H.R. 897, H.R. 3925, H.R. 5441, AND H.R. 6235

LEGISLATIVE HEARING

BEFORE THE

SUBCOMMITTEE ON WATER, WILDLIFE AND FISHERIES

OF THE

COMMITTEE ON NATURAL RESOURCES
U.S. HOUSE OF REPRESENTATIVES

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Thursday, January 18, 2024

U.S. House of Representatives

Subcommittee on Water, Wildlife and Fisheries

Committee on Natural Resources

Washington, DC

The Subcommittee met, pursuant to notice, at 10:02 a.m. in Room 1324, Longworth House Office Building, Hon. Cliff Bentz [Chairman of the Subcommittee] presiding.

Present: Representatives Bentz, Graves, Webster, Carl, Duarte, Westerman; Huffman, Hoyle, and Porter.

Also present: Representatives LaLota; Bonamici, and Courtney.

Mr. BENTZ. The Subcommittee on Water, Wildlife, and Fisheries will come to order.

Good morning, everyone. I want to welcome Members, witnesses, and our guests in the audience to today's hearing.

Without objection, the Chair is authorized to declare a recess of the Subcommittee at any time.

Under Committee Rule 4(f), any oral opening statements at hearings are limited to the Chairman and the Ranking Member. I therefore ask unanimous consent that all other Members' opening statements be made part of the hearing record if they are submitted in accordance with Committee Rule 3(o).

Without objection, so ordered.

I also ask unanimous consent that the gentleman from New York, Mr. LaLota, be allowed to participate in today's hearing.

Without objection, so ordered.

We are here today to consider four legislative measures: H.R. 897, the Alabama Underwater Forest National Marine Sanctuary and Protection Act, sponsored by Representative Carl of Alabama; H.R. 3925, the Youth Coastal Fishing Program Act of 2023, sponsored by Representative Salazar of Florida; H.R. 5441, the Long Island Sound Restoration and Stewardship Reauthorization Act of 2023, sponsored by Representative LaLota of New York; and H.R. 6235, the Harmful Algal Bloom and Hypoxia Research and Control Amendments Act of 2023, sponsored by Representative Bonamici of Oregon.

I now recognize myself for a 5-minute opening statement.

STATEMENT OF THE HON. CLIFF BENTZ, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OREGON

Mr. BENTZ. I want to thank the witnesses for being here today and our Members for their interest in the issues we will be discussing.

While debate in this Committee can often be contentious and partisan, this morning we are considering four bipartisan pieces of legislation that do important work in helping restore and protect coastal communities, protect the environment from hazards like harmful algae blooms, and introduce the next generation to the nation's fishing industry and the marine environment. Across the board, these efforts require effective partnership between Federal, state, and local government agencies, and input from the private sector and other stakeholders.

Over the 118th Congress, Republicans on this Committee have consistently shown that economic activity and energy production do not have to occur at the expense of protecting the environment. Our coastal communities across the Gulf Coast, the Atlantic, and the Pacific are home to some of the United States' most pristine natural resources. At the same time, these coastal communities are some of the country's economic engines, driving industries like energy, maritime transportation, tourism, and fishing.

The balance and direct relationship of these two interests, economic activity and environmental protection, are at the heart of the pieces of legislation we are considering today. For example, one of the bills we are considering would designate a 60,000-year-old underwater forest off the Gulf Coast of Alabama as a National Marine Sanctuary. This legislation would protect a critical resource, one that has been internationally recognized for future scientific efforts and other related activity. While the legislation includes important protections around the borders of the sanctuary,

it also ensures that critical law enforcement and national defense activities, along with energy production that has previously been permitted, are uninhibited.

It also is important to note that it was local fishermen who first discovered this forest: more proof that restoration and recreation can work together.

Another piece of legislation being considered today reauthorizes the Long Island Sound Program, one of the 28 estuaries included in the Environmental Protection Agency's National Estuary Program. The Long Island Sound Program has been successful since its creation in 1985, serving the Sound's communities along New York and Connecticut, along with the entire watershed which extends north to the border with Canada.

This program helps work with local communities to deploy projects that restore the Sound and protect its coasts, sharing the most up-to-date science and data while helping convene working groups of state, local, and Federal partners. The program also helps provide financial resources to localities and other entities working on environmental restoration.

The Sound is also a critical resource for commercial fishing. Montauk Point on Long Island is home to New York's largest commercial fishing fleet. Conducting important research in this region helps improve environmental outcomes like nitrogen pollution, while working with vital interests such as fishing that are critical to the economy.

We are also considering legislation that reauthorizes vital programs that help address and respond to hypoxia events and harmful algae blooms, events that occur across all 50 states, not just along the coast. The Harmful Algal Bloom and Hypoxia Research and Control Act of 1998 created a more formal, robust process across Federal agencies to address these issues. NOAA has found that HABs can have an average annual impact of between $10 and $100 million, and the cost to respond to a single harmful bloom event can be tens of millions of dollars.

In June 2022, the Government Accountability Office found that NOAA and the EPA had made progress in developing plans to conduct research consistent with this legislation, but significant gaps still existed. By reauthorizing this legislation consistent with the GAO's recommendations, important reforms to consider additional impacts from HABs, focusing efforts both on the coast and inland freshwater areas, and more consistently measuring progress, we can respond to threats more effectively, protecting human health and natural environment.

Lastly, we also consider legislation today that aims to get the next generation of Americans interested in the marine environment, particularly fishing. Outdoor recreation, including fishing, made up 2.2 percent of the United States' GDP in 2022, and exposing America's use to those activities is critical to increasing participation in them. By creating a new grant program at NOAA to provide resources to organizations conducting youth fishing activities, we can encourage kids to get outside, help them make lasting memories, build friendships and relationships.

I am looking forward to hearing from the Members that have sponsored each of these bills, and hearing from our witnesses

joining us today. Their perspective on the real-world impacts and benefits of these pieces of legislation is valued as we advance them, along the way of accomplishing key objectives that will help communities that we represent across the United States.

I now recognize Ranking Member Huffman for his opening statement.

STATEMENT OF THE HON. JARED HUFFMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. HUFFMAN. Thank you, Mr. Chairman. It is good to be with everyone. Thank you for braving the weather and joining us today.

Mr. Chairman, I would like to ask unanimous consent that Representative Joe Courtney of Connecticut have permission to sit on the dais and join us today.

Mr. BENTZ. Without objection.

Mr. HUFFMAN. Thank you. So, Mr. Chairman, you said it. We are taking a break from the regularly scheduled combat we sometimes see in this Committee and Subcommittees, and that is a welcome thing from my perspective. It is a good way to start off our first Subcommittee hearing of the new year with four bipartisan bills, all of which focus on protecting and preserving natural spaces or broadening access to outdoor recreation.

Today, we will hear testimony on H.R. 6235, the Harmful Algal Bloom bill by Representative Bonamici. And you said it, Mr. Chairman, harmful algal blooms are a significant threat to marine and aquatic ecosystems in all 50 states and our territories. They grow quickly under particular conditions and produce toxins that poison humans and wildlife. And when these algal blooms die off, their decomposition removes oxygen from the water column, suffocating the surrounding environment. So, it is a huge problem, and it is good that we are taking action.

This bill reauthorizes and updates programs that research and forecast these algal blooms and hypoxia across the United States. Those updates will help us protect communities with tools and partnerships that will improve health and safety of the water bodies that these communities depend on for drinking water, food, recreation, and tourism.

I understand similar language was added to the Science Committee's markup of the Weather Act reauthorization and reported to the House, even though it is actually in our Committee's jurisdiction. But it is good to see progress.

Now, although I support the bill's goal, I have to say that it is disappointing to see that breakdown in regular order. We have heard at length from House Republicans about how important it is for our Committee to work through every bill in our jurisdiction before it goes to the Floor. So, progress is good. I am glad we are having this hearing, and I am hopeful for a timely markup, but I do hope that this Committee will not be scrambling to play catch-up on our Committee's own bills going forward.

In any event, I look forward to hearing from our witness, Dr. Don Anderson, the Director of the National Office for Harmful Algal Blooms and Senior Scientist at the Woods Hole Oceanographic Institution, on the importance of this bill.

We will discuss H.R. 897, as well, today, Mr. Carl's legislation creating a new marine sanctuary protecting a well-preserved underwater cypress forest that is dated 50,000 years old. That is older than most Members of Congress, Mr. Carl.

Mr. CARL. Not in the Senate, though.

Mr. HUFFMAN. Not in the Senate?

[Laughter.]

Mr. HUFFMAN. It is a good bill. I appreciate your work. My understanding is that these trees are an invaluable archive of information, recording past climate and environmental conditions. So, designating this marine sanctuary will protect a unique habitat while still allowing individuals to learn about and enjoy the ancient Alabama underwater forest. As co-Chair, with Mr. Graves, of the National Marine Sanctuaries Caucus, I am excited to see this bill expand the sanctuary network and simultaneously protect communities and underwater treasures.

Today, we will also discuss H.R. 3925, the Youth Coastal Fishing Program Act, which creates a grant program to support youth fishing that prioritizes projects that serve underserved communities. That is very important. These grants will remove financial barriers to outdoor recreation and education, and undoubtedly will foster connection to the outdoors through fishing experiences.

And then finally, H.R. 5441, the Long Island Sound Restoration and Stewardship Reauthorization Act. Long Island Sound, situated between Long Island and Connecticut, obviously supports a lot of important coastal habitats and unique ecosystems. Unfortunately, development and industrial activity throughout the watershed and in surrounding areas have significantly degraded water quality and negatively impacted these ecosystems.

In 1985, Congress created the Management Conference for the Long Island Sound Study to identify and address environmental problems, and through this conference and the Long Island Sound Programs grants are awarded to support projects and studies which help implement conservation and management plans benefiting the Sound and the surrounding watershed. This bill reauthorizes these programs through 2028 to support Long Island Sound Grants and Long Island Sound Stewardship Grants.

I am happy to support all of these bills, Mr. Chairman.

And I yield back.

Mr. BENTZ. I thank you, and I will now introduce our first panel. As is typical with legislative hearings, the bills' sponsors are recognized for 5 minutes each to discuss their bills.

We will begin with Congressman Jerry Carl for 5 minutes.

STATEMENT OF THE HON. JERRY CARL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ALABAMA

Mr. CARL. Thank you, Mr. Chairman, and thank you, Congressman Huffman, for your support on this bill. That really means a lot to us. It means a lot to this country and, obviously, for the environmental community.

My bill, the Alabama Underwater Forest National Marine Sanctuary and Protection Act, is an important measure to safeguard Alabama's ancient underwater cypress forest. Importantly, this bill strikes a balance between conservation and recreation use

of this site. By designation of the underwater forest as a national marine sanctuary, we are preserving a one-of-a-kind, 60,000-year-old natural marvel. There isn't anything quite like Alabama's underwater forestry that has been discovered in this size and this age. The underwater forestry offers an opportunity for the recreational opportunist, such as scuba diving and fishing.

The bill ensures that this site remains protected, prohibiting the removal of ancient trees, while allowing responsible access to the public.

Just like Yellowstone and Yosemite, this forest should be accessible to tourists while protecting from disruptive activity, and this bill does that.

It is crucial to recognize the benefits that will ripple through South Alabama's economy. We are not just preserving a natural wonder, we are laying the foundation for a sustained economic gain. This legislation ensures that the underwater cypress forest remains a source of pride, wonder, and economic opportunities for generations to come.

And gentlemen, I thank you again for your support.

Mr. BENTZ. Thank you, Mr. Carl.

Next is Congressman Nick LaLota, who is recognized for 5 minutes.

STATEMENT OF THE HON. NICK LALOTA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. LALOTA. Thank you, Chairman Bentz and Ranking Member Huffman, for hosting this important hearing today, and for allowing me to waive on to your Committee and to testify about an issue that is of critical importance to my district back home on Long Island: the Long Island Sound Restoration and Stewardship Reauthorization Act of 2023, H.R. 5441.

In 1985, Congress created the Long Island Sound Study, also commonly referred to as the Long Island Sound Program, to identify and address the major environmental and ecological issues affecting the Long Island Sound and its watershed. Since then, Congress has reauthorized and funded the Long Island Sound Program consistently, ensuring that the vision of the program, clean, clear, safe to swim, and charged with life, is a reality for the millions of Americans whose everyday lives are affected by the Sound.

The longevity and health of the Long Island Sound is also critical for Long Island and Connecticut residents. For many, the Long Island Sound and our waterways are our way of life. From environmentalists, to fishermen and anglers, to animal welfare advocates, to engineers and more, the Sound is how folks provide a better future for their families. We must ensure that the Long Island Sound Program continues for generations to come.

Ask anyone on Long Island, really, the Sound has certainly had its fair share of issues. Pollution, over-development, algae, water quality, and dumping are just a few of the issues we have endured over the past several decades. The deterioration of the Long Island Sound and its natural habitats has also been an issue the Long Island Sound Program has addressed, ensuring that endangered native species can thrive in this environment.

