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GIANT SALVINIA: HOW DO WE PROTECT OUR ECOSYSTEMS?

OVERSIGHT FIELD HEARING

BEFORE THE

SUBCOMMITTEE ON FISHERIES, WILDLIFE, OCEANS AND INSULAR AFFAIRS

OF THE

COMMITTEE ON NATURAL RESOURCES
U.S. HOUSE OF REPRESENTATIVES

ONE HUNDRED TWELFTH CONGRESS

FIRST SESSION

Monday, June 27, 2011, in Shreveport, Louisiana

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OVERSIGHT HEARING ON "GIANT SALVINIA: HOW DO WE PROTECT OUR ECOSYSTEMS?"

Monday, June 27, 2011
U.S. House of Representatives
Subcommittee on Fisheries, Wildlife, Oceans and Insular Affairs
Committee on Natural Resources
Shreveport, Louisiana

The Subcommittee met, pursuant to call, at 10:00 a.m., in the University Center Theater, Campus of LSU-Shreveport, Shreveport, Louisiana, Hon. John Fleming [Chairman of the Subcommittee] Presiding.

Present: Representatives Fleming and Gohmert.

Dr. FLEMING. OK. I want to thank everyone today for spending their Monday morning with us on this very important hearing.

We're going to start the day as we do every day in Washington, and that's with a prayer, so I'd ask Pastor Chad Mills to come forward and lead us in prayer. He's from Oil City First Baptist Church.

Rev. MILLS. Would you join me as I pray?

[Prayer.]

Dr. FLEMING. Thank you. Next we have the Boy Scouts coming forward to present the colors.

COLOR GUARD LEADER. If everyone will stand.

[Colors presented.]

[Pledge of Allegiance.]

STATEMENT OF HON. JOHN FLEMING, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF LOUISIANA

Dr. FLEMING. Be seated. The Subcommittee on Fisheries, Wildlife, Oceans and Insular Affairs will come to order.

Good morning, ladies and gentlemen, and welcome to Louisiana State University's Shreveport campus. I am pleased to be hosting this congressional hearing with my good friend and colleague from Tyler, Texas, Congressman Louie Gohmert.

We both want to thank LSU for allowing us to utilize this beautiful auditorium and for all the assistance we've received in making this important hearing come together.

Now, I intend to conduct this hearing as if it were in Washington, DC. This is not a town hall meeting. The way we do hearings in Washington are through a very tightly scripted format, a very formal kind of format.

And whenever we have field hearings such as this, we do it the same way we do it in Washington. It may be a little more relaxed at times, but this is not a town hall or a public hearing.

Certainly there are other formats in the future that perhaps we can do that, but the important focus today is to learn from the experts on this subject to collate the data.

So we want to make sure and stay certainly on our schedule and make sure that we get all the important information that we can possibly get.

The purpose of today's hearing is to obtain testimony on efforts to control and eradicate one of the worst invasive weeds in the world.

Native to Brazil, giant salvinia has been devastating to both Lake Caddo and Bistineau. Long before I was elected to Congress, I've been aware of the giant salvinia problem. My hometown of Minden sits along the north bank of Lake Bistineau and has faced the detrimental effects of giant salvinia to the community at large.

Let me share with the audience some brief descriptions of this nasty invasive plant. The Texas Parks and Wildlife Department has recently issued a publication that states, put simply, invasives can kill a lake, and giant salvinia is the worst of the lot.

Former Eagles band member and Caddo Lake Institute founder, Don Henley, reminds us that it's probably the most dire threat that the lake has ever faced.

And Dr. Randy Westbrooks of the United States Geological Survey has noted that giant salvinia plants do not die quickly. In fact, they can live a few days or even a couple of weeks out of water.

It is, therefore, not surprising that giant salvinia has been officially banned in the United States by its inclusion on the Federal Noxious Weed List and that it is a state crime to distribute, possess, sell or transport this ruthless aquatic invasive fern in both Louisiana and Texas.

The good news is that no one has ignored this problem and allowed the menace to destroy Caddo Lake like Lake Bistineau and other freshwater bodies of water.

Through the combined efforts of Federal, state, local, and non-governmental organizations like Bistineau Task Force and the Caddo Lake Institute, there's been a comprehensive effort to control and eradicate giant salvinia.

These efforts have literally saved these lakes from becoming giant dead zones and thousands of our neighbors are able to continue enjoying boating, fishing, and recreating on these waters.

The fight to eradicate giant salvinia will be a long and arduous battle. Once an invasive species has become established, it is difficult, if not impossible, to completely remove it. There's no silver bullet to kill giant salvinia.

What we know, however, is that its biomass can double in size in a week or ten days and that its expanded mats of vegetation degrade fishing habitat, decrease water quality, create unsafe boating and fishing access and threaten property values.

We will continue to contain this invasive species by utilizing a number of different strategies, including simple things like making absolutely sure that once a boat is removed from the lake, the boat owner does not allow giant salvinia to hitchhike home.

We have asked today's witnesses to share with us their thoughts on where we are in the fight against giant salvinia, what control or eradication strategies have worked and at what cost, whether we can develop a more weather-resistant weevil and how we can finance these efforts in the future.

I look forward to hearing from our distinguished witnesses, including two elected representatives from Louisiana and Texas.

I'm now pleased to recognize Congressman Louie Gohmert for whatever time he would like to use.

[The prepared statement of Chairman Fleming follows:]

Statement of The Honorable John Fleming, Chairman, Subcommittee on Fisheries, Wildlife, Oceans and Insular Affairs

Good morning, ladies and gentlemen and welcome to Louisiana State University's Shreveport campus. I am pleased to be hosting this Congressional Hearing with my good friend and colleague from Tyler, Texas, Congressman Louie Gohmert. We both want to thank LSU for allowing us to utilize this beautiful Theater and for all of the assistance that we received in making this important hearing a reality.

The purpose of today's hearing is to obtain testimony on efforts to control and eradicate one of the worst invasive weeds on this planet. While there are many wonderful people and things that have arrived from Brazil, Giant Salvinia is not one of them. In fact, let me share with the audience some briefs descriptions of this nasty invasive plant.

The Texas Parks and Wildlife Department has recently issued a publication that states: "Put simply, invasives can kill a lake, and Giant Salvinia is the worst of the lot." Former Eagles band and Caddo Lake Institute Founder, Don Henley, reminds us that: "It's probably the most dire threat that the lake has ever faced." And, Dr. Randy Westbrooks of the United States Biological Services has noted that: "Giant Salvinia plants do not die quickly. In fact, they can live a few days or even a couple of weeks out of water."

It is, therefore, not surprising that Giant Salvinia has been "officially banned" in the United States by its inclusion on the Federal Noxious Weed List and that it is a state crime to distribute, possess, sale or transport this root less aquatic invasive fern in both Louisiana and Texas.

The good news is that no one has ignored this problem and allowed this menace to destroy Caddo Lake, Lake Bistineau and other freshwater bodies of water. Through the combined efforts of federal, state, local and non-governmental organizations like the Bistineau Task Force and the Caddo Lake Institute, there has been a comprehensive effort to control and eradicate Giant Salvinia. These efforts have literally save these lakes from becoming giant "dead zones" and thousands of our neighbors are able to continue to enjoy boating, fishing and recreating on these waters.

Just like international terrorism, however, this will be a long and arduous battle. Once an invasive species has become established it is difficult, if not impossible, to completely remove it. There is no silver bullet to kill Giant Salvinia. What we know, however, is that its biomass can double in size in a week or ten days and that its expanded mats of vegetation degrades fishing habitat, decreases water quality, creates unsafe boating and fishing access and threatens property values. We will continue to contain this invasive species by utilizing a number of different strategies including simple things like making absolutely sure that once a boat is removed from a lake, the boat owner does not allow Giant salvinia to hitchhike home.

We have asked today's witnesses to share with us their thoughts on where we are in the fight against Giant Salvinia, what control or eradication strategies have worked and at what costs, whether we can develop a more weather resistance weevil and how we can finance these efforts in the future.

I look forward to hearing from our distinguished witnesses including two elected representatives from Louisiana and Texas. I am now pleased to recognize Congressman Louie Gohmert for whatever time he would like to use.

STATEMENT OF HON. LOUIE GOHMERT, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. GOHMERT. Thank you, Mr. Chairman. I appreciate the opportunity to have this hearing. It's great to be here with you guys and great to have you all here with us.

I was first notified in 2006 that there was a tiny little innocuous-looking plant that had been found that year on Caddo Lake. Jack Hanson had given me a call, and I saw Jack here earlier, and I know he's here somewhere.

But, anyway, that got us involved; and in early 2007, we started pushing to get other assistance, and that year we also had a meeting over at Caddo Lake and brought together a number of different entities—Texas Parks and Wildlife, I believe Randy Westbrooks who is here today, and many others from different services were there. Jim McCreary had sent a staff member over to find out more about it.

And over the last four years, we've continued to push because those of you who are here obviously are concerned about it, so you've known about it, but it was just hard to get people concerned about some little bitty—I mean, it is a cute little plant. It's not near the ugly dramatic killer of lakes that we know it to be.

Maybe if it was a giant blob or something, they would make a movie about it and everybody would get scared, but anything that doubles in size in less than a week is something to be concerned about.

So in any event, you may know that giant salvinia has been discovered in 90 different locations affecting 41 freshwater drainage basins in 12 states, that it doesn't pose the threat apparently in the north because of the cold winters that it does to freshwater bodies here in the south of our country.

It was first discovered in Caddo Lake in May of 2006, and two years after that, it was discovered that this tiny, innocuous plant that started as basically nothing apparently had grown to over a thousand acres in just two years.

A single plant has been found to cover 40 square miles in three months. If left untreated, giant salvinia can completely take over and destroy the ecological system of any freshwater body.

And as folks who want to see the economy thriving know, it can make swimming, boating, fishing and other recreational activities virtually impossible.

As most of you, I'm sure, maybe all of you, are aware, education is critical because one tiny little plant, as Randy Westbrooks and others have pointed out, it may live for weeks dry out of the water on a boat trailer until it's inserted.

And once inserted back into water, if it has not totally died, then it goes right back to reproducing and doubling in less than a week.

For those who are concerned in our country with endangered species, it is important to note that 42 percent of all endangered species in our country are mainly threatened or most threatened by non-native invasive species.

Giant salvinia has different treatments.

I know personally having watched and witnessed numerous activities on Caddo Lake that it can be attempted mechanically.

Australia has tried some things there, as well as biologically, perhaps weevils, chemically, and also with saltwater.

And one of the reasons I'm so grateful for the hearing today and having this mass amount of IQ here on this subject is that we really do need to come together.

Some of us have concerns, you know, is there any chance that those weevils will figure out they'll bite into something and go, oh, this is pretty good, too, and then away they go on something else.

Do we really want to develop them to be more hardy in winter, especially in case there were to be something they found out they enjoyed eating as much as giant salvinia.

When you introduce saltwater to kill it in freshwater, what kind of problems are posed, effective ways to mechanically control and obviously that can't get it all, but it sure can open up some boat ramps when you need it, as we've seen at Caddo.

But the key is to make sure people know this isn't just some little issue that some bureaucrat somewhere thought up. When you lower your boat trailer in a lake and it's got even one tiny piece of giant salvinia on it, then you may be the leading threat to that body of water that you enjoy using.

So I really want to thank John Fleming.

He has been great as Chairman of this Subcommittee and is very concerned about this issue. It's really been a great assistance, and, John, thank you for all your work in this area. I think we're going to get some good done. Thank you. I yield back.

Dr. FLEMING. Thank you. I thank the gentleman from Texas, and I thank you for your kind words.

Mr. Gohmert, by the way, is an ex-judge from Texas. He was a judge prior to going to Congress, and I would say to call him colorful would be an understatement.

He's the one that I think had the famous quote that "how can you give rebates when you don't see bates," so we're always excited and enjoy the words of wisdom that Judge Louie provides to us. Well, thank you, Congressman, for an excellent opening statement.

Like all witnesses, your written testimony will appear in the full hearing record, so I ask that you keep your oral statements to five minutes, as outlined in our invitation letter to you under Committee Rule 4(a).

I also want to explain how our timing lights work. I think this is our only timing light. OK. Oh, I see.

You will have five minutes to read or give your statement. If you don't complete your statement, you can still submit it in full for the record.

After four minutes of green, you'll have a minute of yellow, and then it turns red. That's five minutes, and we want you to conclude your statement at that point, if you haven't already.

Mr. GOHMERT. Mr. Chairman, if I might, I'd like to ask unanimous consent to include a written statement from Texas State Representative Bryan Hughes. Bryan has been wonderful. He's helped with this issue from the beginning as a State Rep from East Texas.

We're in session—in special session in Austin in Texas, and so we ask if that can be submitted by unanimous consent.

Also from Texas A&M College of Agriculture and Life Sciences, we have a wonderful statement prepared for today that I would ask unanimous consent to have that two-page submitted as well.

Dr. FLEMING. Without objection, so ordered.

[The statement of Texas State Representative Bryan Hughes submitted for the record follows:]

June 24, 2011

The Honorable John Fleming, MD
Chairman
Subcommittee on Fisheries, Wildlife Oceans and Insular Affairs
US House of Representatives
Washington, DC 20515

Dear Chairman Fleming:

Thank you for the kind invitation to testify before your Subcommittee on June 27. I was honored to be invited, and I so appreciate my friend and mentor, The Honorable Louie Gohmert, for submitting my name to you. I have never testified before a Congressional Committee and consider it a real honor to represent my District and Caddo Lake before you.

So I am deeply sorry to confirm that I will not be able to attend Monday's hearing in Shreveport. When this hearing was scheduled, we anticipated that the current Special Session of the Texas Legislature would be completed by this time. We had also hoped that if the session were still going, there would be no business conducted on Monday or it would be of such a nature that I could be absent. I have now confirmed that we have significant legislation on the floor Monday, and the Speaker has directed that every member be present.

You will no doubt learn from the impressive witnesses before you on Monday that the Giant Salvinia problem at Caddo Lake has been almost overwhelming. The speed with which it grows is difficult to describe and harder to believe.

Thankfully, through the work of dedicated volunteers, talented professionals, nonprofits, generous donors, government at the county, state, and federal level, and a host of others working together, the situation is getting under control. So I anticipate that you will gain helpful information and be encouraged by all of these folks coming together to deal with a very difficult problem.

I wish that I could be there. But I thank you again for the invitation, and I thank you and your Subcommittee for addressing this serious matter. If you have any questions, or if I can be of any help to you, please let me know.

Sincerely,

Bryan Hughes

[The statement of Texas A&M College of Agriculture and Life Sciences submitted for the record follows:]

COLLEGE OF AGRICULTURE AND LIFE SCIENCES
TEXAS WATER RESOURCES INSTITUTE
1500 Research Parkway, Suite A240
2118 TAMU
College Station, TX 77843–2118
Tel. 979.845.1851 Fax 979.845.8554
http://twri.tamu.edu

Center for Invasive Species Eradication
Texas Water Resources Institute 6.27.11

Caddo Lake Giant Salvinia Eradication Project

The ***Caddo Lake Giant Salvinia Eradication*** project is the initial effort being undertaken through the Center for Invasive Species Eradication (CISE) which was established by the Texas AgriLife Extension Service and Texas AgriLife Research and is administered by the Texas Water Resources Institute (TWRI). This project is advancing management options for giant salvinia *(Salvinia molesta)* in Texas and other infected states. This project was made possible by Congressional funding ob-

tained through the leadership of Senator Hutchison. Project funds are managed by the USDA Natural Resources Conservation Service.

Giant salvinia is a free-floating aquatic fern, native to South America and introduced to the United States by the watergarden industry. Since its introduction, giant salvinia has proven to be an aggressive invader that can double in size in four to 10 days under favorable growing conditions.

Caddo Lake was first infested with giant salvinia in 2006 and within two years the plant expanded its coverage on the lake from less than two acres to more than 1,000 acres. Efforts conducted to control giant salvinia thus far have yielded moderate success but have not completely eradicated the species from the lake.

The project's over-arching goal is to identify the most effective control methods while killing giant salvinia on Caddo Lake and incorporate these methods into agency guides, such as the USDA Natural Resources Conservation Service's *Field Office Technical Guide* and Texas AgriLife Extension Service educational program materials, so that public and private entities have readily available, proven methods to fight giant salvinia.

Project Objectives

- Evaluate individual and combined control practices (including chemical, biological, mechanical and other management) to determine their effectiveness and implementation costs
- Establish, operate and maintain a salvinia weevil rearing facility near Caddo Lake to serve as a ready source of weevils for release on Caddo Lake and also provide a living laboratory and nursery to develop a better knowledge of salvinia weevils and their behavior
- Develop specifications and recommendations for individual and combined control methods verified through the effective control of giant salvinia at Caddo Lake and surrounding water bodies
- Evaluate and quantify non-targeted environmental and ecosystem impacts resulting from demonstrated control methods and develop mitigation practices to minimize adverse effects
- Develop and deliver educational programs for landowners and managers on methods for controlling and eliminating giant salvinia and for preventing its spread from infected to non-infected waters
- Collaborate with the USDA Natural Resources Conservation Service (NRCS), Texas Parks and Wildlife Department (TPWD), other local, state and federal agencies and nongovernmental organizations in Texas and Louisiana to expand and enhance public educational efforts and provide research information and additional resources to help prevent the spread of giant Salvinia

Project Accomplishments to Date (June 2010 - June 2011)

- Collectively, Caddo Lake Institute (CLI), TPWD, and TWRI personnel constructed a salvinia weevil rearing facility at the Caddo Lake National Wildlife Refuge in August 2010; further efforts by TWRI, CLI and local volunteers constructed greenhouses at this facility in October 2010 to provide a climate controlled environment that supports year-round salvinia weevil production
- Active operation and management of the salvinia weevil rearing facility began in August 2010 and has produced substantial numbers of salvinia weevils to date
- As of June 22, 2011, approximately 75,000 adult weevils have been released on Caddo Lake into 4 isolated areas from the rearing facility
- Along with these adult weevil releases, as many as 250,000 weevil larvae were released. Larvae are the primary killer of giant salvinia as they bore their way out of the plant after hatching from eggs laid by adult weevils in the stems of the plant, thus seriously damaging the Salvinia
- Developed signage for the salvinia weevil rearing facility in cooperation with CLI, TPWD, USDA NRCS, U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), and the Friends of Caddo Lake National Wildlife Refuge to prominently display descriptive information about giant salvinia, the salvinia weevil, the salvinia weevil rearing facility and how the weevil can be used to aid the fight against giant salvinia
- Worked closely with salvinia weevil researchers with USACE and Louisiana State University (LSU) to transfer information and to support each other in efforts to learn more about salvinia weevil ecology and application of this information in controlling giant salvinia infestations
- Conducted a weevil over-wintering study to determine temperature tolerance thresholds for weevil survival in colder temperatures; these weevils are a tropical species and have yet to survive winters on Caddo Lake

- A study to determine how early in the spring weevil reproduction begins was also established and is underway to determine an optimum time and temperature at the beginning of the growing season to inoculate giant salvinia with salvinia weevils
- Actively working with other scientists and personnel of LSU, TPWD, USACE, chemical industries and others to evaluate costs and effectiveness of various herbicides and surfactants to control giant Salvinia
- Currently in the process of hiring a private applicator to chemically treat giant salvinia on Caddo Lake in 2011 to support and complement other spraying efforts by the Cypress Valley Navigation District, TPWD and Louisiana entities
- Closely coordinating and tracking spraying efforts to ensure that biological controls complement these efforts
- Maintained active coordination and collaboration through established partnerships with local, regional, state and federal entities by providing educational, scientific and treatment support as needed
- Presented educational information on the dangers of giant salvinia to diverse audiences, locally, regionally and statewide. As of June 25, 2011; 31 meetings have been participated in with more than 1,000 people reached
- Established a website, blog and Facebook page for the Caddo Lake Giant Salvinia Eradication project to aid in publicizing education and outreach, research, treatments and success of the project

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Dr. FLEMING. And I, likewise, have two statements for the record. One is from Gary Hanson, and then another I would like to read partially into the record and submit in whole for the record. Hearing no objection, so ordered.

This is from Robert Adley, Senator Adley. I'd like to recognize him. He's here in the front row with us today. He's done work on this, and I'm going to read part of his statement into the record.

He goes on to say: "Spraying has been beneficial but depends greatly on the weather as far as its effectiveness. Spraying requires a specific ratio of water to the sprayed chemical. After spraying, it takes time to establish and begin to kill the salvinia. If much wet weather is encountered after the spraying, the benefit of spraying is reduced due to change in ratio.

The plant grows in three layers, and spraying kills only the top layer. Hence the amount of chemical needed is three times the initial amount used.

Talking about beetles, beetles were developed near Houma, Louisiana, and transported to the lake by loading more giant salvinia in trucks with beetles and put into the lake at specific points.

The use of beetles has met with some success, but they're greatly diminished during cold winters. Hence, the use of beetles is part of control, but not sufficient by themselves.

We may hear some testimony today. It's my understanding that beetles do a much more effective job in Brazil because they can survive the winters that are more moderate there.

The Department of Wildlife and Fisheries tried lowering the lake to allow the plants to dry out and die, but that's been of limited effectiveness."

So, a lot of good information that Senator Adley provides to us today, so we will submit these testimonies for the written record as well.

[A statement from Gary Hanson submitted for the record follows:]

Statement of Gary M. Hanson, Director, Red River Watershed Management Institute, Louisiana State University Shreveport

Congressman Fleming, thank you for addressing the invasive aquatic plant Giant Salvinia *(Salvinia molesta)* problem threatening lakes and waterways in Louisiana, Texas and many other areas of the U.S. from Virginia to California (Fig. 1). I appreciate the opportunity to submit written testimony to the Subcommittee on Fisheries, Wildlife, Oceans and Insular Affairs oversight hearing today here at Louisiana State University Shreveport. I have served as Director of the Red River Watershed Management Institute since its formation as a LSU system institute ten years ago. During that time I have had a unique opportunity to interact, not only with our own expert faculty, but with many groups and organizations concerned with water quality and ecosystem issues throughout the Ark-La-Tex and coastal areas of Louisiana. I am intimately aware of the serious challenges facing our region and nation from a water resource-related point of view. I serve as a member of the Louisiana Ground Water Management Advisor Task Force and Chairman of the Water Resources Committee of Northwest Louisiana. This voluntary body is composed of leaders and technical experts from Caddo, Bossier, Desoto and Webster Parishes, City of Shreveport, Metropolitan Planning Commission, Executive Director of the Red River Waterway Commission, Director of the Sabine River Authority, St. Mary's Oil and Gas, and others who have expertise in groundwater and surface water issues. We have met specifically to discuss the evolving nature of invasive aquatic plants and in particular Giant Salvinia in our region. Our LSUS researchers have worked closely with those attempting to eradicate Giant Salvinia in Cross and Caddo Lakes. I have personally interacted with leadership and field biologists working Lake Bistineau, Toledo Bend Reservoir, Caddo Lake and Cross Lake.

I have served as a member of the Louisiana Hypoxia Subcommittee for a number of years. This group has been tasked with evaluating the massive low oxygen or dead zone that occurs off the coasts of Louisiana, Texas and Mississippi each summer. The dead zone has been increasing over time and is considered a serious threat to our gulf fisheries. Early predictions for this year indicate that the dead zone will cover a record area of over 24,000 km2 or 9300 mil (Nancy Rabalais, 2011 - Fig. 2). The excessive nutrients flowing from Mississippi River tributaries into the Gulf of Mexico each summer is the cause of this worsening situation. This year's record floods will be a major contributing factor if the anticipated record dead zone forms. The nutrients stimulate excessive plant (phytoplankton) growth, which eventually die and as their biomass is oxidized most of the dissolve oxygen is removed from the water column. Most experts agree that one key factor that is responsible for Giant Salvinia inundating and taking over fresh water aquatic habitats is the increase in nutrient levels in targeted water bodies (urban and agricultural runoff, leaking septic systems and land disturbance).

The infestation of most of our water bodies throughout Northwest Louisiana and East Texas by Giant Salvinia and other invasive aquatic plant species have devastated these aquatic environments and there appears to be no significant long-lasting successes in this battle. These exotic plants destroy the natural diversity and left unchecked will continue to negatively affect our economy, agriculture and public well being through scarcity of available surface water resources. The problem will only grow, unless all available public and private resources are brought to bear to work cooperatively to control the spread and growth of these plants. Determined efforts have been undertaken in most of these waterbodies. The COS has been working diligently to control Giant Salvinia and Hydrilla in Cross Lake (Fig. 3), the only source of water for Shreveport and Barksdale Air Force Base. Already this year these plants have advanced to growth stages that are equivalent to late July or August because of the drought and unseasonably high temperatures. Prior to this spring the plants had been kept in check to some degree because of cold winter temperatures.

The Lake Bistineau Task Force has also been working relentlessly to control the Giant Salvinia (Figs, 3, 4 and 5). The Louisiana Department of Wildlife and Fisheries have been trying a spectrum of approaches that includes, introducing Salvinia weevils, spraying large amounts of herbicides, removing cypress trees and draining the lake. The Task Force is considering modifying the darn so that the Giant Salvinia can be floated out of the lake into Loggy Bayou and ultimately the Red River. There have been some short-term successes. The Task Force has spent about $2 million to date with $400,000 spent for herbicides in one year. Draining the lake leaves massive deposits of nutrient laden biomass on the lake bottom. As the lake is refilled this decomposing biomass provides a ready source of nutrients to perpetuate the growth of more plants (Fig. 6). These various strategies and methods that are intended to manage and control Giant Salvinia all have drawbacks and dis-

advantages. It appears no one knows what affect the massive amounts of herbicides will have on the wildlife and fish, much less humans that consume them, In some cases, the strategies and methods already used may be considered to be as detrimental (or more so) as that of leaving the plants in place. The problem is massive and complex when considering the conditions that effect its' growth and the budgets and technologies that have been used to date and others that may be soon available to battle the plant.

Let me explain briefly, before offering a new strategy based on a soon to be released technology that has the potential to keep up with the growth rate of the plants and remove the biomass, without the need to either drain the lakes and/or the excessive use of expensive and potentially dangerous amounts of herbicides. The draining of the lake should be a desperate last resort which is devastating to the lakes' ecosystem and only provides temporary control of the spread of the plants. Therefore, the only solution is to use a coordinated holistic approach to physically harvest and remove the biomass in a cost effective manner and thereby limit herbicide spraying to only those areas that are not accessible to current and future harvesting methods. The immediate benefit would be the restoration of the lakes and surrounding ecosystems and recreational economies. However, perhaps the greatest benefit would be the restored and preserved availability of precious fresh water that will only be of increased demand in the future.

I am convinced that the only strategy going forward that will work is to cut through the jurisdictional red tape that causes time delays and increases the expense to fight the menace, by bringing in the private sector to work through joint public-private ventures to first, harvest and transport the biomass and then second, find alternative uses for it as biofuel and/or soil amendment, etc. Transportation will be the key cost factor in the future that will affect all aspects of the strategy and methods to harvest and remove the biomass from the water and then move it to commercial users and areas that may use the biomass cost effectively. I have been introduced to a company that has been working on a holistic mechanism to address the harvesting and utilization of the salvinia biomass from a commercial model approach, but it will likely rely on public coordination, cooperation and collaboration to be most successful.

This terrible problem created by the Giant Salvinia and its' potential control solution could end up as a win-win situation for the betterment of our region and the rest of the affected areas of the U.S. with the full return of the use of our area water bodies for municipal, industrial and recreational usages, while restoring and preserving vital aquatic and the surrounding natural and residential habitats.

Attachments:

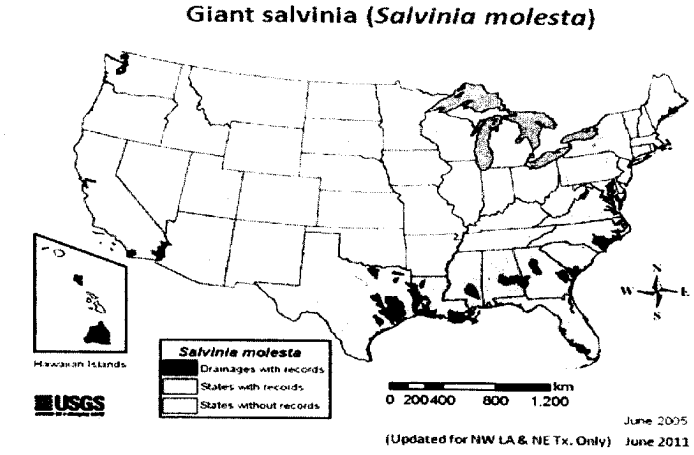


Figure 1 – Distribution of Giant Salvinia

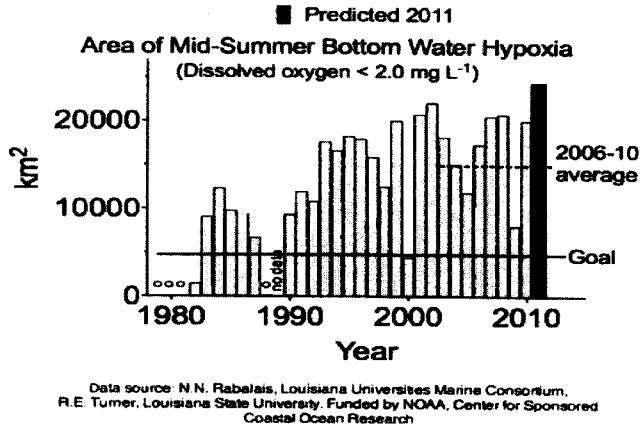


Figure 2 - The measured and modeled size of the hypoxia zone from 1979 to 2010

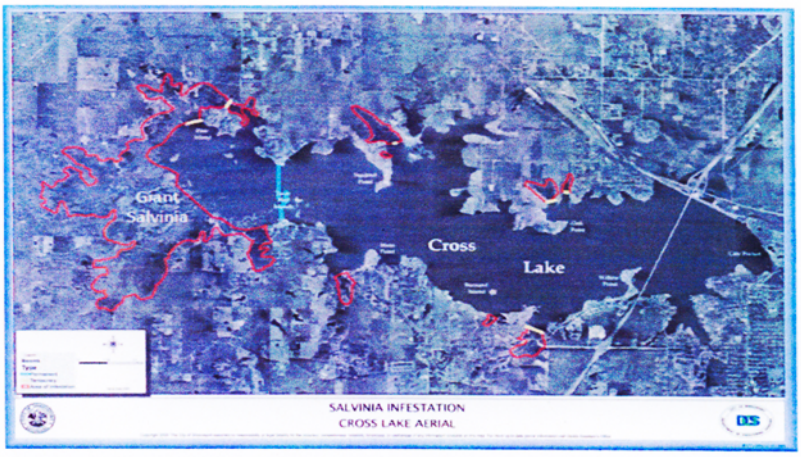


Figure 3 - Distribution of Giant Salvinia in Cross Lake, water source for the City of Shreveport (COS) and Barksdale Air Force Base (Source: COS Dept. Of Operational Services, 2009)



Figure 4 - Lake Bistineau is a snap shot of the regional (and national) problem of the invasive water plant species Giant Salvinia (*Salvinia molesta*).

