturbance such as a wildfire can kill many trees, thereby releasing the stored carbon quickly through wood combustion or slowly by killing the tree and thus releasing carbon through the slower decomposition process. Wildfires release an instant pulse of carbon and then changes the albedo of the land surface that allows for a much greater absorption of solar energy that may last decades in boreal forests (Running 2008). A young forest that may develop in the burned area over the next 100-300 years recaptures the carbon again leading to the concept that forests are actually "carbon neutral" in the long term. However, if forest's natural cycles are altered, their overall contribution to atmospheric carbon-dioxide also changes. Enhanced growing conditions resulting from factors such as increased precipitation, milder or shorter winters, fewer pests and pathogens, faster growing or longer lived species to name a few all can lead to greater carbon sequestration and carbon storage. Alternatively, conditions such as less precipitation, greater drought periods, uncharacteristic summer and winter temperatures, unusual wind events, and increased pest, pathogen and wildfire occurrence can result in lower rates of tree carbon sequestration, and the loss of total forested area and the release of large amounts of wood sequestered carbon into the atmosphere. The global carbon cycle can be converted into atmospheric carbon dioxide, a primary greenhouse gas when trees burn or decay, or atmospheric carbon can be sequestered when trees grow and produce wood. As part of the IPCCs 4th assessment, seven general circulation model simulations unanimously project an increase in June through August temperatures of 2 to 5°C by 2040 to 2069. Wildfire burn areas in Canada and the western United States are expected to increase by 74 to 118%. Wildfires add an estimated 3.5 x 10 15 g atmospheric carbon each year equivalent to 40% of annual fossil fuel emissions (Running 2006). Forests thus represent both a potential source of atmospheric carbon dioxide if they are degraded, or the most efficient land based sink with a large capacity to absorb atmospheric carbon dioxide when trees are rapidly growing.

Opinions vary and range from those that advocate active forest management to enhance forest's resilience to bark beetle epidemics, wildfires and ability to adapt as well as increase atmospheric carbon dioxide sequestration rates and fixed carbon storage capacity to those that feel active management of forests causes a net carbon storage loss as well as less carbon sequestration capacity and overall harm to forest function and integrity. As with all complex natural resource issues, there are valid arguments based on site specific and single species research that can be made to support both sides of the issue. As a forest practitioner with now 29 years of applied experience caring for trees and managing forests as well as extensive academic and scientific training and work on the ecology of Northern Rockies forest ecosystems, it is my opinion that active forest management and the use of wood-based renewable bioenergy applied in appropriate locations using both the academic and practical knowledge and experience currently available, will most likely result in greater forest resilience to large landscape level disturbances that are both within and outside of the historic range of variability. This will also maintain or increase most forest ecosystems ability to store and sequester atmospheric carbon dioxide.

Figure 1 Source: Gannon and Sontag 2008, Meyer 2005.

Acres Burned

Year	Acres
2000	1,160,145
2001	146,819
2002	110,309
2003	736,809
2004	18,445
2005	103,294
2006	1,047,118
2007	778,079
2008	123,943
Total:	**4,224,961**

Acres severely affected by bark beetles

Year	Acres
2000	103,920
2001	223,892
2002	450,134
2003	493,785
2004	730,782
2005	1,213,602
2006	1,000,289
2007	948,517
Total:	**5,164,921**

(Source: Montana Department of Natural Resources and Conservation 2007)