One of the biggest issues the Sound has faced is hypoxia, which has created issues for marine life in the Sound, including fish and shellfish. And as of 2022, Federal funding for the Long Island Sound has enabled programs to significantly reduce the amount of nitrogen entering the Long Island Sound from sewage treatment plants by 70.3 percent compared to the 1990s; reduced hypoxic conditions by 58 percent compared to the 1990s; and restore more than 2,000 acres of coastal habitats; and also fund 570 conservation projects.

In Fiscal Year 2023, the Long Island Sound received $40 million, the largest funding level in the history of the program. The House and Senate have both included $40 million for Long Island Sound in their Fiscal Year 2024 appropriations bills, and we are extremely grateful for their work.

The reauthorization of the Long Island Sound Program has never been more important, and we have made incredible progress, but there is much more work to be done, and I look forward to working with this Subcommittee and all of my colleagues to reauthorize the Long Island Sound Program.

I urge all of my colleagues to support H.R. 5441, the Long Island Sound Restoration and Stewardship Reauthorization Act of 2023, and I yield back the balance of my time.

Mr. BENTZ. Thank you. And before we go to our second panel, Ranking Member Huffman has 1 minute of remarks.

Mr. HUFFMAN. If that. But thank you so much, Mr. Chairman. I just wanted to take a point of privilege to acknowledge that today is the final Subcommittee hearing for two Sea Grant fellows who have been doing great work for both the Committee and my personal office.

Basia, to my left, has been sitting in that chair for the past year. And these fellowships are really wonderful for the work that all of us do, but it is a little bittersweet because we get to know these folks and they do great work for us, and then they leave and we start all over again every year. So, thank you, Basia.

And then Austin, behind, has been an invaluable member of my office staff, staffing me on all sorts of natural resource issues.

They are both terrific, science-minded young professionals who are going to go on to do wonderful things, and I just wanted to acknowledge and thank them.

Thanks, Mr. Chairman.

[Applause.]

Mr. BENTZ. I thank the Members for the testimony. I will now introduce our second panel.

Mr. Paul Scholz, Deputy Assistant Administrator for Ocean Services and Coastal Zone Management with NOAA in Washington, DC; Mr. Ben Raines, Environmental Fellow with the University of South Alabama in Mobile, Alabama; Mr. Chris Pickerell, a Marine Program Director with Cornell Cooperative Extension of Suffolk County in Riverhead, New York; Mr. Donald Anderson, Senior Scientist and Director of the U.S. National Office for Harmful Algal Blooms with the Woods Hole Oceanographic Institution in Woods Hole, Massachusetts; and Mr. Mike Lum, Fundraising and Event Coordinator for Captain Rollo's Kids at Sea in San Diego, California.

Let me remind the witnesses that under Committee Rules, they must limit their oral statements to 5 minutes, but their entire statement will appear in the hearing record.

To begin your testimony, please press the "on" button on the microphone. We use timing lights. When you begin, the light will turn green. When you have 1 minute remaining, the light will turn yellow. At the end of the 5 minutes, the light will turn red, and I will ask you to please complete your statement. I will also allow our witnesses to testify before Member questioning.

I now recognize Mr. Scholz for 5 minutes.

STATEMENT OF PAUL M. SCHOLZ, DEPUTY ASSISTANT ADMINISTRATOR, NATIONAL OCEAN SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, SILVER SPRING, MARYLAND

Mr. SCHOLZ. Good morning, Chairman Bentz, and Ranking Member Huffman, and members of the Subcommittee. My name is Paul Scholz, I am the Deputy Assistant Administrator for NOAA's National Ocean Service. Thank you for inviting me to testify today on a number of bills under consideration by the Subcommittee.

The National Ocean Service, along with the other line offices and staff offices in NOAA, is dedicated to positioning the nation to adapt to a future of wide-ranging environmental change that directly or indirectly results from a changing climate. All across America, but especially along our coasts and Great Lakes, Americans are already feeling the effects of these changes on our communities, ecosystems, infrastructure, and livelihoods each day. As a small and nimble organization taking on big challenges, we bring an ethos of partnerships and collaboration to all that we do to meet the growing demand for ocean and coastal data, products, and services.

The National Ocean Service recently adopted a new strategic plan for 2023 to 2027 to help us amplify the positive impact of our program and budget. This new plan enhances synergies across our broad portfolio of authorities and expertise, and aligns closely with the Department of Commerce and NOAA's strategic plans.

Further connecting these efforts with partners across sectors allows us to maximize the reach of our capabilities. The way that we conduct our HAB and hypoxia programs is a great example of this partner-centered approach. Harmful algal blooms occur in every state and territory. And due to the changing conditions in our rivers, lakes, and coasts, they are increasing in frequency, toxicity, and duration.

Since the initial enactment of the Harmful Algal Bloom and Hypoxia Research and Control Act in 1998, Congress has authorized NOAA as the Federal lead for coastal and marine HABs and hypoxia. We share this role with EPA and the Great Lakes. Over the years since, Congress and NOAA have responded to ever-increasing HAB and hypoxia threats with increasing investments in a comprehensive, national approach to research, monitoring, forecasting, and mitigating the impacts of HABs and hypoxia.

Since the last reauthorization of HABHRCA in 2018, NOAA has continued to enhance and expand our operational HAB forecasts and near real-time monitoring networks across the country. We are

also making strides in detecting HAB toxins to safeguard seafood consumers and public health. NOAA coordinates with and supports our Federal partners, tribal governments, and communities, and other stakeholders through grant funding, education and outreach, and citizen science efforts.

The bill before this Subcommittee today would provide a vital reauthorization of NOAA's efforts to better understand HABs and hypoxia, and provide actionable information to decision makers nationwide to safeguard human health, ecosystems, infrastructure, and regional economies.

Also before the Subcommittee today is the Youth Coastal Fishing Act, which would establish a new grant program to support youth's coastal fishing projects across the country. Recreational fishing is not just a cherished pastime for millions of Americans. It also generates billions in economic activity and supports hundreds of thousands of jobs.

We believe that the bill aligns well with NOAA's long-standing mission priorities, as well as the priorities of this Administration. For example, NOAA's National Saltwater Recreational Fishing Policy promotes inclusive and sustainable participation in recreational fishing.

In addition, one of the central goals of the America the Beautiful Initiative is to increase the ability of underserved and underrepresented communities to enjoy the benefits of nature, including recreation.

Many of us who enjoy recreation and nature can intuitively understand how activities like recreational fishing instill a deep appreciation for both nature's wonder and the importance of sound, science-based stewardship.

The last bill before this Subcommittee today that is of interest to NOAA is the Alabama Underwater Forest National Marine Sanctuary and Protection Act, which would designate a new national marine sanctuary off the coast of Alabama. The National Marine Sanctuary System encompasses and protects many of our national treasures in the oceans and Great Lakes. Many sanctuaries are highly valued destinations for boating, diving, fishing, wildlife viewing, and more. To conserve these qualities for current and future generations, sanctuaries provide comprehensive management while allowing for multiple uses, both recreational and commercial.

We appreciate the support of Subcommittee members for our sanctuary mission, and I would especially like to give a shout out to Congressman Graves and Congressman Huffman for your leadership on the National Marine Sanctuary Caucus. Thank you.

In closing, NOAA is proud to serve as the steward of America's ocean, coastal, and Great Lakes resources. We appreciate the Subcommittee's attention to these bills to enhance our mission, and I look forward to your questions.

[The prepared statement of Mr. Scholz follows:]

PREPARED STATEMENT OF PAUL M. SCHOLZ, DEPUTY ASSISTANT ADMINISTRATOR, NATIONAL OCEAN SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE

ON H.R. 897, H.R. 3925, H.R. 5441, AND H.R. 6235

Chairman Bentz, Ranking Member Huffman, and Members of the Subcommittee, thank you for the opportunity to testify today on a number of bills. My name is Paul Scholz and I am the Deputy Assistant Administrator for the National Oceanic and Atmospheric Administration's (NOAA) National Ocean Service.

H.R. 897—Alabama Underwater Forest National Marine Sanctuary and Protection Act

NOAA's Office of National Marine Sanctuaries works with diverse communities of partners and stakeholders to conserve and facilitate sustainable use of America's most iconic ecosystems and cultural resources in the ocean and Great Lakes. These special places support thriving recreation, tourism, and commercial economies. Of the 15 sanctuaries currently in the National Marine Sanctuary System, 12 were administratively designated by NOAA pursuant to the National Marine Sanctuaries Act and 3 were designated by Congress through other legislation.

H.R. 897 would designate an area encompassing approximately ten square miles of ocean off the Alabama coast as a national marine sanctuary. The bill would charge NOAA with protecting and managing this area and its resources, which include a stand of submerged ancient cypress trees that were buried in sediment for tens of thousands of years until they were uncovered by Hurricane Ivan in 2004.

NOAA would welcome the opportunity to work with the Committee to ensure that all information is up to date and that the bill would enable NOAA to effectively conserve the area in accordance with congressional intent. The National Marine Sanctuary System relies upon appropriated funding to implement management, public engagement, and research programs for both new and existing sanctuaries. This site was not included in NOAA's estimates informing the development of the FY 2024 President's Budget. Fully funding NOAA's Sanctuaries and Marine Protected Areas line item at the Fiscal Year 2024 President's Budget request of $87 million would support the effective conservation of sites in the sanctuary system, which is contending with the management challenges of rapid environmental change overall.

H.R. 3925—Youth Coastal Fishing Program Act of 2023

The Youth Coastal Fishing Program Act of 2023 would establish a new grant program within NOAA to support youth coastal fishing projects across the country. Engaging young people and removing barriers to participation in marine and coastal recreational fishing are priorities for NOAA, as well as the outdoor recreation industry, and essential to ensuring the sustainability of this cherished American pastime. The bill would authorize $2 million annually for 5 years to provide grants for youth fishing projects.

NOAA's updated 2023 National Saltwater Recreational Fishing Policy aims "to foster, support, and enhance a broadly accessible and diverse array of sustainable saltwater recreational and non-commercial fisheries for the benefit and enjoyment of the nation."

As drafted, the proposed grant program would allow grant recipients to use funds to reduce financial barriers for children to learn and experience the benefits of coastal fishing. NOAA, through the National Marine Fisheries Service and the Office of National Marine Sanctuaries, recently partnered with the National Park Trust to support underserved and military family fishing trips throughout our National Marine Sanctuary System. Additionally, NOAA participates in the Federal Interagency Council on Outdoor Recreation (FICOR) which is working across numerous federal agencies to create more safe, affordable, and equitable opportunities for Americans to get outdoors and has prioritized reducing barriers to access.

NOAA would like to note a concern on the timing required in the bill. The bill states that "1 year after the date of the enactment of this Act, the Secretary shall submit to Congress a report on (1) the eligible entities awarded grants under this section; (2) the amount each such entity received; (3) how those entities used the grant award; and (4) the number of participants in youth fishing projects funded by grants under this section." This would require NOAA to establish the grant program, request, review and approve applications and grant recipients to host all events, and report back all activities within a 12-month time frame. The 12-month deadline would be challenging to meet, particularly when most coastal recreational fishing occurs between late spring and early fall.

H.R. 5441—Long Island Sound Restoration and Stewardship Reauthorization Act of 2023

H.R. 5441 would amend the Clean Water Act to reauthorize certain Long Island Sound programs through 2028. The Environmental Protection Agency has primary responsibility for implementation of these programs. Although NOAA's National Ocean Service does not have a direct role in the implementation of the Act, Connecticut's Coastal Management Program and National Estuarine Research Reserve coordinate with the EPA's Long Island Sound Study on research and planning projects.

H.R. 6235—Harmful Algal Bloom and Hypoxia Research and Control Amendments Act of 2023

Harmful algal blooms, or HABs, and hypoxic events are scientifically complex and economically damaging occurrences that threaten our nation's communities and ecosystems. Every U.S. state and territory now experiences some kind of HAB event, the most severe of which can lead to hospitalizations from toxin exposure, commercial fisheries closures, income loss for tourism businesses, cultural, social and subsistence impacts, and wildlife strandings. For example, a single 2018 red tide event off the coast of Florida resulted in $318 million in tourism business losses, and a 2014 bloom in Lake Erie resulted in $65 million in lost benefits, including recreation for Ohio residents, property values, and water treatment services.

H.R. 6235 would reauthorize and amend the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998, also known as HABHRCA. HABHRCA provides authority for NOAA's role in researching, detecting, monitoring, and forecasting HABs and hypoxia in our oceans, coasts, and Great Lakes. In addition, the Act authorizes cutting-edge research into HAB prevention, control, and mitigation. NOAA's programs focused on HABs and hypoxia are national in scope, but tailored to diverse and specific regional needs, providing actionable information about HABs to help decision-makers protect human health, the seafood industry, and other coastal resources. NOAA's HABs information also supports meeting nutrient reduction goals of international agreements such as the U.S.-Canada Great Lakes Water Quality Agreement.