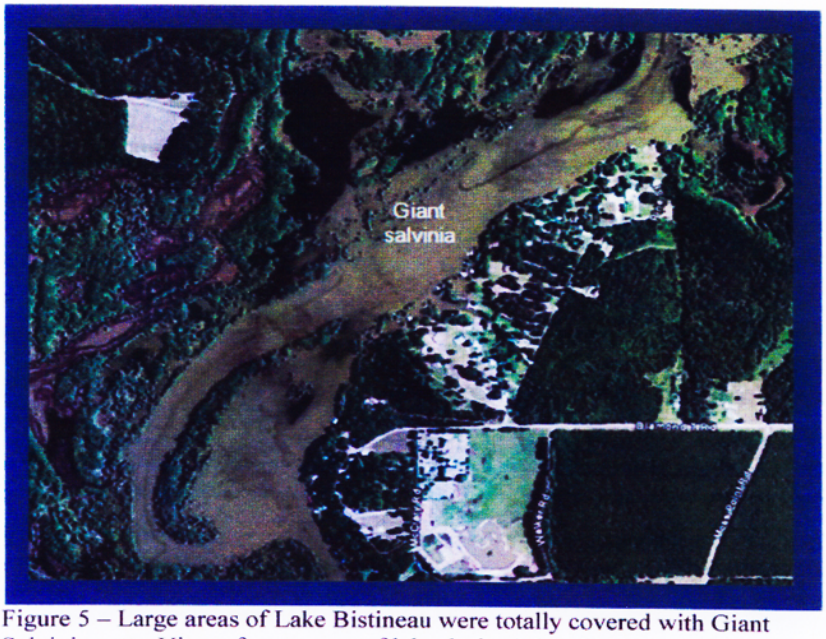


Figure 5 – Large areas of Lake Bistineau were totally covered with Giant Salvinia mats. View of upper part of lake during May, 2009.



Figure 6 - Loss of water resources due to invasive aquatic plant Giant Salvinia. Huge biomass left on bottom of lake after being drained

[A letter from Senator Robert Adley submitted for the record follows:]

Statement of The Honorable Robert Adley, State Senator, Senate District 36, State of Louisiana

Congressman Fleming,

Thanks for arranging for the field hearing relating to Salvinia. As you know, the problem is statewide and is a significant problem in Lake Bistineau. Lake Bistineau was the first manmade lake in Louisiana and is located wholly within my Senate district. As such, my office has assisted the Louisiana Wildlife and Fisheries Department by adding funds to its budget for control of Aquatic weeds. Additionally, we have coordinated meetings with the public and the dissemination of information to the public. As such, l am familiar with the past attempts to control and manage Salvinia in Lake Bistineau.

Spraying has been beneficial but depends greatly on the weather. As I understand it, spraying requires a specific ratio of water to the sprayed chemical. After spraying, it takes time to establish and begin the kill of Salvinia. If much wet weather is encountered after the spraying, the benefit of the spraying reduced due to the change in ratio. The plant grows in three layers and spraying kills only the top layer. Hence, the amount of chemical needed is three times the initial amount used. It requires ongoing spraying to be effective and the chemicals used for the spraying are extremely expensive. Hence, Wildlife and Fisheries began evaluating other plans and established other plans for the ongoing reduction of Salvinia.

Beetles were developed near Houma, Louisiana and transported to the lake by loading more Giant Salvinia in trucks with beetles and put into the lake at specific points. The use of beetles has met with some success but they are greatly diminished during cold winters. Hence, the use of beetles is part of control but not sufficient by themselves.

The Dept. of Wildlife and Fisheries has tried lowering the lake to allow the plants to dry out and die but that too had limited effect on the overall growth of the plant. Because the dam for the lake is located outside of the main channel, the lake lowering of water levels is limited. For the complete replenishment of the lake for fish hatcheries and the control of Salvinia, the darn should be located at the channel, which would allow the water level to be brought down to channel level. The construction of a new dam is also very expensive. The current darn and the maintenance falls under the Louisiana Department of Transportation (DOTD). The Dept. of Wildlife and Fisheries has been meeting with DOTD regarding a new dam.

During those meetings, it was determined that the Salvinia could be moved over the top of the existing dam in high water conditions. Hence, much of the Salvinia was removed from the lake last year by flowing Salvinia over the top of the darn. However, in normal weather that will not work because the actual control of water levels is at the bottom of the dam. Hence, Wildlife and Fisheries moved forward with a plan to make changes to the current dam that would allow the Salvinia to flow over the top in normal weather conditions.

Additionally, the Wildlife and Fisheries expressed the need to remove some of the trees in the lake that are retarding the movement of the plant towards the channel and retarding the ability to spray more efficiently. To my knowledge, no trees have yet to be removed for various reasons.

During this past legislative session, I put forth an amendment to the Capital Outlay bill for funds to make the changes to the dam. I ultimately removed the amendment because Wildlife and Fisheries relayed concerns by the Red River Waterway Commission. When the Salvinia flows from the lake over the dam, it eventually makes its way into the Red River. As long as the Salvinia is flowing within the Red River, it will not establish itself. However, oxbows in the river are at risk. Hence, I withdrew the amendment to fund the restructuring of the dam until the matter can be resolved.

As of now, Wildlife and Fisheries tells me they are allowing the lake to fill again and will continue with spraying. Additionally, it is my understanding that they are evaluating so-called skimming methods for the removal of Salvinia.

As you know, this is a very serious matter and anything that you can do to assist is appreciated.

Dr. FLEMING. I would now like to welcome today's first panel of witnesses. We're having two panels, and each of them received a written invitation from me outlining the issues we would like them to discuss in their testimony.

Since I recognize that we were unable to accommodate everyone who might have had interest in testifying, I will be accepting any and all written statements for the record.

This hearing will be printed and it will include all statements submitted today and through the next ten days that the record will be open.

On Panel 1, we will hear from The Honorable Henry L. Burns of Haughton, Louisiana; The Honorable Robert Barham, Secretary of the Louisiana Department of Wildlife and Fisheries; Mr. Ross—you're going to have to help me with your name, sir.

Melinchuk?

Mr. MELINCHUK. Melinchuk.

Dr. FLEMING. Melinchuk. OK. Very good. Thank you, sir.

Deputy Executive Director, Texas Parks and Wildlife Department; Mr. William R. Altimus, and he's not arrived yet. If he does, certainly we'll welcome him to the panel, of Bossier Parish Police Jury, District Nine. Dr. Michael Grodowitz——

Mr. GRODOWITZ. Grodowitz.

Dr. FLEMING. Grodowitz. Very good. Thank you. Biomanagement Team Leader, U.S. Army Corps of Engineers; and Dr. Randy G. Westbrooks, Invasive Species Prevention Specialist, United States Geological Surveys, National Wetlands Research Center.

Representative Burns, you are now recognized for your five minutes of testimony.

STATEMENT OF THE HON. HENRY L. BURNS, LOUISIANA HOUSE OF REPRESENTATIVES

Mr. BURNS. Thank you, Congressman. I really appreciate it.

I want to acknowledge the fact that this invasive plant is a problem for our entire country. One of the things I want to do, though, is emphasize its impact here locally on Lake Bistineau.

Lake Bistineau has had a torrid history of—yes?

Dr. FLEMING. Be sure and get closer to the microphone.

Mr. BURNS. Closer to the microphone? OK. Can you hear me? Can everyone hear me?

Dr. FLEMING. I think we can hear you now.

Mr. BURNS. OK. Lake Bistineau has had a torrid history with invasive plants going back to the 1940s. Some of the types were water hyacinths, alligatorweed, hydrilla, water primrose, and now the giant.

As you mentioned earlier, there is a three- to five-day body mass that can take place where it can double. Normally it takes about ten days to two weeks, but Lake Bistineau is the perfect nursery.

This shallow, nutrient-rich inland water body spanning over 17,000 acres with over a million acres of watershed that feeds it.

What contributes to this watershed?

Well, you've got rich agricultural land. You've got hamlets. You've got municipalities. You've got industry that are discharging some of their waters that find its way into Bistineau.

Also, Lake Bistineau, 50 percent of that lake is forested with cypress trees, providing perfect nursery issues there.

What type of impact do we have, whether it's economic, there's recreational, hunting, fishing, water sports has been at best the last few years hit and miss.

Congressman Fleming, it is the number one complaint that we get. In fact, it's kind of dangerous sometimes to go to ball games because people's hunting spot or fishing spot has been hit.

And then, of course, there's property values and broken dreams from people who have bought homes along these scenic river areas wanting to make their retirement there, to a place to bring their grandchildren out to fish.

The biggest question, the number one question I'm asked is when are we going to get our lake back?

There are numerous unintended consequences that has taken place, and let me just share a couple of those with you.

One, my son's in-laws live on Lake Bistineau. They went out to have a day of fun and recreation. The motor clogged with all this invasive plant and it burned up the motor, so they struggled to get the boat back to the shoreline.

Well, he thought he was in three or four feet of water because with the canopy there, you couldn't really tell. He jumps out of the back of the boat to push it to the shore, breaks his leg. Now, that's just from one family's point of view.

A story that's even more outlining on what unintended consequences, and, Congressman Fleming, you have Shawn that works for you. Her sister Dotie Horton and Gary were out fishing on Bistineau.

Their boat got hung up in a lot of aquatic invasive plant material, and he tried to push it in. When they pushed the boat, it finally jettisoned and clipped Dotie on the head, just barely, and Gary pulled his back muscle, so all the attention was given to her husband.

Two days later, we were at LSU Medical Center and having life-saving surgery because of the contusion and the hematoma that was caused from just that slide.

So there are so many things that happen with this invasive plant that takes away the joy and the beauty, and we do appreciate, Congressman Fleming, all that y'all are doing and the Department of Natural Resources and Fisheries are doing.

And, you know, it's a tough fight, but we want to give it, you know, everything we've got, and people really appreciate that you're having this meeting because they want to know what we're doing.

And as I read the history—and I also have a report from Bill Altimus, if he does not show. I do have his statement, and we'll enter it into the record at a later time.

Dr. FLEMING. OK.

Mr. BURNS. Thank you.

[The prepared statement of Mr. Burns follows:]

Statement of The Honorable Henry L. Burns (LA–9), Louisiana House of Representatives

Governor Jindal and the Louisiana Department of Natural Resources selected Lake Bistineau as the primary focus for controlling invasive plant life in our inland water bodies in Louisiana. I am grateful for this selection, but with limited funding our effort has restricted the department's ability to make the gains that were anticipated.

It will take a coordinated effort by all parish, state, federal and to include private sector contributors just to minimized the negative impact of this destructive aquatic plant, Giant Salvinia.

What is at stake? Quality of life, recreational opportunities, property values and economic development. Without question, it will take a team effort just to manage this problem. I applaud Congressman Fleming for his interest and action.

Dr. FLEMING. OK. Thank you, Representative Burns. We just got a report that Mr. Altimus had a minor emergency, so he probably won't be with us today. Something popped up at the last minute.

Mr. BURNS. Chairman Fleming, I have an actual official technical report I'd like to enter into the record.

Dr. FLEMING. Yes. Without objection, so ordered. Did you have a——

Mr. GOHMERT. No, that's what I was going to ask, that we do that.

[NOTE: The report submitted for the record has been retained in the Committee's official files.]

Dr. FLEMING. OK. Very good. Secretary Barham, you're up next, sir.

STATEMENT OF THE HON. ROBERT BARHAM, SECRETARY, LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES

Mr. BARHAM. Congressman Fleming and Congressman Gohmert, on behalf of my boss, Governor Bobby Jindal, I certainly want to thank you for being here today and for focusing your attention and hopefully a lot of other folks' attention on what has become almost a science fiction challenge that we have, as you referred to. It is the blob in this part of the state.

It's certainly a pleasure to be with Representative Burns and my former seat mate, Senator Adley, who I learned so much from. If

there's a problem and he doesn't have an answer for it, you know it's a serious one, so this is quite a challenge for us all.

We're working closely with Texas Parks and Wildlife. I've known Mr. Melinchuk for a long, long time, and Carter Smith, who is their Director, and it's going to take all of us.

We have two congressmen representing two states here. It won't be long and you're going to have a whole panel of congressmen that's going to include Mississippi, Alabama, and certainly Florida. It's going to happen to us.

I wish I could tell you we're winning this battle. We're not winning the battle. My budget is just under $8 million. $7.9 million is what I'm spending now, and I'm not leaving any of the assets that I have in the cabinet at the end of the year.

Two years—we found this a little over ten years ago in Toledo Bend. Almost certainly someone dumped it out of a water garden or an aquarium. It joins other invasives like water hyacinths that was brought in, Johnson grass. They are plants that we don't have any control for that show up. We got it about ten years ago.

As he pointed out, Bistineau is the poster location for this plant and what it needs to grow. It's a shallow sediment rich lake, a lot of trees, don't get a lot of wave action, and it started exploding. It became like a golf course out on Bistineau. It was just impossible to get around on it.

These folks need the attention that—sometimes things have to get bad enough that everybody's affected before you get real action to it.

With all deference to Bistineau, as long as it was stuck off in a little lake in northwest Louisiana, the rest of the state wasn't overly frightened.

Well, two years ago we had 13,000 acres of giant salvinia in Louisiana. We have over 25,000 acres now. With me doing everything I can, it's doubled, and it's all the way into Barataria-Terrebonne Estuary.

Dr. Dearl Sanders is here with LSU. He's growing our weevils for us. So we're losing ground using everything I've got to fight this stuff, and it literally is a game changer. It will destroy a fisheries habitat, destroys the property values around lakes.

A lot of folks like to live on the water, and that's what we're facing. We're losing ground against something that we don't have the answer for. We're using every tool we can. Pulling down lakes is one of the tools.

We're spraying, spending millions of dollars spraying; but this plant, in addition to growing, doubling in size—you're not timing me, by the way, you're going to have to wave at me when I go too long.

But when—this plant not only doubles in size, but the nature of the plant is such that we can't fight it very well. On the leaves, it's got these little fibrous hair that protect it from chemical spray, and we just can't get to it.

One of the effective tools we have is Galleon. It's a saturation complex that must remain in the water column from 60 to 90 days.

Now, we're in a drought now and it will work in a drought, but if you get a rain event, it dilutes it and it doesn't work, and Galleon cost over $1,850 a gallon, so you can see with my budget, I

don't have the money to use Galleon everywhere, and it's not the silver bullet.

I could go on and on, but this is a horrific problem, and all the help you can give us, we need it.

[The prepared statement of Mr. Barham follows:]

Statement of The Honorable Robert Barham, Secretary of the Louisiana Department of Wildlife and Fisheries

Thank you for the invitation to testify before you today about Louisiana's efforts to manage the infestation of the aquatic nuisance plant Giant Salvinia. I am Robert Barham, the secretary of the Louisiana Department of Wildlife and Fisheries for Governor Bobby Jindal. Our Department is charged with a broad range of duties, including responding to major man-made and natural disasters that occur both in our state and along our coast, hunting and fishing license sales, outdoor education, enforcement of fish and game regulations, and habitat management. Ultimately, resource management and protection are at the core of our mission.

Since giant salvinia was identified in Louisiana more than five years ago, our biologists have made it a priority to identify methods for treating it, preventing further infestations and rehabilitating the water bodies across our state that it has already devastated.

This plant is voracious. While our staff works long hours and days, without a comprehensive strategy to combat giant salvinia we'll never get ahead. The green monster, as some call this plant, works 24 hours a day, seven days a week. In as few as three days, it is capable of doubling its biomass. And in as little as seven days, giant salvinia can double surface coverage of water bodies. It spreads incredibly quickly, devouring the resources and damaging the habitats within water bodies across our state.

There is no easy answer to this dilemma. We can't simply spray every area to kill it. We can't only introduce a predator and hope for the best. We can't fence it off or deploy booms and wait till the winter comes to kill it off. And no matter what efforts we take to prevent the spread, all it takes is one alligator, one nutria or other wildlife, to move from an infested water body into an area where giant salvinia hasn't yet taken root, and the spread continues. What we must do is devise a complex strategy, one that involves our agency, and local and federal agencies to stop the spread of giant salvinia and rehabilitate what it has damaged. This fight takes all of us, from the property owner on up.

Our Department has already begun many of these efforts. Over the past few years we have employed contract herbicide sprayers, deployed booms, conducted experiments with natural predators, like the salvinia weevil, conducted drawdowns and aggressively sought to educate members of the general public. Battling giant salvinia is tasked to our Office of Fisheries and utilizes a $6.9 million invasive aquatic species budget.

The current state of infestation in Louisiana is 25,076 acres, across 35 water bodies. Some of the most prominent areas of infestation are Lake Bistaneau and Caddo Lake. However, the jump in acreage infested with giant salvinia over the last two years from 13,691 to more than 25,000 acres, is due to the spread of infestation in South Louisiana, primarily in the Barataria and Terrebonne basins.

In each water body we face a different challenge, but the parameters that allow infestation to flourish remain the same throughout. While this rootless aquatic fern flourishes during the summer months, it is incredibly hardy. Stress, lack of water and cold winters won't necessarily kill off the plant. And in water bodies like the Barataria and Terrebonne basins, the temperature doesn't drop nearly enough to produce a large scale kill-off of the plant.

Giant salvinia even comes armed with its own defense mechanism in the tiny, white hairs that capture herbicides just above the plant's surface, seriously challenging the efficacy of any spray treatment. For nearly each solution we, as resource managers, can devise, giant salvinia has a solution. That is why we must tackle this problem from numerous angles.

For this year through May 31, the Department has utilized 21 spray crews and contractor air boat treatments to control 10,730 acres of giant salvinia. These herbicides provide us with the ability to kill of the plant during the spring and into the warm summer months when it would flourish. However, spraying can be incredibly difficult. Many areas, such as Lake Bistaneau, are also inhabited by the iconic cypress tree. The close proximity of trees can make it incredibly difficult for spray crews and their boats to access parts of these infested water bodies. And as the tree loses its leaves each year, that debris further fuels the degradation of the aquatic

habitat. While we advocate for moderate tree removal, this is both expensive and, at times, unpopular with the public.

Spraying is also an incredibly expensive treatment method. For each gallon of Galleon, the herbicide our Department utilizes, it costs us $1,851 per gallon. With more than 25,000 acres infested, simply spraying would be an incredibly expensive and likely ineffective task. And the costs not included in the cost per gallon for herbicide are the manpower costs to the state, the cost of the equipment, the boats and the fuel.

The financial commitment required by Louisiana residents for an herbicide-only approach is one reason we have also investigated and begun the introduction of giant salvinia's natural predator from Brazil—the salvinia weevil. This hardy little insect eats through the plant and consumes the terminal bud, the part of the plant which is responsible for growth, severely hampering further infestation. Currently, we produce salvinia weevils in the spring and release them during the summer months. However, we are exploring the possibility utilizing an existing Department facility as a salvinia weevil hatchery. A hatchery or farm that would allow us to produce the weevils during winter months will allow our biologists to release weevils before the start of the active months for giant salvinia—tackling the spread of infestation before the heat of summer.

LDWF also actively utilizes drawdowns of water bodies infested with giant salvinia. Lowering the water level of bodies of water with large-scale giant salvinia growth allows the biologists to strand and dry out the plants, killing them. In order to execute water fluctuations effectively, water control structures must be in place. In some instances, constructing water control structures requires authorization from the U.S. Army Corps of Engineers, local governments and districts.

However, water fluctuations are not always a popular option with local residents as it may mean limited access of the water body being drawn down for recreational use. We work to communicate our efforts with local residents, government and user groups in affected areas. While there may be initial disapproval from residents and users, we firmly believe that water fluctuations provide a sustainable solution that, ultimately, means residents will have access to an infestation-free water body in the future.

An example of this method is the drawdown of Turkey Creek Lake, in combination with Galleon herbicide treatments, in 2008. The drawdown was, initially, a success, but small amounts of the plant that were isolated during the drawdown reinfested the main water body. Still, despite not being able to completely eradicate giant salvinia in Turkey Creek Lake, the current coverage is less than before the water fluctuations were instituted.

Another example of a water fluctuation and herbicide combination approach was in treatment of Toledo Bend. In addition to the actions taken by our Department biologists, two successive hard winters provided added reduction to the giant salvinia and help prevent continued infestation. Herbicide treatment is currently being used to ensure giant salvinia does not re-infest the lake as the water level rises.

Lake Bistineau is also a prime example of a combination approach to treatment of giant salvinia. Water level fluctuation, intense application of herbicides and two successive cold winters greatly reduced the giant salvinia infestation in the lake. Unfortunately, shallow cypress tree stands have provided refuge for the giant salvinia. Biologists and spray crews are unable to access the plants in shallow areas. However, total coverage in the lake is estimated to be less than 100 acres, down from 8,500 acres just a year earlier.

Public education is another crucial component in battling the giant salvinia infestation in Louisiana. Because this rootless plant can completely cover the surface of water bodies, it severely limits public access for boating and fishing. It can be burden for property owners with waterfront access and it can be unsightly for residents who are used to enjoying the simple pleasure of viewing an un-infested lake.

Our biologists have been extremely proactive in communicating with residents in impacted areas—from requesting to be on the agenda at Police Jury meetings to attending user group meetings to be available for questions and comments. In some instances, like for Lake Bistineau, our biologists have worked closely with local government to provide residents with consistent updates. Information from our efforts can be found both on the local website: http://www.lakebistineau.com/salvinia/index.htm and on our Department's website at http://www.wlf.louisiana.gov/waterbodies/33991.

We have also produced numerous brochures and posters to educate the public about giant salvinia and their role in helping stop the spread. While it is not a cure-all, encouraging residents to thoroughly wash both their boat and boat trailer goes a long way to helping contain infestation. A boat trailer may pick up a small

amount of giant salvinia; it may live on the trailer for a short while and upon the boater's next trip, be introduced to a new, uninfested water body.

While we don't expect the actions of residents and those tourists who enjoy the lakes and rivers across Louisiana to be able to wholly prevent the spread of giant salvinia—a 10 inch rain event can do more damage in a short amount of time—encouraging good boating and fishing habits may be a small help. Like each component I have discussed, none can stand alone in treating the infestation. Instead a complex combination of actions must be taken.

Ultimately, we are dedicated to the effort to tame this voracious plant. Giant salvinia restricts boating and angling access in state water bodies. It degrades the quality of habitat for fish and other organisms. Each component I've mentioned today is crucial to the overall effort.

Let me be clear, giant salvinia cannot simply be eradicated. This deft plant is far too integrated into our environment to kill off. This will be an ongoing issue that will require local, state and federal dedication of funds to battle. Agencies at all levels, and local residents, must work together to reduce the occurrences of this plant and to rehabilitate impacted water bodies. Our Department is up to the task and we will continue to seek your support for our efforts in the years to come.

Thank you, again, for the invitation to speak today. At this time, I'll take any questions you may have for our Department.

Dr. FLEMING. Well, thank you, Mr. Barham. That's very enlightening and distressing at the same time.

Next up is Mr. Melinchuk. Five minutes, sir.

STATEMENT OF ROSS MELINCHUK, DEPUTY EXECUTIVE DIRECTOR, TEXAS PARKS AND WILDLIFE DEPARTMENT

Mr. MELINCHUK. Good morning. Thank you, Chairman Fleming and Congressman Gohmert, for giving me the opportunity to speak with you today on this important topic.

Caddo Lake has a long history of problems with infestations of aquatic invasive plants, as you are——

Mr. GOHMERT. Ross, could we get you to pull the mic closer?

Mr. MELINCHUK. A little better?

Mr. GOHMERT. Great. Thank you.

Mr. MELINCHUK. And species like giant salvinia, water hyacinths and hydrilla have altered aquatic ecosystems and negatively affected boat access, navigation and recreation.

Similar issues have occurred in 17 other Texas lakes and water bodies and have been especially prevalent in the eastern part of the state.

To prevent and manage infestations of the giant salvinia and other aquatic invasive plants, the Texas Parks and Wildlife Department maintains a full-time four-man crew of certified pesticide applicators that work statewide.

As funding allows, the Department also uses contract services to conduct herbicide treatments. Aquatic plant activities implemented by the Department and our contractors are based on an integrated pest management approach that uses biological, chemical, and mechanical controls supplemented with preventative measures like boater education and outreach campaigns.

For the last ten years, the Department's annual statewide budget for management of invasive aquatic plants has ranged from several hundred thousand dollars to 1.5 million. Funding has been provided by a variety of sources, including our Department, the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, various river authorities, and local partners.

For Fiscal Years 2010 and 2011, the Texas Legislature provided about three-quarters of a million dollars annually for statewide management of invasive plants, which we matched with Federal grants.

Unfortunately, state funding has been eliminated for Fiscal Years 2012 and 2013, and the Department is now going to be relying on Federal grants and partner cost share to support these activities.

A comprehensive plant management program would require in our estimation about $2 million annually to implement, at least $600,000 of which would be targeted at giant salvinia.

As has been said, giant salvinia was confirmed on the Texas side of Caddo Lake in September of '06; and since 2008, the Department has spent on average about $150,000 annually on the Texas side. Roughly 60 bucks an acre is what it's costing us.

After a number of meetings with local, state, and Federal officials, including Representative Gohmert, the Department and partners developed a bi-state aquatic plant management plan for Caddo Lake in 2007.

Funding needed to fully implement that plan was never fully realized, and by September of '09, giant salvinia had expanded to cover more than 3200 acres.

Fortunately, due to a combination of cold winters in 2010 and '11 and some aggressive herbicide treatments, giant salvinia has now been reduced to about 300 acres on the Texas side, so we're fortunate in that respect.

Talked about weevils a little bit. Large numbers of giant salvinia weevils were stocked in Caddo Lake earlier this year, and the Department is hopeful that this action will prevent at least the expansion of giant salvinia during this growing season.

Although giant salvinia weevils have proven effective in controlling giant salvinia in many areas of the world, their effectiveness in Texas is somewhat limited by our climate.

However, if stocked at high enough rates, they have the potential to enhance our control efforts in Caddo and elsewhere, especially in the shallow backwater areas where chemical and mechanical treatments are difficult to conduct. Rearing facilities at Jasper, Texas, and Karnack should lead to more effective use of the weevil.

Prevention is definitely the least expensive form of treatment, and public education and outreach efforts such as the Giant Salvinia Awareness Campaign launched in 2010 by Texas Parks and Wildlife Department are important components of the Integrated Pest Management Approach.

Targeted outreach programs can be effective, but they, too, are expensive. The Department spent about $275,000 in 2010 for a one-month media campaign focused on Caddo, Lake Conroe, Toledo Bend, and Sam Rayburn reservoirs.

The campaign included radio, television, print ads, online advertising, billboards, ramp buoys, pump station toppers, pretty comprehensive campaign.

The boater survey conducted following the campaign showed us that 51 percent of boat owners had seen advertising or information about giant salvinia and that awareness had increased.

Key point, in fact, 96 percent of boaters surveyed reported that the campaign made them more likely to clean their boat and trailer in the future.

In closing, I want to emphasize our commitment to work with our Louisiana colleagues, other partners, to identify and secure a stable source of funding and coordinate efforts to manage giant salvinia in Caddo Lake and other public waterways.

Thank you for the opportunity to address the Subcommittee and I'll take any questions.

[The prepared statement of Mr. Melinchuk follows:]

Statement of Ross Melinchuk, Deputy Executive Director, Natural Resources, Texas Parks and Wildlife Department

Thank you Chairman Fleming, Representative Gohmert and other members of the subcommittee for the opportunity to speak with you today on this very important topic. Caddo Lake has a long history of problems with infestations of invasive aquatic plants. Species such as giant salvinia, water hyacinth and hydrilla have altered aquatic ecosystems and negatively affected boat access, navigation and recreation. Similar issues have occurred in numerous other Texas waterbodies and have been especially prevalent in the eastern portion of the state. To prevent and manage infestations of giant salvinia and other invasive aquatic plants, the Texas Parks and Wildlife Department maintains a full-time, 4-man crew of certified pesticide applicators that work statewide. As funding allows, the department also utilizes contractual services to conduct herbicide treatments. Aquatic plant management activities implemented by the department and our contractors are based on an Integrated Pest Management approach that utilizes biological, chemical and mechanical controls, and preventative measures such as boater education and outreach campaigns.