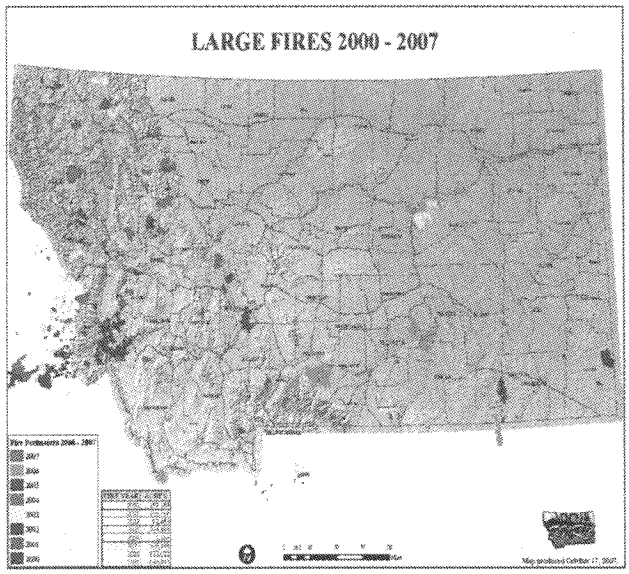
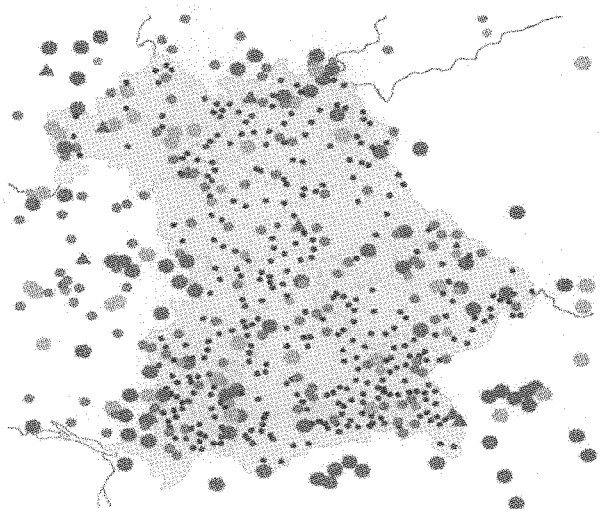


Figure 2 (Source: Bavarian Forestry Institute 2008)
Diagram of wood processing and utilization plants in Bavaria, Germany,



Larger circles are sawmills, black dots a wood based bio-energy facilities, rust dots a wood heating pellet manufacturing facilities.

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Mrs. NAPOLITANO. Thank you, Dr. Kolb, for your testimony. I apologize for the rush, but we have about one minute to get to the Floor.

We thank the panel for your forbearance, and your testimony has been very, very enlightening. We hope to pursue this to a greater extent.

I want to add a special thanks to the Forest Service people who are dedicated to our forests.

With that, this concludes the Subcommittees' oversight hearing on the mountain pine beetle, strategies for protecting the West. Thanks to all of you for appearing before the Subcommittees. Your testimonies and expertise have, of course, been very enlightening and helpful.

Under Subcommittee Rule 4[h], additional material for the record should be submitted within 10 business days after the hearing. Your cooperation in replying promptly to any questions submitted to you in writing will be very much and greatly appreciated.

With this, the hearing is adjourned. Thank you very much.

[Whereupon, at 1:38 p.m., the Subcommittees were adjourned.]

[Additional material submitted for the record follows:]

[A statement submitted for the record by Mr. Smith of Nebraska follows:]

Statement of The Honorable Adrian Smith, a Representative in Congress from the State of Nebraska

Good morning and thank you, Chairwoman Napolitano, Chairman Grijalva, Ranking Member McMorris Rodgers and Ranking Member Bishop for holding this important oversight hearing today on the Mountain Pine Beetle.

As a member of this Committee and the House Agriculture Committee, today's discussion must give attention to the need for better forest management. The overgrowth of trees coupled with stringent fire suppression policies has increased the stress on the West's water supply. This scarcity of water not only makes trees susceptible to disease and insect infestation, such as the Mountain Pine Beetle, but also can significantly reduce water flows. The West's Platte River, which feeds into my district in Nebraska, is undergoing far-reaching new ecosystem management in order to restore the wildlife habitat lost from years of declining water flows.

All that said, I question why the U.S. Forest Service and the National Park Service stopped managing the overgrowth of trees over the past few decades. Besides the massive damage from the mountain pine beetle, there are many other consequences from inaction.

Thank you again. I appreciate both Subcommittees for holding this joint hearing today on recommendations for improving our nation's land management. I look forward to hearing testimony from the U.S. Forest Service, the National Park Service, Department of Energy, and all of our witnesses. I hope they will be able to shed light on these important issues.