NOAA acknowledges that a major goal of H.R. 6235 is to improve coordination and cooperative efforts both across and within federal agencies, as well as to sustain and enhance monitoring and observation capabilities. Currently, NOAA co-leads the Interagency Working Group on HABHRCA and is a member of the Hypoxia Task Force. These groups are both highly effective in coordinating federal research activities, addressing mutual challenges, and producing legislatively-mandated progress reports. The legislation maintains NOAA's role as the lead agency for overall HABHRCA activities, and clarifies that the Environmental Protection Agency leads the freshwater aspects of program-wide duties, in collaboration with NOAA and the Interagency Working Group.

Conclusion

NOAA is proud to provide data, products, and services that protect our ecosystems and enhance the Nation's resilience to climate and other environmental change. We appreciate the Committee's attention to the issues addressed in these bills, and we look forward to continuing our work with you on enhancing our programs and partnerships. Thank you again for the opportunity to testify. I am happy to answer any questions.

QUESTIONS SUBMITTED FOR THE RECORD TO MR. PAUL M. SCHOLZ, DEPUTY ASSISTANT ADMINISTRATOR OF THE NATIONAL OCEAN SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

Mr. Scholz did not submit responses to the Committee by the appropriate deadline for inclusion in the printed record.

Questions Submitted by Representative González-Colón

Question 1. H.R. 6235, the Harmful Algal Bloom and Hypoxia Research and Control Amendments Act, would amend current law to explicitly include Sargassum within the definition of a harmful algal bloom. I am very supportive of this and

understand it was NOAA who recommended updating the definition to clarify that Sargassum is classified as such.

Sargassum blooms have become a major problem for coastal communities in Puerto Rico, washing ashore and covering our beaches. It not only has a terrible odor, but once nearshore or on land Sargassum can have extremely negative effects, releasing irritants, smothering coral reefs, altering water pH balance, and disrupting the local tourism economy.

Could you discuss how NOAA—using the authorities provided in the Harmful Algal Bloom and Hypoxia Research and Control Act—partners with other agencies and stakeholders to research, monitor, and improve forecasting of Sargassum blooms? And could you discuss, if possible, any specific investments or work conducted in Puerto Rico and the U.S. Caribbean region to address this issue?

Question 2. What type of support or assistance, if any, can NOAA provide to help local governments and communities respond to and manage Sargassum inundation events, including to facilitate appropriate cleanup or removal efforts? Has NOAA conducted any efforts or outreach with coastal municipal governments in Puerto Rico to improve their capabilities to respond to these events?

Question 3. H.R. 6235 would also provide NOAA authority to enter into agreements or grants with states, territories, tribes, and local governments to help pay for or reimburse costs associated with a harmful algal bloom or hypoxia event of significance. The bill would establish an Event of Significance Fund and authorize NOAA to transfer up to $2 million per fiscal year to support such efforts.

Could you discuss how this provision could impact or potentially improve NOAA's and other federal agencies' ability to respond to harmful algal bloom events, including Sargassum inundation events in the U.S. Southeast and Caribbean regions?

Question 4. In June 2022, the U.S. Government Accountability Office (GAO) released a report—titled Agencies Should Take More Actions to Manage Risks from Harmful Algal Blooms and Hypoxia—where it found the Harmful Algal Bloom and Hypoxia Research and Control Act Interagency Working Group had taken some actions, such as developing a Research Plan and Action Strategy, but had not implemented a national harmful algal bloom and hypoxia program nor developed performance measures to assess the results of federal agencies' efforts to manage the risks of these events. GAO recommended that NOAA and the EPA, as Co-Chairs of the Working Group, should define what a national program would entail and develop performance metrics to assess federal efforts, including the extent to which the recommended goals from the Research Plan and Action Strategy have been achieved.

Could you discuss what efforts NOAA has pursued to date, in partnership with the EPA, to address and meet GAO's recommendations?

Mr. BENTZ. Thank you, Mr. Scholz.

I now recognize Mr. Pickerell for 5 minutes.

STATEMENT OF CHRIS PICKERELL, MARINE PROGRAM DIRECTOR, CORNELL COOPERATIVE EXTENSION OF SUFFOLK COUNTY, RIVERHEAD, NEW YORK

Mr. PICKERELL. Good morning, Chairman Bentz, Ranking Member Huffman, and members of the Subcommittee. Thank you for inviting me to testify. My name is Chris Pickerell, and I am the Director of the Marine Program for Cornell Cooperative Extension of Suffolk County on Long Island, New York. I am here to provide testimony in support of H.R. 5441, Long Island Sound Restoration Stewardship Reauthorization Act of 2023.

Before I address the program, however, I thought it would be helpful to provide a little background so you understand why I believe this bill is so important. I was born and raised on Long Island in a family that has worked on the water for generations. My father is a bayman, boat builder, and oyster farmer who

worked in the harbors of Long Island's North Shore, harvesting clams to support our family.

When I was very young, I spent many hours in his boats, mostly watching and sometimes helping. Through this experience, I gained a deeper appreciation for and a unique understanding of our local waters. However, by the time I was old enough to choose my own path, working on the water no longer offered the same opportunities it had for my father and grandfather. Instead of following in their footsteps, I decided to pursue a career in biology so that I might be able to protect the same waters that had once sustained my family.

Long Island Sound is a 1,300-square-mile body of water lying between the southern coast of Connecticut and the north shore of Long Island, running from Manhattan out to the Connecticut-Rhode Island border. Its watershed encompasses 16,000 square miles spread across six states, with an asset value of approximately $1 trillion. The Sound is situated in the midst of one of the most densely populated areas of the United States. Nearly 9 million people live within this watershed. Millions flock there for recreation, and it is a critical transportation corridor for goods and people.

Additionally, the Sound provides feeding, breeding, nesting, and nursery areas for diverse animal and plant life. Managing an estuary of this size and complexity is a massive undertaking. Funding from the EPA supports a management conference consisting of a number of committees and work groups made up of Federal, state, and local officials, along with NGO partners and interested citizens. This structure brings stakeholders together to work towards a common goal set forth in a Comprehensive Conservation and Management Plan.

The CCE Marine Program participates in this work through various planning and grant-funded initiatives. As part of the Cooperative Extension System, our mission includes supporting local communities and small businesses through education, outreach, and hands-on learning, as well as applied research projects that address emerging issues. The Long Island Sound Program helps us achieve this mission.

With this funding, we have worked on a number of important stakeholder-driven projects based on local needs. These have included water quality monitoring, debris removal, habitat restoration, as well as supporting local farmers to introduce BMPs to protect the watershed.

One of the most interesting and successful of these is the Unified Water Study, where we collaborated with over 25 other organizations and municipalities across the Sound. This initiative developed new protocols so groups throughout the region can collect comparable data on the health of bays and harbors, those same areas that once supported my family.

Another important initiative involves removing derelict lobster pots left behind after the collapse of the lobster fishery in 1999. With funding from the Long Island Sound Study, we have been able to remove more than 20,000 derelict lobster pots to date. And as an added benefit, we hired local fishermen to take us out in their vessels, which helps keep them on the water.

Other important work has involved restoring coastal plant communities, including seagrass and saltmarsh habitats. These systems provide critical ecosystem services, including support for recreational and commercial fishing, while also protecting the shoreline from excessive erosion. In this way, our work supports both the natural environment and valuable shoreline infrastructure.

The common thread through all of this work is the funding made available in the bill you are considering today, and it is important to note that these grants require local matching funds and services that help leverage Federal dollars. This gives your investment an even greater impact.

My brief testimony touches on just a few reasons why it is important to reauthorize the Long Island Sound Study Program. If you need more proof, I ask that you please look at the information contained in the links I have included in my written testimony. In these you will find a more complete and detailed list of the program's many accomplishments.

Thank you for your time and consideration. I would be happy to answer any questions.

[The prepared statement of Mr. Pickerell follows:]

PREPARED STATEMENT OF CHRISTOPHER HOWARD PICKERELL, MARINE PROGRAM DIRECTOR, CORNELL COOPERATIVE EXTENSION OF SUFFOLK COUNTY

ON H.R. 5441

Good morning, Chairman Bentz, Ranking Member Huffman, and Members of the Subcommittee. Thank you for inviting me to testify. My name is Chris Pickerell and I am the Director of the Marine Program for Cornell Cooperative Extension of Suffolk County [1] on Long Island, New York.

I am here to provide testimony in support of H.R. 5441 to reauthorize Long Island Sound Study Programs.

Before I address the program however, I thought it would be helpful to provide a little background so you understand why I believe this bill is so important.

I was born and raised on Long Island, in a family that has worked on the water for generations. My father is a bayman, boat builder, and oyster farmer who worked in the harbors of Long Island's north shore, harvesting clams, to support our family. When I was very young, I spent many hours on his boats, mostly watching and sometimes helping. Through this experience, I gained a deep appreciation for, and a unique understanding of, our local waters.

However, by the time I was old enough to choose my own path, working on the water no longer offered the same opportunities it had for my father and grandfather. Instead of following in their footsteps, I decided to pursue a career in biology, so that I might be able to protect the same waters that had once sustained my family.

Long Island Sound is a 1,300 square mile body of water lying between the southern coast of Connecticut and the north shore of Long Island, running from Manhattan out to the CT/RI border. Its watershed encompasses 16,000 square miles spread across six states, with an asset value of approximately $1 trillion.

The Sound is situated in the midst of one of the most densely populated areas of the United States: nearly 9 million people live within this watershed, millions flock there for recreation, and it is a critical transportation corridor for goods and

[1] CCE Suffolk is a subordinate governmental agency with an educational mission that operates under a form of organization and administration approved by Cornell University as agent for the State of New York. It is tax-exempt under section 501(c)(3) of the Internal Revenue Code. The association is part of the national cooperative extension system, an educational partnership between County, State, and Federal governments. As New York's land grant university Cornell administers the system in this state. Each Cornell Cooperative Extension association is an independent employer that is governed by an elected Board of Directors with general oversight from Cornell. All associations work to meet the needs of the counties in which they are located as well as state and national goals.

people. Additionally, the Sound provides feeding, breeding, nesting, and nursery areas for diverse animal and plant life.

Managing an estuary of this size and complexity is a massive undertaking. Funding from the EPA supports a Management Conference consisting of a number of committees and workgroups made up of Federal, State, and local officials along with NGO partners and interested citizens. This structure brings stakeholders together to work towards a common goal set forth in a Comprehensive Conservation and Management Plan.

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My brief testimony touches on just a few reasons why it is important to reauthorize the Long Island Sound Study Program. If you need more proof, I ask that you please look at the information contained in the links I have included in my written testimony. In these, you will find a more complete, and detailed list of the Program's many accomplishments.

Thank you for your time and consideration. I would be happy to answer any questions you may have.

Please see the following links for additional information about the Long Island Sound Study Program:

https://longislandsoundstudy.net/

https://longislandsoundstudy.net/wp-content/uploads/2023/11/liss_sound_matters_fall_2023_issue.pdf

https://longislandsoundstudy.net/wp-content/uploads/2023/09/CCMP-2022_Print_Singles-1-final-9.13.23.pdf

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Mr. BENTZ. Thank you.

I now recognize Mr. Raines for 5 minutes.

STATEMENT OF BEN RAINES, ENVIRONMENTAL FELLOW, WRITER, AND FILMMAKER IN RESIDENCE, UNIVERSITY OF SOUTH ALABAMA, MOBILE, ALABAMA

Mr. RAINES. I am going to talk for a second, and then we will start the video.

I guess you all couldn't see it because I was seeing it right here.

My name is Ben Raines. I am the Environmental Fellow at the University of South Alabama. My name may be more familiar to some of you as the person who found the Clotilda, the last slave ship to bring enslaved Africans to America. Similarly, my work brought the underwater forest to the world. There have been news articles, thousands of them now, all over the world. The documentary we made about it has been viewed millions of times, proof of how the forest sort of captured the attention of the world.

So, here you are going to see some trees, and I am going to narrate this video as we go.

[Video shown.]

Mr. RAINES. These are some scientists, some of the first we brought out there, and they quickly figured out the forest we now have determined was actually 70,000 years old, so even older than we thought.

This tree here would be the size of a redwood if it were fully intact. Many of the stumps we found were 10 to 12 feet across. So, these are trees with a circumference of 30,000 feet, if you can imagine.

Now, the site is functioning like a coral reef. You can see the incredible numbers of fish everywhere. And the stumps all along the bottom are being colonized by crabs, and anemones, and all sorts of things, and new stumps are emerging all the time as they get uncovered by storms and things.

One of the first things that happened when I first wrote about the forest was a furniture company offered me $10,000 for the coordinates, and that has only accelerated.

Now, here you are seeing an ancient river channel that runs through the site, and you can actually see the path of the river meandering through the forest. There are some logs on the bottom there. So, you swim up to the edge of the river, the trees stop, you swim across the river, and the trees start up again on the other side.

This is a modern cypress forest in Alabama so you can kind of see what we are looking at here. The underwater forest, to look at the mix of trees in it, to find a similar forest today you have to go to coastal Virginia. So, this was a forest built in the Ice Ages for the Ice Ages. Because of that, it gives us a unique climate record.