Over the last 10 years, the department's annual statewide budget for management of invasive aquatic plants has ranged from several hundred thousand dollars to nearly $1.5 million. Funding has been provided by a variety of sources, including Texas Parks and Wildlife Department, the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, river authorities and local partners. For fiscal years 2010 and 2011, the Texas Legislature provided $750,000 annually for the statewide management of invasive aquatic plants, which was matched with federal grants. State funding has now been eliminated for fiscal years 2012–2013 and the department is reliant on federal grants and partner cost-share to support these activities. A comprehensive aquatic plant management program would require an estimated $2 million dollars annually to implement, with at least $600,000 for giant salvinia.

Giant salvinia was confirmed on the Texas side of Caddo Lake in September 2006. Since 2008, the department has spent, on average, over $150,000 annually on aquatic plant management on the Texas side of the lake, at an estimated cost of $60 per acre. After a number of meetings with local, state, and federal officials, including Representative Gohmert, the department and partners developed a bi-state aquatic plant management plan for Caddo Lake in 2007. Funding needed to fully implement that plan was never realized and by September 2009, giant salvinia had expanded its coverage to more than 3,200 acres. Fortunately, due to a combination of cold winters in 2010 and 2011, and aggressive herbicide treatments, giant salvinia has been reduced to less than 300 acres.

Large numbers of giant salvinia weevils were stocked in Caddo Lake earlier this year, and the department is hopeful that this action will prevent the proliferation of giant salvinia during this growing season. Although giant salvinia weevils have proven effective in controlling giant salvinia in many areas of the world, their effectiveness in Texas is somewhat limited by our climate. However, if stocked at high enough rates, they have the potential to enhance our control efforts in Caddo Lake and elsewhere, especially in shallow backwater areas where chemical and mechanical treatments are difficult to conduct. Aquatic plant shredders and other mechanical removal devices have had limited success in east Texas lakes and have not shown to be cost-effective. This is especially true at Caddo Lake, where the abundance of Cypress stumps and other snags make use of these machines almost impossible.

Prevention is definitely the least expensive form of treatment, and public education and outreach efforts such as the Giant Salvinia Awareness Campaign launched in 2010 by Texas Parks and Wildlife Department are important components of the Integrated Pest Management Approach that is being implemented by the department and our partners. Targeted outreach programs can be effective but

also can be very expensive. The department spent approximately $275,000 in 2010 for a one-month media program focused on Caddo Lake, Lake Conroe, Toledo Bend reservoir and Sam Rayburn reservoir. The campaign included radio and television news stories, print ads, online advertising, billboards, boat ramp buoys and gas station pump toppers in targeted areas. A boater survey conducted following the campaign showed that 51% of boat owners had seen the survey and that awareness had increased. In fact, 96% of boaters surveyed reported that the campaign made them more likely to clean their boat and trailer in the future.

In closing, I want to emphasize our commitment to work with our Louisiana colleagues and other partners to identify and secure a stable source of funding and to coordinate efforts to manage giant salvinia in Caddo Lake and other public water bodies. Thank you for the opportunity to address the Subcommittee on this important topic. I would be happy to answer any questions.

Dr. FLEMING. OK. Thank you, Mr. Melinchuk. Next we have Mr. Grodowitz for five minutes.

STATEMENT OF DR. MICHAEL GRODOWITZ, BIOMANAGEMENT TEAM LEADER, U.S. ARMY CORPS OF ENGINEERS

Dr. GRODOWITZ. Mr. Chairman, Congressman Gohmert, my name is Michael Grodowitz, and I work as a research entomologist for the U.S. Army Corps of Engineers, Engineer Research and Development Center, Vicksburg, Mississippi.

Thank you for the opportunity to testify today on efforts to control and eradicate the invasive weed salvinia molesta or, as commonly known, giant salvinia.

I'm sure that most people in attendance are quite aware of the manifold problems giant salvinia has and is causing in many areas of the U.S.

A native to South America, it was first introduced into the U.S. in the 1980's in the Carolinas. Since that time, it is now found as far west as the Hawaiian Islands, east into the peninsula of Florida, and north into Virginia.

I don't have to remind you that giant salvinia is an aquatic fern capable of forming surface mats upwards of one meter thick. Its growth rate is tremendous. It is known to double its biomass in two to three days, can have infestations with greater than 5,000 plants per meter squared, and amazingly can produce plant biomass of a hundred tons per hectare annually.

Giant salvinia, as you all have heard, hinders navigation, disrupts water intake, degrades water quality, decreases native plant and animal diversity, impacts threatened and endangered species, and increases mosquito breeding habitat for species that are known to transmit encephalitis, dengue fever, malaria and elephantiasis.

Numerous control strategies have been implemented for the management of salvinia. These include the use of traditional methods such as mechanical control and chemical applications.

Chemical control is probably the most widespread management method employed in the U.S. today. The use of alternative methods, such as biological control, is highly promising and has been shown to produce long-term sustainable control.

One insect agent has been approved for release in the U.S., the salvinia weevil, or cyrtobagous salviniae, and is the method of choice for many overseas locations.

As you are painfully aware, each of these strategies have their own advantages and shortcomings. For example, chemical applica-

tions, while highly effective, are expensive, especially since they require repeat applications over several years.

Drawdowns, which serve to desiccate and kill the plant, do reduce infestations and can isolate the plant into smaller areas allowing easier access for mechanical removal or chemical treatment.

However, when water levels increase, remaining plants can be scattered throughout the water body making treatment even more difficult.

The use of biological control has gained in increased favor in the United States. Over the last five years, rearing operations for the salvinia weevil have been developed at many Federal, state, and local levels, allowing the release of large numbers of weevils in a variety of water bodies, particularly in Texas and Louisiana.

Importantly, the U.S. Army Engineer Research and Development Center, aquatic plant control and research program facility in Vicksburg, Mississippi, and our remote facility outside of Dallas, Texas, have been instrumental in providing weevils and rearing methodologies.

While effective, it is important to note that the biocontrol is a long-term process, typically taking from two to four years for long-term control.

The only strategy that will allow more complete management of giant salvinia is the implementation of all management methods in a truly integrated fashion, and to some extent that is becoming to be more commonplace in the United States.

As you're aware, there are many actions that can be taken for more effective control of giant salvinia, but I believe in my opinion the following six items are paramount:

One, since salvinia is mainly disbursed by humans, it's essential that we increase public awareness to minimize the risk of new infestation and reinfesting older sites.

Two, it's important that we develop common guidelines that will allow the selection of the best control method or combination of strategies on a site-by-site basis.

Three, we need to implement standardized sampling protocols for infield biocontrol population size, impact, and numbers released.

Four, must ensure that monitoring for new infestation is accomplished on a continual basis. Early detection, rapid response is essential.

Five, we need to address underlying factors responsible for the buildup of such large and damaging infestations.

One of those, which I'm glad to see you mentioned, high nutrient levels are one of the most important. High levels of nitrogen and phosphorus allow for explosive plant growth.

And finally and essential, that applied research be advanced, including identification of new chemicals and chemical combinations, more cost-effective insect rearing and release methods, and the development of integrated management technologies in an effort to enhance control.

However, it must be noted that funding for this type of research will continue to be difficult, particularly in today's budget environment.

In conclusion, salvinia management in the United States has come a long way since its introduction nearly 30 years ago. Diligent

application of chemicals and the development of several large and successful rearing facilities for the weevils is a testament to that statement.

However, more work is needed. This includes a more coordinated response to human mediated transport and new infestations, a better educated public, increased compatibility and application of sampling protocols on a national level, addressing high nutrient loads, and continuing applied research and development.

Thank you, and I want to extend an open invitation to the congressmen and their staff to visit our facilities in the near future. Again, thank you and I look forward to your questions.

[The prepared statement of Dr. Grodowitz follows:]

Statement of Michael J. Grodowitz, Ph.D., Research Entomologist, Engineer Research and Development Center, U.S. Army Corps of Engineers, Vicksburg, Mississippi

Mr. Chairman and other Members of the Subcommittee, I am Michael J. Grodowitz, Ph.D. I work for the U.S. Army Corps of Engineers, Engineer Research and Development Center. Thank you for the opportunity to testify today on efforts to control and eradicate the Invasive Weed, Giant Salvinia.

Giant salvinia (*Salvinia molesta*), a native of Brazil, is a floating fern introduced into the United States through the aquatic nursery trade. Since its introduction in the middle to late 1990's, giant salvinia has dispersed naturally and by humans, and in less than 20 years can now be found as far west as the Hawaiian Islands, east into the peninsula of Florida, and north into Virginia. It is one of the world's worst weeds and is causing manifold problems throughout the sub-tropical and tropical regions of the earth. Impacts are varied and include hindering navigation; disrupting water intake for municipal, agricultural and industrial purposes; degrading water quality; decreasing floral and faunal diversity; impacting threatened and endangered species; and increasing mosquito breeding habitat for species that are known to transmit encephalitis, dengue fever, malaria, and rural filariasis or elephantiasis.

Giant salvinia causes significant problems in over 20 other countries including Australia, New Zealand, Fiji, the Philippines, India, Indonesia, Malaysia, Singapore, Papua, New Guinea, the Ivory Republic, Ghana, Zambia, Kenya, Namibia, Botswana, South Africa, Madagascar, Columbia, Guyana, and several Caribbean countries (including Cuba, Puerto Rico, and Trinidad). This list increases yearly. In the United States, it is now found in at least 90 localities and is especially troublesome in southern states including Texas, North and South Carolina, Louisiana, Georgia, Florida, Alabama, Mississippi and west into Arizona, and California.

Giant salvinia reaches damaging infestation levels because of its tremendous growth rate. While it has been shown to only reproduce vegetatively (i.e., viable spores are not produced) this is more than enough to allow it to form surface mats up to 1 m thick with plant numbers approaching 5000/m^2 and biomass production of upwards of 100 tons/ha/year. Even greater production is possible under more favorable conditions. It has been known to double in number in one to eight days, depending on environmental conditions.

Numerous control strategies have been implemented for the management of salvinia. These include the use of traditional methods such as mechanical control (i.e. cutting or plant removal) and chemical applications. Mechanical control options are not particularly effective. They are expensive and often do not produce results needed for even partial management. However, in certain instances, especially small isolated areas, mechanical control may be employed with some success. The use of chemical technologies can be effective but tend to produce only short-term control and can become expensive, especially when multiple treatments are needed over the course of a growing season. The use of alternative control methods such as biological control is highly promising and has been shown to produce long-term sustainable control. One agent has been approved for release in the United States, the salvinia weevil (*Cyrtobagous salviniae*), and is the method of choice for management in many overseas locations. While effective, biological control can take several years and there is some concern that it may not be particularly effective in the more northern extreme of salvinia's distribution. Other methods employed for salvinia control in the United States include flushing and drawdowns. Increasing water flow to 'flush' plants out of a waterbody or drainage can reduce biomass locally but may increase

the distribution of salvinia downstream. Drawdowns (which serve to desiccate and kill the plant) do reduce biomass and can isolate the plant into smaller areas allowing easier access for mechanical removal or chemical treatment. However, when water levels increase remaining plants can be scattered throughout the water body making treatment even more difficult.

Currently, chemical control is the most widely used management strategy in the United States for the control of salvinia. A wide variety of products are employed mainly those containing diquat, glyphosate, and to a lesser extent fluridone and carfentrazone-ethyl. Active ingredients recently labeled for aquatic use including penoxsulam and flumioxazin, have been evaluated and are effective but have yet to be used on a wide scale. As indicated earlier, chemical applications can be highly effective producing dramatic control (> 90%) in a manner of days or months. However, several factors often dictate the need for repeat applications and diligent post-treatment monitoring. One important factor is the rapid growth rate of salvinia which allows the plant to easily outpace the current application of chemicals. Probably a more important factor is the ability of salvinia to re-grow from small buds or plants that are missed during chemical application, especially in backwater coves where overhanging vegetation can hide small plant populations or where plant growth is dense and underlying layers are protected from surface sprayed herbicides. These plant fragments can be smaller than ¼ inch. In addition, the plant can easily be transported by a variety of human mediated means. Thus, water bodies where salvinia has been eradicated can be easily re-infested. Therefore, the rapid growth rate of salvinia and its excellent dispersal ability necessitates the use of greater amounts of chemicals with increased labor costs for application which leads to a never-ending cycle of chemical use.

The use of biological control is gaining increased favor in the United States. Over the last five years, rearing operations for the salvinia weevil have been developed at the Federal, state, and local levels, allowing the release of large numbers of weevils in a variety of water bodies, particularly in Texas and Louisiana. Such an active approach to the use of biocontrol is promising and is allowing the more widespread application of a technology that offers the possibility of longer and more sustainable control. However, set-backs have occurred. First, releases of weevils from the various rearing operations are not coordinated to any large extent between the various agencies and institutions; i.e., no central database is available allowing for easy consultation and comparison. Also, in many cases, there is only minimal monitoring of release sites using sampling protocols designed to document weevil populations and subsequent impact over the long term. Hence, information on current numbers of biocontrol agents and impact levels, which is essential to make informed decisions on the need for additional releases, is lacking. In addition, numbers of weevils released is often reported differently by different agencies leading to erroneous information exchange on actual numbers introduced. Unusually cold weather has also hampered the establishment of the weevils in many sites in the northern distribution of salvinia. Historic cold events over the last two winters have significantly reduced the extent of the salvinia infestations especially along and just north of the I–20 corridor. This has increased the effectiveness of chemical applications because of the smaller size of the infestations. Several sites in these areas were targeted for release of the weevil. However, with the reduction in salvinia populations establishment of the salvinia weevil could not be confirmed and may have been unsuccessful due to the extreme cold and mortality of the plants.

The following are steps needed to ensure the implementation and success of a working and well coordinated management plan for successful control of salvinia:

1. Increase public awareness—While some effort has been put toward educating the public on the dangers of this invasive species, additional work is needed. This is especially important since salvinia can easily be transported from one water body to another through human mediated transport including boats, trailers, and live wells, among others. Emphasis needs to be directed toward ensuring that people adequately clean all equipment before entering and leaving a water body. This is not easily accomplished, but continued non-compliance will only allow the plant to spread to new locations as well as re-infest sites where management options were employed successfully in the past. Stronger penalties and fines may have to be implemented for non-compliance along with a coordinated educational program. It is important to note that giant salvinia is listed as a Federal noxious weed by the USDA which prohibits importation into the U.S. and across state lines. It is also listed as a noxious weed in Florida, North Carolina, Mississippi, Texas, Oklahoma, California, Arizona, Louisiana, Alabama, South Carolina and Georgia based on state regulations which go further to prevent its spread and sale within these individual states.

2. There is a need to develop common guidelines on what site characteristics dictate application of either chemical and/or biocontrol techniques. While developing such selection criteria can be complex, there are certain characteristics that will allow intelligent selection of applicable technologies. Items that should be considered include extent of infestation, number of high priority sites needing rapid reduction, accessibility of sites for chemical application, latitude, among others.
3. It is important to develop and implement standardized sampling protocols for monitoring insect release sites for population size and impact and to determine actual numbers released from various rearing facilities. This includes the development of standard methods for reporting such information that can be used across the region.
4. We must ensure that monitoring for new infestations is accomplished on a continual basis. Implementing such procedures will identify and allow treatment of new infestations before they reach levels where management becomes untenable. This process is known as early detection, rapid response (EDRR) and is an essential component of successful management programs.
5. It is important to understand and address underlying causative factors allowing the formation of damaging infestations of giant salvinia. One of the more important causative factors is high nutrient levels that allow for increased and explosive plant growth. While it is difficult to minimize nutrient influx into water bodies, several strategies have been used with varying success. These include repairing leaking septic systems or positioning the septic fields away from the water body, implementation of regulations prohibiting fertilization of lawns right up to the water's edge, and ensuring that sewage treatment plants use tertiary treatment processes to limit nitrogen and phosphorus loading. One potential method is the use of re-vegetation techniques to establish a diverse community of non-invasive native vegetation that will act as nutrient sinks to reduce nitrogen levels thereby limiting plant growth and reducing the chance of new infestations by salvinia as well as other invasive species including waterhyacinth, hydrilla, and Eurasian watermilfoil, among others. This includes the use of emergent species near the water's edge to catch and contain nutrient run-off from the surrounding landscape and the establishment of a diverse submersed and floating leaved aquatic plant community to reduce nutrients in the sediment and in the water column, and provide competitive pressure through shading, filling of empty spaces, etc.
6. Finally, advancement of applied research would enable development of more efficient and efficacious methods for the control of salvinia. This includes but is not limited to identification and registration of new chemicals and chemical combinations that are more environmentally compatible and possess increased selectivity for salvinia. Also, it is important to continue researching better methods of rearing, releasing, establishing, and monitoring the salvinia weevil and associated impact. More importantly, better methods need to be developed to more successfully integrate these two methods in an effort to enhance control. However, funding for this type of research will continue to be difficult particularly in today's budget environment.

In conclusion, salvinia management in the United States has come a long way since its introduction in the 1990's. Diligent application of chemicals and the development of several large and successful weevil rearing facilities is a testament to that statement. However, more work is needed. This includes a more coordinated response to human mediated transport and new infestations, a better educated public, increased compatibility and application of sampling protocols on a National level, addressing high nutrient loads, and continuing research and development.

I have included a U.S. Army Corps of Engineers report published in 2004 that provides more detailed information on salvinia and the available management options. Thank you for the opportunity to testify today and I will be happy to answer any questions you may have.

Dr. FLEMING. Thank you, Dr. Grodowitz. Next is Dr. Westbrooks.

STATEMENT OF DR. RANDY G. WESTBROOKS, INVASIVE SPECIES PREVENTION SPECIALIST, USGS NATIONAL WETLANDS RESEARCH CENTER

Dr. WESTBROOKS. Thank you. Thank you, Chairman Fleming, for the opportunity to testify about current efforts to control and eradicate giant salvinia in the MidSouth Region of the United States.

My name is Randy Westbrooks. I'm an Invasive Species Prevention Specialist with the U.S. Geological Survey, National Wetlands Research Center, based in Whiteville, North Carolina.

The USGS is the bureau of the Department of the Interior that conducts research to better understand interrelationships between biological systems, earth processes, and human activities.

One of our roles is to provide biological, geological, and hydrological expertise and technical assistance to state and Federal land managers in addressing invasive species that pose a threat to natural ecosystems.

This morning I will provide you with background information on giant salvinia as well as strategies for minimizing the establishment and spread in waterways of the southern United States.

Giant salvinia is a small, free-floating aquatic fern that is native to South America. It is somewhat similar to our native duckweed, only bigger.

It prefers warm temperatures and grows best in nutrient-rich, slow-moving waters such as canals, ponds, and lakes.

Under ideal growing conditions, giant salvinia can double its mass in five to seven days and form large floating mats.

Left uncontrolled, these mats will interfere with native aquatic plants and organisms in the water. The mats also block access to boat ramps and docks and interfere with navigation.

Giant salvinia was probably first introduced into the United States as a novelty aquarium and water garden plant prior to being listed as a Federal Noxious Weed by the USDA in 1981.

The first free living infestation of giant salvinia was detected and eradicated from a small pond near Walterboro, South Carolina, in 1995.

Since that time, giant salvinia has been reported in a number of other states, including Louisiana and Texas. It was first reported in Toledo Bend on the Texas, Louisiana border in 1998.

Since then, it's been detected in 34 other water bodies in the state and in 17 water bodies in Texas, including nearby Caddo Lake and Lake Bistineau.

Based on the work that has been done in weed eradication efforts across the country, such as the Beach Vitex Task Force in the Carolinas and Virginia and the North Carolina Giant Salvinia Task Force, there are a number of strategies that may be employed for addressing new aquatic weeds like giant salvinia.

These include inspection and cleaning of boats and trailers at vehicle weigh stations along major highways by state personnel; inspection of water garden plants at aquatic plant nurseries by state personnel; inspection and cleaning of boats and trailers prior to leaving infested waters; detection and delimiting surveys at major public lakes and waterways by state and Federal personnel; removal of microinfestations around boat docks and ramps by shoreline watch groups; eradication of small infestations in public lakes

by lake association contractors; eradication of small infestations in private lakes by homeowners and landowners; and control of large infestations on public lakes and waterways by interagency groups, such as the Interagency Giant Salvinia Control Team.

The Interagency Giant Salvinia Control Team is making progress in controlling giant salvinia in these two states; however, successful eradication efforts will require that all impacted and potential stake owners get involved with the giant salvinia management effort in both states.

Fortunately over the past two years, cold and unusual winter weather has significantly reduced giant salvinia infestations in the northern parts of the MidSouth.

So this provides a unique opportunity to treat remaining infestations and to take steps to prevent giant salvinia from becoming wildly established in this region again.

This is one invasive species problem that cannot be solved by public agencies alone. However, with public support and involvement, giant salvinia can be eliminated as a serious threat to the MidSouth Region.

This concludes my statement, and I'll be happy to answer any questions that you have.

[The prepared statement of Dr. Westbrooks follows:]

Statement of Dr. Randy Westbrooks, Invasive Species Prevention Specialist, U.S. Geological Survey, U.S. Department of the Interior

Thank you, Chairman Fleming, for the opportunity to testify about current efforts to control and eradicate Giant salvinia in the MidSouth Region of the United States. My name is Randy Westbrooks, and I am an Invasive Species Prevention Specialist with the U.S. Geological Survey, National Wetlands Research Center, based in Whiteville, North Carolina.

The USGS, which is a bureau of the Department of the Interior, conducts research to understand the interrelationships between biological systems, Earth processes, and human activities. One of our roles is to provide biological, geological, and hydrological expertise and research to assist State and Federal land managers in managing invasive species that pose a threat to natural ecosystems, particularly in our public parks and refuges. My statement will include background information on Giant salvinia (*Salvinia molesta* D.S. Mitchell), which is considered one of the world's worst weeds, and proven strategies for controlling and minimizing its spread in the waterways of the southern United States.

What is Giant Salvinia? Giant salvinia is a small, free-floating aquatic fern that is native to southeastern Brazil and northeastern Argentina. It is somewhat similar in appearance to our native duckweed (*Lemna minor*), but bigger. Its most notable feature is the rows of "hairs" with 4 branches that join in a cage-like tip. The tip traps air that helps the plant float on the water surface. Giant salvinia prefers tropical, sub-tropical, or warm temperatures and grows best in nutrient-rich, slow-moving waters such as ditches, canals, ponds, and lakes. It is a freshwater plant but can tolerate salinity levels in estuaries up to levels of about 10% that of seawater.

Why is it a Problem? It is no exaggeration to say that Giant salvinia is one of the world's worst weeds. It takes only a fragment of a single plant to multiply vegetatively and produce a thick floating mat of plants (called a "sudd") on the surface of standing water (Holm and others, 1977). The mats clog waterways and block sunlight from reaching other aquatic plants below the surface, reducing the amount of oxygen in the water. As these plants die and sink to the bottom, decomposer organisms use up even more oxygen in the water. The mats also impede the natural exchange of gases between the water and the atmosphere, which can lead to stagnation of the water body. Ultimately, these processes will kill all plants, aquatic insects, and fish living below the mats. The mats also provide ideal conditions for mosquitoes to breed, block access to boat docks and boat ramps, and interfere with navigation.

How was it Introduced and Spread? It is presumed that Giant salvinia was first introduced into the United States as a novelty aquarium and water garden plant and/or as a contaminant of aquarium and water garden plants, that were im-

ported, before it was listed as a Federal Noxious Weed in 1981. Since then, it has escaped into the wild, where it has been identified in a number of States across the southern United States, including Louisiana and Texas. Once it infests a waterway, Giant salvinia is spread to new areas by flowing water and by boats, trailers, and other recreational watercraft.

In 1995, the South Carolina Department of Natural Resources (SC–DNR) identified the first sustained infestation of Giant salvinia in the United States in a small private pond near Walterboro, South Carolina. It was summarily eradicated from that pond by SC–DNR and the Plant Protection and Quarantine (PPQ) program within the USDA Animal and Plant Health Inspection Service (APHIS).

In 1998, Giant salvinia was detected in Toledo Bend Reservoir on the Louisiana-Texas border. By the time it was identified and reported in Toledo Bend, Giant salvinia had already formed large mats of sudd that were interfering with recreational boating and fishing. Since then, it has been detected in 34 other water bodies in the State of Louisiana. Giant salvinia was likely introduced to Lake Bistineau on one or more boat trailers during the lake drawdown in 2005 (Louisiana Department of Wildlife and Fisheries). It was first reported in Caddo Lake in 2006.

Giant salvinia was first detected in Pender County, in southeastern North Carolina, in 2002. In response, the North Carolina Giant Salvinia Task Force was formed and started working to eradicate Giant salvinia from five sites in the North Carolina Coastal Plain. Owing to their efforts, Giant salvinia has been conditionally eradicated from North Carolina. This year, the task force is conducting appraisal surveys at River Bend Swamp in Pender County, North Carolina, to make sure that it has been totally eradicated from the site.

General Management Strategies. Preventing infestations is clearly the most effective strategy for managing Giant salvinia. Once it becomes established and widespread in a large water body it is very difficult to control. Under ideal conditions, Giant salvinia can double its mass and coverage area in 5–7 days. In areas where Giant salvinia has become established, setting up local monitoring programs that involve local residents and boaters, to make sure that new infestations are detected early and addressed quickly before it becomes widespread, has been effective. The Caddo Lake Shoreline Watch Program that is being organized by the Caddo Lake Institute and its partners is a good example of local stakeholders working together to address this problem.

Manual, Mechanical Control—If an infestation grows too large to be easily eradicated, mechanical harvesters are sometimes used to open up boat lanes in public lakes until other means of control can be implemented. Infestations in small water bodies can be removed by hand or by draining the water and allowing the plants to desiccate on exposed lake bottoms.

Chemical Control—A number of herbicides are effective in controlling Giant salvinia. Examples include diquat (Reward®—a contact herbicide) and fluridone (Sonar®—a systemic herbicide that is taken up from the water column). It is important to remember that a contact herbicide such as diquat will only control the plants that it touches. It will not kill all of the plants in a thick mat of Giant salvinia. On the other hand, systemic herbicides such as fluridone are ideal for controlling Giant salvinia in small, contained water bodies with standing water. All of the plants with submerged leaves will take up the chemical from the water and be killed. However, systemic herbicides will not stay adequately concentrated in large water bodies and flowing waterways, reducing their effectiveness.

Biological Control—In some locations, biological control has been an effective method for managing Giant salvinia. The most successful example is the introduction of South American Salvinia weevils (*Cyrtobagous salviniae*), which demonstrated excellent results in controlling Giant salvinia on Lake Moondarra in Queensland, Australia, and other countries in the early 1980s.

In 2009, the Louisiana State University (LSU) AgCenter and the Louisiana Department of Wildlife and Fisheries introduced 30 tons of Giant salvinia, which was infested with 2.3 million Salvinia weevils, into Lake Bistineau and four other north Louisiana lakes. As a result of this application of weevils, in conjunction with two consecutive cold winters, the Giant salvinia infestation in Lake Bistineau has been reduced by 90%, according to Dr. Dearl Sanders, with the LSU AgCenter (Bossier-Press Tribune, May 11, 2011).

Despite the success of using weevils to control Giant salvinia in some regions, the Salvinia weevil is not a fully effective control method in every case because it is less tolerant of cold temperatures than Giant salvinia. For this reason, the Salvinia weevil was unsuccessful controlling Giant salvinia in Kakadu National Park in the Northern Territory of Australia. In 2005, Salvinia weevils that were released into the River Bend Swamp of Pender County, North Carolina, also did not overwinter while the Giant salvinia plants survived.

On the basis of work by LSU and the Louisiana Department of Wildlife and Fisheries, as well as other work done by the U.S. Army Corps of Engineers and the Texas Parks and Wildlife Department, it is clear that biological control can be an effective strategy for reducing infestations of Giant salvinia in northern parts of the MidSouth Region (e.g., Caddo Lake and Lake Bistineau). However, the weevils must be released on infested waterways annually, since they are unlikely to overwinter in northern parts of Louisiana and Texas. The Salvinia Weevil Rearing Facility was recently established at the Caddo Lake National Wildlife Refuge to provide the Salvinia weevils that will be needed each year for Giant salvinia control projects in north Louisiana and Texas.

Regulatory Status. USDA APHIS first listed Giant salvinia as a Federal Noxious Weed in 1981. As a listed Federal Noxious Weed, Giant salvinia cannot be imported into the United States or transported across State lines without a Federal permit from APHIS. Under the U.S. Plant Protection Act of 2000, USDA APHIS can also cooperate with State and local agencies to eradicate infestations of listed Federal Noxious Weeds such as Giant salvinia.

Giant salvinia is also listed as a regulated State Noxious Weed in a number of U.S. states and territories. These include Alabama, Arkansas, Arizona, California, Colorado, Connecticut, Florida, Idaho, Louisiana, Massachusetts, Maryland, Michigan, Mississippi, Nevada, North Carolina, Oklahoma, Oregon, Puerto Rico, South Carolina, Tennessee, Texas, Vermont, and West Virginia.