Most of the climate data we have comes from ice cores, which exist today in cold places. So, this is giving us a more temperate view into the past, and there really isn't another climate record quite like it.

This is an LSU scientist. She has done most of the aging work, and performed at the site, and we did a lot of the work at the Lawrence Livermore Laboratory. It has been a pretty incredible scientific effort. The entire ecosystem is intact. So, we have captured things, and this is a modern cypress tree the size of those I was talking about. We have collected everything from the ecosystem, pollen, seeds, even insects that were alive 70,000 years ago. It is a really unique peek into the past. There is nothing else quite like it on Earth.

Here she is taking a core out of the tree. We figured out this tree was probably about 700 years old when it died 70,000 years ago.

So, you can see this is a glimpse into America before there were any Americans.

Now, this is the bottom, about a quarter of a mile away from the site. You can see it is very barren. There is a starfish, there are no fish. And this is the site.

As a diving destination, this will instantly become one of the premier diving destinations in America, and I can attest to that from the interest from the diving community globally to see this incredible place where you can actually swim among the dinosaurs.

The idea that these furniture companies, which have now applied to the Corps of Engineers and the state of Alabama for permits, would be allowed to take these things up to make coffee tables is really absurd. This is a natural wonder, like the Grand Canyon or something like that.

Here is a huge red snapper swimming through, these giant predator fish. Kemp's ridley sea turtle, our rarest and most endangered turtle. And here are some sponges growing on the site.

One of the most unique things about it is that it is data we can't get anywhere else, but people can go enjoy it, and see it, and experience it.

And this is a scientist from New Jersey, from Paterson University, and here you can see some of the wood and how intact it is. When we brought this wood up on the surface and cut into it, you get a fresh, piney scent. You smell that smell. You can see the growth rings in the trees. They are very tight, which indicates how cold it was back then.

And here is this fellow, sawing the tree. When we got into the lab, by the time we got back the sap had actually started oozing out of these 70,000-year-old logs, if you can imagine. And that is what drew the interest of the furniture companies. The wood is intact enough at that age to be workable, you can make things out of it, furniture and things like that.

We have a few sites around the Earth where there are trees in the water, like off England, but they are in about 10 feet of water and they are 2,000 years old. This window here is unlike anything else we can have.

I would also like to report that 37 years ago I was in this building delivering mail as a Senate page. So, it is my pleasure to be back, and thank you all very much for having me.

[The prepared statement of Mr. Raines follows:]

PREPARED STATEMENT OF BEN RAINES, ENVIRONMENTAL FELLOW AT THE UNIVERSITY OF SOUTH ALABAMA, STOKES SCHOOL OF MARINES AND ENVIRONMENTAL SCIENCES

ON H.R. 897

The ancient cypress forest found sixty feet underwater in the Gulf of Mexico, due south of Gulf Shores, Alabama, is about 70,000 years old, say a team of scientists who have studied the site.

The forest appears to be a wholly unique relic of our planet's past, the only known site where a coastal ice age forest this old has been preserved in place, with thousands of trees still rooted in the dirt they were growing in millennia ago. It is considered a treasure trove of information, providing new insights into everything from climate in the region to annual rainfall, insect populations, and the types of plants that inhabited the Gulf Coast before humans arrived in the new world. Scientific analysis of the site is ongoing.

Meanwhile, the fate of the forest is at risk. After the first article by Ben Raines in 2012, a furniture company offered the journalist $10,000 for the GPS coordinates

for the site. Raines refused. Eight years later, in 2020, the furniture companies sought permits to mine the trees from the seafloor from the U.S. Army Corps of Engineers and the state of Alabama. There is no existing law to protect the trees from harvest. The primary thing preventing the furniture companies from moving forward is that they do not know the precise location of the Underwater Forest because we have refused to reveal it to the public unless the site is protected.

Scientists believe the forest was buried beneath the Gulf sediments for eons, until giant waves driven by Hurricane Ivan in 2004 uncovered it. Before it made landfall, Ivan raged through the Gulf as a Category 5 hurricane. Its winds pushed the largest waves ever measured, which were 98 feet tall when they passed over a cluster of government data buoys far offshore. Those buoys were ultimately ripped loose from their moorings by the storm.

Samples were first collected from the site in 2012 by the laboratories at Louisiana State University and the University of Southern Mississippi.

Dropping 10 fathoms down, below the green waves of the Gulf and back in time to this prehistoric world amounts to a sort of time travel's journey. Nothing like the forest, in terms of age or scale, has ever been found. A few trees, perhaps 1,000 years old, have been found off the English coast, and a handful of other places, but they grew in a world we understand well, one much like our own in every way.

These trees sprouting from the seafloor off Alabama are so much older that they provide a window into a past scientists are still trying to understand. And there are thousands of them, part of a vast and swampy floodplain forest. The scientists believe the trees were buried under layers of mud in an age when sea levels were suddenly on the rise. That mud protected the trees from decomposition because they sealed them away from the oxygen-rich Gulf water. Underwater, where there is no oxygen, there is no decomposition. In effect, the trees have been hermetically sealed in place in a sort of natural time capsule.

Predating the arrival of humans in North America and the pyramids of ancient Egypt by more than 50,000 years, the trees discovered in the Underwater Forest date to an ice age 70,000 years ago, when sea levels were hundreds of feet lower, and the Earth was much cooler than it is today, with much of the water on the planet locked up in glaciers.

While most people think of the period from about 12,000 to 18,000 years ago when they think of "the" ice age, the planet has actually been visited by dozens of ice ages, which occur every 40,000 to 100,000 years.

Kristine DeLong is a paleoclimatologist at Louisiana State University, expert in the climactic upheavals of the past. She usually studies coral formations, which can provide a record of what the world's oceans and atmosphere were like thousands of years ago. DeLong had samples from the forest sent for analysis at Lawrence Livermore National Laboratory using a method known as radio-carbon dating.

"At first, just based on water depth and looking at the sea level curve, we thought the trees should be in the 10,000 to 12,000 (year old) range. But we took some wood samples, sent them off to get radio carbon dated, and surprising results. They were not able to date them because the trees were so old we can't use radio carbon dating to date them," DeLong said.

Radio-carbon dating can only reach back about 50,000 years, and the closer you get to 50,000 years, the less reliable the data becomes. Several follow up tests on additional samples confirmed that the trees were what's known as "radio-carbon dead." DeLong then turned to a team of LSU geologists who collected core samples from the sea floor, known as vibracores.

The vibracore machine punches a metal tube about four inches in diameter into the seafloor. It can penetrate down through nine feet of sediment, trap this column of dirt, and bring it back to the surface for analysis. The sediment trapped in the tube provides a clear chronology of the past, with layers of sand and mud being added over the millennia. Using extremely sensitive sonar machines, the LSU team was able to find an area with large numbers of trees that were still entirely buried in layers of sediment. In some cases, those trees are more than 10 feet down.

From the vibracores, DeLong's team was able to find material from about 45,000 years ago that was recent enough to register when radio-carbon dated. Then, by measuring how many inches of sediment separated that layer from the surface, and from the deeper layer where the forest lies, DeLong was able to calculate the age of the forest.

"In those sediment cores, right above the level where the forest is, we had some other pieces of wood. We collected those pieces, and those dates came back about 42,000 years old and we have a second date 45,000," DeLong said. "This tells us we are in the ballpark of between 50,000 to 60,000 years ago for the actual wood pieces."

In this earlier ice age, sea levels along the Gulf Coast were about 400 feet lower than they are today, and the Gulf shoreline was between 30 and 60 miles farther offshore than our modern beaches. Dauphin Island and the Fort Morgan peninsula on the Alabama coast were veritable mountains at the time, towering hundreds of feet above the surrounding landscape. And Mobile Bay was a valley, with a river running through the middle. At various points in the distant past, the rivers that today drain into the Mobile-Tensaw Delta ran south until they hit the Mississippi River, which in this ancient era made a sharp turn to the east in Louisiana and ran along the Mississippi and Alabama coasts toward the Florida Panhandle before entering the Gulf. Mobile Bay was a forested valley at the time, with rivers running through it.

It was in this now inundated zone between the modern shoreline and the more distant ancient shoreline that the Underwater Forest sat. Scientists believe this portion of forest was miles back from the Gulf shoreline at the time, as cypress trees cannot tolerate exposure to salt.

"We're in this period called Marine Isotopic Stage 3. This is where we're going into full glacial conditions, but it is not fully glaciated yet. It's colder, it's windier. One of the things paleoclimatologists want to understand about this period is what was happening to different ecosystems. How was a bald cypress swamp responding to changes in sea level and it getting colder?" DeLong said.

Interestingly, an analysis of the types of pollen found in the LSU vibracores provides intriguing hints at how a bald cypress forest handled these changes in sea level and colder weather. In fact, the pollen record suggests the Underwater Forest was more like a coastal forest you would find today in North Carolina, where winters are much colder than on the Gulf Coast.

Andy Reese, a pollinologist at the University of Southern Mississippi, specializes in reconstructing the environments of the past by looking at the pollen left behind by various plant species. He analyzed the deepest of the vibracores collected by LSU.

"The top meter of that core is just Holocene sand, like you sink your feet into at the beach. Then, the next meter is sand and then marine clay. Then, all of a sudden, it transitions to peat. That's the weirdest thing I've ever seen in an oceanic core like that, just perfectly preserved peat, that runs a half a meter down," Reese said. "When I started to look at the pollen, I was pretty surprised to see that it was all terrestrial. At first, it seemed like you dug up a scoop of dirt from a swamp just on the other side of town today. That's what was present in terms of species. But when I started to count how many of each type of pollen I found, it became apparent that different species were dominant."

In fact, the type of forest that Reese reconstructed is not found on the Gulf Coast at all today. Instead, the mix of species, with the dominant trees being cypress, alder and oak, fits with a rare forest type now found on the coast of North and South Carolina called the Atlantic Coastal Plain Blackwater Levee/Bar Forest. In essence, the Underwater Forest wasn't like a modern Gulf Coast swamp at all. Instead, it was a forest designed for a colder place.

That fits right in with what the trees themselves have to say about the world they were growing in.

Studying the tree rings present in multiple samples from the site in the Dendron Lab at the University of Southern Mississippi, Grant Harley was able to create a timeline that covered a span of about 500 years in the life of the forest. Harley, a dendrochronologist or tree scientist, took the lead in preserving and analyzing the physical pieces of wood collected from the seafloor.

"That was a big milestone in our understanding of the forest. When you think about the samples you collected, these are not ideal conditions. You were in 60 feet of water, you've got limited bottom time, your picking samples off the in-situ stumps, picking samples off the bottom. To have them all match up is not easy. It's actually very rare. I can't think of another study that's been able to do this," Harley said.

"In all, there were about ten of those wood samples that you and your team pulled up from the underwater forest that were usable for dendrochronology. I then took those ten samples, sanded them down, and I wanted to see if I could match up the patterns of wide and narrow rings that I see in those samples. If I could match them together, that meant those trees were growing—were alive—at the same time," Harley said. "Drying the samples out was a challenge, because you have this wood that has been underwater for tens of thousands of years. I did some research on people working with submerged wood and you can have some checking and splitting in your sample if you dry it out too fast. So I put the wood into a fume hood, where I could control the conditions a little bit. I dried them out very slowly, over a period of about a month and a half."

Once the dried wood emerged from the fume hood, Harley was amazed.

"When we ran those samples through the band saw, you could smell the resin just like you were cutting into a fresh piece of wood today. Same thing with when we sanded them down. They smelled fresh. Very well preserved," Harley said. "Given the fact that these samples are thousands of years old, I was astonished."

One of the most surprising discoveries was the sap that leaked out of the wood when it was cut, sap that had to be tens of thousands of years old.

"In every way, the opportunity to really study this site, to kind of reveal clues about what the climate was like in the Gulf Coast region is very rare. There are very few natural archives of long term climate change in the Gulf Coast region," Harley said. "To have this site, uncovered by a hurricane of enormous stumps still rooted in the sediments that they were covered up in is a very rare and unique opportunity."

Once the wood was dried, Harley said he was able to study it using standard dendrochronology techniques.

"No matter the question you are trying to address, whether it is drought, or how an insect invasion influenced some trees, or a disease, you start by lining up the rings and cross dating the trees. Sure enough, I got 10 of them to match up together. They are all matching up together over the course of 500 years," Harley said. "They weren't all alive 500 years, but all of those trees were alive at some point during that 500-year span. That's what we call a floating chronology. Some are older, some are younger, but they all overlapped while they were alive."

The oldest tree among the samples was about 700 years old. During several exploratory trips made by Ben Raines before any scientists had visited the site, divers measured two trees that were ten feet in diameter, with a circumference of close to 30 feet. In other words, some of these ancient trees, growing in a forest eons before humans arrived, rivaled the redwoods in size.

"When you look at the chronology through this 500-year time period, the most recent growth for the trees, right around the time they all died, the growth really slowed down, which is quite exciting," Harley said. "It suggests these trees died around the same period of time and they died under adverse conditions. They were under stress. For instance, from drowning in saltwater due to a rising sea. Cypress doesn't tolerate saltwater intrusion. If you get saltwater in a cypress forest, those trees are going to die. That's what these results suggest. That's one scenario, probably the most likely."

That scenario matches up with another finding from the pollen analysis.

"In the top of that peat section, the pollen is mostly grass. There is sedge pollen, and a variety of other grasses. It is heavily dominated by grasses That's the main story," said Reese, the pollen scientist. "But as you go back in time, it sort of transitions. Grass starts to decline and then cypress pollen starts to pop up. Then alder starts to pop up. You go from grasses dominating to trees dominating."

That, Reese said, would likely be a very typical response to a changing climate, with a fluctuating sea level.

To understand the significance of the transition from trees to grasses at this spot, study a modern river delta. The plants in a river delta change as you move upstream from the open water the river dumps into, for instance Mobile Bay. The first plants on the soggy land at the mouth of the river are grasses. First there are the marsh grasses, spartina and juncus, like you see in a coastal marsh. Then, as the water freshens, you'll see various sedge species, and the round scirpus grasses, then taller cane like the Roseau, or Phragmyties, in the Gulf Coast estuaries. But all of these, even the 12 foot tall Rosea are grass species. Behind them, further inland, begin the trees. Then, imagine this river delta moving back, year by year, with the grassy fringe that is closest to the sea retreating ever northward as sea levels rose.

It appears that just such a transition may be documented in the pollen collected at the Underwater Forest. From the time the trees died, a steady transition occurred in the pollen assemblage, ending with nothing but grasses typical of an estuary at the edge of the sea. Then the whole site was swallowed by the sea and buried under mud and then sand. Reese said such conclusions are tantalizing, but more study is needed.

AL.com also invited paleontologist Martin Becker, with William Paterson University, to visit the site. Becker specializes in fossils. He's found the bones of a wooly mammoth and other ice age land animals during previous diving expeditions on the Atlantic Coast, and is at work trying to find signs of extinct squirrel-like mammals that may have lived in the Underwater Forest.

He said the key to understanding how the forest came to be so far offshore comes from looking at the past. Becker has made a hobby of hunting for sharks' teeth and other ancient bones in Alabama streams. AL.com has joined many of his adventures and published accounts in these pages over the years. The day after his first dive

on the forest, which included a close encounter with a shark, Becker was sifting for 35-million-year old shark teeth below a waterfall on the Sepulga River.

"We're about 100 miles from the nearest shoreline, and we're pulling fossilized shark teeth from this modern creek. Certainly you don't see any sharks swimming around behind you. More than half the state of Alabama at one time was submerged underneath an ancestral ocean that dates back to the time of the dinosaurs," Becker said. "The record of that is recorded in the fossils, and in the regional geology . . . the Underwater Forest is about 120 miles distant, and the water in that area is about 60 feet deep. So you are talking about a substantial amount of sea level change. Obviously, at one time, that area was like a modern cypress forest today. Sea level has subsequently risen, and it is on its way up now. And it is going to return to this area that we are sitting in. And when it does, so will the sharks. It's just going to be awhile!"

For all of the scientists working with the Underwater Forest site, studying the past is really about trying to understand and prepare for the future.

"It's pretty rapid change geologically speaking," Becker said, just after his first dive in the forest. "We're looking at 60 feet of seawater where a forest used to be . . . I'm looking at a lot of development, of people's shore homes and condominiums, etcetera, you know. The forest is predicting the future, and maybe a pretty unpleasant one."

Indeed, DeLong said the time when the Underwater Forest was growing on dry land was a fraught one for the planet, with significant upheaval. Upheaval that may be somewhat analogous for our own times.

"Sea level 40 to 50,000 years ago is not stable. It's increasing and decreasing, increasing and decreasing. And some of this is tens of meters in just 1,000 years," DeLong said.

For the record, DeLong is talking about sea level rising or falling around 75 feet in just 1,000 years. This would translate into a rate of sea level rise of about 8 feet every 100 years, or even faster than the current worst-case predictions for the near future.

Becker said science provides such concrete proof of climate change and fluctuating sea levels that he fears the politicians of today are spending too much time arguing about what role pollution may have played rather than how to get ready for the coming changes.

"When you study the past, fossils and such, you start to think, 'We're not here for a long time, we're just here for a good time," Becker said. "The sea is rising, just as it has in the past. Places we live are going to be flooded, just as the Underwater Forest was. It may happen in five years, it may happen in ten, it may not happen in my lifetime, but it is going to happen."

The proof, he said, is all around us, from the fossils in the ground, to this ancient forest under the sea.

Mr. BENTZ. Thank you.

I now recognize Dr. Anderson for 5 minutes.

STATEMENT OF DONALD ANDERSON, SENIOR SCIENTIST AND DIRECTOR, U.S. NATIONAL OFFICE FOR HARMFUL ALGAL BLOOMS, WOODS HOLE OCEANOGRAPHIC INSTITUTE, WOODS HOLE, MASSACHUSETTS

Dr. ANDERSON. Mr. Chairman and members of the Subcommittee, my name is Don Anderson, and I am a Senior Scientist at the Woods Hole Oceanographic Institution, where for more than 40 years I have investigated harmful algal blooms, or HABs, as we call them. Thank you for the opportunity to provide my perspective on H.R. 6235, the Harmful Algal Bloom and Hypoxia Research and Control Amendments Act of 2023, which I will refer to as HABHRCA.

My key takeaway message today is that HABs and hypoxia, in their various forms, are national problems and require a comprehensive national research, monitoring, and mitigation strategy as formulated in HABHRCA.

Both phenomena occur in marine and fresh waters, and thus affect every U.S. state and territory.

HABs are accumulations of microscopic and macroscopic, think seaweeds, that cause harm in many ways. Some produce potent toxins that enter the food web and cause illness and death of humans who eat contaminated shellfish or fish, but also mass mortalities of fish, seabirds, and marine mammals.

But there are many other impacts, including some caused by non-toxic species. Think of huge masses of rotting seaweed on beaches, or tiny algal cells with sharp spines that lodge in the gills of farmed fish, for example.

In terms of scale, one massive HAB stretched from Washington State to Southern California, resulting in nearly $100 million in losses to the Dungeness crab and razor clam industries. Another, along much of the west coast of Florida, caused $200 million in damages and the loss of 3,000 jobs. And these are just two examples of many.

Now, HABs also occur in fresh water, with many being highly toxic. A common sight is the green, slimy pond scum that you see on ponds or lakes. These affect people through recreational exposure, drinking water, and reduced property values, but also affect fish, wildlife, and domestic animals, including many dogs.

Hypoxia, or low concentrations of dissolved oxygen often linked to the decay of algal blooms, can also have a wide range of detrimental impacts on human and animal health.

Recognizing these challenges, my colleagues and I worked with Federal agencies and Congress to establish a national HAB program under HABHRCA, first established in 1998. And unequivocally, HABHRCA has been instrumental in establishing the framework and enabling the environment for Federal partnerships and research progress, with many accomplishments described in my written testimony, and these include innovative sensors for automated detection and monitoring of HAB cells and toxins, greater understanding of bloom causes and dynamics, operational HAB forecast systems, and promising bloom control strategies, among many others.

But resource managers nationwide are facing expanding threats from multiple HAB species and poisoning syndromes that challenge their limited resources. Climate change is one factor contributing to that expansion, and is already affecting the distribution and abundance of multiple HAB species. And a warming ocean is also increasing the number of hypoxic zones.

So, there is no doubt that the expansion of HAB and hypoxia problems is bringing many new challenges, yet most states lack the technical and financial resources to respond adequately. In this regard, the HABHRCA amendments provide mandates for sustaining our important funding programs, as well as sustaining operational forecasting capabilities and implementation of a national HAB observing network consisting of arrays of sensors and other instruments in the water that provide early warning of HABs and real-time data to improve our forecasts, just as weather instruments on land improve the accuracy of weather forecasts.

Furthermore, the National HAB Control Technologies Incubator will provide proof of concept funds to promising bloom control tech-

nologies, and a clearinghouse of state and Federal regulations to help scientists navigate that challenging landscape.

Let me close by stating that it is vitally important to reauthorize HABHRCA. I have worked in this field for 40 years as a scientist, and have seen these problems expand significantly, but I have also seen a clear acceleration of the benefits from sustained research support and the partnerships among diverse Federal agencies. Together, these efforts are leading to a greatly enhanced understanding of these phenomena and to the development and implementation of technologies and approaches that protect public health, fisheries, tourism, and other economic and social interests.

Mr. Chairman, that concludes my testimony, and I welcome any questions you may have.

[The prepared statement of Dr. Anderson follows:]

PREPARED STATEMENT OF DR. DONALD M. ANDERSON, SENIOR SCIENTIST, BIOLOGY DEPARTMENT, WOODS HOLE OCEANOGRAPHIC INSTITUTION, AND DIRECTOR OF THE U.S. NATIONAL OFFICE FOR HARMFUL ALGAL BLOOMS

ON H.R. 6235

Chairman Bentz and Members of the Committee, thank you for this opportunity to testify today on important legislation for our Nation. I speak in strong support for reauthorization of HABHRCA and of the amendments contained in H.R. 6235.

I am Donald M. Anderson, a Senior Scientist in the Biology Department of the Woods Hole Oceanographic Institution, where I have been actively studying harmful algal blooms (HABs) for over 45 years. I am here to provide the perspective of an experienced scientist who has investigated many of the HAB phenomena that affect coastal waters of the United States and the world. I am also Director of the U.S. National Office for Harmful Algal Blooms, a former co-Chair of the National Harmful Algal Bloom Committee, and have been actively involved for many years in formulating the scientific and legislative framework and the agency partnerships that support and guide our national program on HABs. This includes working on the first iteration of the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998 (HABHRCA), the law for which amendments are on the floor for the Committee's consideration today.

My testimony today will summarize the national scale of the HAB and hypoxia problems in the U.S., notably their distribution, impacts, and trends as well as the emerging challenges facing those responsible for monitoring and managing these phenomena. I will also highlight recent research accomplishments and partnerships made possible by investments in the HABHRCA, as well as developments that are needed to improve the national response to HABs and hypoxia. Finally, I will provide my perspective on the programmatic, legislative, and funding needs of the national HAB program given emerging issues and challenges, and offer some comments about the Committee's draft legislation for the reauthorization of HABHRCA.

Background

HABs and hypoxia are national problems that require a comprehensive national research, monitoring, and mitigation strategy. The increasing frequency, intensity, and spread of HABs adversely affect the health and economy of communities, states, tribes, and regions around the nation. Similarly, hypoxic zones are expanding throughout U.S. coastal waters, and worldwide. Smaller areas experiencing periodic hypoxia can grow into "dead zones" if contributing factors are not addressed. Indeed, dead zones have spread exponentially since the 1960s and have been reported in more than 400 receiving waters worldwide, nearly half of which are in the U.S. As the name implies, most forms of marine life cannot survive such low oxygen conditions.

Congress has responded by increasing HAB and hypoxia funding for some agencies, in particular for NOAA's base and competitive programs, which is essential if we are to improve our understanding of how these phenomena develop and identify strategies to mitigate their impacts. These increases, however, do not fully restore major funding cuts made in previous years when the national HAB and hypoxia problems were much smaller than what we face now. Clearly, sustained funding at

a higher level is a critical need. Enhanced support is also needed for HAB programs in the EPA, USGS, and multiple other agencies with mandates that include HAB and hypoxia issues.

I want to start by highlighting the challenge that HABs and hypoxia pose to our nation. HABs are accumulations of microscopic and macroscopic algae (seaweeds) that cause harm in myriad ways. There are many species and types of HABs that occur in both marine and freshwater environments, leading to wide-ranging impacts on people and ecosystems. Some species produce compounds that are among the most potent natural toxins known. Either because of these toxins or the sheer biomass of the dense accumulations of the algae (hence the common term "red tide"), impacts can be significant, including illness and death of humans who consume contaminated shellfish or fish; mass mortalities of fish, seabirds, and marine mammals; and even irritating aerosolized toxins that cause respiratory irritation and drive tourists and residents from beaches. To provide a glimpse of the scale of some of these phenomena, a few years ago a massive and highly toxic HAB occurred along the U.S. west coast, stretching from Washington to California. A few years later on the east coast, much of the west coast of Florida was impacted by major HAB events in 2018 and 2021 that devastated the Florida Gulf Coast marine ecosystem, tourism, and fishing industries. Millions of fish and hundreds of sea turtles, dolphins, and manatees perished, while driving residents and tourists away from beaches and coastal waters. Socioeconomic studies estimate approximately $184 million in losses in the tourism sector from the 2018 outbreak, and, because of the consequent contraction to the rental market, the loss of nearly 2,900 jobs. These describe just two of many small- and large-scale marine HAB events that occur nationwide every year.