In Louisiana, Giant salvinia is listed as an Invasive Noxious Aquatic Plant under Louisiana Revised Statutes Title 76, Section 1101. In Texas, Giant salvinia is listed as a Noxious and Invasive Plant under Texas Administrative Code—Title 4—Agriculture—Rule 19.300.

Under most State noxious aquatic weed laws, a listed species cannot be imported (into), transported (through), or possessed in the State without a permit from the plant regulatory agency of that State. Based on a strict interpretation of the Louisiana state law in 2006, homeowners, boaters and fishermen were discouraged from assisting in the Giant salvinia removal effort in Caddo Lake. However, as the infestation has become much more pervasive over the past several years, the Louisiana Department of Wildlife and Fisheries has begun encouraging homeowners to control Giant salvinia around their boat docks and to remove small populations of the plant from the water to help control further expansion of the infestation. Community participation, in cooperation with State and local agencies, is a critical component of a successful Giant salvinia removal and control effort.

Proven Strategies for Managing Giant Salvinia and other New Invasive Plants in the Southern United States. There are a number of proven strategies that have been successfully used to manage invasive plants across the southern United States and could be employed to minimize further establishment and spread of Giant salvinia in waterways of the MidSouth Region. Here is a summary of these strategies.

I. Interagency Partnering to Address Giant Salvinia. Successful eradication efforts will require that all impacted and potential stakeholders get involved with the Giant salvinia control effort in Louisiana and Texas.

A. A number of State Invasive Species Councils have been established across the United States (the Maryland Invasive Species Council, the Delaware Invasive Species Council, etc.). Such interagency groups provide an effective mechanism for interagency coordination and stakeholder input for addressing new invaders such as Giant salvinia. Such councils often form interagency task forces to address new invaders that cannot be addressed by a single agency.

B. The Beach Vitex Task Force (www.beachvitex.org) is a good example of this new trend in interagency partnering in action. This task force, which was first established in 2003, has eliminated all but a few of the 230 known infestations of Beach vitex from coastal dunes along the South Carolina coast. The task force is now working to eradicate Beach vitex from coastal communities in North Carolina and Virginia. The Interagency Giant Salvinia Team (LA/TX) is making similar progress in managing Giant salvinia in Louisiana and Texas.

II. Survey and Detection. Survey and detection is the first line of defense against Giant salvinia.

A. One reason for the tremendous success of the Beach Vitex Task Force effort has been the involvement of sea turtle volunteers who are working to protect sea turtle nesting habitat along the Carolina coast. In searching for sea turtle nests among primary and secondary ocean dunes, volunteers have been instrumental in detecting and reporting incipient infestations of Beach vitex to task force coordinators for action. Likewise,

development of local shoreline watch programs at public lakes such as Caddo Lake and Lake Bistineau could be very helpful to the Interagency Giant Salvinia Control Team and local contractors in managing new outbreaks of Giant salvinia.

B. Another possible approach for early detection of Giant salvinia infestations would be through detection and delimiting surveys, to determine the extent of the infestation, on public waterways under the APHIS Cooperative Agricultural Pest Survey Program in Texas and Louisiana. As a listed Federal Noxious Weed, Giant salvinia is already a high-priority target species for USDA APHIS and State plant regulatory agencies, especially in states where it is also listed as a State Noxious Weed.

C. As previously mentioned, early infestations of Giant salvinia in the southern United States escaped from water gardens stocked with imported aquatic plants. Periodic inspection of commercial pond and water garden suppliers for the presence of Giant salvinia and other aquatic weeds of concern in Louisiana and Texas could reduce unintentional distribution of these species.

III. Outreach and Education. Ensuring that every person participating in water sports and recreation across the MidSouth is aware of Giant salvinia and know what they can do to help control the problem is also key to successful eradication.

A. Ongoing public outreach through newspaper, magazine, radio, and television news stories, features, and public service announcements can be helpful to inform the boating public about the problem.

B. Posting Giant salvinia warning signs at public boat ramps, gas stations, and marinas by the Texas Parks and Wildlife Department has been very effective in raising awareness of the problem. The signs, which encourage the boating public to clean their boats and trailers, are important in the effort to prevent further spread and establishment of this unwanted plant.

IV. Regulatory Containment, Control, and Eradication.

A. **Steps to Prevent Interstate Movement on Boats and Trailers.** As noted earlier, the Federal Plant Protection Act of 2000 provides authority to regulate the interstate movement of listed Federal Noxious Weeds such as Giant salvinia. One way to accomplish this would be to inspect boats and trailers for Giant salvinia at highway rest stops and vehicle inspection areas. State DOT personnel and Highway patrol personnel could include Giant salvinia in their routine inspections of boats and trailers at highway rest stops and vehicle inspection areas near the Louisiana and Texas state borders.

B. **Control of Large Infestations by Interagency Control Teams.** A great deal of work to control Giant salvinia in Louisiana and Texas is being done by the Interagency Giant Salvinia Control Team. Long-term success of the Giant salvinia control effort in these states depends on this team. Left unchecked, a Giant salvinia infestation can establish at high levels in a very short time.

C. **Adoption of a Three-Tier Management Strategy.** A three-tier management strategy that includes stakeholder involvement has proven to be effective in managing large, small, and micro-sized infestations of high-priority invasive plants such as Beach vitex and Giant salvinia in the Carolinas. Such a strategy for managing Giant salvinia would include control and eradication of large infestations by an Interagency Control Team, eradication of small infestations by local task-force contractors, and control of micro-infestations (e.g., around boat docks, boat ramps, and elsewhere) by impacted homeowners and the boating public. The Louisiana Department of Wildlife and Fisheries has already implemented this kind of approach in southwestern Louisiana, where lake residents at Toledo Bend Reservoir are encouraged to remove Giant salvinia around their boat docks and boat ramps. The landowner would normally manage infestations detected in private ponds with advice from a State Aquatic or Extension Weed Specialist.

Summary and Conclusion. Since the Caddo Lake Giant Salvinia Field Tour was held in August 2007, tremendous strides have been made in getting organized to address Giant salvinia in Texas and Louisiana. The most significant achievement has been establishment of the Interagency Giant Salvinia Control Team. Fortunately, over the past two years, colder winter weather has killed a significant amount of Giant salvinia across the northern parts of the MidSouth Region, making the present a favorable time to treat existing infestations and to take steps to pre-

vent it from becoming more widely established in this region. Adoption of a three-tier management strategy for control and eradication of large, small, and micro-sized infestations has proven to be effective in managing new and emerging invasive plants such as Beach vitex and Giant salvinia in the Carolinas. Another valuable component of any effort to address Giant salvinia in the MidSouth Region is to stimulate public awareness and engagement to ensure that Giant salvinia is not spread to new waterways via boats, trailers, and fishing gear. This is one invasive species problem that cannot be solved by public agencies alone. However, with public help and support, Giant salvinia can be eliminated as a serious threat to the MidSouth Region.

This concludes my statement. I will be happy to answer any questions you may have.

For more information:

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Dias, G. 1967. Eradication of Water Weed (*Salvinia auriculata*) in Ceylon. World Crops. 19:64–68.

Hobbs, J. and P. Molina. 1983. The influence of the aquatic fern *Salvinia auriculata* on the breeding of *Anopheles albimanus* in coastal Guatemala. Mosq. News 43:456–459.

Holm, L., D. Plucknett, J. Pancho, and J. Herberger. 1977. The World's Worst Weeds—Distribution and Biology. University of Hawaii Press, Honolulu, HI. 609 pp.

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Westbrooks, R. 1984. Federal Noxious Weeds: Kariba Weed (Salvinia molesta D.S. Mitchell). Weeds Today 15:8–10.

Online Resources:

Giant Salvinia Image—U–GA Bugwood Image Gallery. URL: http://www.invasive.org/species/subject.cfm?sub=2785 Giant Salvinia Profile—ISSG Global Invasive Species Database. URL: http://www.issg.org/database/species/ecology.asp?si=569&fr=1&sts=sss

Giant Salvinia Profile—USDA Plants Database. URL: http://plants.usda.gov/java/profile?symbol=SAMO5

Giant Salvinia Control Plan. 2009 Texas-Louisiana Interagency Giant Salvinia Control Team. URL: http://salvinia.org/Docs/Interagency

GiantSalviniaControlDRAFT6.pdf

Giant Salvinia Control Recommendations. Practical Guidebook to the Control of Invasive Aquatic Plants of the San Francisco-Bay Delta Region. URL: http://www.sfei.org/nis/salvinia.html

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Dr. FLEMING. OK. Thank you, Dr. Westbrooks. Excellent testimony and very informational, and so now at this point we're going to begin questions of our witnesses.

Basically we'll ask questions for five minutes each, and if we have further questions, we'll have further rounds and continue until we're done, so I now recognize myself for five minutes.

I have a question for both of our researchers, our doctors here today. Now, this is kind of a hypothetical question, maybe it's even possible, but I'm sure mostly impractical.

If you totally drain a lake, drain it dry to the bone, will that fully eradicate giant salvinia from that lake until its re-entry at some time at a later date?

Dr. WESTBROOKS. Well, in North Carolina, we have seen giant salvinia sit on the side of a tree for three to four weeks and then when the water goes down.

So I would say that you're going to have to leave the water down really low for a long time until it dries out.

The idea of getting it out from a boat or from around a boat ramp, throwing it up in your yard, is to make sure it gets out of the water and stays there.

So it's a matter of just how long you're going to keep that water low because it would be impossible to drain all the water out of a lake. I mean, it's going to be mushy and with mud and everything there.

So I think that—they have done this with hydrilla, and Mike can probably talk about that, where you actually reduce a lake down to a certain level and you can actually go and it will help reduce hydrilla.

I think this is more problematic because it forms this mat, and it maintains that moisture inside the mat, and so I think that would be one thing that you might can do in a swimming pool, but I don't know if you can do it in a lake with a mud bottom.

Dr. GRODOWITZ. I have to agree with Randy on that. I think you will reduce the biomass significantly, but I think you will still have pockets of that plant.

If you keep it dry, completely dry, for six months, you might be able to get some kind of control, but I think that's impractical, though it would be nice if that would happen.

Dr. FLEMING. Sure. If you treated it with herbicide on top of that to perhaps speed up, I guess, the period that it might die rather than—

Dr. GRODOWITZ. That might help, but, again, what Randy was indicating, that stuff forms these thick mats, and even when you have a single surface, it's difficult to get herbicides into that plant.

Dr. FLEMING. So it traps water, but it's also—

Dr. GRODOWITZ. So you might be able to kill that top layer, but you wouldn't be able to kill underneath that, so that might sound like a nice way of doing it, but I think it would be very impractical.

Dr. WESTBROOKS. I will say if you can do that and implement all these other strategies where the water is going to come back but you've eliminated, say, half of it or three-quarters of it, that makes it easier on all these folks at Texas Parks and Wildlife and here in Louisiana to deal with it, to do all the things they're trying to do.

So it's not a bad idea. It's just that if that were the only thing you were doing, I don't think it would work.

Dr. FLEMING. OK. Thank you. My second question is again another hypothetical.

What is the possibility of harvesting this for biomass for some sort of energy use?

Dr. GRODOWITZ. Again, what you have to consider is that salvinia is mostly water. It's 95 percent water, 90, 95 percent water.

So when you start harvesting it, when you look at the economy, the economics of it, you're going to be moving a lot of weight from just the water end of it.

And so for a biofuel type of production, salvinia is probably not a very good candidate. Most of it is water plant.

And while I'm not so familiar with salvinia, but other aquatic plants, they have tried all over the world to use those for some type of benefits, and none of those really work very well, so—

Dr. WESTBROOKS. I think the—

Dr. GRODOWITZ. Go ahead.

Dr. WESTBROOKS. The idea of getting it back to the land was an issue to begin with in Caddo Lake is when you have mechanical harvesters, they have a huge mass of this plant, how do you get it back to the land.

So transportation of it back out to some place where you could actually go process it, unless you could process it there on the lake, if you had a processor on the lake where you're removing the water and if you've just got the biomass of the cellulose left of the plant.

That certainly is something you should think about. It's terrible to just kill it and let it go to waste. You can't use it for something with biofuel.

Dr. FLEMING. So if it's desiccated, then obviously there's very little fuel left then because the weight is—vast majority is water to begin with. Yeah. OK.

Dr. GRODOWITZ. And another thing is that personally I think it's—you have to be careful when you try to promote the use of an invasive species because then you just—how are people going to use it and then you have to start spreading it around and you're going to have problems with it again.

Dr. FLEMING. Right.

Dr. GRODOWITZ. So I would rather see some kind of native plant or something that's not as invasive as salvinia—

Dr. FLEMING. Sure.

Dr. GRODOWITZ.—used for biofuels.

Dr. FLEMING. Right. Thank you. Since my time is about up, I'm going to go ahead and yield to my good friend Congressman Gohmert for his questions. I have more after that.

Mr. GOHMERT. Thank you, Congressman Fleming.

Well, I'll just follow up on that. I don't know if anybody here is familiar with the research that was completed at Stephen F. Austin about the possibility of giant salvinia extracts inhibiting the growth of tumor cells. Is anybody here familiar with that?

OK. And, Doctor, I understand what you're saying. You don't want to come up with something that actually encourages the growth of an organism that takes over, puts a mat on the top of the water, kills everything underneath.

But at the same time, if there was some way to have incentive to encourage people to get this mess out of the lake, then we welcome that, too.

I'm curious. In this climate, for all the panel members, what do you think is the single best inhibitor of the growth of giant salvinia or the killer of giant salvinia?

Dr. WESTBROOKS. Cold weather.

Mr. GOHMERT. Cold weather.

Dr. WESTBROOKS. Yes.

Mr. GOHMERT. OK. So—well, seemed like we had about as cold a winter in East Texas and some have been skeptical about carbon dioxide causing warmth.

We're saying if it's true it causes warmth, we need more carbon dioxide because we need things warmed up after this winter.

But as you pointed out, it ends up killing the weevils. Now, I heard some people proposing that we spend money to develop a breed of these weevils that will actually survive better in the cold.

But then I still have this innate concern that when you go to bring in an invasive species and then bring in another invasive organism, do you end up with more problems than you originally had?

I still worry that at some point, one of these weevils is going to bite into something that they like as good or better than giant salvinia, and it's something we don't want them to kill.

Dr. GRODOWITZ. If I can address that, sir.

Mr. GOHMERT. Sure.

Dr. GRODOWITZ. First of all, these organisms that are used for biocontrol for plants are tested for many, many years under quarantine conditions, and they're actually starved and presented with a choice of plants and—

Mr. GOHMERT. Is that like we tested the grass carp before we put them in and then found out later that they actually do multiply even though they've been tested and guaranteed sterilized.

Dr. GRODOWITZ. That's true, and you have a good point there, sir, and I have to acknowledge that.

But, again, they're tested very strongly, and that relationship between a plant and an insect is different than a lot of other types of relationships where you see things shift. That's really hard to break.

But the most important evidence that we have of these things are safe is that it's been used over the world for the last 30 or 40 years and has never, ever fed on anything else than salvinia in that group.

Now, this weevil will feed on salvinias of different species, but it will not feed on anything else. After all these years all over the world, I've never seen any evidence that it shifted over to another host plant.

Mr. GOHMERT. Well, if we worked on developing a more winter hardy or cold weather resistant weevil, would you have any concerns that that might cause some other interests than it currently has for—

Dr. GRODOWITZ. No, sir. I don't believe that's going to happen. I don't think you have to worry about that at all.

I think it's important to realize that the last two winters we've had are probably one of the coldest that we've had for many, many years.

And if we go back to a more typical winter cycle, I don't think the weevils will have any problem with over wintering and making it.

The big important part, and I'm excited to see that the state and local people have started to have a more active role in biocontrol.

If we can put weevils out there early, say even if they don't over winter with very high numbers, if we can put out enough weevils, I think we can see control within one season with these.

These insects are very, very effective.

In fact, they're one of the best insect agents for weed biocontrol in the world of any other ones that they have.

So I think that that's the key. I think these two winters are a little bit unusual.

Mr. GOHMERT. Well, let me—my time is running out let me ask quickly.

I've been reading about some usage of saltwater to help kill these plants, and, of course, I worry about saltwater going into fresh.

Any comments on how that treatment works and any danger from it?

Dr. GRODOWITZ. We know for sure that they're not very tolerant of saltwater. I think I've read recently it can take higher salt concentration than recent research that was done in our Dallas facility.

But, you know, when you start looking at putting saltwater into freshwater, you're going to have amounts of huge problems over that, so I think I would try to tend to stay away from something like that if I could.

Mr. GOHMERT. Any other comments on saltwater.

Mr. BARHAM. It will take too much salt to reach the level you need. Before you kill the salvinia, you'll be killing the cypress trees and the bass and the freshwater fish.

Mr. GOHMERT. OK.

Mr. BARHAM. So that's not a practical solution.

Mr. GOHMERT. OK. Thank you. Thank you. My time is up.

Dr. FLEMING. And the gentleman yields back.

I have further questions and a statement, by the way, just for what it's worth, anecdotal.

It's recently been reported that the sun spot activity is going to diminish for some years to come and perhaps will see colder weather as a result of that, so maybe that will help us, so we shall see.

Gentlemen, again, back to our researchers, what's the possibility of raising a hardier beetle that may survive our winters and maybe be around permanently?

Dr. GRODOWITZ. I think that's very possible. I think that's something that we've looked at and examined, but it's going to take time and it's going to take funding, and I think that's an important part of it.

Whether we need to actually do that, I think it will depend on how the winters are over the next few years.

And just to make a statement, you know, we've had cold winters, coldest that we've seen in years and years, and the salvinia still survived. I mean, that's the scary part of it to me.

But it's also important to realize that typically that weevil will probably survive as well if you have survival of the plant.

I just don't think we've looked hard enough to really understand. We haven't had a true establishment of those weevils on these sites to see if they can over winter as well.

I mean, we've had some anecdotes. I think that we need more applied types of research to ask those questions. I think that's an important part of it.

Dr. FLEMING. But when you say the plant survives, it is definitely diminished, wouldn't you say?

Dr. GRODOWITZ. It is definitely diminished.

Dr. FLEMING. So—

Dr. GRODOWITZ. We are—I mean, I just talked to Evan Canes of Louisiana Fish and Wildlife. He works at Bistineau.

He's telling me they only have 50 acres compared to what they had over a thousand, so, I mean, yes, we're really lucky, but I think that one good summer and extended fall season where it's very warm, you're going to see salvinia unless you really keep on top of it.

Dr. FLEMING. Right.

Dr. WESTBROOKS. When you have a mat—it's like insulation. It doesn't matter how—it can get zero. I've seen it in ice. I've seen the plant in ice in North Carolina and, of course, that would die.

But if you get a mat—and the plants in the middle are what are surviving, you know. They can just sort of sit there, and it may get down to degrees, but, you know, that's the issue is the mat, the ability of the plant to form a mat that thick.

Dr. FLEMING. Yes.

Dr. WESTBROOKS. And it's the stuff in the middle that is surviving. I say anything on the surface is definitely getting—

Dr. FLEMING. Right. Well, let me ask you this: Short of being able to have a weevil that will survive through the year, if we've got a higher population to the plant faster, could that really make a difference?

If we can doing a better job of getting thousands, maybe millions of weevils put out and put out in a timely way, do you think that would have a more significant impact?

Dr. GRODOWITZ. Yes. I think that's very important. That's what we've been striving for, and I think that we've have had some success with the use of cold frame in Lake Caddo, and hopefully we'll go and see the rearing facility.

They released I believe 70,000 weevils fairly early. Our facility was just now starting. We were able to release fairly early as well.

So the faster you can get the weevils out there, as long as there's a good matter of salvinia, I think you're going to see an impact faster as well, and we really need—

And one of my things I talked about that were important is that we need to understand that those insects are established out there, so we need to be sampling, we need to be looking because most biocontrol programs, when they fail, it's because we didn't go back and really look and see what's happening. I think that's an important part.

Dr. FLEMING. Right.

Dr. GRODOWITZ. Just throwing out weevils is only part of it. We need to look and see what's happening.

Dr. FLEMING. Right.

Dr. WESTBROOKS. Thank you.

Dr. FLEMING. Thank you. Great information.

Let's talk about impact. Representative Burns, certainly a lot of your constituents are along Lake Bistineau. What impact, if any, has this plant had on real estate values?

Mr. BURNS. Well, it's had a tremendous impact, Congressman. In fact, there are people who, you know, can't even get to the water with a boat from their property.

And the idea of buying there, of course, was to enjoy the recreational amenities of the lake, and that has been taken from them. And, of course, they're willing to wait if we can, you know, do something fairly rapidly.

And, of course, you know, we drew the water down and then we had a drought and so some of the process that we were going to use to help flush the salvinia out, you know, was taken away from us.

So, you know, it seems like each time we turned—I do have a question that's kind of associated with this because I get different answers everywhere I go, and it impacts the ability to move the salvinia out.

Say, if you do get some water entry and you get a little bit of the current flow and move it out, the trees, sir, you know, is a hedge against those moving out, and the question is, is a cypress tree protected.

You know, some people say, you know, environmentalists say, you know, it's a national tree and you can't cut it. Some say that is not true, and I thought maybe this might be a good forum to, you know, have this brought out, if anyone knows the answer.

Mr. BARHAM. You can cut it.

Mr. BURNS. OK. Did everybody get that? You can cut it. And that was my understanding also, but, you know, a number of people—

But in answer to your question, it has impacted real estate and also all the services that support it, the boat docks, the, you know, fisheries, the restaurants, all the amenities associated with enjoyable life on the lake have been impacted very much.

Dr. FLEMING. So you're saying if you have a lake house, you buy a lake house, it's not very valuable if you can't get into the lake.

Mr. BURNS. That is correct.

Dr. FLEMING. OK. Very good. And no question it's had a significant economic impact.

Well, I see my time is up, so I yield to my good friend.

Mr. GOHMERT. Thank you. Well, following up on economic impact, has there been any kind of study done in Texas or Louisiana that any of y'all are aware at the economic impact of giant salvinia on the lake property, recreational usage? Perhaps Parks and Wildlife has noticed fees—

Mr. BARHAM. I'm not aware of a statewide study, anecdotal comments about declining property values, and Representative Burns is exactly right.

There's not a good answer. Drawing a lake down is not the single best thing you can do.

The property values lose a lot of why they're there by the fact that the lake is dry, so that's not the ideal situation. It may be part of a tool flushing out the salvinia. Also, the challenge because you're giving it to go somebody downstream.

That salvinia is not dying. The salvinia that comes out of Bistineau is going down through Loggy Bayou and ultimately into the Red River, so we're just pushing the problem off to someone else.

I have to jump in and say that ultimately the natural control looks like the only way we—the option that I see for the long term, Dr. Sanders has been talking about his weevils came from Brazil, I believe.

He's looking at going into Argentina to see some more cold tolerant varieties perhaps down there or propagating some more winter tolerant varieties here or growing them in a hothouse environment here in the Shreveport area where we get the jump in the spring that you described, Congressman, so where we get a massive input of weevils early in the season when the salvinia is lower. That get—

Mr. GOHMERT. Well, that leads me to another question, though, about does anybody know the cost of raising these weevils, developing them?

Mr. BARHAM. Well, I defer to the folks that do raise them.

Dr. GRODOWITZ. I don't know—

Mr. GOHMERT. Anybody here know?

Dr. FLEMING. We'll get that—

Mr. GOHMERT. The next panel maybe can help us on that.

What other herbicides besides Galleon?

You mentioned Galleon, $1850 a gallon.

Mr. BARHAM. 1851 a gallon.

Mr. GOHMERT. And I thought I was using some expensive paint recently, but that's incredible.

What are some other herbicides that have been in use?

Mr. BARHAM. Well, the water equivalent of Round-up, which is Sonar, I believe, and that's the other that we use.

And, of course, if it's not in the productive crop growing season, you can use 24D in any aquatic environment as long as it's November to March.

You can't use it in the summer in the peak growing time, so you're limited pretty much to Sonar and Galleon is what we've been using.

Dr. GRODOWITZ. There are two really broad types of herbicides that are used for salvinia control. Some are contact herbicides. Some you spray on top of the plant. Kills the plant fairly quickly. There's also contact herbicides that are systemic. 24D is one. It takes a little longer to kill.

But what you know about Fluridone and Galleon, as you put it in the water, you have to maintain a certain concentration at a certain length of time to kill the plant, but it's good because you're killing plants over a larger area, but very, very expensive and hard to maintain concentrations up there.

There are several new registrations, chemical registrations that have come out, penoxulam and flumioxazin, that the Corps of Engineers has been testing right now to look at their effectiveness, especially in combination with the weevils.

So if you have weevils out there, you spray these herbicides, what kind of impacts on the weevils, can you maintain weevil populations, will the weevils come back afterwards.

So those are important applied research type of questions that were asked, and so there is a fairly good arsenal of chemicals you can use against this plant. It just depends on your situation, your budget, and your time frame that you need.

Mr. GOHMERT. Of course, we're dealing with freshwater, in some cases drinking water. What threats do those—whether it's Galleon, Sonar, 24D, what do they pose to other vegetation or to the freshwater itself? Do we know of any risks.

Dr. GRODOWITZ. Well, you know, of any of those contact herbicides, if you spray them on, most—they typically will kill any plant that get sprayed, so you have to be very careful. Your application techniques are very important.

Mr. GOHMERT. Yeah. We don't want to kill any of the hydrilla or water hyacinths, I guess.

Dr. GRODOWITZ. No. We want to keep those over there because they add some beauty to your lakes.

But with any herbicides, if you follow label directions, you're careful with the application techniques—

Mr. GOHMERT. Right.

Dr. GRODOWITZ.—you're not going to have any problems healthwise or—go ahead.

Dr. WESTBROOKS. If there were concerns about drinking water, they would say on the—EPA—it's approved by EPA, don't put it anywhere there's going to be drinking water or something.

So I think most of the water you're talking about is in rivers and lakes and ponds and stuff like that. There wouldn't be drinking water concerns, I guess, unless you had a well beside the lake.

Mr. GOHMERT. Well, is Bistineau used for drinking water? Does anybody know?

Mr. BURNS. Well, obviously it has many multiple uses and all, but, you know, I can't say that it's not being used, that there's no commercial hookup with it or any state sales associated with it now.

We had some legislation look into that as far as Lake Bistineau, but there was real concern on, you know, some of the purchases of water because it wasn't really sure then everybody's water might end up being a water source, and it became a regional—became kind of a regional issue, so—but not to my knowledge, it's not used for drinking water.

Mr. GOHMERT. Thank you.

Dr. FLEMING. OK. The gentleman yields back.

I have one more question here, and that is what is the impact or effect or the danger perhaps to the waterways, such as the Red River?

We understand that it doesn't thrive in moving waterways, but on the other hand, there's always—we know that certainly create a danger to other lakes and ponds just by way of transportation.

But what are the dangers to waterways and through waterways? Anyone on the panel?

Dr. GRODOWITZ. Danger of salvinia?

Dr. FLEMING. Yes.

Dr. GRODOWITZ. Just more than the typical types of—

Dr. FLEMING. Well, could it, for instance, cause navigation problems, the inability to navigate through flowing water?

Dr. GRODOWITZ. For sure, and it's not going to accumulate in fast flowing water, as we're all aware, but even slow-moving waters.

And the example that people use is the Sepik River in Papua New Guinea. It's a huge river, but very slow moving. That whole thing covered with salvinia. They had to move whole villages because they couldn't get out there any more, fisheries.

So that's a very typical example you hear when people give talks about salvinia, so, yes, that is very, very possible.

Dr. FLEMING. All right.

Dr. GRODOWITZ. I think you have to be careful, and if I may make one little statement—

Dr. FLEMING. Yes.

Dr. GRODOWITZ.—that I think is important here.

Dr. FLEMING. Sure.

Dr. GRODOWITZ. We need to talk of this plant. We need to get rid of it, we need to use all the tools that we have available.

But the important thing is that we need to look at why these plants are causing problems in our—besides being there. I mean, several times people have mentioned that we have hydrilla, we have water hyacinths, and we have salvinia.

There are underlying reasons why they're there and why they're causing problems, and I think you hit the nail on the head when you talk about high nutrient levels are really one of the more important, and it's one that we tend not to want to address because it's a hard question to get to.

Lack of native vegetation is also important. I think that we need to control the plant.

We need to get in there, but we need to start asking questions, hard questions, of what is causing these water quality changes in these lakes that allow these plants to flourish.

And I just wanted to mention that. I didn't know that I made that clear very much.

Dr. FLEMING. Right. And the rest of the time I have, I'm just going to open up to the panel to see if you have any additional comments on any of these questions or any—are there any questions we haven't asked thus far.

And, of course, Mr. Gohmert will get a chance to ask questions as well, so I'll open it up to the panel for any further statements.

Dr. WESTBROOKS. Just one more example of the kind of effects this plant can have. Over in Africa, you're talking about flowing water. This may apply more to Caddo Lake or some place like that.

But if you didn't deal with this over the next few years, what happened in Lake Victoria, which is near Kenya over there, they had this thing—this is like four years ago—and it got so—the mats would get so thick that trees would grow in them, so they became floating tree islands. So these things get pushed back and forth on the lake.

Can you imagine a flooding giant salvinia three on Caddo Lake being pushed over there on the Texas side like Jack Hanson loves to talk about here comes the tree island. And so that would be the ultimate thing is I don't think as much in a river, but in a lake especially situation.

But if you had backwaters on a river, if you could have these floating mats that would become so solid like a floating island and

then you have tremendous amount of water coming down through there in a spring or something, it could cause problems down the river, something that you wouldn't notice, say, right now in a drought or something.