Freshwater HABs are primarily caused by cyanobacteria or blue-green algae. These create serious problems, first due to the reduction of light and depletion of oxygen in the water, and second, through the production of potent toxins. Freshwater HABs can affect humans through recreational exposure and drinking water, and also affect fish, wildlife, and domestic animals. In 2014 a cyanoHAB near Toledo severely impacted Ohio's drinking water intake source in Lake Erie resulting in 500,000 water customers being advised not to drink their tap water for nearly three days. A similar event occurred in Salem, Oregon in 2018, affecting a similar number of people but for a longer interval. The scale of these blooms can be massive, evidenced by the largest bloom in recorded history in western Lake Erie in 2015—an event that produced a surface scum that covered nearly 300 square miles.

Hypoxia can also have a wide range of detrimental impacts on human and animal health. Low concentrations of dissolved oxygen, often linked to high concentrations or biomass of algal cells, can be lethal to aquatic species. Increases in hypoxia events have led to increased frequencies and magnitudes of fish kills and mass-mortality events. HABs and hypoxia are often linked in a positive feedback loop that further reinforces harmful conditions, such as when hypoxia in an aquatic ecosystem reduces the populations of algae-controlling fish species, allowing algal blooms to proliferate unchecked.

Ocean conditions, such as those along the Pacific Northwest Coast, are affected by changes in winds that drive upwelling ocean currents that pull deep, oxygen-poor waters onto the shallow continental shelf. Stronger winds from climate change have accentuated the risk and severity of low-oxygen events. In recent years, the synergistic effects from HABs and hypoxia have repeatedly led to the closure of entire Dungeness crab fisheries along the Pacific Northwest Coast. As the result of low-oxygen waters being upwelled into coastal waters, oxygen levels can drop so low that Dungeness crabs suffocate in the pots of fishermen before they can be brought to market. This has led to massive die-offs of crabs impacting the region's most valuable fishery.

As noted above, HAB and hypoxia events have wide ranging economic impacts, including the costs of conducting routine monitoring programs to keep dangerous shellfish and other affected resources off the market, short-term and permanent closures of harvestable shellfish and fish stocks, reductions in seafood sales (including the avoidance of "safe" seafoods as a result of "overreaction" to or uncertainty with health advisories), mortalities of wild and farmed fish, shellfish, submerged aquatic vegetation and coral reefs, impacts on tourism and tourism-related businesses, and hospital treatments for people who fall ill. Furthermore, regional studies show that HABs and hypoxia cause losses in tourism, housing, and general business revenue that can amount to hundreds of millions of dollars annually. For example, the 2015 West Coast Dungeness crab closures and delayed openings mentioned earlier resulted in over $97.5 million lost from commercial landings compared to the previous years, and coastal communities in Washington lost an estimated $40 million in tourism spending for recreational activities.

National HAB and Hypoxia Programs

The diverse nature of HAB and hypoxia phenomena and geographic variability associated with outbreaks throughout the U.S. pose a significant constraint to the development of coordinated national programs. Nevertheless, in large part because of HABHRCA, the combination of planning, coordination, and highly compelling topics with great societal importance has led to integrated research and response communities that include scientists, federal and state agencies, Tribes, and industry. In the past, many of these individuals and groups worked independently and with little exchange of ideas and data. The networks that now exist in many parts of the country are active and productive, and are a major factor in the growing capabilities of the national programs.

Our national HAB "program", or strategy, is viewed by many of my colleagues in other disciplines and other countries as a model program that has succeeded because of its organization and partnerships. Given the diversity of HAB a impacts across different regions of the U.S., sustained national support is critical to allow agencies to respond to the inevitable outbreaks that will occur in different locations in future years. Historically, NOAA was often the only federal agency addressing this issue for our nation. The Interagency Working Group (IWG) on HABHRCA was then established by Congress in 1998 as an interagency task force, and today, it has over 16 member agencies, leveraging the expertise and capabilities of the federal government to prevent, mitigate, and even control these diverse phenomena. The IWG should be sustained, and in my opinion, NOAA has done an excellent job leading that group and should continue in that role.

Partnerships are key to our success and help us point science in the right direction. The IWG-HABHRCA enhances federal coordination of activities that span agencies' jurisdictions to leverage capabilities where possible. For instance, CyAN, a satellite-based cyanobacterial monitoring network, is a collaboration between NASA, NOAA, USGS, EPA and USACE that provides near real-time cyanobacterial bloom data for more than 2000 lakes in the United States. Each agency alone would not have the expertise, technology, development tools, or funding to complete a project of that nature. Collaborative methods and technologies like CyAN help state and local officials make informed decisions on where to focus their limited time and capacity for testing and mitigation efforts.

HABHRCA has been instrumental in providing the framework and enabling environment to move many of these federal partnerships forward. The academic research community strongly relies on federal funding through these programs to conduct our research across a very broad spectrum. Reflecting the diverse nature of HABs and their impacts, over the last 25 years the national HAB program has evolved into a comprehensive strategy that addresses all of the major elements of HAB research and management. Many of these program elements are authorized in HABHRCA. What follows is a brief summary of the individual scope of these research programs that complement each other and produce a comprehensive national strategy:

- ECOHAB (Ecology and Oceanography of HABs) is a critical, core program that is needed to address the fundamental processes underlying the impacts and dynamics of HABs. Knowledge of how different factors control the initiation, development, and decline blooms is a critical precursor for advancing HAB management nationwide.
- ECOHAB research results have been brought into practical applications through MERHAB (Monitoring and Event Response of HABs), a program formulated to transfer technologies and foster innovative monitoring programs and rapid response by public agencies and health departments.
- Similarly, PCMHAB (Prevention, Control and Mitigation of HABs) is a program dedicated to advancing research on effective strategies for HAB prevention, control, and mitigation.
- Now, the new federal Social, Cultural and Economic Assessment of Harmful Algal Blooms (SEAHAB) Program will further address critical gaps in assessing the socioeconomic and cultural impacts of HABs.
- Additionally, the National Science Foundation and National Institute of Environmental Health Sciences jointly fund research on marine-related health issues through the Centers for Oceans and Human Health program that is bringing HAB scientists together with the public health community to understand human exposure to HAB toxins, to develop methods to detect, quantify and forecast ocean-related health threats, and to identify

relationships among parameters of climate change and increased human exposure to toxins.

This suite of programs has been a major part of the success and productivity of HAB research in the U.S., and therefore I fully support having them highlighted in HABHRCA and having other federal agencies participate in them where possible.

Directly authorized by HABHRCA, the Coastal Hypoxia Research Program (CHRP) is a competitive research program focused on advancing the scientific understanding and management capabilities needed to assess, predict, and mitigate hypoxia events. The program brings together researchers, federal experts, blue industry, and stakeholders to address impacts of hypoxia on local communities and natural resource managers. For example, in 2022 CHRP provided academic researchers with funding to work with Oregon's Dungeness commercial crab fishery to cooperatively implement a hypoxia detection and monitoring program. The project team will deploy dissolved oxygen sensors on commercial crab pots in collaboration with commercial fishermen. The information collected with these sensors will supply hypoxia exposure data that will allow the fishing fleet to adapt to the onset of hypoxia events and the Oregon Department of Fisheries and Wildlife Shellfish Program managers to conduct in-season management of the fishery. The project will also help the fishing fleet to adaptively manage the crab fishery in response to hypoxic events by providing recommendations to bolster its multi-stressor readiness plan.

All of these programs serve important topic areas, and collectively form the basis for what I believe has been an extraordinary pace of national progress addressing both HABs and hypoxia.

Emerging Problems

Since the last reauthorization of HABHRCA, and as is evident from the diverse and expansive nature of the national HAB and hypoxia problems described above, managers responsible for the protection of human health and coastal resources are facing a growing and daunting challenge. Many regions now experience multiple HAB species, with many blooming at different times of the year, affecting multiple resources. State monitoring programs that used to focus on a single HAB poisoning syndrome are now struggling to cover two, three, and even four different threats, sometimes concurrently, greatly stretching scarce personnel and financial resources. In some cases, this has led to blanket harvesting closures in which entire coastlines are quarantined for months at a time on an annual basis, even though the affected resources may not be toxic across that entire expanse and time.

Climate change will also almost certainly influence HABs and hypoxia since many critical processes governing their dynamics are influenced by climate, such as temperature, water column structure, water circulation patterns, and nutrient inputs. This is not a future problem, but one that faces us now. 2023 was the warmest year on record, and three other recent years fall in the top 10 of the warmest years recorded. This underscores the need for reauthorization of HABHRCA legislation, as there is no doubt that the rapidly changing climate is bringing us new and different challenges going forward. We know, for example, that climate change is causing increasing frequency and severity of marine heatwaves and general warming of surface and near-shore bottom waters that are already affecting the distribution and abundance of HAB species. Climate change is expected to exacerbate the HAB problem in some regions and shift species distributions geographically. In the Gulf of Maine, where I have done much of my HAB field research, we are watching with great concern a massive region or blob of exceptionally warm ocean water in the northwestern Atlantic near Labrador and Nova Scotia. The seawater in that area is as much as 15°F warmer than long-term averages. We know that the region is important in the development of blooms of a HAB species that causes the human poisoning syndrome called amnesic shellfish poisoning (ASP), and that changes in regional currents and water circulation can affect the paralytic shellfish poisoning (PSP) problem as well. The presence and persistence of a huge oceanographic feature of this type needs to be studied to better understand the changes that might happen with HAB phenomena in the region. Indeed, 2023 already proved to be a highly unusual year for the PSP problem in the Gulf of Maine, as there was virtually no toxicity observed throughout the bloom season across the entire region, a truly rare occurrence in the long history of annually recurrent, wide-scale outbreaks. Similar anomalies and heat waves are occurring in other areas of the U.S. coast, and the HAB implications are the same.

A warming ocean also gives rise to oxygen-poor (or hypoxic) zones. This is because warmer waters hold less dissolved oxygen and stratified warmer waters on the surface of the ocean act to slow the replenishment of oxygen from the atmosphere to

the deep ocean. The low-oxygen zones that we experience today are more severe and closer to shore than what can be seen in historical records that go back seven decades. Just as we have wildfire seasons that start earlier and spread farther on land because of climate change, Oregon and other states now have hypoxia seasons that return to those coastal waters each year. Similarly, freshwater cyanoHABs are expected to worsen as temperatures rise. The cyanobacteria that cause many of these outbreaks thrive under warm temperatures and outcompete many more beneficial groups of algae.

One area where global warming is of particular and immediate concern is in the Arctic which is warming nearly four times faster than the global average. With present-day warming leading to major reductions in ice cover and changes in regional hydrography, biogeographic boundaries of a wide range of marine species at all trophic levels are being impacted, particularly in summer ice-free shallow waters. There is now clear evidence that multiple HAB toxins are accumulating on a recurrent basis within the Arctic food web at dangerous levels, and I firmly believe that the problems will worsen as waters warm. For example, as a result of these warming trends, historically dormant, deepwater cysts of one of the country's most dangerous HAB species are now germinating and blooming in the Arctic and sub-Arctic waters of Alaska, producing massive quantities of toxins that can move through virtually every level of the marine food web. As this occurs, human health and ecosystems are threatened in a region where traditional monitoring programs for toxins in shellfish, fish, or other animals are not feasible, and where the Alaskan native communities that rely on many different marine animals and plants for subsistence have no prior exposure to these toxins. The ecosystems that are critical to the survival of these communities are also threatened by HAB toxins, as these can lead to animal illnesses and deaths that raise food security issues as well. I am thus supportive of the amendments to HABHRCA that expand applied research to a wider range of impacts, such as subsistence impacts on rural and Tribal communities that rely on marine resources for their cultural, nutritional, and economic well-being.

Technological Developments

Of necessity, research advancements have had to keep pace with the expanding needs and complexity of HAB and hypoxia problems. In recent years, research has led to the development of operational forecasts for specific HAB types in certain regions, such as the NOAA HAB forecasts in Lake Erie and the Gulf of Maine. An operational HAB forecast is like checking the weather to see what the water conditions are at a given moment, up to several days in advance. Similarly, research has led to the development of innovative and powerful HAB sensors that can be deployed autonomously at key sentinel locations and on a variety of fixed and mobile platforms. For example, one new instrument is a submersible microscope that takes hundreds of thousands of high-resolution images of microscopic algal cells every day and, with the aid of artificial intelligence, software then identifies and counts the HAB species that are present. When deployed at key locations, these new technologies can provide states, Tribes, management agencies, and tourism, aquaculture and wild and farmed fisheries industries with HAB early warning. Equally importantly, these instruments can supply data that can be assimilated into HAB forecast models, making them more accurate, just as arrays of weather instruments supply data that improve the accuracy of weather forecasts.