So I think that there is hidden potential for problems in the future if you choose to do nothing with this.

Dr. GRODOWITZ. That's for definite sure. If you start having flooding events with salvinia in the waters, you're going to have more damage because you're looking at all this huge biomass in the water being pushed down there, and that's well documented you'll see more damage that way.

Dr. WESTBROOKS. It could actually—I don't know about salvinia, but I know in Florida water hyacinths would pile up against bridge, actually push the bridges out, so I don't know if it's comparable, but it probably could.

Dr. FLEMING. OK. Any others?

Mr. BURNS. I just wanted to bring up what Bill Altimus had said because you talk about all the tools that you can use.

And they're addressing a totally different approach, although they're supporting all the activities that is going on now. They've been working in close contact with Louisiana Tech that has been working on a herbicide.

And they wanted for the Committee to take a look at it also, and also a fungus they're working on.

So you've got, you know, a research institute, Louisiana Tech, working in combination with the Police Juries, which is probably Webster, Claiborne, Desoto, Bossier Parish also, and they're willing to provide this.

They have some type of agreement with a company called C-Pro Corporation to evaluate the natural occurring fungus, and everything I've heard mentioned so far has been beetles and weevils.

Do any of the distinguished panelists here have any thumbnail or knee jerk reaction to what I just mentioned versus the weevils and beetles?

Dr. GRODOWITZ. If they can find something that works, I'm all for it.

Dr. WESTBROOKS. A hundred percent.

Dr. GRODOWITZ. But I'm not as familiar—I've heard of some of these things kind of anecdotally, but I'm not sure how far along they would be until they can be used effectively in an operational types of method.

To approve a fungal pathogen for control over a weed, even if it's native, takes a long time to have those kind of approvals done, but if they can find something, I'm all for it.

Mr. BURNS. OK.

Dr. WESTBROOKS. If it were native, if it were from another country, it would have to go through approval at the national level of biological control technical advisory group would actually review a petition like that. So—but if it's native I say—

Dr. GRODOWITZ. But even if a native one, they're very difficult to get through because you have to go through EPA registration.

Dr. WESTBROOKS. EPA.

Dr. GRODOWITZ. Yeah.

Dr. WESTBROOKS. OK.

Dr. FLEMING. OK. Well, thank you panelists and I yield to my friend.

Mr. GOHMERT. Well, I want to follow up what, Dr. Grodowitz, you brought it up.

One of the problems that is a result of having all these invasive species, the water hyacinths, hydrilla, and now giant salvinia, this stuff does die, even though new replaces in many cases, and it goes to the bottom.

And in the old days, like Caddo Lake, where, you know, a giant flood would just sweep all that sediment out and you get, you know, fresh native growth again.

I had one landowner say he bought his property because he liked how deep it was right there at that point in the lake, which means it's normally more expensive property because it's deeper, and it was 15 feet right there where he was located, and now it's seven feet because of all the dead masses that go down and build up.

And then, as I understand it, you've got more nitrogen coming and then it seems like it actually causes it to reproduce more quickly, and so it's an interesting issue to say that we may need to study the effects on the water that causes these non-native plants to all of a sudden take off like they never have in our history.

But I'm just curious in either Texas or Louisiana, is there any money that's been allocated and from the Federal Government toward dredging out some of this old plant mass? Any comments on that?

Are we spending any money to deal with the damage that comes from these masses going to the bottom? Anybody know of any, Texas, Louisiana, or Federal?

Mr. BURNS. I'm not aware of any dredging for the reason of the plants. Only dredging I'm aware of is for navigational issues.

Mr. GOHMERT. Yeah.

Mr. BURNS. And it doesn't have anything to do with the plants—

Mr. GOHMERT. Right.

Mr. BURNS. One of the problems you've got, I will say that you're describing a situation that is striking fear in all of our hearts about losing bodies of water to this plant.

One of the areas I'm most concerned with is the Atchafalaya Basin. It's the largest swamp area in the country—shallow, trees, slow-moving waters.

We just opened the Morganza Spillway. Fortunately we don't—we're not seeing a lot of—we don't see any salvinia at this point that was put into it.

Now, ultimately it's going to get there because it's coming out of the Red River. It's coming down to the Atchafalaya, but that's the place that it will take. It will make—we almost lost Henderson Lake, and that was water hyacinths.

And so we've got some real threats from these type of plants in certain environments, these shallow, slow-moving, tree-strewn, nutrient-rich environments across the Deep South.

Mr. MELINCHUK. If I might just add to that point, I think, you know, we talk about the number of water bodies that are currently infested.

I think our challenge is to make sure that we contain it to those water bodies now, and all the things we're talking about play into this.

It truly is an integrated approach. There is no single silver bullet, but I think—I think, you know, boater education, educating people on what giant salvinia looks like, and to make sure you clean, drain, and dry your boat before you move it to another lake after your weekend on one of these lakes is really going to be key to us containing it within these areas, and then we can focus on control and management on those water bodies and not have to contend with another 35 or 40 in two years. It has that potential if it gets away from us.

Mr. GOHMERT. And one of the things that wasn't mentioned, but I know y'all are aware, Randy pointed out years ago, but I was shocked that you could have a level of water hyacinths and not think you had a salvinia problem.

Pull up the water hyacinths and then there's a mat forming of salvinia up underneath that protected and yet still growing. We've seen that over at Caddo Lake.

But I think you had something else?

Dr. WESTBROOKS. I just want to add one thing. You brought up something really interesting that I haven't even thought about before, and that is if this goes on for a really long time, in other words, you keep fighting this for a long time, you're going to have to figure out how to start cleaning out the lake, even if you kill the stuff and it settles to the bottom.

To begin with, all we know is that it takes oxygen out of the water and is killing fish and stuff like that, but if this organic matter builds up for like peat in the bottom of these lakes, you may have an entirely different problem.

It's going to change the characteristic—ecological characteristics of the lake. Ecologists could respond to that better than me, but I just think that you ought to add that to your list—

Mr. GOHMERT. From what you know, what would that do to the lakes?

Dr. WESTBROOKS. I don't know, but I would really like to have an ecologist take a look at that because that's way beyond weed control.

In other words, if we kill it, then that's all we need to worry about, but you brought up something that is actually—somebody else probably ought to look at that.

And I haven't heard anybody ever even talk about looking at, OK, if we kill it, but if we get four feet of this stuff on the bottom, well, that may be as bad for other reasons.

OK. Sure, you've got your clean water up here, but now the lake is four feet deep. So—

Mr. GOHMERT. Well, good point. Well, thank you so very much.

Dr. FLEMING. I think the gentleman yields his time. We've completed questioning from our first panel of witnesses. Excellent, excellent information. We thank you, gentlemen, so much, but don't go away. We have an excellent—equally excellent second panel coming.

We're going to take a break for five minutes while the panel comes forward. If you want to go to the restroom or whatever, go ahead and be back in five minutes. We'll start promptly.

[Recess.]

Dr. FLEMING. We're going to be getting started in one minute.

As people are getting in their seats, I wanted to mention that there is going to be an entourage of us visiting Caddo Lake today, to actually go out and look at the current situation there with giant salvinia and just see it up close and personal and talk further about it there, share information.

Also, I'll mention about my good friend Louie Gohmert. Apart from being a judge, he's quite an expert at barbecue ribs. He cooks barbecue ribs. I think it's once a year.

Mr. GOHMERT. Actually we're trying to do it three or four times.

Dr. FLEMING. Three or four? He wants to ramp that up. And some of the best ribs you'll ever taste, Texas style ribs right there in Washington D.C.

And certainly he had to battle with Nancy Pelosi a little bit on getting clearance for cooking in the House of—in the office building there; but at any rate, he was able to overcome all obstacles, so we appreciate that.

We're now ready to hear from our second panel of witnesses. They're Dr. Dearl Sanders, a resident coordinator, Idlewild Research Station, Louisiana State University; Mr. Michael Massimi, invasive species coordinator, Barataria-Terrebonne National Estuary Program. Don't ask me to say that again. I'm not sure how close I came the first time.

Mr. Ken Ward, project manager, Department of Public Works, Caddo Parish; Mr. Richard Lowerre, President, Caddo Lake Institute; Mr. Jeff Trandahl, Executive Director of the National Fish and Wildlife Foundation; and Dr. Damon E. Waitt—Waitt; is that correct?

Dr. WAITT. Correct.

Dr. FLEMING. Senior Director and Botanist, Lady Bird Johnson Wildflower Center, University of Texas at Austin.

Like all witnesses, your written testimony will appear in full in the hearing record, so I ask that you keep your oral statements to five minutes as outlined in our invitation letter to you and in keeping with Committee Rule 4(a).

And I think some of you, maybe perhaps all of you, have been here. You've seen how the lights work. Four minutes on green, one minute on yellow.

When it's red, we would want you to wrap up, although we're a little more flexible today than we would be otherwise because we only have two Members asking questions.

And certainly, as you can see from the previous panel, we have a little more flexibility that we can have some more give and take exchange, a little less rigid from how we do it when we have a lot more Members asking questions.

Dr. Sanders, you're now recognized for five minutes, sir.

STATEMENT OF DR. DEARL SANDERS, RESIDENT COORDINATOR, IDLEWILD RESEARCH STATION, LOUISIANA STATE UNIVERSITY

Dr. SANDERS. Thank you, Congressman.

I'm Dearl Sanders with the LSU AgCenter. The AgCenter is the agricultural research and cooperative extension arm of LSU.

Put in our first herbicide screening trial on salvinia in 1999, put in our first biocontrol trial on salvinia in 2001. Twelve years later, we have gotten three new herbicides labeled for use to put in the toolbox.

We've reared 1.3 million weevils for release. A million of them were released up here in your district.

So why are we here today if we have all these good control tools? The bottom line is that all of these control tools have weaknesses. It boils down to something that's already been addressed today.

We did a growth study back several years ago, released into a pristine environment, good growing conditions. These weevils out about—or the plants out about 35 or 40 days after you put them in an area, reaching 80 percent growth rate per day.

That means that it—not biomass, but area covered—doubles every day and a half. That means you can't have any misses with these treatments or you're right back where you started.

The foliar materials that are out there are effective, but as Mr. Adley put it earlier, it's like peeling an onion. You just have to peel off layer after layer after layer after layer. It's expensive and requires a lot of tenacity to go out and spray the same body of water every two weeks for the rest of your life.

The total water volume treatments that were mentioned, Secretary Barham mentioned Galleon, an excellent material, but you're putting a million dollars—500 gallons eats up about a million dollars, a million dollar treatment, and you're betting it's not going to rain 35 days from now. That's a hard bet to make.

Weevils, we've had good success with weevils in south Louisiana. I've had, oh, two nurseries operating, two more harvested this year, three more for harvest next year, three more on the books for 2013, started making releases 2007, made massive releases in 2009.

We've cleaned up about ten or 11,000 acres of salvinia in south Louisiana. It didn't get cold there. We put a million weevils up here in your district in 2009, and January 2010 we lost a million weevils to the cold weather. So you can see the problems associated with all this.

Now, there are some things that I can tell you up front about the weevils that we do know for sure, and we've done grass carp trials, salinity trials, fertility trials, DNA trials.

We've got a huge ream of information on this thing, nothing that's led us to believe that we've got a silver bullet on this.

Now, what I can tell you about the weevils, in south Louisiana where they have worked, the weevils are never going to eradicate giant salvinia.

Where they exist in Brazil—and I've been there—they live in equilibrium, a few plants, a few weevils. Plants get increasing, the weevils increase. It's an equilibrium, but not an eradication.

Where it takes about two to three years in south Louisiana for them to start showing tracts of open water, you're making progress. There's a tipping point.

You have to have about 40 weevils per kilogram of giant salvinia to reach that tipping point to where the weevils are destroying more of the salvinia than the salvinia can replace.

Once you reach that point, it tips over real quick, but it takes about two to three years to reach that point, or it has since 2007.

The other thing is the things don't fly. Almost all weevils in the world have the capability of flying. The boll weevil, the sweet potato weevil, they all fly. This little booger won't fly no matter what you do to him.

That means you can have two bodies of water. You can have Toledo Bend and Sam Rayburn, not separated by any great distance, but the man is going to have to move the weevils from point A to point B to make this work. That's very labor intensive.

Basically our hope now is to continue with the weevil releases in south Louisiana. We continue to screen herbicides. We're doing all these other tests that really haven't amounted to a whole lot.

We'll continue to do it hoping something will come through. We're going to continue with weevil releases, especially targeting the south Louisiana area. We're making them available for Wildlife and Fisheries for—up here in north Louisiana.

We do have a proposal before USDA now to seek funding to look for a cold-tolerant weevil. Thank goodness Secretary Barham has been around and we're running on a shoestring. Fortunately he's provided the shoestring.

Our efforts to find Federal funding, USDA, NRCS, Corps of Engineers, U.S. Fish and Wildlife, it was even on our earmark list for years before they did away with earmarks, but none of that funding has ever come through, but we're doing with what we can. Thank you.

[The prepared statement of Dr. Sanders follows:]

Statement of Dearl Sanders, Edmiston Professor and Resident Coordinator: Bob R. Jones-Idlewild Research Station, Louisiana State University Agricultural Center

The LSU AgCenter has been involved in investigating and implementing control measures for giant salvinia since 1999.

After its discovery on Toledo Bend Reservoir in 1998, a herbicide screening site was established adjacent to the Sabine River Authority headquarters building at Pendleton Bridge. This screening site was operated for three years and it was where all herbicides registered for aquatic use, all herbicides with pending registrations for aquatic use and many herbicides that could possibly be registered were screened.

With the discovery of giant salvinia near Cameron, La., in 2000, a biological control program was initiated. It is interesting to note that the only effective eradication of giant salvinia in Louisiana was accomplished at the Cameron site by using salt water. The traditional drainage and pumping facilities were temporarily reversed, and the infested canals and associated ponds were filled with high salinity water from the nearby Calcasieu Navigation Channel. After the salvinia had died, the process was reversed, removing the salt water from the system with little, if any, negative effect on the native plant life. Remnant populations of giant salvinia not associated with the drainage system were treated with a herbicide (diquat) by a contract applicator until no live giant salvinia could be located. With the eradication of the giant salvinia from the Cameron location all further herbicide and biological control research was suspended in that area.

The Cameron site was the only infestation site where high salinity water was available in enough quantity to be efficacious. So herbicide screening trials at various locations at Toledo Bend Reservoir continued until 2004.

In 2005, an infestation was identified in the lower Bayou Des Allemands and was traced to the vicinity of the Company Canal. In 2006, large-scale biological control and herbicide trials were established on Golden Ranch near Gheens, La. A 6 acre aquaculture facility was made available by the landowner, stocked with giant salvinia and then infested with giant salvinia weevils obtained from the Corps of Engineers site near Center, Texas. The reproduction of the weevils was limited due to the possible uneven sex ratio of males to females. In early 2007, an active population of weevils was found on Toledo Bend near Negreet, La., and weevils were transported to the Golden Ranch site where they flourished. By 2009, this nursery site had produced approximately 1.2 million adult weevils that were transplanted into 18 water bodies in Louisiana and two in Texas.

In addition to the mass rearing of weevils for release, basic biology research on the weevils was also under way. Studies at the Golden Ranch site confirmed reports in the literature from Australia that under ideal growing conditions giant salvinia can approach an 80 percent daily coverage rate, or, stated another way, the giant salvinia can reach a point where it can double the area of water covered every 1.5 days (Attachment 1).

Basic studies conducted at the Golden Ranch site and in Baton Rouge discovered or confirmed several important things about the weevils:

1. The weevils cannot fly. This is important in planning a distribution system, since any movement of weevils from one place to another that is not directly connected by water is unlikely. The weevils must be moved by people to accomplish any large-scale control program.
2. In southern Louisiana it takes a minimum of two full years for the population to reach a threshold where the weevils consume the salvinia faster than the salvinia can reproduce.
3. Once the weevils reach this threshold, the number of adult weevils increases rapidly, and the amount of available salvinia in the nursery declines as rapidly.
4. In our work, this threshold is approximately 40 adult weevils per kilogram of salvinia (Attachment 2).

Most herbicide screening work was transferred to the Golden Ranch site and continued until 2010 at that location. A number of new herbicides, not available during the initial screenings, were tested at the Golden Ranch site. Of those, three recently were registered for use on giant salvinia thanks in part to our screening work.

At the request of and in cooperation with the Louisiana Department of Wildlife and Fisheries, an extensive grass carp biological control trial was conducted at the Golden Ranch site in 2009. The trial confirmed that grass carp will not eat giant salvinia even when it is the only plant material available. This was not unexpected, since grass carp usually do not consume floating plants and giant salvinia contains a metabolic inhibitor (thiamine inhibitor) that if consumed in quantity is toxic to the fish (and other animals).

A small number of weevil releases were made in 2008. In 2009, working in cooperation with Louisiana Wildlife and Fisheries personnel, approximately 50,000 pounds of weevil-infested salvinia was harvested from the Golden Ranch site and transplanted to lakes throughout northwest Louisiana. This amount of material represents approximately 1 million adult weevils. These weevils were released by Louisiana Wildlife and Fisheries personnel on Lake Bisteneau, Caddo Lake, Cross Lake, Toledo Bend, Clear Lake, Loggy Bayou and Black Lake. An additional 10,000 pounds of infested salvinia was harvested and transplanted to sites in south central Louisiana. Releases in south Louisiana were made in Lake Salvador, Bayou Des Allemands, Golden Ranch, Delta Farms, Bayou Black, Mandalay NWR, Jean Lafitte National Park and the Atchafalaya Spillway. Additional weevil releases were made in south Louisiana in 2010 and early 2011.

The weevil releases in south Louisiana made in 2008 and 2009 have been successful. Several canals adjacent to Bayou Des Allemands that were impassable in 2008 currently are free of giant salvinia. Salvinia populations on Golden Ranch have been reduced by nearly 90 percent. On parts of Delta Farms salvinia has been reduced by 80 percent. Prior to opening of the spillway for flood control in 2011, the areas in the Atchafalaya spillway with weevil releases had substantial reductions in salvinia population densities. Similar salvinia reductions have been observed at other release sites.

It must be noted that the salvinia weevil never eradicates giant salvinia. As in its native Brazil, it consumes salvinia to the point it can no longer maintain huge population numbers—allowing some salvinia and some salvinia weevils to remain somewhat in equilibrium.

The successes discussed above are very encouraging. Unfortunately, the same cannot be said for the weevil releases in northwestern Louisiana. The unusually cold

winter of 2009–2010 and the winter of 2010–2011 that was nearly as cold winter decimated the weevil populations. Samples obtained shortly after Feb. 1, 2010, from Lake Bisteneau indicated no weevil survival. (Samples taken from all release sites in south Louisiana in February 2010 and February 2011 showed good to excellent weevil survival.) The cold winter temperatures also decimated the salvinia populations in other areas, as well, it is unlikely that any weevils survived the cold temperatures in northwestern Louisiana.

The weevil nursery at Golden Ranch was discontinued at the landowner's request. We currently have two nurseries established with plans to harvest weevils in 2011. We have two additional nurseries completed with plans to harvest in 2011 and three additional nurseries in the construction phase.

The results of over more than two dozen herbicide trials conducted by the LSU AgCenter since 1999 have identified a number of herbicides that are effective in controlling giant salvinia when applied according to directions. A number of the effective herbicides have obtained federal registration from the EPA and are available for use. These herbicides can be divided into two groups: foliar sprays and total water treatments. Diquat (Reward), flumioxazin (Clipper) and glyphosate (numerous trade names) are foliar treatments shown to be effective with multiple applications. Fluridone (numerous trade names) and more recently penoxulam (Galleon) are total water treatment herbicides (the giant salvinia absorbs the herbicide through root uptake) often are effective from a single application, but the contact time (time the plants are exposed to the herbicide) may be as long as 60 days. Exchange of water (rainfall, normal current flow, etc.) with the minimum exposure time negates control. Even with these herbicides proven to be effective, chemical control of giant salvinia is problematic for several reasons:

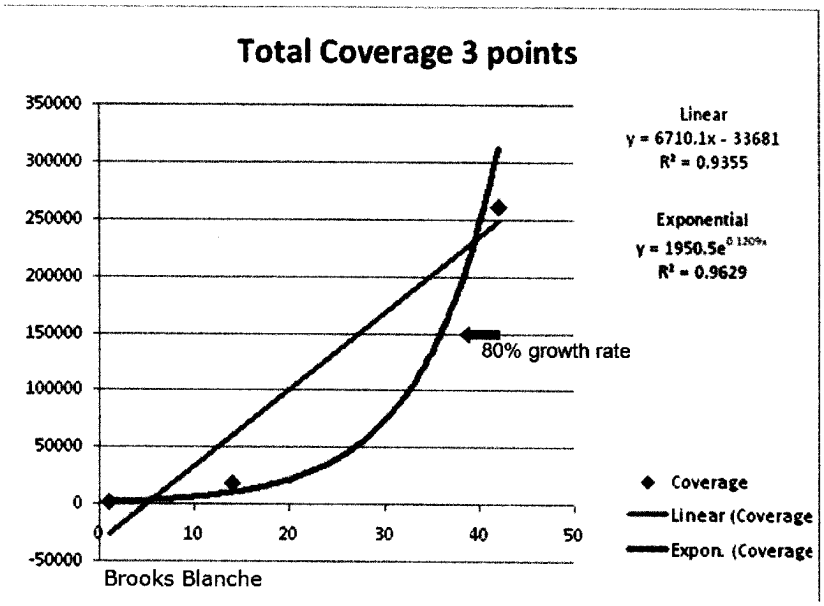
1. All of the foliar applied herbicides require multiple applications to have a significant effect on matted giant salvinia. Multiple applications are expensive and labor intensive.
2. The total water treatment herbicides require long contact times. This works well in small confined areas (ponds with little watershed area), but it often does not work well in larger water bodies with larger watersheds and does not work at all in areas of moving water.
3. All of these herbicides are expensive (as high as $1,600 per gallon on the upper end), and state budgets are limited.
4. With the phenomenal growth rate of giant salvinia (Attachment 1), complete control is difficult to achieve, since only a few surviving plants can repopulate and area in a brief time.

The LSU AgCenter has and continues to operate an outreach program of meetings, publications, videos and so forth to inform the public of the threat of giant salvinia and recommending that the boating public clean their boats and trailers of any aquatic vegetation before launching into uninfested waters. As part of the outreach program, the LSU AgCenter also conducts a series of educational programs in cooperation with the Louisiana Department of Agriculture and Forestry to train commercial and public sector applicators in the proper methods of applying herbicides to giant salvinia and other nuisance aquatic plants.

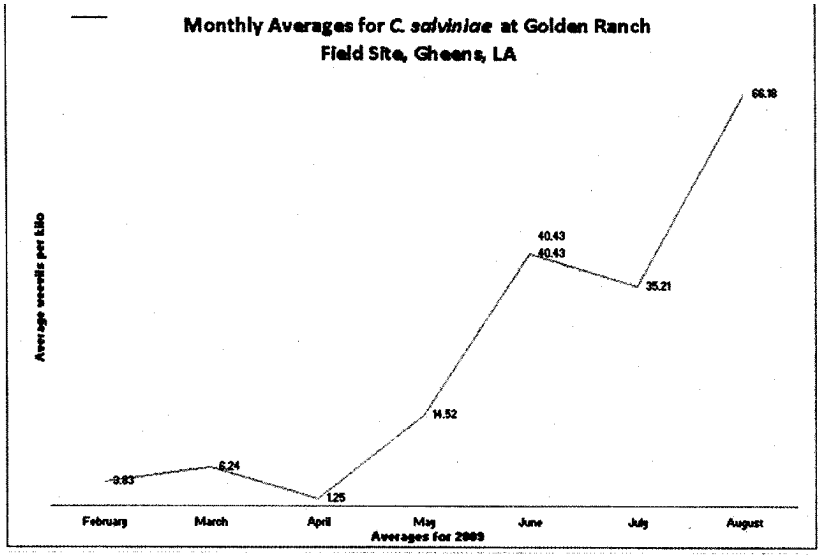
Future research plans include a continuation of the herbicide screening program and refining/increasing our salvinia weevil production capabilities. Of specific interest is research directed at hopefully finding a strain of the salvinia weevil that can accommodate the low winter temperatures northwestern Louisiana experienced in 2009–2010 and 2010–2011. Additional research will be predicated on finding additional research funds.

In conclusion, we believe herbicide sprays and weevil releases will reduce the levels of infestation of giant salvinia in south Louisiana to acceptable levels, but eradication is very unlikely. Applications of herbicides should be made on new and accessible locations. Salvinia weevil releases should be made in more remote areas and where herbicide applications are not cost effective. Unless a cold-tolerant strain of salvinia weevil is identified and made available for use in north Louisiana, biological control measures always will be subject to winter kill. Unless and until a cold-tolerant strain is available, salvinia control will depend on herbicide applications and help from mother nature.

This research and extension program has been funded in part by the Johnny Fruge Aquatic Plant Control Fund and from grants from the Louisiana Department of Wildlife and Fisheries, DuPont Corp, Monsanto Corp and BASF Corp.



Attachment 1. Giant salvinia growth curve.



Attachment 2: Salvinia weevil growth curve at Golden Ranch 2009. At the point where the weevil populations reach approximately 40 adults per kilogram of salvinia, the salvinia starts to decline, and the weevils are forced onto the fewer remaining plants.

Dr. FLEMING. Thank you, Mr. Sanders. Mr. Massimi?

STATEMENT OF MICHAEL MASSIMI, INVASIVE SPECIES COORDINATOR, BARATARIA-TERREBONNE NATIONAL ESTUARY PROGRAM

Mr. MASSIMI. Thank you, Mr. Chairman. Thank you, Mr. Gohmert. I'm Michael Massimi from Barataria-Terrebonne National Estuary Program, which, if you're not familiar, is all the land between the Mississippi River and the Atchafalaya River.

It's about a four-million-acre area, roughly triangular, down on the coast, coastal estuaries. We very much appreciate the weevils down there. Thank you.

It's an area that has a lot of environmental problems. We're the fastest disappearing land mass. Everybody knows about Louisiana's trouble with land loss.

The invasive species is no less an issue down there. We have plenty of them. Since I've been there for seven years, we have six new invasive species recorded in the Barataria-Terrebonne just since I've been there.

Plenty of salvinia in the coastal estuaries. It's not just up here in the northern part of the state.

After Hurricane Katrina, we started finding giant salvinia in several new locations. The hurricane definitely spread it around, and my fear is that this river flood of 2011 is going to really spread it a lot farther, into the Atchafalaya basin and then, of course, into the Barataria-Terrebonne system as well.

It's found in the Barataria system, the north rim of Barataria Bay, including in Jean Lafitte National Historical Park, and I believe that we're going to see severe impacts very soon in the Penchant Basin system of Terrebonne. That is where all the Atchafalaya River water eventually went.

So we've already talked about its incredible growth rate. We've kind of already discussed what this thing does. The impacts are very severe.

Total shade, blocking gas exchange on the surface, no oxygen getting through. As the plant decays, that sucks oxygen out as well, and causes fish kills. We're seeing that in the southern part of the state.

The mat is so thick that even your air-breathing animals, even big ones like otters, don't want to go through that.

Ducks will relish our native duckweed, which is a similar floating plant, but it's a thin mat, and ducks can get through it. Ducks will completely avoid a water body covered with giant salvinia.

And then, of course, the human impacts as well. We've already touched on it. Water management structures get overwhelmed. Boating is impossible, even sometimes for larger vessels. A mat three feet thick is going to impede a pretty big boat.

Intakes for industrial water or municipal drinking water get clogged, and one of the questions earlier was about drinking water. I have been informed that Cross Lake now has giant salvinia in it, and that's where the City of Shreveport gets their water from.

So we know what it is. We know how bad it is. We know what it does, and we, I think, have unanimously decided we want to get rid of it. So how do we do that?

We've talked about the chemical control. That's definitely going to be a big part of any comprehensive management plan. We will

rely on herbicides, no doubt about it. The drawback to that is it's very expensive. Using chemicals year after year has other impacts.

And speaking just generally about invasive species biology, invasives love to stir up habitats. They have a much harder time invading an area if every niche is filled with a native species and it's a functioning healthy ecosystem.

You do something to disturb that, the invasives come in. They're great generalists and they're great pioneers of disturbed habitats.

Using chemicals repeatedly knocks back not just your target species, it knocks back a lot of species. You're degrading the habitat in that way, and so it can be a negative feedback or positive feedback, rather, where a further degraded habitat is now primed for further invasion.

And we see this with invasive species helping one another. An invasive actually degrades a habitat, clearing the way for another invasive to come in. Common in invasion biology.

So one thing we can do that hasn't been mentioned is good restoration and restore native vegetation, cut back on the nutrients. That's going to be part of a comprehensive plan as well.

Earlier there was a reference to the interagency control team. I definitely agree with all the recommendations they've put together. More weevils is at the top of that list for me. I'm a huge proponent of biocontrol.

Another thing speaking generally about invasion biology is that imbalance, and you mentioned restoring the natural balance. When a new invasive invades a new area, it's freed from that system of checks and balances. Its predators aren't there. Its diseases aren't there, so that's why they tend to explode and go nuts.

Biocontrol is the one method that tends to restore that natural balance. Now, you can spray chemicals year after year after year, but if the biocontrol program eventually works, and I do suspect that there is a threshold there, you get sufficient numbers enough, you're going to have a self-sustaining population and you start to restore that natural balance.