These HAB sensors are now being deployed throughout the country, but Alaska once again gives a clear example of the value of these new technologies. The communities mentioned above that rely on subsistence harvesting are scattered throughout the Alaskan Arctic, often in remote and rugged areas along the coast. Since these areas are far from the population centers that have infrastructure for toxin monitoring and measurement, new region-specific approaches are needed to provide early warning of blooms as they occur. Efforts are thus underway to deploy autonomous instruments in several locations so that the instruments can sample the water three times every hour, 24/7, with results communicated via the internet on a near real-time basis. Locals are being trained to operate the sensors, and generators and StarLink Internet connections established to keep the systems operating and communicating despite frequent power outages and limited bandwidth. This nascent Arctic HAB observing system is just one element of the critically important National HAB Observing Network (NHABON), which will allow states and industries to deploy and maintain sensors to meet their specific needs. I am thus supportive of the clear mandates introduced in these amendments for both sustaining operational forecast capabilities at the national level, and also for a National HAB Observing Network (NHABON).

HAB Control

Many of the technologies and research programs described above are helping to prevent and mitigate HABs and their impacts, but one of the most challenging frontiers of HAB science is the development, scaling, and ultimate deployment of bloom control or suppression technologies. Once again, the diverse nature of HAB species and their impacts dictates that no single control strategy will work for all HABs, and therefore, many different approaches are under investigation, ranging from chemical algaecides to biocontrol using naturally occurring bacteria and viruses, and even to the dispersal of simple clay minerals that aggregate with each other and with HAB cells, sinking the cells and their toxins to bottom sediments. Research progress has been rapid in this area, but state and federal regulatory requirements are a major obstacle to transitioning technologies from the lab setting into the field when blooms are happening, even for small-scale field trials. NOAA's NCCOS program has taken a major step to help with these challenges by creating a National HAB Control Technologies Incubator that will provide one-time seed money to promising but risky technologies for proof of concept studies, as well as a clearinghouse of state and federal regulations to help investigators navigate that difficult landscape. I am highly supportive of the inclusion of the National HAB Control Technologies Incubator in this version of the HABHRCA bill to address this growing need.

Event Response

Finally, when unexpected or unusual HAB events occur, there are immediate needs for short-term observations of where a bloom is, where it will go, and how severe it might be. This information is needed for assessments of impacts and formulation of management responses, as well as economic assistance. NOAA has maintained a modest HAB Event Response Program for over a decade, and it has been very effective, but given the growing diversity and scale of the problems described above, a much larger program is needed. The amount of money available for distribution to those requesting immediate assistance throughout the country is small, both in terms of the size of individual awards, but also in the number of awards that can be granted. This bill includes modifications to the Harmful Algal Bloom and Hypoxia Events of National Significant provision that make it more effective for both short-term and long-term response, and creates a funding mechanism that will allow monies to be provided quickly to affected states.

Summary

Let me close by saying that it is vitally important to reauthorize HABHRCA so that we can maintain the highly productive momentum that we have built up for addressing the growing problems of HABs and hypoxia. The U.S. has strong and highly respected programs, and from the perspective of one who has been an active investigator in the HAB field for over four decades, I have seen a clear acceleration of outcomes and benefits from the sustained research support covered by HABHRCA. Furthermore, these amendments clearly support the collaborative interagency effort that is needed to respond to and manage HABs and hypoxia across a diverse array of federal agencies and mandates. Together, these efforts are leading to greatly enhanced understanding of the mechanisms underlying HABs and hypoxia and their impacts, as well as the development and implementation of practical tools, technologies, and approaches that can assist state and federal managers and others on the front lines to protect public health, fisheries, tourism, and other economic and social interests at the national, state, and community levels.

Thank you for the opportunity to offer information that is based on my own research and policy activities, as well as on the collective wisdom and creativity of numerous colleagues in the HAB and hypoxia fields. I would be pleased to answer any questions that you or other members may have.

QUESTIONS SUBMITTED FOR THE RECORD TO DR. DONALD ANDERSON, SENIOR SCIENTIST, BIOLOGY DEPARTMENT, WOODS HOLE OCEANOGRAPHIC INSTITUTION

Questions Submitted by RepresentativePeltola

Question 1. As you think about your history researching HABs in the far north, have you seen changes in the range for HABs, the type of algae that is sensitive to blooms, or other notable changes in how you'd characterize HABs in Alaska?

Answer. Perhaps the best way to answer this question is to summarize the situation with HABs in Alaska. First, in marine waters, the two most worrisome problems are caused by: 1) the dinoflagellate *Alexandrium catenella*, the organism that produces what are called paralytic shellfish toxins (PSTs) responsible for the human poisoning syndrome called paralytic shellfish poisoning (PSP) and 2) multiple species in the diatom genius *Pseudo-nitzschia* that produce the toxin called domoic acid (DA) that causes amnesic shellfish poisoning (ASP) in humans and domoic acid poisoning (DAP) in wildlife. Although *Pseudo-nitzschia* and domoic acid have been detected in the water and in the tissues of marine mammals from southeastern Alaska through the Bering Sea and into the Chukchi and Beaufort seas north of Alaska, concentrations have been quite low and thus this HAB problem is not considered a major concern at this time.

In contrast, *Alexandrium* and PSTs are a new and significant concern for the northern waters of Alaska. PSTs have long been known to be a serious problem in southeastern Alaska, including some of the Aleutian and Pribilof Islands, but there have only been occasional, academic reports of this species in waters north of Bering Strait, and there are no societal indications that local populations are accustomed to periodic incursions of toxic algae. However, within the last five years, studies by myself and others have shown that *Alexandrium catenella* has colonized the waters of the Bering Sea, Kotzebue Sound, and the Chukchi Sea, evidenced by huge accumulations of the dormant cysts of that species. These cysts allow *Alexandrium* to remain in bottom sediments during cold winters, germinating to initiate blooms when temperatures are warm and conditions favorable. Scientists attribute the recently discovered massive cyst accumulations in the Chukchi Sea to the transport of *Alexandrium* cells from warmer, Bering Sea waters in the south through Bering Strait, depositing cysts in the northern waters at the end of those blooms. Historically, bottom temperatures have been too cold to allow cyst germination. Repeated deposition events and minimal losses from germination can explain the build-up of the massive cyst seedbed, called a "sleeping giant" in one of my papers. But, in recent years, the surface and bottom waters of the Alaskan Arctic have warmed considerably, and now we believe the giant has awoken and cysts are germinating in Kotzebue Sound, the Chukchi Sea, and even Utqiagvik, bringing a second mechanism for bloom formation into play for that northern region, compounding the threat from the transported blooms. We now believe that not only are these locally generated rooms occurring more frequently as Arctic waters rapidly warm, but the transported blooms also may be larger and more frequent as well.

PSTs are a problem in many other parts of the US, but the situation in northern Alaska is unique and worrisome. In other areas, the major vectors for transferring PSTs to humans and animals are shellfish such as clams, mussels, and crabs. In the Alaskan Arctic, however, most communities rely on subsistence harvesting of a wide range of marine resources for food and economic and social well-being. Unfortunately, many of these food sources can be contaminated with PSTs, and thus there is a public health threat to these communities, as well as a food security threat, since the toxins can also kill marine animals. The state of Alaska has never been able to monitor its entire coastline for HAB toxins, and thus tribes are facing the daunting challenge of setting up their own monitoring and toxin-testing programs. This challenge is amplified by the fact that a wide range of marine animals are consumed by local communities, and little is known about the manner in which PST's accumulate in these resources, which tissues are most dangerous, and how long the toxins might be retained by these animals. So, to give the short answer to this question, in marine waters, the species that is expanding and becoming much more of a threat is *Alexandrium catenella*, with at least one of the factors driving that expansion being global warming.

HABs also occur in freshwater, typically caused by cyanobacteria or blue-green algae. These species also produce toxins that can threaten human and domestic animals, and wildlife. And, numerous papers have been written arguing that cyanobacteria will thrive under extremely warm future conditions, so problems with freshwater HABs are likely to not only continue, but to worsen as well. Alaska has these types of blooms, and some programs are underway, particularly in the Kotzbue Sound region, but the problem is certainly far more widespread than that in the state.

To summarize, HAB problems have occurred for many years in southeastern Alaska, but in recent years, waters of the northern Bering Sea, Bering Strait, Kotzebue Sound, and the Chukchi Sea are all experiencing major outbreaks that pose significant threats to subsistence communities with no prior experience with these types of events. Concurrently, freshwater blooms are threatening other communities by making water supplies dangerous to drink, threatening human, animal and wildlife health.

Question 2. What can be done to protect people in northern Alaska from toxic HABs?

Answer. The Alaskan Arctic faces multiple challenges in monitoring and responding to HABs, some of which are unique to the region. Efforts to monitor and manage HABs in the region are hindered by a lack of information, limited infrastructure, and unique spatial challenges inherent to the Alaskan land- and seascapes. Foremost among the challenges is the need to provide coverage across large stretches of sparsely populated coastline. Transportation and communication infrastructure is limited and often impacted by harsh weather. As a first step towards enhanced communication, the Alaska Harmful Algal Bloom Network (AHAB: https://aoos.org/alaska-hab-network/) has been established to share information among a diverse group of scientists and interested stakeholders throughout Alaska. This is, however, a stakeholder-initiated effort currently funded by federal appropriations that are subject to funding uncertainties, and thus a more stable state-supported communications strategy and network might be needed to enhance and sustain HAB response.

Scientists, managers, and agencies concerned with HAB events are primarily urban-based in Alaska, far from the northern and western coasts, so northern communities are largely reliant on themselves for awareness of a HAB event or human medical emergency. The lack of a robust infrastructure contributes to a high-risk situation, as recently demonstrated in 2020 with the first human HAB/PSP fatality since 2010 in Alaska, and the first reported fatality in western Alaska (https://content.govdelivery.com/accounts/AKDHSS/bulletins/295e317).

An additional complication is that resource managers, community leaders, and regulatory officials must deal with multiple HAB toxins and algal species that occur in different seasons and locations, with blooms that are highly episodic and as yet, unpredictable. HAB toxins can also accumulate in, and affect, a diverse suite of marine species that are food sources for local communities. The State of Alaska tests all commercial shellfish harvest, but there is no state-run testing program for recreational and subsistence harvest. With no federally authorized commercial harvest of seafood in the Chukchi and Beaufort Seas, all seafood is harvested on a non-commercial basis and thus is not included in state-funded HAB monitoring.

Given the geographic and logistical constraints of monitoring HABs in the Alaskan Arctic and the lack of a state-funded toxin testing program for non-commercial harvest, the marine ecosystem of the Alaskan Arctic, and the people that rely on it, are at risk. A monitoring approach to be considered would be the establishment of a local or regional monitoring program, perhaps modeled after the program run by the Sitka Tribe of southeastern Alaska. This effort is focused on the Gulf of Alaska and is limited to shellfish, but staff and facilities for HAB toxin analysis are in place to serve community concerns about HABs through shellfish toxin testing, paid for by the users. Currently there is no community-based HAB testing in the Alaskan Arctic, and if one is established, it is important to recognize that shellfish are only a minor and occasional component of diets in the region. Regional monitoring programs will thus need to develop protocols and capabilities to test seabirds, fish, and marine mammals as well. Ongoing research by university, agency, and other partners can provide information about the presence of HAB toxins in fish and wildlife but current sampling efforts are limited and many diagnostic tools used are not directly applicable to food safety assessments. Nevertheless, one clear need is for a regional laboratory capable of HAB toxin testing, similar to the one established by SEATOR.

In addition, experience in other regions of the world suggests that a plankton screening program to detect HAB cells in coastal waters could also be a useful element in local or regional monitoring programs. Local monitoring using plankton nets and inexpensive microscopes is common in many areas subject to HABs, and training and funding to establish this capability should be a high priority activity in the Alaskan Arctic going forward. Ongoing programs by the Norton Sound Health Corporation are a good start in that direction. Given the many existing and growing challenges to coastal communities, however, citizen or volunteer plankton monitoring programs may not be sustainable in the region. The direct testing of seafood harvest should therefore be considered, though the manner in which this could be accomplished is unclear given limited transportation infrastructure and analytical capabilities. Again, this highlights the need for a regional toxin testing laboratory.

With respect to ecosystem health and food security, potential impacts from STXs and DA to most marine wildlife in the Alaskan Arctic are unknown and thus there is, as yet, no firm guidance to offer for the safety of coastal communities. Ongoing grant-funded research programs will soon provide data of this type, and it will be critical to include effective communication and outreach plans to provide coastal

communities the data and implications as they become available. I note that the NOAA ECOHAB program has changed its programmatic goals to include frequent reference to subsistence harvesting, so hopefully this knowledge deficit will soon be addressed.

Yet another concern is that the marine ecosystems of the Alaskan Arctic are shared with the Russian Federation, and transboundary communications can be logistically and bureaucratically challenging. It is not only imperative but ethically responsible for collaboration and/or communication on research and monitoring efforts to protect shared wildlife resources and human health.