Eradication, probably not, but, you know, at least it's back in balance where the salvinia is just part of the natural system.

Also, outreach and education is very, very important, especially at the boat launches and for registered boaters and hunters.

The fight against invasive species and salvinia, in particular, it should be multidisciplinary. It should be multijurisdictional. It should be transpolitical.

A good early detection and rapid response program where lots of outreach means lots of eyes in the field, lots of boots on the ground. We have a phone number where they can call and report it quickly. We have assets out there ready where you can go out.

When the infestations are still small, eradication is a possibility. Once they get big, there's no other possibilities, so early detection and rapid response programs should be a critical part of a comprehensive program.

And, finally, I'd like to just say that in invasive species management, we're constantly caught in a reactionary mode, so we're here today to talk about giant salvinia, but we really should take a much more high altitude view and much more widespread and talk about invasives in particular proaction rather than reaction.

There is a nutria bill. There is a feral hog bill, and maybe there will be some salvinia action at some point, but if we can have stricter regulations on what gets imported into this country to begin with, we might avoid the next giant salvinia.

I would even venture to say that giant salvinia was a preventable disaster if we had had stricter regulations on what sorts of plants could be imported.

There is no way giant salvinia would have passed a risk screening. It was well known to be invasive in lots of other places in the world, and it would never have been allowed in if we had a pre-import risk screening program.

And there are some actions that are attempting to do that. Senator Nelson of Florida is introducing the—it's an update to the Lacey Act, which would basically start a pre-import risk screening process for exotic animals and APHIS also has a new action Q37, which would do the same thing for plants.

Basically if we see that they are a problem in other parts of the world and we have a high invasive potential, we don't let them in, and I'd like to see us move toward a more proactive system like that rather than reacting to each new invasive species.

Thank you.

[The prepared statement of Mr. Massimi follows:]

Statement of Michael Massimi, Invasive Species Coordinator, Barataria-Terrebonne National Estuary Program

To Mr. John Fleming, M.D., Chairman, and the Honorable Members of the Subcommittee on Fisheries, Wildlife, Oceans and Insular Affairs:

The invasive floating fern giant salvinia (*Salvinia molesta*) is possibly the most noxious of all aquatic weeds. It is native to southern Brazil where, ironically, it is not particularly abundant or troublesome. Freed from the natural system of checks and balances in its native range, however, giant salvinia has become one of the world's most destructive invaders. Introduced and spread mainly as an ornamental by the horticulture and pond garden trade, it has become established in tropical and subtropical regions on four continents. In the US, giant salvinia is established in at least 11 states, and if current trends hold, it has the potential to devastate freshwater habitats in as many as 20 states.

In Louisiana, giant salvinia first became established in the Toledo Bend Reservoir in 1998. By 2004 it had spread to Terrebonne, Cameron, Lafayette, Jefferson Davis, and Lafourche Parishes. Then came the hurricane season of 2005. While salty storm surge from Hurricane Rita apparently helped wipe away the infestation in Cameron Parish, Katrina did no such favors in the southeastern portion of the state. The widespread flooding and high winds had the opposite effect. Giant salvinia was soon found in the Gulf Intracoastal Waterway, where it was then able to spread into many waterbodies throughout the coastal zone. Boating activity no doubt contributed to the accelerated spread, both along the coast and in the lakes of northern Louisiana. Giant salvinia is currently considered established in at least 15 parishes, mostly in the southeast and northwest of the state, and the river flooding of 2011 will most certainly result in additional introductions. Giant salvinia can thrive in any freshwater area of the state, and I believe that we are, unfortunately, only on the leading edge of the giant salvinia invasion.

The growth rate of giant salvinia is exponential. It doubles its coverage area in as little as a week under good growing conditions. A single plant could cover 40 square miles in three months. Waters infested with giant salvinia quickly become covered by a thick mat of vegetation. The mat can be up to three feet thick at the surface, making navigation impossible, even for relatively large boats. The mat is also much denser than other floating plants, blocking sunlight almost completely and greatly inhibiting oxygen exchange at the surface. The decay of plant masses further deoxygenates the water. The result is catastrophe for native flora and fauna. Hypoxic waters can cause fish kills. Submersed native aquatic plants are shaded out and they die. Habitat is destroyed for air-breathing animals like otters, diving birds, turtles and frogs, which cannot penetrate the mat. Ducks, which relish surfaces covered with the much thinner native duckweed, will completely avoid surfaces covered

with salvinia. There is also evidence that prolonged presence of salvinia mats causes gradual acidification of lakes and ponds.

Giant salvinia infestations have severe human impacts too. Water management structures are damaged or rendered useless, boating and commercial navigation is impeded, intakes for municipal drinking water or industrial facilities are clogged, and recreational uses such as fishing, waterfowl hunting, paddling, or swimming are stopped.

Expensive and laborious efforts across the globe to control giant salvinia have seen mixed results. Chemical herbicides offer some control, but certain characteristics of the plant and its growth present challenges to chemical control. Contact spray herbicides can miss plants and plant parts under the waterline, and the thick mats serve to cover and protect plants buried within them. Systemic herbicides can be difficult to maintain at sufficient concentrations in large or flowing waterbodies. Also, frequent use of herbicides in aquatic settings present environmental and human health concerns.

Harvesting salvinia mechanically can be effective only in very small infestations; otherwise the sheer weight and volume of the wet plants are unmanageable. Booms and other structures to prevent the movement of salvinia can protect small areas, but often get overwhelmed by the massive mats when pushed by wind or current.

Currently, though, there is promise with biological control. A small South American insect known as the salvinia weevil (*Cyrtobagous salviniae*) has been approved for use by the USDA's Animal and Plant Health Inspection Service. The salvinia weevil appears to be completely host-specific, meaning that is cannot survive on plants other than salvinia. It is thus an ideal biocontrol agent. It feeds primarily on the buds, but also the leaves of the plant. Its larvae hatch on the plant and feed on buds and rhizomes. Plants develop brown lesions at the feeding sites that quickly grow and merge. Entire mats can brown over and the plants die and sink. Under the right conditions, salvinia weevils can be extremely effective at controlling giant salvinia.

Weevils have been released in Louisiana since the mid-2000s, so far without dramatic impact, although tremendous progress has been made in Australia and South Africa using the same insect. One of the limitations here is temperature. The insect appears to be slightly more sensitive to cold than the plant, and both are on the edge of their temperature range in Louisiana. Although weevils have been reported to overwinter in Toledo Bend, weevils released in Lake Bistineau in 2009 did not survive the freeze event in January 2010. But biocontrol is a long-term process, and we should not be discouraged. As we have seen with many introduced species, tolerances for environmental conditions often change over time due to selection. We now have four rearing ponds in the state, growing two strains of the weevil, but an expanded rearing operation would be a big step forward in producing effective weevil population numbers.

The fight against invasive species and salvinia in particular should be multidisciplinary, multijurisdictional, and transpolitical. According to the Gulf and South Atlantic Regional Panel of the Aquatic Nuisance Species Task Force, "Spread will continue until combinations of multiple control methods are established and implemented consistently across states and jurisdictions." I agree with the recommendations of this group's salvinia control team, which include significantly increasing the number of weevils to be released, incorporating technology such as satellite imagery and software development to inform monitoring programs, developing new funding strategies, and coordinating collaborative control that can strategically integrate weevil release zones with chemical spray zones and other control efforts.

Giant salvinia, like most invasive species, is an aggressive pioneer of disturbed habitats. Physical disturbance of the landscape or water quality problems such as eutrophication can disrupt native succession and open ecological niches to invasion. Thus another important component of a comprehensive salvinia management plan is to restore aquatic habitats by controlling nutrient runoff, curbing water pollution, and maximizing the presence of native vegetation. To use an often quoted phrase, never leave an empty niche!

When giant salvinia is found to have invaded a new site, or when a new invasive species is reported, it is important to have a robust program of early detection and rapid response. My organization, the Barataria-Terrebonne National Estuary Program, is partnering with the University of New Orleans and the Louisiana Department of Wildlife & Fisheries to produce such an ED/RR program. The goal is to have field identification guides of potential invaders for resource agents in the field, and a clear line of communication that can quickly mobilize assets when a sighting is made, before an invasive species becomes widely established. ED/RR programs require resources and funding, but they are critical to successful invasive species management.

The final piece of the management puzzle is education and outreach. Increased attention to invasive species at the local level should be introduced in school science curricula. Plant pest notices should be sent to people with boat registrations and hunting and fishing licenses. Signage should be placed at public boat launches and parks with instructions on how to minimize the spread of aquatic invasive species. Encouraging good public stewardship of the environment pays for itself over time.

Unfortunately, the recurring theme in invasive species management is reaction. We are constantly trying to chase down the best control practices for each new problem species. We scramble to mitigate damages and restore habitats one invasion at a time. Government action, such as the outdated listing procedure for injurious species provided to the U.S. Fish & Wildlife Service by the century-old Lacey Act, has invasive species biologists caught in a permanent reactionary mode. A species' damage to the environment is a necessary condition for it to be declared injurious, so it has already become established and is highly unlikely to be susceptible to eradication. Controlling invasive species to a manageable level is the best we could hope for in such situations.

Many invasions are preventable. Stronger regulations to control the importation and trade of exotic plants and animals could have prevented such environmentally disastrous invasive species as Asian carp, tilapia, red lionfish, nutria, Burmese pythons, catclaw vine, hydrilla, and giant salvinia. Fortunately, there are new regulations being enacted and proposed that will finally move us toward a more proactive, rather than reactive, approach to invasive species. Senator Bill Nelson of Florida is currently intruding a bill, the Invasive Wildlife Prevention Act, which would bring the exotic animal import provisions of the Lacey Act into the 21st century. It would allow the USFWS the flexibility to conduct risk assessments before a new exotic animal is allowed into the country. Also, the USDA has issued action Q–37 to the Animal and Plant Health Inspection Service similarly allowing them to conduct risk analyses on plants that have shown potential for invasiveness before they are allowed to be imported.

Of all the tools available to combat invasive species, prevention is the only one that definitely works. Proactive approaches like Q–37 and the Invasive Wildlife Prevention Act must replace the old way of doing things. I am certain that giant salvinia would never have been allowed into the country if APHIS had been able to conduct pre-import risk screening. We are stuck with salvinia now, but while the next invasive species could be worse, it can be prevented—if we put the proper rules in place.

Dr. FLEMING. OK. Thank you, Mr. Massimi. Excellent advice. Next is Mr. Ward. You have five minutes, sir.

STATEMENT OF KEN WARD, PROJECT MANAGER, DEPARTMENT OF PUBLIC WORKS, CADDO PARISH

Mr. WARD. Thank you, Chairman. Thank you, Congressman. From Caddo Parish Commission and our Administrator Woodrow Wilson, we would like to say thank you for hosting this hearing in Caddo Parish.

My name is Kenneth Ward. I've been project manager for Caddo Parish for a little over five—almost five years now. I have worked a lot with our Parks Department on Caddo Lake about the giant salvinia issue. We've looked at a lot of different options. I'd like to give you a brief breakdown.

Giant salvinia has been in Caddo Lake since 2006. Its fast growth rate causes many problems to the lake and the people who use it. Giant salvinia can double in size within a week and can become up to three feet deep. This causes Caddo Lake to not be the water resource that it should be.

One million seven hundred thousand (1,700,000) gallons of water every day are used to provide quality drinking water to Caddo Parish residents. Giant salvinia reduces the oxygen in the water, which increases treatment requirements.

The thickness of the giant salvinia also slows down currents, causes suspended solids to settle at the bottom, resulting in increased sedimentation.

Who knows what the problems will be associated with the decaying salvinia at the bottom of the lake?

More than 30,000 people on Caddo Lake each year use it for recreation. Giant salvinia causes dead—large dead zones where floating islands of salvinia harm wildlife as well as recreation. The floating islands create problems for boaters, blocking off large areas of the lake. Reduced sunlight and oxygen cause problems for fish and other wildlife in those areas.

Currently, the Louisiana Department of Wildlife and Fisheries is the lead agency for fighting giant salvinia in Caddo Lake. As the local government agency, Caddo Parish works with the Louisiana Department of Wildlife and Fisheries to address visitors' concerns effectively.

The U.S. AgCenter—LSU AgCenter and Louisiana Tech University are conducting research to provide best ways to battle giant salvinia. They are researching herbicides, weevils, and microorganisms.

Today, no known problem areas exist on Caddo Lake in Caddo Parish, but now that the summer is here, the high temperatures and lack of rain creates the perfect growing conditions for giant salvinia.

In a few short weeks, Caddo Parish—Caddo Lake could be out of control as experienced in 2008. The cold winters for the past two years and the flushing due to the heavy rains last year have forced giant salvinia over the dam and into the currents of the Red River, which has helped clear Caddo Lake.

The Parish of Caddo has worked closely with the Louisiana Department of Wildlife and Fisheries to identify herbicide sprayed area. The Wildlife and Fisheries has a spray crew dedicated to Caddo Lake.

Herbicide spraying works, but it has many limitation. The cost of the herbicide is the greatest. In fact, in past years Louisiana—the State of Louisiana has run out of funds for herbicide and the Parish of Caddo has helped purchase the chemicals for continued spraying.

Manpower for spraying is also very limited. Spraying cannot be applied in the rain or high wind conditions.

Boat launch barriers have been installed at Caddo Parish's Earl Williamson Park in Oil City to help assist giant salvinia from entering the boat launch areas.

This helps keep the plant from attaching to boat trailers during launch and release, but during high winds, giant salvinia can be blown in the barriers, which mean—which cause problems in the launching areas.

Caddo Parish has passed and posted ordinances on the prohibition of transportation and spreading of giant salvinia. Enforcement of such ordinances are very expensive and time consuming.

Signs have been posted at all boat launches to assist in proper notifications, hoping that most users would be concerned that they are not the ones causing the invasive plant to be spread.

Louisiana State University in Shreveport, through a grant with funds from Caddo Parish, is also providing ways to possible solutions for the giant salvinia battle.

Caddo Parish is also providing land to Wildlife and Fisheries for a regional facility to store equipment and supplies to help fight the giant salvinia in northwest Louisiana.

Some other possible solutions are the introduction of weevils in the infested areas. The ability of the weevils to survive our winters and the inability to spray where weevils have been added are the largest limitations.

Harvesting is an option for the open lake areas. Areas with heavy trees and shallows make harvesting virtually impossible. Both of these require funding and large amounts of manpower.

In conjunction with Louisiana Department of Wildlife and Fisheries, the Parish of Caddo is working to save one of our most valuable water resources in northwest Louisiana. The loss of historic Caddo Lake due to giant salvinia would be a loss of a way of life to our parish.

Jobs that derive from the lake would be lost. Families would have to move away from Caddo Lake to find work. Recreational opportunities and high quality drinking water would be lost.

The Parish of Caddo has spent more than $40,000, not to mention the state funds that have been spent, to save this valuable resource.

With research and committed dedication, this invasive plant can be managed in Caddo Lake. Thank you.

[The prepared statement of Mr. Ward follows:]

Statement of Kenneth Lynn Ward, Project Manager, Parish of Caddo, Louisiana

Giant salvinia has been in Caddo Lake for several years. Its fast growth rate causes many problems to the lake and the people who use it. Giant salvinia can double in size in a few days and can become up to three feet deep. This causes Caddo Lake not to be the water resource that it should be.

One million seven hundred thousand gallons of water each day is used to provide drinking water for Caddo Parish residents. Giant salvinia reduces the oxygen in the water, which increases treatment requirements. The thickness of the salvinia also slows down currents causing suspended solids to settle to the bottom resulting in increased siltation. Who knows what problems are associated with the decaying salvinia at the bottom of the lake?

More than thirty thousand people visit Caddo Lake each year for recreation. Giant salvinia causes large "dead zones" where floating islands of salvinia harm wildlife as well as recreation. The floating islands create problems for boaters, blocking off large areas of the lake. Reduced sunlight and oxygen cause problems for fish and other wildlife in those areas.

Currently, the Louisiana Department of Wildlife and Fisheries is the lead agency fighting giant salvinia in Caddo Parish. As the local government agency involved, Caddo Parish works with the Louisiana Department of Wildlife and Fisheries to address visitors and residents' concerns effectively. LSU AgCenter and Louisiana Tech University are conducting research to find the best way to battle giant salvinia. They are researching herbicides, weevils, and microorganisms.

Today, no known problem areas exist on Caddo Lake in Caddo Parish. But, now that summer is here, the high temperatures and lack of rain creates the perfect growing conditions for giant salvinia. In a few short weeks, Caddo Lake could be out of control as experienced in 2008 (see pictures A and B). The colder winters of the past two years and the "flushing", due to heavy rains last year, forced giant salvinia over the dam and into the currents of the Red River which has helped to clear Caddo Lake.

The Parish of Caddo has worked closely with the Louisiana Department of Wildlife and Fisheries to identify herbicide spray locations. Wildlife and Fisheries has

a spray crew assigned to Caddo Lake. Herbicide spraying works, but has many limitations. The cost of the herbicide is the greatest. In fact in past years Louisiana ran out of funds for herbicide and the Parish of Caddo purchased the chemicals for continued spraying. Manpower for spraying is also very limited. Spray cannot be applied in rain or high winds. See pictures C and D of areas before and after spraying.

Boat launch barriers have been installed at the Parish of Caddo's Earl Williamson Park in Oil City to assist in keeping giant salvinia from entering the boat launch area, see picture E. This also, helps in keeping the plant from attaching to boat trailers during launch and pick up. But during high winds, giant salvinia can be blown over the barriers and back into the launching area.

Caddo Parish has passed and posted ordinances on the prohibition of transportation and spreading of giant salvinia. Enforcement of such ordinances are hard and time consuming. Proper enforcement is very expensive. Signs have been posted at all boat launches to assist in proper notifications, hoping that most users would be concerned that they are not causing the invasive plant to spread.

Louisiana State University in Shreveport through a grant with funds from Caddo Parish is working on finding possible solutions to the giant salvinia battle. Also, Caddo Parish is providing land to the Louisiana Wildlife and Fisheries for a regional facility to store equipment and supplies to fight giant salvinia in Northwest Louisiana.

Other possible solutions are the introduction of weevils to the infested areas. The ability of the weevils to survive our winters and the inability to spray areas where weevils have been added are the largest limitations. Harvesting is an option in open lake areas. Areas with heavy trees and shallows make harvesting impossible. Both of these require funding and large amounts of manpower.

In conjunction with the Louisiana Department of Wildlife and Fisheries, the Parish of Caddo is working to save one of the most valuable water resources in Northwest Louisiana. The loss of historic Caddo Lake due to giant salvinia would be the loss of a way of life to our Parish. Jobs that derive from the lake would be lost. Families would have to move away from Caddo Lake to find work. Recreational opportunities would be lost, and high quality drinking water would be lost. The Parish of Caddo has spent more than $40,000, not to mention the State funds that have been spent, to save this valuable resource. With research, and committed dedication this invasive plant can be managed in Caddo Lake.

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

Dr. FLEMING. Thank you very much, Mr. Ward. Mr. Lowerre, five minutes, sir.

STATEMENT OF RICHARD LOWERRE,
PRESIDENT, CADDO LAKE INSTITUTE

Mr. LOWERRE. Thank you, Mr. Chairman, Congressman Gohmert, thank you so much for letting me speak today and——

Dr. FLEMING. You can just pull that mic closer to you so——

Mr. LOWERRE. All right. Is that better? Is it on.

Dr. FLEMING. Yes, it's on.

Mr. LOWERRE. Thank you also for holding this hearing here.

The public awareness of the problem and public awareness of things they can do is a very important aspect of the effort. I believe it's the most important aspect, and that's what I want to talk about briefly.

This hearing, having it here, can help with that whole public awareness campaign that we need to have. I also want to thank Congressman Gohmert for all his support for the work of the Caddo Lake Institute and many partners in Texas for the work that's gone on on the problem over the last five years.

Giant salvinia is a regional problem. We need to solve it with regional solutions. Caddo Lake is a good example. Obviously solving the problem on one half of the lake, the Texas side or the Louisiana side, doesn't solve the problem. We'll still have the problem if we don't solve it on both sides.

The same is true with the region. Having lakes in the area with problems, solving it only on one lake is not going to solve our problems. It's going to move from one lake to another. It's just a matter of time.

I also don't think, as you've heard, that there's any silver bullet, that there's any one agency, Federal, state or local, that's going to solve the problem. We need a public-private partnership that pulls everyone involved together.

We've done that in a decent fashion, but we can build on it. We've learned over the last five years how to do it. We've had amazing, really tremendous help from every Federal agency that's here, along with the Fish and Wildlife Service, the state agencies, the local counties and parishes, the cities have all pitched in.

We've had help from private industries bringing in money, and we've had what I think is an amazing job by a lot of the volunteers, a lot of the landowners around the lake, a lot of the visitors to the lake in helping.

I think that is really what—the way we're going to solve the problem because we just can't afford to spend all the kinds of money to spray as we were told the same 20 acres year after year or month after month.

We've got to do some prevention as we get on top of the problem, whether it be by freeze or by large herbicide or weevil action. We still have to have what you've heard, that early detection, rapid responses to solve the problems as they start, really before they get out of hand.

Those infestations that the local people can handle, and we've had amazing success in many areas with some local shoreline watch where people are actually out there identifying it, calling in rapid response, or taking care of it themselves with rakes and other devices, just to remove those small infestations.

We need that. We obviously need a real effort at the boat ramps, wherever we can reduce the spread of it from lake to lake. Again, volunteers can help there. It's not something that we really expect to see a police force out there issuing tickets.

Education, reminders, maybe some people that are willing to go out there and remind people and help people, gas stations.

Texas Parks and Wildlife has a great I guess what's called pump topper with some information right there as people stop to fill up the tank, getting owners of gas stations and people that work there aware of the problem.

There's things we can do that don't cost a lot of money, but they take some coordination. They take some almost door-to-door activity in some cases to get the people involved.

Once they are involved, and one example is a field guide that was funded by the State of Texas, Alcoa, a lot of individuals participated in it, and it's not just, you know, horrible, here's the invasive species. It's, look at all these great natives we have out here. Learn to identify those also. Learn to understand your system.

It's good that people can then actually identify the invasives and help us and they're ready for the next one, and we know the next one is going to come, too.

So building that grass roots effort is what I hope your Committee will help us do, the state and the Federal agencies, the local will all participate in a partnership.

I think we have seen at Caddo Lake since the—at least the founding of Caddo Lake Institute in 1993 by Mr. Henley that the local participants really do want to protect their resources. Given the opportunity, given the information, the science and the understanding, they can do amazing work.

Again, thank you for this hearing. I appreciate it.

[The prepared statement of Mr. Lowerre follows:]

Statement of Richard Lowerre, President, Caddo Lake Institute

Regional Solutions for Giant Salvinia

INTRODUCTION

Mr. Chairman, thank you for permitting me to address your committee today on the important issue of control of Giant Salvinia. I also want to thank Congressman Gohmert for his support for the work of the Caddo Lake Institute and the many others who have worked hard together on the problem. I also appreciate the subcommittee members taking the time to help address the invasive species issues facing this region and much of the country.

Giant Salvinia is clearly having a very negative impact on this region. You have heard and will hear from many about the problems created by its presence. It is reducing the recreational value of the natural resources in the area. It is depressing the economics of tourism, sport fishing, hunting, and other water-based enterprises. It is depressing property values.

Giant Salvinia is clearly a regional problem. We need to address it together, as a regional problem.

Caddo Lake makes a good example, since it is half in Texas and half in Louisiana. Effective management of Giant Salvinia on only one side of the state line is clearly not a viable approach. Likewise, effective management at one lake in the region is also not sufficient. Because this plant can easily be transferred from lake to lake on boats and trailers, we need to address the problem at all the lakes. If we do not, those lakes that are not treated will simply become the source for infestations and re-infestations of other lakes.

Mr. Chairman, you have assembled a very good set of people with expertise and experience to help this committee address the problems. Moreover, by holding the hearing here, you are helping with the needed public outreach effort. Thank you.

It is that public outreach effort that will be the focus of my testimony today.

The Caddo Lake Institute (CLI) is a non-profit scientific and educational organization with the mission of protecting the ecological, cultural and economic integrity of Caddo Lake, its associated wetlands and surrounding plant and wildlife habitats.

CLI was founded by Don Henley in 1993 and has had the honor of working with the local governments, non-governmental organizations and individuals around Caddo for 18 years. We have worked together to take advantage of opportunities to improve local economic development and to address threats to such development in the region. Giant Salvinia is one of the biggest threats to date.

The public-private partnerships that have developed to work on opportunities and threats can claim significant victories. In the 1990s for example, we obtained a designation for much of Caddo Lake as a Wetland of International Importance under the Ramsar Convention, now signed by over 160 countries. Likewise, the partnership has successfully addressed threats to the lake and wetlands including assuring adequate flows to Caddo Lake.

The successes have been the result of coordination and cooperation among partners once there was consensus on a goal. There is a very strong consensus now that Giant Salvinia is a serious threat and has to be properly managed.

BACKGROUND ON THE WORK ON INVASIVE SPECIES AT CADDO LAKE

Many individuals and organizations have played important roles in the work on invasive species at Caddo Lake. Some of the key individuals are here today.

For example, Texas State Representative Hughes (who is testifying today) has been a strong ally, helping to obtain funding from the State of Texas for the efforts by the Cypress Valley Navigation District to control Giant Salvinia.

Likewise USGS, and especially Dr. Randy Westbrooks, has played a critical role in providing information on control of Giant Salvinia that we could not get from private sources. Dr. Westbrooks continues to be a critical advisor.

Dr. Damon Waitt has also been an important advisor and ally. His website, www.texasinvasives.org serves as an important central location for information on how we can address problems of invasive species.

The National Fish and Wildlife Foundation has helped fund the work of the Caddo Lake Institute—work that CLI hopes to continue. The Foundation has been an important source for funds for other control efforts around the country as well.

There are many others who have helped, but are not represented here today. Alcoa is one of the private companies that has helped fund work at Caddo. Alcoa helped pay for the field guide to aquatic plants of Caddo Lake that helps people identify native and invasive aquatic plant species.

The Northeast Texas Municipal Water District (NETMWD) led a watershed protection planning process that helped coordinate some of the earliest work to manage Giant Salvinia.

The Cypress Valley Navigation District (CVND) has used its limited resources effectively in the application of herbicides.

Last year, the Texas Parks and Wildlife Department (TPWD) initiated a major public education campaign on invasive species focusing initially on the problems in Northeast Texas with Giant Salvinia. Some of their materials are shown in the attachments to my testimony.

It is, however, non-governmental groups and volunteers who have done some of the most amazing work to fight Giant Salvinia. For example, in 2006 and 2007, the Greater Caddo Lake Association of Texas raised money and convinced many volunteers to spend hundreds of hours to build a 2-mile-long net across Caddo Lake and to collect the Giant Salvinia daily as it was captured in the net. A picture and map of that net is attached.

A local landowner, John Sanders, purchased an expensive floating mechanical harvester to allow CLI and others to experiment with such equipment on Caddo Lake and determine if and when such harvesting can play a role in the overall effort, and it can.

Since there are too many partners who have helped to name them all here, I have attached a poster to this testimony which identifies them. The full size poster is located at the Caddo Lake National Wildlife Refuge and is one effort to recognize the many participants in the effort to control invasive species.

It is my belief that only with such an extensive public–private partnership can we solve the problem of Giant Salvinia. There is no single solution; no one entity that can provide all the answers. There are important roles for the people who live, work and play at the affected lakes and rivers. We need to have them involved in a significant way, and we can.

SOLUTIONS

This hearing is an important step in solving the regional problem with appropriate regional solutions.

We need a comprehensive public-private partnership made up of all the potential participants, including

1) the two state agencies with legal responsibilities for management of invasive species,
2) federal agencies with expertise and resources to bring to this two state problem,
3) local governments that can often move more quickly to respond to local problems,
4) universities that bring expertise to the problem, and
5) local non-governmental organizations and individuals who can assume important roles in the effort.

While we are going to have to rely on chemical, biological and mechanical controls, mostly used by governmental entities, it is almost as important to have the owners of property at the lakes, boats used on the lakes and marinas with operations on the lake to serve as inspectors for the effort. They can help identify infestations so the Giant Salvinia can be eradicated before it gets out of hand.

In fact, in the long run, it has to be the local stakeholders who are engaged and want to take responsibility if the management of invasive species is going to be successful.

We had a great start to public education and participation at Caddo Lake. The two-mile net is just one example. We have lost some of our momentum, however. We lost the funding for the volunteer coordination that is needed. And while the hard freeze of 2010 knocked back the Giant Salvinia, it also knocked back public

involvement. That is understandable. The hard freezes did what all our other efforts had not done. In fact, some thought that periodic freezes would solve our problems.

After that 2010 freeze, however, Giant Salvinia roared back. If not for the freeze this past winter, Caddo Lake could have been on its way to very significant coverage by Giant Salvinia this year. We now know that we cannot rely on freezes. We know that Giant Salvinia can take over a lake in just a couple of years, damaging the economic and other values of the lake.

The two freezes in the winter of 2010 and 2011 have given us a new opportunity to reinvigorate people to help. Lakefront landowners and boaters and others can help identify small infestations so rapid response teams can spray or remove the Giant Salvinia.

We had this type of effort at Caddo in the past. We called it a Shoreline Watch. Residents and others were trained and provided field guides and other tools and information to help with search and destroy efforts. They helped identify infestations and some even took actions to remove the Giant Salvinia.

CLI is starting this effort again. We believe we can be more effective this time, having learned from past experience. We also believe we can and should take this approach to other lakes, if invited to do so by the local communities.

CLI and other non-governmental organizations can also build on other work done over the past 5 years. We can, for example, use the materials developed by TPWD and in others states for a broad public campaign. This work will likely be needed just to keep the current effort up, given budget cuts for TPWD. We can also use the videos, PSAs and other ideas that have already been developed. TPWD has agreed to assist.

RESEARCH

I do want to highlight one more critical part of the effort. We need to know what is working now and what can work best under different conditions. Toward that end, the Texas A&M Water Resource Institute has been able to establish an experimental Giant Salvinia weevil rearing facility at the Caddo Lake National Wildlife Refuge. It did so with federal funds, thanks to Senator Hutchison. It has also set up research projects that will help us evaluate the proper role of weevils and other control techniques.

Until last year, we lacked these aspects of the effort. Weevils seemed like a possible solution, but there were different opinions about if and when they should be used. We are learning first hand now that they can be raised in this region and that they can be used to control Giant Salvinia. They will not, however, be a silver bullet. They certainly can be used to help control Giant Salvinia, but here, where we have freezes that kill the weevils faster than the plant, they are not going to be the only tool we need to use.

The weevil facility has another benefit. It provides a great public education opportunity since it is located at the visitor area at the Caddo Lake National Wildlife Refuge.

Mr. Chairman and members of the subcommittee, when you consider options to address Giant Salvinia, I hope you will be looking to expand these facilities to other parts of our region if, as I expect, you learn that these types of facilities are cost effective tools in the fight against Giant Salvinia. Texas A&M, LSU and other universities are the logical grantees for these types of research and experimental efforts.

CONCLUSION

I have a set of recommendations on the opportunity to engage the public in the management of Giant Salvinia. I urge this subcommittee to encourage a strong public role. That is, I believe we need not only the chemical, biological and mechanical systems that our government agencies can bring to the problem, but also the grass roots solutions.

With your help we can find solutions that fit the two-state or regional problem. One of those solutions should be early detection and response assisted by local residents and other stakeholders. Those efforts can be important to:

1. Eradicate Minor Infestations: We can develop better programs to encourage and assist property owners, boaters, local governments and local lake associations to help identify small infestations in public water bodies and report them to others for rapid responses through chemical treatments.
2. Remove Many of the Small Infestations: We can develop better programs to encourage and assist property owners, boaters and others to remove infestations around their boat docks, boat ramps, marinas and other locations to prevent establishment or spread of the invasive species.

To make this happen, I believe we need to raise public awareness throughout the region. We have good models, such as the signs, bumper stickers and other materials developed by the Texas Parks and Wildlife Department.

We also need to reduce the transportation of Giant Salvinia in the region. We can develop better programs to use volunteers and signage at local gas stations and at other locations to encourage boaters to clean their boats and trailers before leaving boat ramps at Giant Salvinia infested waters to help stop the spread of the problem.

And in raising public awareness of the need to reduce the movement of Giant Salvinia, we will have prepared ourselves to address similar problems for the next invasive species to arrive.

Thank you for holding this hearing and the opportunity to provide this testimony.

Attachments:

Pages 1–4: CLI brochure
Page 5: Signage at the weevil-rearing facility on the Caddo Lake National Wildlife Refuge
Page 6–9: TPWD public awareness campaign materials
Page 10: Map and photo of giant salvinia net across Caddo Lake
[NOTE: Attachments have been retained in the Committee's official files.]

Dr. FLEMING. All right. Thank you, Mr. Lowerre. OK. Mr. Trandahl, you're up next, sir.

STATEMENT OF JEFFREY TRANDAHL, EXECUTIVE DIRECTOR, NATIONAL FISH AND WILDLIFE FOUNDATION

Mr. TRANDAHL. Thank you. And I just want to start by thanking both of you gentlemen for taking time and traveling here and holding a field hearing like this.

Invasive species are an issue that there is a lot of confusion around, and yet not a lot of attention paid in Washington D.C. Around the issue, yet it costs our economy $100 billion annually, and it's an enormous drag on communities, and we're seeing that here in this community.

And I run the National Fish and Wildlife Foundation, and we're one of the larger funders in terms of invasive response.

We're a very proud funder of the Caddo Institute, and we look to communities to try to understand not only what are the issues, but does the community support action in terms of trying to respond and is there a multiprong strategy involving several partners on the ground in order to effectively respond.

Many times when invasive species are identified, a lackluster response is done on the ground, and ultimately what we find ourselves in is a worse situation than if we had actually done nothing.

So I believe this is an example where we have the opportunity to really go at this and really be able to control the issue.

But, again, it has to have that community support and voice behind it, and what Rich says about public education is truly one of those key components.

National Fish and Wildlife Foundation, we fund in fifty states. We focus in terms of wildlife sustainability in abundance normally, but in a situation like this, it's about control and eradication.

We want to get the economy and protect the economies that are out there and protect those working landscapes and those individuals, get them that public access that they want for boating, fishing, hunting, or other economic purposes.

We fund roughly $1.3 million annually.

We partner with Fish and Wildlife Service, BLM, Forest Service, and APHIS in doing that, and that $1.3 million that we put on the

ground is one of the largest funds, believe it or not, for invasives in the country. It's quite sad.

We also do work with private partners. There is an enormous need for private resources to step up into the invasive species realm, but it isn't something that's exciting, and it's not always in the headlines.

So we have to help put pressure into those donors and better educate donor bases in order to help build private resources because we all know public resources are so tight.

I have to say, I commend the Institute. Right now we have a request for proposals out there. We run a competitive process as we put money on the ground, and we hope to be looking forward to being a continued partner long into the effort here. Thank you.

[The prepared statement of Mr. Trandahl follows:]

Statement of Jeff Trandahl, Executive Director, National Fish and Wildlife Foundation

Mr. Chairman and Members of the Subcommittee:

Thank you for the opportunity to testify on behalf of the National Fish and Wildlife Foundation (Foundation) and efforts to control and eradicate Giant Salvinia. The Foundation has supported conservation projects in the northwest Louisiana and eastern Texas and specifically funded grants to the Caddo Lake Institute for Giant Salvinia that I will discuss later in the testimony. The Foundation has also provided grants to the Caddo Lake National Wildlife Refuge, Red River National Wildlife Refuge, and other non-profit organizations in Louisiana and Texas working to protect the region's natural resources through conservation and education activities.

The Foundation was established by Congress in 1984 to leverage federal and private funds to conserve fish, wildlife, and their habitats. Since then, the Foundation has developed a successful model of fostering public-private partnerships to address the most significant threats to fish and wildlife populations and their habitats on private working lands and public lands. We have a particularly strong history in working with community-based organizations to support conservation actions that benefit fish, wildlife, plants and other natural resources while positively impacting local economies through improved recreation, tourism, and other business opportunities.

The Foundation has demonstrated its unique ability to bring together multiple federal agencies with state, tribal and local governments and private organizations to implement coordinated conservation strategies through grant-making programs. We employ this collaborative model to address invasive species and thank you for the opportunity to discuss our programs and the challenge of Giant Salvinia.

Caddo Lake and Giant Salvinia

Caddo Lake is a wetland of international significance that supports diverse species of fish, wildlife, and plants and provides unique recreational opportunities for the public. Caddo Lake is a popular destination for waterfowl hunters and fishermen in Louisiana and Texas and attracts visitors from across the country. These sporting activities as well as boating, canoeing, photography, bird watching, camping and other recreational activities are important to the local economy and are inextricably linked to the health of Caddo Lake.

In 1993, Caddo Lake was declared a wetland of international significance by the Ramsar Convention on Wetlands, which is an international treaty that recognizes exemplary wetland systems across the world and provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. Caddo Lake is one of only 27 wetlands in the United States recognized by the Ramsar Convention on Wetlands. The bald cypress forests of Caddo Lake, including trees as old as 400 years, host one of the highest breeding populations of wood ducks as well as prothonotary warblers and other neotropical birds. The forests and wetlands of Caddo Lake are critical for migratory bird species within the Central Flyway, including tens of thousands of migrating waterfowl that utilize Caddo Lake (and other nearby lakes) as resting and feeding grounds.

However, these internationally-recognized wetlands are threatened by Giant Salvinia, one of the world's most noxious aquatic weeds introduced from Brazil as part of the pet industry. Giant Salvinia grows rapidly and spreads across water surfaces, forming dense floating mats that reduce light penetration and result in oxy-

gen depletion of the lake. This prevents growth of natural vegetation, a food source for waterfowl, and the mats of Giant Salvinia also eliminate open water on lake for waterfowl to use for resting purposes. Oxygen depletion below the mats of Giant Salvinia also impacts fish survival in the lake. Giant Salvinia was first identified in Louisiana in 2005, quickly spread into Texas in 2006, and infests lakes in both states.

Pulling Together Initiative: Supporting Community-Based Solutions to Invasive Species

Invasive species like Giant Salvinia are one of the greatest threats to fish, wildlife, and plant biodiversity facing the United States and disrupt the economy and ecology of our nation. Invasive plants threaten private working lands and publicly protected lands and infest over 100 million acres in the United States. On public and private lands and waters of this country, invasive species negatively impact the natural systems on which we all depend and economic losses are estimated at over $100 billion annually. It is our experience that a community-based, inter-jurisdictional approach based on a comprehensive and adaptive management plan is necessary to effectively address the problem of invasive species such as Giant Salvinia.

In order to help address the problem of invasive species, the Foundation and its federal agency partners established the Pulling Together Initiative in 1997 to provide financial support to help local communities effectively manage these plant invaders through cooperative management strategies for their control, eradication, and prevention.

The Pulling Together Initiative was created to specifically address the large scale problem of invasive plants in the United States by engaging a variety of local stakeholders in a comprehensive, long-term strategy to reduce the problem. The Foundation, in partnership with the U.S. Fish and Wildlife Service, Bureau of Land Management, USDA Forest Service, and USDA Animal and Plant Health Inspection Service, brings together landowners, citizen groups, and weed experts to develop and implement strategies for managing invasive plant infestations on public lands, private working lands, and other natural areas. The cooperative approach of the program has played an instrumental role in invasive plant management across the country.

Interest in the program is strong and the Foundation was only able to fund one-fifth of the total funding requested in 2010. Grantees include local governments, non-profit organizations, Refuge friends groups, and others performing on-the-ground conservation efforts to combat invasive plants. All grant awards must be matched by non-federal contributions from project partners on at least a 1:1 basis. To date, the program has awarded $17.9 million to 541 projects. Leveraged by an additional $37.6 million in partner contributions, these grants have resulted in a total of $55.5 million for local communities fighting invasive weeds.

In addressing invasive plants, grants emphasize the importance of local support by private landowners, state and local governments, and the regional/state offices of federal agencies that are committed to working together to manage invasive plants across their jurisdictional boundaries. To be successful, a long-term weed management plan should be developed based on an integrated pest management approach using the principles of ecosystem management and the plan should include a public outreach and education component.

We have found that the most successful approach to addressing invasive species is through Weed Management Areas—formal partnerships among public and private landowners working together using natural rather than political boundaries, such as a watershed, ecosystem, landscape, or county. The Pulling Together Initiative has helped to create numerous local Weed Management Areas, fund their ongoing stewardship work, and educate local communities about the magnitude of the crisis posed by the spread of invasive plants and what they can do to help address the problem.

The Foundation had an independent evaluation of the Pulling Together Initiative in 2009 to assess the effectiveness of the program and opportunities for improvement. They found that the grants result in strong and diverse partnerships and catalyze the formation of robust weed management organizations. In nearly all cases for the grantees surveyed, partnerships and weed control activities continue after the grant has ended. The evaluation concluded that the successful grantees engaged in weed control as a primary activity, utilized a variety of innovative approaches, and incorporated educational and public outreach activities. Most grantees utilize volunteers which help to extend resources and involve the broader community. With these comprehensive strategies in place, grantees reported a significant degree of success and "better controlled" weed infestations.

Pulling Together Initiative Grants to Caddo Lake Institute

The Foundation awarded grants through the Pulling Together Initiative to the Caddo Lake Institute (Institute) in 2007 and 2008 to address aquatic invasive plants at Caddo Lake. Through these grants, the Institute positively engaged private shoreline-owners, cultivated media relationships, strengthened public education, and facilitated removal of Giant Salvinia from Caddo Lake. Most importantly, the Institute was empowered to work collaboratively with government agencies, residents, and other stakeholders to address Giant Salvinia at Caddo Lake. The Institute received two $50,000 grants through the Pulling Together Initiative. Grant funds were leveraged by $120,664 of matching contributions for a total investment of $170,664.

A key part of the Institute's success has been their public awareness campaign and recruitment of local volunteers. To foster volunteer participation, the Institute attended numerous community meetings and exchanged information with public and private stakeholders about biological, chemical, mechanical, and other physical control strategies. Through meetings with individual shoreline residents, the Institute helped private individuals deploy small-scale containment devices on a voluntary basis. Also during the grant period, the Institute developed and distributed a Field Guide to Invasive Aquatic Plants to help the public identify problem plants and assist in control efforts. Residents became better informed about control strategies and a stronger public participation process was established in partnership with the Texas Parks and Wildlife Department.

The Institute has been successful in working with federal, state and local governments to advance cooperative management efforts through public-private partnerships. Their work actively involves the public and has generated local, state and national media coverage of Giant Salvinia at Caddo Lake. We believe these are important accomplishments and these types of strategies can be employed on a larger scale at Caddo Lake and other areas infested with Giant Salvinia in Louisiana and Texas.

The Foundation has supported the existing partnership at Caddo Lake and we expect to continue to be a partner in the future. However, for the Foundation and its grantees to be effective, a collaborative and coordinated effort between the states with community engagement is necessary. We look forward to working with organizations and agencies in the region to build on their existing work and comprehensively address the problem of Giant Salvinia in the future.

Once again, thank you for the opportunity to provide testimony on this subject and we look forward to working with you to address this issue and other conservation concerns.

Background on the National Fish and Wildlife Foundation

As of FY 2010, the Foundation has awarded over 11,000 grants to national and community-based organizations through successful partnerships with the Department of Interior Agencies, USDA's Forest Service and Natural Resources Conservation Service, the Environmental Protection Agency, the National Oceanic and Atmospheric Administration, and others. This collaborative model brings together multiple federal agencies with state, tribal and local governments and private organizations to implement coordinated conservation strategies in all 50 states. Since its inception, the Foundation has leveraged nearly $530 million in federal funds into $1.8 billion in on-the-ground and in-the-water conservation with less than 5% aggregate overhead to the federal government and fewer than 100 staff nationwide.

The Foundation's grant-making involves a thorough internal and external review process. Peer reviews involve federal and state agencies, affected industry, non-profit organizations, and academics. Grants are also reviewed by the Foundation's issue experts, as well as evaluation staff, before being recommended to the Board of Directors for approval. In addition, according to our Congressional Charter, the Foundation provides a 30-day notification to the Members of Congress for the congressional district and state in which a grant will be funded, prior to making a funding decision.

Dr. FLEMING. Great. Thank you, Mr. Trandahl. And now Mr. Waitt. Dr. Waitt. I'm sorry.

STATEMENT OF DR. DAMON E. WAITT, SENIOR DIRECTOR AND BOTANIST, LADY BIRD JOHNSON WILDFLOWER CENTER, UNIVERSITY OF TEXAS AT AUSTIN

Dr. WAITT. Mr. Chairman and Congressman Gohmert, thank you for the opportunity to speak before your Subcommittee on the important issue of giant salvinia.

As you're aware, invasive species like giant salvinia are of great concern to those of us who care deeply about our natural and national heritage.

But even as we're working to protect that heritage from climate change, land development, and other pressures, natural ecosystems across the country, on our land and in our waters, are facing a less obvious but equally serious threat from non-native invasive species.

I'll add to the bulleted list of problems with invasive species, that they cause from with reducing habitat for endangered species and also to the cost of $137 billion annually, they're also the second greatest threat to native biodiversity, second only to habitat destruction.

Today you've heard a lot about the efforts to control giant salvinia on Caddo Lake, Lake Bistineau, and other bodies of water in Texas and Louisiana.

You've heard from scientists, land managers, and politicians describing their successes and failures, dollars spent, biocontrol initiatives, the impact of freezes and acres treated.

While I'm familiar with these issues, I'd like to take this opportunity to share my personal experience with Lake Bistineau and Caddo Lake.

Lake Bistineau: As the son of a U.S. Air Force pilot, our family moved around quite a bit, and in 1972, we were stationed at Barksdale Air Force Base, and we moved to Bossier, Louisiana.

I was 11 years old when Lake Bistineau became my lake. Bistineau was where we camped, where I caught my first fish, where I was the captain of the jon boat. In my teen years, Lake Bistineau is where I skied, met girls, and snuck my first beer.

Nature deficit disorder does not exist at Bistineau. Like the Spanish moss draped from the cypress trees, Bistineau was draped in nature. You were surrounded by it, immersed in it, and sometimes even intimidated by it, but you could by no means escape it.

It is sad to think that these kind of experiences may no longer be available to the 11-year olds of 2011.

Bistineau helped define me and started me on a path that led to a Ph.D. in Botany, the Wildflower Center, and a passion to protect ecosystems from invasive species.

Caddo Lake: My experience with Caddo Lake came later in life and was primarily secondhand from a woman who grew up in Karnack, Texas.

With her mother dead, her much older brothers gone, and her father running the local general store, there was little time for five-year old Claudia Alta Taylor.

As a child, Claudia found solace in nature paddling the dark bayous of Caddo Lake. The sense of place that came from being close to the land never left her.

She would devote much of her life to preserving it. It helped define her and started her down a path that led to the White House,

Highway Beautification, and the National Wildflower Research Center. That young girl was, of course, Lady Bird Johnson.

And when I talked to her about invasive species when she was still alive, she would describe—she said to me, "Damon, those are plants that have no socially redeeming value."

One of Lady Bird's most famous quotes goes, "The environment is where we all meet; where we all have a mutual interest; it is the one thing all of us share. It is not only a mirror of ourselves, but a focusing lens on what we can become."

I think we all agree that we all have a mutual interest in controlling giant salvinia. The question is what we can become, which leads me to my next point.

Coordination. You have in this room all the ingredients to address the threat of giant salvinia; good research, biocontrol, herbicide programs, committed partners, and volunteer support.

What seems to be lacking is the recipe for success that coordinates these ingredients into an effort that will solve the giant salvinia problem.

And I say coordination, not cooperation.

I think this hearing and all the projects we've heard about are good examples of the cooperation that is already occurring.

My recommendation would be to integrate all the giant salvinia management efforts across the jurisdictional boundaries. There is a good precedent for this approach in the Cooperative Weed Management Areas that are springing up all across the Nation with the exception of Texas and Louisiana.

Cooperative Weed Management Areas are local partnerships that include citizens, city, county, state, Federal leaders, non-profit or for-profit corporations.

Cooperative Weed Management Areas go by different names in different parts of the country. In the northeast, they're called Partnerships for Regional Invasive Species Management, or PRISMs. In the southeast, they're called Cooperative Invasive Species Management Areas, or CISMAs.

Call them what you will, they all share six basic characteristics. They operate within a defined area distinguished by the common weed problem; they involve a broad cross-section of landowners and natural resource managers; they're governed and held accountable by a steering committee; and they have a long-term commitment to cooperation, along with a comprehensive plan.

All this facilitates coordination across jurisdictional boundaries, allows partners to share and leverage limited resources for the benefit of all.

These are highly visible efforts that build community awareness and participation. They improve control efforts by training all partners in use of best management practices.

They provide an early detection and rapid response network, and they can help secure funding, as we heard from Mr. Trandahl.

Having established a coordinated partnership, you will make progress on the giant salvinia problem, be better prepared to address the next invasive species to arrive.

For as long as we leave our guard down and our borders open, new threats will surely arrive, which brings me to my last point.

Prevention. Prevention is the first line of defense. It's the most cost-effective approach because once a species becomes established, controlling it may require significant and sustained expenditures.

Public investment in prevention tools, resources and infrastructure is indispensable in protecting our natural resources.

That and I encourage the congressmen to support two Federal initiatives mentioned by Mr. Massimi; one is the revision of the Lacey Act, to require screening of animal imports and, second, to improve and strengthen the U.S. Department of Agriculture's quarantine provisions for Q37.

Thank you for this opportunity.

[The prepared statement of Dr. Waitt follows:]

Statement of Damon E. Waitt, Ph.D., Senior Director and Botanist, Lady Bird Johnson Wildflower Center at The University of Texas at Austin

Biographical Information

Dr. Damon Waitt is Senior Director and Botanist at the Lady Bird Wildflower Center in Austin, Texas. A self-supporting Organized Research Unit of the University of Texas at Austin since 2006, the Wildflower Center was founded in 1982 and is nationally recognized as an innovative leader in plant conservation and environmental sustainability, as well as the premier national source of information on native plants and landscapes. Dr. Waitt serves as the principal investigator on several projects related to the Wildflower Center's *Pulling Together Invasive Species Initiative* including the Invaders of Texas Citizen Science Program (www.texasinvasives.org). In addition, Dr. Waitt serves on the Invasive Species Advisory Committee for the National Invasive Species Council, is founder and past-president of the Texas Invasive Plant and Pest Council, past chair of the National Association of Exotic Pest Plant Councils and past-president of the Texas Academy of Sciences. Waitt also serves on the Texas Invasive Species Coordinating Committee Advisory Group and acts as the Center's liaison to the National Environmental Coalition on Invasive Species.

Testimony

Mr. Chairman and members of the Subcommittee on Fisheries, Wildlife, Oceans and Insular Affairs, thank you for the opportunity to speak before your group on the important issue of Giant Salvinia (GS). As I am sure you are aware, invasive species like GS are of great concern to those of us who care deeply about our natural and national heritage. But even as we are working to protect that heritage from climate change, land development and other pressures, natural ecosystems across the country—in our backyards, along our roadways, on our farms and ranches and in our waters—are facing a less obvious but equally serious threat from non-native invasive plants. Here are just a few of the problems caused by invasive species:

- After habitat destruction, invasive species are the second greatest threat to native biodiversity. Invasives threaten the survival of native plants and animals, interfere with ecosystem functions, and hybridize with native species resulting in negative genetic impacts.
- Invasive species impede industry, recreation, threaten agriculture, endanger human health, and are becoming increasingly harder to control as a result of rapid global commercialization and human travel.
- Invasive species are a significant threat to almost half of the native species currently listed as federally endangered.
- The costs to prevent, monitor and control invasive species combined with the costs to crop damage, fisheries, forests, and other resources cost the U.S. $137 billion annually.

Today, you are going to hear a lot about the efforts to control GS on Caddo Lake, Lake Bistineau and other bodies of water in Texas and Louisiana. You will hear from field scientists and managers describing their successes and failures, dollars spent, bio-control initiatives, the impact of freezes and acres treated. While I am familiar with these issues, I would like to take this opportunity to share my personal experience with Lake Bistineau and Caddo Lake.

Lake Bistineau

As the son of a USAF Pilot my family moved around quite a bit (Japan, Massachusetts, Minnesota, Panama). In 1972, my father was stationed at Barksdale Air

Force Base and the Waitt family picked up once again and moved to Bossier City, Louisiana. I was eleven years old when Lake Bistineau became my lake. Bistineau was where we camped, where I caught my first fish, where I had my birthday parties, where I was the captain of the Jon Boat. In my teen years, Lake Bistineau was where I skied, met girls and snuck my first beer. Nature Deficit Disorder did not exist at Bistineau. Like the Spanish moss draped from the cypress trees, Bistineau was draped in nature. You were surrounded by it, immersed in it and even intimidated by it but you could by no means escape it. It is sad to think these kinds of experiences are no longer available to the eleven year olds of 2011. Bistineau helped define me and started me on a path that led to a Ph.D. in botany, the Wildflower Center and a passion to protect ecosystems from invasive species.

Caddo Lake

My experience with Caddo Lake came later in life and was primarily second-hand from a woman who grew up in Karnack, Texas. With her mother dead, her much older brothers gone and her father running the local general store, there was little time for little, five-year-old Claudia Alta Taylor. As a child, Claudia found solace in nature paddling the dark bayous of Caddo Lake, under ancient cypress trees decorated with Spanish moss just like Lake Bistineau. The sense of place that came from being close to the land never left her. She would devote much of her life to preserving it. It helped define her and started her down on a path that led to the White House, Highway Beautification, and the National Wildflower Research Center. That young woman was, of course, Lady Bird Johnson, America's Environmental First Lady.

One of Lady Bird's most famous quotes goes: **"The environment is where we all meet; where all have a mutual interest; it is the one thing all of us share. It is not only a mirror of ourselves, but a focusing lens on what we can become."** I think we agree that we all have a mutual interest in controlling the GS, the question is what we can become which leads me to my next point.

Coordination

You have in this room all the **ingredients** to address the threat of GS (research, bio-control, herbicide programs, volunteer support, a management plan, etc.). What seems to be lacking is the **recipe** that combines these ingredients into a coordinated effort that will solve the GS problem.

My recommendation would be to integrate all GS management resources across jurisdictional boundaries. There is a precedent for this approach in Cooperative Weed Management Areas (CWMAs) that are springing up (with the exception of Texas and Louisiana) all across the United States (Figure 1). CWMAs are local partnerships that coordinate efforts to address the threat of invasive plants across jurisdictional boundaries. They include local citizens, city, county, state and federal leaders, and both nonprofit organizations and for-profit corporations. CWMAs go by different names in different parts of the country, for example, Partnerships for Regional Invasive Species Management (PRISMs), Cooperative Invasive Species Management Areas (CISMAs), or Invasive Species Teams or Partnerships. They can be organized in a variety of ways, but they all share six basic characteristics:

1) They operate within a defined geographic area, distinguished by a common geography, weed problem, community, climate, political boundary, or land use.
2) They involve a broad cross-section of landowners and natural resource managers within the boundaries.
3) They are governed by a steering committee.
4) They have a long-term commitment to cooperation, usually through a formal agreement among partners.
5) They have a comprehensive plan that addresses the management of invasive species within their boundaries.
6) They facilitate cooperation and coordination across jurisdictional boundaries.

Why establish a CWMA?

CWMAs cross geographical and political boundaries. Groups that have an agreement in place that allows cooperation across boundaries can address invasive plants on the landscape as a whole, rather than piecemeal. GS doesn't know the difference between the Texas and Louisiana side of Caddo Lake. Coordinated invasive plant management efforts are likely to be much more effective than treating a particular species at different times and with different methods on separate properties.

CWMAs allow partners to share and leverage limited resources for the benefit of all. One partner may have a group of dedicated volunteers, another may have tools or herbicides they are willing to share, and another may have the ability

to send press releases to media contacts. Partners joining together have access to more resources.

CWMAs are highly visible, building community awareness and participation. Cooperative efforts can bring the issue of invasive plants to the attention of state and federal legislators and demonstrate broad support from the community for preventing and controlling invasive species.

CWMAs can improve control efforts by training all partners in the use of best management practices. Training local landowners in control methods can reduce non-target damage and help them select the most appropriate methods for their situation.

CWMAs can provide an early detection and rapid response network by ensuring that all the partners are aware of and are able to identify and respond to new infestations.

CWMAs can help secure funding. An established CWMA can access multiple funding sources, including government grants, private foundation grants, and donations. The "pulling together" concept is attractive to many funders such as NFWF.

Having established a cooperative partnership, you will make progress on the GS problem and be better prepared to address the next invasive species to arrive. For as long leave our guard down and our borders open, new threats will surely arrive bringing me to my last point. . ...prevention.

Prevention

Prevention is the first-line of defense. It is the most cost-effective approach because once a species becomes widespread; controlling it may require significant and sustained expenditures. Public investment in prevention tools, resources and infrastructure is indispensable in protecting human health, agriculture and natural resources. To that end I encourage this subcommittee to take a close look at two federal initiatives:

1. **Revise the Lacey Act to require screening of animal imports.** The Lacey Act provides authority for the FWS to name groups of animals as "injurious species" and thus restrict their import. However, it does not require that animal species being proposed for import be screened for either invasiveness or disease risk first. This creates unacceptable threats to native wildlife, to the economy, and to human and animal health. Thus, Congress should provide the FWS with the necessary authority to screen invasive animals, both terrestrial and aquatic, rather than relying on the Lacey Act's currently ineffective 100 year old provisions.
2. **Speed up and strengthen the U.S. Department of Agriculture's (USDA's) revision of plant regulations to screen out weedy imports.** Intentional horticultural and nursery imports are the top pathway for the introduction of harmful weeds. Other nations have significantly reduced weedy introductions—and have reaped major economic benefits—by adopting risk screening protocols. The United States urgently needs a similar approach. The Obama administration should direct the USDA's Animal and Plant Health Inspection Service (APHIS) to promptly complete its revision of regulations for importing plants, known as Quarantine 37, or "Q–37." APHIS released proposed improvements in 2009 but has not yet implemented them. This effort needs a jump-start by the administration.

Thank you for the opportunity to provide this testimony.

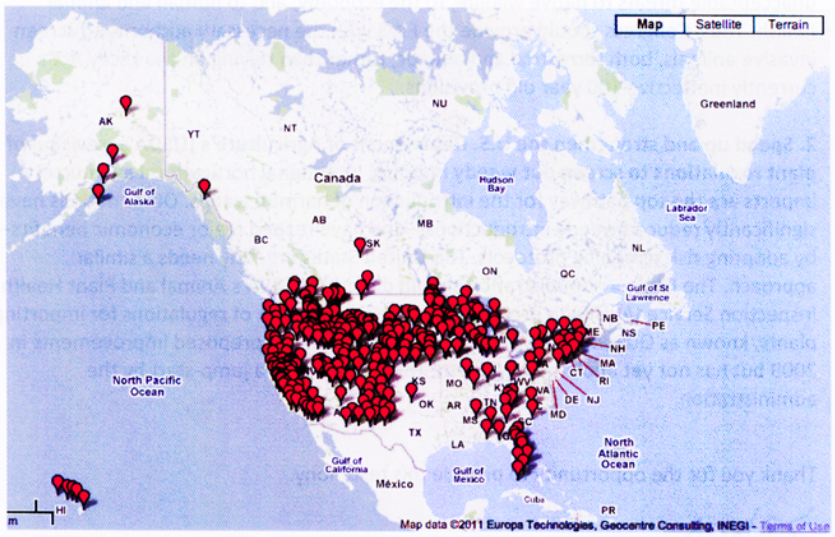


Figure 1. Distribution of Cooperative Weed Management Areas (CWMAs), Partnerships for Regional Invasive Species Management (PRISMs) and Cooperative Invasive Species Management Areas (CISMAs) in North America

Dr. FLEMING. Thank you, Dr. Waitt, and that concludes the initial portion of the second round. We'll go now to the questions. I now recognize myself for five minutes.

Dr. Sanders, I didn't catch it in your oral statements, but in your written statements, you indicate, and I'll quote you, The only effective eradication of giant salvinia in Louisiana was accomplished at the Cameron site by using saltwater.

Dr. SANDERS. That's true.

Dr. FLEMING. I'm intrigued about that. Tell me about that.

Dr. SANDERS. In 2001, we were contacted by Cameron Parish Police Jury. They had an infestation of giant salvinia essentially in the freshwater marsh just north of the town of Cameron.

We went in there and took a long look at it and they tried spraying, spraying, spraying, and it went down the same road we've all been down.

Three years later, 2004, I finally talked them into reversing the flow system. This was a drainage system that keeps the freshwater marsh fresh. It sits right on the Calcasieu Ship Channel.

We hit a period of about 30 parts per thousand of saltwater with a southerly flow during the summer. I convinced them to go against their grandfathers' wishes and reverse the flow in that system. They drained it down, pumped saltwater in there, and eliminated the problem.

The following year and a half later, of course, Hurricane Rita eliminated the town, so it was 15 or 18 feet of saltwater, but the problem had already been solved at that point.

Now, that was essentially a saltwater marsh that had been converted to freshwater over time through man's interventions with water control structures.

I simply did away with that for a very brief period of time. They flushed the saltwater system—the saltwater out of the system after 30 days. Fresh water plants returned, everything was fine.

The problem up here is we're a long ways from the Gulf to get free saltwater. I had access to free saltwater.

Dr. FLEMING. OK. So that technique holds a lot of promise if you have access to saltwater.

Dr. SANDERS. Certainly. We are faced with a—due to—or just realizing that high river flow this year has introduced salvinia into areas previously uninfested of Jefferson, Plaquemines, St. Bernard.

We'll probably look real close at that again this year because those areas do have access to saltwater.

Dr. FLEMING. Well, what would be the possibility or the practicability of not putting saltwater into such a lake, but putting salt in such a lake?

Dr. SANDERS. I was asked that question four or five years ago by a gentleman from Minden, so I actually did the math on that one.

To get the level—the lethal level for giant salvinia is around six parts per thousand or six pounds of salt for every thousand pounds of water. Water weighs about nine pounds per gallon.

You can do the math. It comes up to about something like 750 18-wheeler loads of salt that would be put into the lake.

At that point, you would lose all your cypress trees, as Secretary Barham mentioned earlier.

Dr. FLEMING. The baby goes out with the bath water. And what about if, let's say, that was not a concern, that you don't have cypress trees or whatever? How difficult is it to desalinate the water at that point.

Dr. SANDERS. The water would eventually desalinate in a situation where you have a flow-through lake like you do with Bistineau or Caddo, eventually the saltwater would move downstream. It would dilute itself out, depending on rainfall.

Dr. FLEMING. OK. Very interesting. Let's see. Mr. Trandahl, in 2005, 2007, 2008, the Foundation provided grant money to address the emerging problem of giant salvinia on Caddo Lake. Can you describe how this grant money was spent?

Mr. TRANDAHL. Actually I'll turn it over to Rich. He can give you much more specific.

Dr. FLEMING. OK.

Mr. TRANDAHL. The grant was obviously provided to the Institute.

Mr. LOWERRE. It was great. I should have mentioned this before, how the work from—the funding from the National Fish and Wildlife Foundation supported a large effort of pulling people together, doing a lot of what we talked about, the shoreline watch effort.

We held training sessions because everyone is concerned. It was illegal to possess giant salvinia, so what does that mean for a shoreline person to rake it out of the lake. Is that illegal, you know?

Well, we had to do a fair amount of training just in understanding, and we did sessions. Parks and Wildlife helped, local organizations, local governments helped.

So the funding helped provide essentially a staff person to work, to help coordinate that kind of effort, to help work with the volunteers who did things such as the two-mile net that was put across the lake to try to capture the salvinia, and daily people would go out and clean the nets to try to reduce it.

Those kinds of efforts, trying things like just barriers around boat docks to keep the salvinia out and open up the boat lanes. The mechanical harvester experiment was also part of—was funded in part by the National Fish and Wildlife Foundation.

So it really made it possible for us to experiment and bring a lot of people together working with the state and Federal agencies, who we definitely need there, but bring more people involved and I think successfully at the time.

We hope to be able to bring a lot of that back together and cost expand it to all parts of the lake. We really did focus a lot on Texas and not so much on the Louisiana side.

Dr. FLEMING. I'd like to say parenthetically, I really like this idea about the public-private collaboration partnership. It has a magnification effect on the dollars spent. It's not just a government program. Who cares. The government is going to come and clean it up.

When it's your money, you're a sportsman, you're donating money to the foundation or whatever organization there is and you're going to also make the physical effort.

You're going to make sure your boat is clean, that your gear is clean, that—you know, because if it's not, then you're going to end up paying money to clean that back up again.

So I think it has many benefits beyond just the obvious, which is to—the fact that government has such limited resources now, and so I appreciate what y'all are doing on that.

Mr. LOWERRE. And if I could comment——

Dr. FLEMING. Sure.

Mr. LOWERRE.—quickly. For good or for evil, this does require matching grants, so it does require Lake Caddo Institute to go out and find some funds, find partners.

Dr. FLEMING. Yes.

Mr. LOWERRE. And that's really helpful because it actually brings others involved, also. We had some great help, funding from local governments and private industries.

Dr. FLEMING. All right. Excellent. Thank you. I yield to my friend.

Mr. GOHMERT. All right. Thank you. We do appreciate everybody's opening statement, but even more than your opening statements, I appreciate the work because obviously we have here a collection of people that have taken this very seriously.

And I can tell you personally that, you know, from talking to people in Washington about it, when you're talking about some little sweet, innocent-looking plant, it's hard to get people fired up about it.

You know, they can go online and see the pictures and go, that? That's a threat? And so we appreciate all your efforts because you

don't let appearances fool you. Obviously we're dealing with a difficult problem.

Now, Dr. Sanders, you've mentioned grass carp in your discussion. I don't believe anybody today has discussed that. Was there much of any success with grass carp?

Dr. SANDERS. Congressman, this is another one of these studies that was requested by an outside individual through Wildlife and Fisheries, and all the historical data on grass carp indicate that they don't eat floating plants.

But because of the request, we put in a trial in Gaines in 2007, the grass carp provided by Wildlife and Fisheries. We had different stocking rates and different levels of infestation.

After 90 days—of course, we had a control where we fed catfish commercial feed for the grass carp. After 130 days, the grass carp that had only giant salvinia to eat had—a number of them died, and all of them had lost weight from the time we put them in there. The ones we put se none in the controls were three times as big as when I put them in there.

Basically it boils down to two things; one, they don't like floating plants to start with and, two, something that hasn't been addressed here is that the giant salvinia contains a metabolic toxin, contains a thiamine inhibitor.

The grass carp nibbled on it until they got sick and decided that they would eat mud after that and then die, which is what they did. We cut the stomachs open and simply full of mud.

I've gotten requests for why can't we use this for animal feed, cow feed. Same situation. You have to overcome this thiamine inhibitor problem to keep the cows from getting sick, so it works the same with fish.

Mr. GOHMERT. So grass carp just don't eat it. If they do, they get sick.

Dr. SANDERS. The nastiest trial I ever ran in my life.

Mr. GOHMERT. I've never asked anybody this. They're not edible, are they? Grass carp.

Dr. SANDERS. After having harvested them three or four different times over 120 days, I didn't want to see another grass carp. You're going to have to ask someone else that question.

Mr. GOHMERT. All right. Well, what about the cost of producing weevils? I know——

Dr. SANDERS. That question came up in the previous——

Mr. GOHMERT. Right.

Dr. SANDERS.—panel, so I did some quick math. We produced—in 2009 we produced 1.3 million adult weevils. We did the harvest and turned them over to Wildlife and Fisheries, so transportation costs aren't included in this. You would have to get Secretary Barham for that.

My bottom line on it was about $35,000. That covered the half-time employee for that period of time and supplies.

Mr. GOHMERT. All right. And, again, there's been discussion of how many were needed, but about what area would 1.3 million weevils cover.

Dr. SANDERS. A million weevils came up here to northwest Louisiana and the cold weather got them. The 300,000 were distrib-

uted through about 18 water bodies in south Louisiana, and that's where we've had some success.

We've eliminated about 10,000 acres of salvinia with those weevils to date, and they are continuing to grow and expand.

Mr. GOHMERT. And the question also came up in the last panel regarding the nutrients and too much is not a good thing, obviously, in lakes. Kills off fish and you get situations with plants you don't want.

And before I ask that, let me just comment, because this will be the last question from me this round. My time ran out.

But the public-private partnerships have been mentioned, but I have to thank especially the representatives of private foundations that have done so much for our lakes and waters and trying to keep us in situations where we can enjoy our environment.

And, of course, I've gotten to know Don Henley through Caddo Lake. Nobody has more of a heart for the area in which he grew up than Don Henley, formerly of the Eagles.

And even though he's a devout Democrat, he has done great things for the environment, and we sure appreciate that.

In fact, previously when we were leaving a meeting and I had to run vote, gave the cursory, OK, take it easy, and then I realized that's an Eagle song. Don't let the sound of your own wheels make you crazy, and he said, too late. But, anyway, we do appreciate the work he's done to try to keep Caddo pristine.

But what could, should be done about the nutrients that just continue to be a by-product of giant salvinia, water hyacinths, and hydrilla? Any comments what we could do, what we should do?

Mr. LOWERRE. The one thing we are doing, at least in the Caddo Lake watershed, is working with some Federal and state money on a watershed protection plan where we're working with producers, ag producers on issues of best management practices to reduce the extra nutrients that come into the system.

You know, in some cases it's just a matter of proper balance of phosphorus and nitrogen, and the fertilizers can—meaning we're going to have less of that stuff running into the rivers and systems.

So there are some things on the water quality area that need to be done, continue to be done. Those are the kind of problems that I'm sure all up and down the Mississippi people are facing. We need to solve that.

We've not tried to deal with the problem in the lake, the bank of nutrients in the base, in the bottom yet.

Mr. GOHMERT. OK. Thank you.

Dr. FLEMING. I thank you. The gentleman yields back.

A question for my good friend, you're not referring to the Philadelphia Eagles, you're talking about the band.

Mr. GOHMERT. The band the Eagles, that's correct.

Dr. FLEMING. Yeah, because my staff just advises me that Don Henley is actually touring with the Eagles in Europe as we speak, which is why he's not here today, so maybe we'll get him with the next one.

Mr. GOHMERT. Maybe he's out at the Hotel California.

Dr. FLEMING. Yeah. Back to the weevils, just sorting through all the testimony that we've heard, and certainly the relative cost.

Dr. Sanders, you mentioned $35,000 to treat, I guess, an entire lake in this case with weevils? Is that the proper unit?

Dr. SANDERS. Well, the million weevils got distributed throughout this region up here, and you have to ask Wildlife and Fisheries how many weevils went where. We kind of had the say-so over where they went in south Louisiana.

Basically we were putting about 800 weevils on a 200-yard, 250-yard grid pattern, and the lakes varied from pond size up to 40 or 50 acres, so it kind of depended on how big the lake was.

But that was the target. We were trying to put 800 weevils on a grid pattern.

Dr. FLEMING. OK.

Dr. SANDERS. It seems—and there may be better grid patterns than that, better distribution.

The weevils I can mechanically harvest is pretty easy to do. It's efficient. I've got an elevator. You back into a body of water that's a nursery and you line the trucks up and you load them out.

The problem occurs on the distribution end. You have to distribute these things out of a boat, and we haven't found an easy way to do that.

You have to have people—about 40 or 50-pound totes are about as much as any person can manage in a boat, so you have to get it down to the human level on a distribution end. That's also labor intensive, and, of course, that would be expensive, and that was covered by Wildlife and Fisheries, so——

Dr. FLEMING. Sure.

Dr. SANDERS.—Secretary Barham can give you those figures probably.

Dr. FLEMING. It sounds like relative to herbicide, it's much more cost effective, wouldn't you say.

Dr. SANDERS. Oh, yes. I probably have spent somewhere around 180,000, $200,000 on these nurseries total over a five-year period, and that was less than a single Galleon treatment in Lake Bistineau.

Dr. FLEMING. Right. OK. All right. So that——

Dr. SANDERS. So that will give you kind of a reference on——

Dr. FLEMING. Certainly that suggests that weevils at this point are more promising, and while there's certainly no final answer, that's a more cost-effective treatment.

And we talked about ways of making them survive through cold weather, ways of getting larger numbers to the site sooner in time, and maybe we can improve upon those as well as the weevils themselves.

Well, I'm going to open again up to the panel and ask you if there's any other areas that we haven't discussed or anything else you would like to submit. Any other comments?

Mr. LOWERRE. If I could.

Dr. FLEMING. Yes.

Mr. LOWERRE. I do think at least I have been remiss in thanking the universities and the research institutes because they've—they really are important to the effort, too.

A lot of our money just had to go out to control and treatment, and it's taken a while to, I think, understand, as we said earlier.

You've got to understand what's happening, and when you do that so you can learn from it and do better, more cost-effective systems.

I think the experience we're having at Caddo now with the new facility from Texas A&M and their center for invasive species eradication. Their weevil facility is—it's not only providing us weevils, it's providing us research on what they can do. It's providing us better information on conditions in the lake.

So that's really a critical piece of the puzzle, too.

Dr. FLEMING. OK. Anyone else?

Mr. MASSIMI. Yes. Mr. Chairman, I would just like to—as long as we're talking about the weevils again and comparing the cost to chemical control, another part of that is, you know, if they do over winter them and we do see significant population numbers, that will sustain itself.

The weevil program might not need to be run into perpetuity. Maybe you reach a point where there's enough weevils out there that they're handling it themselves.

Dr. FLEMING. Good point.

Mr. MASSIMI. Not only are you—is it cheaper than using chemicals now,——

Dr. FLEMING. Right.

Mr. MASSIMI.—it's much cheaper in the future if——

Dr. FLEMING. If we can get them to survive through the winter, you don't have to repopulate.

Now, there was a mention that you're able to sort of do that down south. Sort of where is the line where they begin to survive?

Dr. SANDERS. We did do a survey after the January cold spell of 2010 when there was ice formation here.

We had weevils survival up to a line about to Alexandria, and I talked to my counterpart in the Texas, and he said that line pretty much extended westward to about Austin.

Anything north of that line froze out. Everything south of that line survived. Different levels—the closer to the coast you got, the higher the levels of survival obviously.

Dr. FLEMING. Right.

Dr. SANDERS. But, you know, any survival is way better than none because——

Dr. FLEMING. Sure.

Dr. SANDERS.—once you get a population established, you're talking about hundreds of thousands of weevils already in place.

Dr. FLEMING. Do you have to enhance that population, kind of bulk it up periodically, or does it seem to——

Dr. SANDERS. We can speed up the process once you have population established on a body of water.

One of the things we have been able to do is you can recognize where they're starting to take hold. You see discolored salvinia. It starts to turn brown.

What we've had individual landowners do is they go in and relocate from those sites so they have many nurseries on their property.

These are landowners in south Louisiana that have an interest in the process succeeding, so they have—they've taken it upon themselves to transplant these weevils.

The more transplanting you do cuts down on the period of time it takes for the weevils to establish over a broad area.

Dr. FLEMING. All right. Well, certainly from the standpoint of cost effectiveness, the potential harm to humans, animals, and the environment in general, and the overall effectiveness, it sounds like that's the most promising area is weevils.

One more comment? Yes. Go ahead.

Mr. WARD. I'm sorry. Mr. Chairman, we talked a lot about weevils today, and one thing just keeps happening in my mind. Are there any negative by-products or any effects of the weevils?

It's sounds like it's a good—but—you know, good application for giant salvinia, but are we causing another problem? Are we causing an unknown situation that we don't know what we're going to encounter? Is it going to be worse than the giant salvinia, the by-product and the weevil itself?

Dr. FLEMING. Yes. Good question. Dr. Sanders, you——

Dr. SANDERS. Yeah. I'll respond to that. That question comes up every time I have a meeting on weevils. Obviously there's a concern that you're going to release the next new plague upon the earth.

All we have right now are two things. One, the USDA APHIS has cleared this thing. It went through an intensive testing program to make sure it didn't eat anything else.

Second, it's been used on three other continents without any adverse effect, going back about 40 years.

I wanted to know what happened to the weevils when they do eat—consume all the salvinia in a pond. Where do they go? Well, we did another one of these myriad of studies that I've been asked to do.

Dr. FLEMING. Yeah.

Dr. SANDERS. Well, what happens here, it's kind of amazing. They actually swim out of the pond trying to seek another batch of salvinia somewhere, and in south Louisiana, they're all consumed by fire ants, another invasive species.

We did about a dozen studies——

Dr. FLEMING. Yeah.

Dr. SANDERS.—and none of the weevils made it more than about 20 feet from the pond there.

Dr. FLEMING. Right.

Dr. SANDERS. There was a predator waiting to attack them, so——

Dr. FLEMING. Amazing, amazing. You have——

Mr. MASSIMI. If I may, Mr. Chairman.

Dr. FLEMING. Yes.

Mr. MASSIMI. The long history of biocontrol, there's been some horror stories in the past. The King Toad in Australia is probably the biggest example, textbook example of that.

You think something is going to control something, you bring it in, and it's worse than the thing you were trying to control in the first place.

I personally think that those days are long gone. APHIS does a very good job under quarantine. I mean, they test every plant under the sun to make sure that these weevils won't eat anything else. Without any salvinia around, they die. They go away.

Dr. FLEMING. I see.

Mr. MASSIMI. So most invasive species, we're not lucky enough to have a biocontrol agent. It just so happens that the particular relationships between plants and insects are sometimes very, very specific.

This is one case where we have a perfectly host specific biocontrol agent and we're just very lucky to have it. I think it's definitely going to be the biggest part of our control effort going forward.

Dr. FLEMING. Great. Great information. OK. I yield back to Mr. Gohmert.

Mr. GOHMERT. Thank you. And, of course, you know, you've heard me ask the question, what about—isn't there a chance the weevils might eat something else, and I still have that concern in the back of my mind.

But how big are these weevils that we're talking about, Dr. Sanders?

Dr. SANDERS. The adult weevils, the females are slightly bigger than the males. They're about an eighth of an inch long. They're visible to the naked eye. They're pretty easy to see.

One of the things that also will—say somebody introduced a salvinia-like plant that the weevils could potentially eat.

The weevils have a very unique reproductive strategy in that they lay the eggs in these rye zones of these plants. If the rye zones aren't there, then the weevils can't reproduce.

So even if one of them did take a bite out of something that somebody introduced that we aren't—40 years from now that we're not aware of now, they still couldn't reproduce in there, so it would be a single bite and no problem.

Mr. GOHMERT. Well, from all that I've read and much of it coming from people here, I've had a lot of my questions answered.

But just in conclusion, I've got one that has not yet been answered. You've talked about 1.3 million weevils costing $35,000 and how you mechanically can move them and all. Who counts those things?

Dr. SANDERS. Another one of these myriad studies, how many weevils are in a pound of salvinia and the first question we tried to answer.

There's actually entomologists came up with a system decades ago that they run a series of plant matter through, it's called a berlese funnel.

What it is is a—just like the name sounds, it's a funnel with a screen in it.

You put a heat source over the top, in this case a fluorescent light bulb, and the heat and the light forces the live insects down through the plant mass, through the neck of the funnel, down the funnel into some type of collection device. We use little plastic bags.

But after the plant matter is completely dry, we pull them out, we pour them out, we count the numbers of weevils that are in there.

We put a kilo of stuff in, we count however many weevils are at the bottom, and that's how we make the determination, and we make hundreds and hundreds and hundreds of these determinations.

Mr. GOHMERT. Thank you. Thank you. I yield back. Thank you.

Dr. FLEMING. Well, gentleman yields back. Again, fascinating discussion today. Thank you for your information. It certainly makes being a Member of Congress seem a lot easier than what you gentlemen have to do every day, so we appreciate——

Mr. GOHMERT. We deal with weevils.

Dr. FLEMING. Yeah, we do. Indeed we do.

Well, if there are no further questions, I would like to let you know that if there are any other questions from Members on the hearing today, we have ten days to submit these additional questions to witnesses. We would ask that you be willing to respond to us in writing.

I'd like to thank the University for all the assistance, wonderful facility here, auditorium. Thank you for allowing us to use this.

I would like to thank the witnesses and staff, particularly Harry Burroughs, who is our lead staff, who really was in charge of putting this together, and this is not a small logistical thing to put together outside of Washington; Samantha, my staff member as well for her work, and many of the other staff here today.

We will continue to do our very best to work in a cooperative manner to insure that giant salvinia is controlled in Caddo Lake, Lake Bistineau, and other bodies of water.

If there is no further business today, then the Subcommittee stands adjourned.

[Whereupon, the Subcommittee was adjourned.]

[Additional material submitted for the record follows:]

[A statement submitted for the record by William R. Altimus, Bossier Parish Police Jury District 9, follows:]

Statement submitted for the record by William R. Altimus, Bossier Parish Administrator, Bossier Parish Police Jury

On behalf of the Bossier Parish Police Jury, I want to thank the Committee for allowing us to make the following comments concerning this issue. Bossier Parish is one of the three parishes that border Lake Bistineau which has been heavily infested with Giant Salvinia for years. This infestation has made the lake unusable for extended periods of time for those who wish to use it for recreation, fishing activities, and even residing around the lake.

As we are all aware, this weed is a tremendous nuisance and extremely hard to remove and keep out of lakes. Fluctuating water levels and extreme temperatures provided by nature have thus far been the most effective in removing and/or reducing this weed.

I am attaching for the Committee's review an excerpt from the Louisiana Department of Wildlife and Fisheries Waterbody Management Plan Series for Lake Bistineau. This section of the plan details the history and effectiveness of the various attempts of this department in trying to control the Salvinia on Lake Bistineau. I believe this information will be beneficial to your Committee in showing what has been done in efforts to remove the Salvinia from Lake Bistineau.

Also, I would like to bring to the Committee's attention a research project currently underway at Louisiana Tech concerning a bioherbicide agent that has shown success in managing and killing the Salvinia. I believe this project is worthy of this Committee's support, and if proven to be successful, this project be moved through the EPA registration process as quickly as possible. I was provided a brief outline of this project which I now present to you.

"La Tech has a collaborative research agreement with SePro Corporation to evaluate the naturally occurring fungus Myrothecium verrucaria for control of giant salvinia. This project is in the early stages of technical feasibility studies to determine the bioherbicidal potential of the fungus. Pending satisfactory completion of these studies, economic feasibility studies are expected to follow. EPA registration would be required before the fungus could be used as a biological herbicide. Legal

protection for development of the fungus as a bioherbicide is provided by La Tech patents."

I feel that studies like this will ultimately provide the sliver bullet that will be effective and economical in controlling Salvinia.

Thanking you in advance,

William R. Altimus
Bossier Parish Administrator

[NOTE: The report has been retained in the Committee's official files.]

[Cypress Valley Navigation District, Marshall, Texas, "Giant Salvinia Response Program" dated June 1, 2011, submitted for the record follows:]

CYPRESS VALLEY NAVIGATION DISTRICT
MARSHALL TEXAS 75661

GIANT SALVINIA RESPONSE PROGRAM
PRESENTED TO THE RED RIVER VALLEY ASSOCIATION
IN TEXARKANA, JUNE 1st, 2011

The Cypress Valley Navigation District is a political subdivision of the state of Texas. Its responsibility is to maintain navigation on Big Cypress Bayou and Caddo Lake in Harrison and Marion Counties. The Board is appointed by the Commissioners Courts of both counties. . ..5 from Harrison County and 5 from Marion County. They meet 6 times a year alternating between Counties for their meetings.

Caddo Lake has long had a problem with invasive species. . .namely Water Hyacinth. Some say this problem dates back to the Late 1950's when Lake o The Pines was impounded. Other invasive species are also present in Caddo, some cause little problem and some are or have the potential to be major problems.

The worst offenders include;
- Giant Salvinia
- Hydrilla
- Alligator Weed

Others that tend to be more localized are:
- Water Millfoil
- FanWort
- Water Primrose
- Elodea
- Parrot Feather
- Pennywort
- Frog's Bit
- Spatterdock
- Duck weed
- Watermeal
- All types of lilies
- Egieria
- Coontail
- American Lotus

There are **three** main control regimes for invasive species
- Bio Controls,
- Herbicide Application,
- and Containment/Removal of material

Containment/Removal of Giant Salvinia has been tried on Caddo in recent years. A trial using a barge with a conveyor system was used to remove and transport the material to shore was conducted. The trial was successful in that it removed the material from the shallow stumpy environment without breakdowns, however, the overall process was slow and not cost effective for large areas.

Bio Controls have been and are currently being used on Caddo Lake. Bio Controls have been used on Water Hyacinth, Alligator Weed, Hydrilla and Giant Salvinia. Texas A & M and TPWD currently have facilities at the Caddo Lake National Wildlife Refuge in Karnack Texas to raise Giant Salvinia Weevils and release them on Caddo Lake.

Herbicide Applications are on-going on Caddo Lake on both sides of the Lake. LDWF is spraying Giant Salvinia on the La. Side of Caddo while TPWD, CVND, USFWS and Texas A & M are all working together on the Texas side.

The Cypress Valley Navigation District focuses their control efforts on Giant Salvinia and Water Hyacinth using herbicide applications.

We work closely with Texas Parks and Wildlife and follow their Lake Management Plan for Caddo Lake.

CVND's efforts on Giant Salvinia started in 2007 when Giant Salvinia was first reported in the Jeems Bayou area of Caddo Lake. A plan was devised to put up a barricade 2 miles long across the middle of the lake to intercept the floating salvinia. The fence was erected and patrolled daily. It it was effective on stopping large quantities of salvinia but could not stop it all. The fence was destroyed by winds from Hurricane Ike and was subsequently removed from the lake.

CVND has been spraying herbicides since late 2007 first using the Greater Caddo Lake Associations spray rigs and personnel and in April 2008 we received a surplus airboat from TPWD which we retrofitted with a new engine and spray rig. In March 2009 we purchased a smaller boat with a Pro Drive motor and a spray rig on it.

From 2007 to the end of May 2011 we have sprayed almost 4000 acres of Giant Salvinia and over 3000 acres of Water Hyacinth

In 2007 TPWD's annual vegetation survey found only trace occurances of GS on the Texas side of Caddo,

in 2008 the annual survey showed almost 1100 acres

In 2009 the annual survey rang up over 3200 acres, the largest coverage to date.

In 2010 the amount was vastly lower @ 605 acres. This was due to a colder than normal winter along with some higher water levels in the winter of 2009. . .in the winter of 2010 we again had a colder than normal winter and we estimate the Giant Salvinia to cover less than 300 acres currently.

Water Hyacinth levels mimick the salvinia, building up then falling out with high water and cold weather.

Hydrilla and Alligator weed only seem to be increasing in their coverage. Caddo has over 5000 acres of hydrilla as of the most recent TPWD survey.

Alligator weed is spreading as well, covering several hundred acres.

CVND receives funding from several sources. Current funding for fiscal year 2011 is:

Harrison County $17500
Marion County $7500
*TPWD $120,000
USFWS Grant $40,000

TPWD funds are through legislative directive (thanks Rep Hughes!) as follows;

For the previous biennium(2008–2009) 240,000

For current biennium (2010–2011) 200,000

TPWD added $40,000 for this biennium in addition to the 200,000 from legislature to bring the 2010–2011 total to 240,000

CVND has received $685,000 from all sources since 2008. This has been used to maintain navigation which includes herbicide applications for water hyacinth and Giant Salvinia. It also has been used for Barricade construction, maintenance and cleaning as well as rebuilding donated airboat, purchasing and outfitting new spray boat, boat road maintenance and log/tree removal.

CVND currently has a contractor in place that is spraying salvinia using our boats and equipment. Our equipment consists of;

1- 16' American Airboat capable of spraying in excess of 25 acres a day

1- 18' Go Devil mud boat with Prodrive 27hp surface drive engine capable of spraying in excess of 25 acres a day.

Both boats have Kappa 55 pump systems that draw water directly from the lake.

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