Recent technological advances in HAB monitoring may also provide important monitoring tools for the region. Given frequent cloud cover and the lack of HABs of sufficient density to be visible from space, traditional satellite remote sensing has limited utility in the Arctic. Of more value are new sensors capable of detecting and quantifying HAB cells and toxins in situ. A promising development in this regard is the advent of ocean observing systems (OOSs)—arrays of moored and mobile instruments that can collect and transmit data continuously from remote locations to shore-based scientists and managers. Instruments capable of measuring HAB cells and/or toxins already exist, such as the Imaging Flow Cytobot (IFCB), a high-speed, submersible microscope that can autonomously operate 24/7 and take hundreds of thousands of images of phytoplankton daily. Artificial intelligence algorithms then identify and enumerate algal species such as the major HAB taxa described here, providing near-real time data on HAB threats . These instruments can be deployed in buildings or on docks or piers, or even on fishing or research vessels for analysis of underway samples. Given the demonstrated northward transport of *Alexandrium* blooms through the Bering Strait and into the Chukchi Sea, IFCB deployments in Bering Strait and in Kotzebue Sound could provide valuable data on incoming HABs, for example. One promising recent development is the purchase of an IFCB by AOOS, the Alaska Ocean Observing System with funding provided by NOAA's National Center for Coastal Ocean Science (NCCOS) and the Integrated Ocean Observing System (IOOS) through the new NHABON program (National HAB observing Network). The intention is to train a community member on Little Diomede in the routine operation of this instrument, with technical support provided by experienced users on the mainland. This is only a single instrument, however, and a minimum of two or three more could easily be justified for Alaskan Arctic waters as part of an Arctic HAB observing system funded through NHABON.

What I am describing here is a combination of community-based, low-technology water sampling with more technically advanced instrumentation and laboratory capabilities. Many other regions of the world face recurrent HABs that contaminate seafood products and affect ecosystem health, yet it has proven possible to protect human health and sustain fisheries and other ecosystem services through informed management actions. The unique nature of the Alaskan Arctic, the lack of scientific understanding of HAB impacts on marine wildlife, and the reliance of coastal populations on non-commercial harvesting for nutritional, cultural, and economic well-being poses new and significant challenges that need to be immediately addressed as this region continues to warm and the potential impacts from HABs expand.

Mr. BENTZ. Thank you, Dr. Anderson.

I now recognize Mr. Lum for 5 minutes.

STATEMENT OF MIKE LUM, FUNDRAISING AND EVENT COORDINATOR, CAPTAIN ROLLO'S KIDS AT SEA, SAN DIEGO, CALIFORNIA

Mr. LUM. Chairman Bentz, Ranking Member Huffman, and members of the Committee, on behalf of Friends of Rollo, a California-based non-profit, I am honored to represent Captain Rollo Kids at Sea and speak to my support of H.R. 3925, the Youth Coastal Fishing Program Act.

I am Mike Lum, I am Fundraising Event Coordinator for the organization. I also manage the Southwest Region for Morton and Associates, a sales agency representing fishing marine outdoor brands throughout the 13 Western states. In addition, I sit on the

board of the Coastal Conservation Association of California, and I am an active member of the American Sport Fishing Association.

In 1999, in honor of Captain Rollo Heyn, a young sport fishing captain that passed away, Friends of Rollo was founded with a goal of providing as many children as possible the opportunity to experience their first fishing trip. With a priority placed on underserved communities, we typically grant 60 to 100 trips per year, each boat carrying 30 to 50 children. Recent increases in fuel and trip costs have created a dire need for additional funding to maintain our current levels. Demand has never been higher, and the need never stronger. The number of trips are only limited by the available funds that we raise each year. The organization, since its founding in 1999, has benefited over 140,000 children.

I am a prime example of life-changing potential that being introduced to the ocean at a young age can have. My father passed away when I was 8 years old. With no family support, my mother had to start working and when not in school I was left to my own. And it didn't take long before a boy with very little supervision was heading down the wrong path.

Thankfully, just before turning 10 years old, a family moved in across the street with a young father that loved to fish. He took me under his wing, took me on local sport fishing boats, and taught me the basics. I remember the very first trip vividly. I was so taken by the experience, the thought of getting into trouble or not doing well in school was no longer an option. He made it very clear that these fishing trips would stop if I didn't behave.

Going fishing and being on the ocean was the most important thing in my life, and as a direct result of that experience, my life has been spent as a passionate angler and never working outside of the fishing, boating, and outdoor industries. I assure you, it was that first day on the water that changed my life and provided me a very clear path to my career and a lifetime enjoyment of being on the ocean.

Most of the youth served by Captain Rollo's live within 40 miles of the coast, yet many have never seen the ocean. Giving children an introduction to the sea cannot be replicated with books and videos. The ocean is vast and full of mystery. Many young people, given the opportunity to be on a boat for the first time, gain an understanding and a curiosity that stays with them forever. Seeing dolphin playing under the bow wake just out of reach is something most never get a chance to experience, and those that do don't forget.

Viewing starfish and crabs on the rocks within the marina, the sea lions, dolphin, whales offshore, the shorebirds hunting for their next meal are all fascinating. Children are captivated by watching the live sardines in the bait tank, and learning how to use a rod and reel, catching their first fish. These trips can be life-changing for many, and they create lifelong memories for all. There are adults working in the sport fishing and marine trades today that were introduced to their first ocean trip on a Captain Rollo trip.

We would like to provide many more young people the opportunity to this program. The systems work well and require no additional cost or funding to expand. We can double or triple the number of trips without adding any operational expenses. One

hundred percent of additional funding will be used to increase the number of kids benefiting.

I want to thank Representatives Salazar and Kamlager-Dove for authoring the Youth Coastal Fishing Program Act, which would create a $2 million grant program within NOAA for projects that take children fishing in the ocean and on the Great Lakes, with a priority given to the underserved communities.

For the programs around the country like ours, where increased funding provides proportional increases in the number of children involved, this bill will allow us to scale up our efforts and directly benefit more children. Thank you for allowing me the opportunity to share how the Captain Rollo's Kids at Sea Program is improving the lives of thousands of children each year, with many more waiting.

[The prepared statement of Mr. Lum follows:]

PREPARED STATEMENT OF MIKE LUM, FUNDRAISING EVENT COORDINATOR, CAPTAIN ROLLO'S KIDS AT SEA PROGRAM

ON H.R. 3925

Chairman Bentz, Ranking Member Huffman and Members of the Committee, on behalf of Friends of Rollo, a California based non-profit organization, I am honored to represent Captain Rollo's Kids at Sea, a coastal youth fishing program in California before the Subcommittee on Water, Wildlife and Fisheries, and speak to my support of H.R. 3925, the Youth Coastal Fishing Program Act. I am Mike Lum, Fundraising Event Coordinator for the organization.

I also manage the southwest region for Morton & Associates, a sales agency representing fishing, marine and outdoor products in the thirteen Western States. In addition, I sit on the Executive Board of the Coastal Conservation Association of California, I am an active member of the American Sportfishing Association and in my spare time, love to go fishing.

California is home to the largest sportfishing fleet and most landings in the nation. Over 200 sportfishing boats, operating year around from dozens of landings from San Diego to the Francisco Bay area. Many of these boats carry up to 75 anglers per trip. We also have the largest and most experienced live bait haulers as our nearshore waters are teeming with baitfish that attract fish and provide ample access to live bait. The California coast drops off rapidly into the Pacific Ocean, creating abundant offshore fishing and whale watching opportunities within a short distance from shore. This is ideal for half-day excursions departing daily. Simply put, California is perfect for youth fishing programs.

Background information about Friends of Rollo, Captain Rollo's Kids at Sea Program

In 1999, in honor of a Captain James "Rollo" Heyn, a popular Sportfishing captain that had just passed away, the 501c3 Non-Profit organization, Friends of Rollo was founded. The goal being to allow as many kids as possible the opportunity to experience their first ocean fishing and marine life awareness trip. With a priority placed on underserved communities, the organization typically charters sixty to one hundred trips per year in addition to a variety of pier and on-land kids fishing events. Each trip carries 30–50 kids. The cost of the boat, fishing tackle, hot lunch and crew are paid by Friends of Rollo. The recent, sky rocketing increases in fuel and trip costs have created a need for additional funding to maintain current trip levels. Demand has never been higher and the need never stronger. The number of trips granted are only limited by the available funds raised. The organization has benefited over 140,000 kids since it was founded.

Trips are granted to as many groups of children as the budget allows for. Funding is largely grassroots in nature with annual raffles, fishing tournaments, public events and individual donations making up the bulk of the financial resources.

Schools, scouts, boys and girls clubs, church groups, at-risk youth facilities, children's homes, neighborhood youth groups, etc. request trips with a simple online application. The Captain Rollo's Kids at Sea trip coordinator works with each group to arrange a date, select a landing, appropriately sized boat, number of kids, etc. Once the details are worked out, the boat is reserved for them. It is that easy.

The Purpose and Benefits of Youth Trips at Sea

For those of us that spend much of our spare time raising money so that these kid's trips are possible, our investment of time and energy is due to our understanding of the importance. We see, first-hand how the kids react to the experience and how they benefit, both in the short and long term. It is not a matter of **if** we want to spend our weekends selling raffle tickets, soliciting donations, running fishing tournaments, hosting barbeques, etc., we simply must do it, it's not a choice. If not for the Rollo program, who would provide this opportunity to all these kids? What we raise is never enough to meet the demand, but it is sizable and benefits thousands of children each year.

Dr. Chris Minnick, a loyal supporter of the Captain Rollo's Kids at Sea, spent 50 years as a child psychiatrist. He recently shared with me his observations and expertise about the benefits of youth fishing.

Dr. Minnick grew up in a family that had little time for him. When not in school, he spent his early childhood mainly on his own, in what was then, a rural Phoenix, Arizona. He discovered the allure of fishing by watching small fish swimming in the irrigation ditches and canals where he used to play. Fortunately for Chris, his family gardener loved to fish and once he realized Chris was interested, was happy to teach him how to catch them. This passion to go fishing was sparked when he was just 7 or 8 years old. His family relocated to Los Angeles when he was 13 and he lost touch with his fishing mentor. However, he brought his love of fishing and being outdoors with him. It wasn't long before he discovered the Santa Monica Pier and expanded his fishing prowess to saltwater species. Today, Dr. Minnick is 78 years old. His love and respect for nature and the great outdoors have only grown stronger over the years.

He has seen first-hand what introducing children to the joy of fishing and developing an appreciation of our marine resources does to benefit kids. In preparation for this testimony, I asked him to summarize his thoughts about the subject. His letter is included but here is part of what he says.

"As a child psychiatrist I have seen firsthand the importance of introducing children, ideally before the turmoil of puberty and adolescence, to activities that can bring focus, community, and passion to their life. Many children grow up in environments that make them vulnerable to creating problematic social ties with peers in gangs. They are at risk to bind emotional distress with drugs.

Caring adults who show an interest in these children can have a profoundly positive influence. As happened with me and our gardener, they can be redirected to a focus on something that they would not even know exists without programs like Rollo's Kids, that take kids fishing. Having that introduction involve caring adult figures is a profoundly important element in the success of such activities.

I am now 78 years old. I was on various fishing adventures 123 days last year. My wife is grandmothering with a similar passion. My grandkids are already involved with fishing and I hope it can give them even a tenth of the happiness and meaning it has provided to my life."

I am a prime example of Dr. Minnick's analysis of the life-changing potential that being introduced to the outdoors at a young age can have. No one can appreciate or attest to the importance of this organization more than me. My father died when I was 8 years old. With no siblings and no family support, my mother had to go to work to provide for us. I was left on my own much of the time and it didn't take long before a young boy without much supervision was heading down the wrong path. As good fate would have it, just before my 10th birthday, a family moved into the house across the street and the young father, freshly out of the Navy, was a fisherman that loved to be on the ocean. His two sons were infants, so he was glad to have someone to teach about the ocean and fishing. He had also lost his dad when he was young and that created a special bond that exists to this day. He took me offshore on local fishing boats and showed me how everything was done. I loved it. I remember the first trip very vividly. I was so taken by the experience, the thought of getting into trouble or not doing good in school wasn't an option. It was made clear that the fishing trips would stop if I didn't behave. Going fishing and being on or near the ocean was the most important thing in my life. As a direct result of that experience, my life has been spent being a passionate angler and never working outside of the fishing, boating, outdoor industry. Being on the ocean is still very important to me and I still enjoy watching the dolphin playing alongside the boat. I assure you; it was that first day on a fishing boat that changed my life and provided me a career and a lifetime of enjoyment.

Another example of a professional that recognizes the importance of taking kids fishing is public school teacher, Mr. Chris Stanley. A teacher in the San Diego area,

he has taken his 5th grade class on Captain Rollo's Kids at Sea trips for 17 consecutive years. This annual trip became so well known that children in lower grades would be looking forward to it for years before entering 5th grade. They couldn't wait to go fishing. However, not all the kids in the class got to go. Good grades and proper behavior were required throughout the school year to be eligible for the trip. Mr. Stanley's Captain Rollo Kids at Sea trips become so successful that teachers from other schools began requesting trips for their classes. Where else could an opportunity like this exist? Mr. Stanley is now teaching in a community day school where students require additional emotional support and positive outlets. Of course, he continues to utilize trips from Captain Rollo Kids at Sea Program. I have included his letter that explains his positive experiences with his classes and the kids being on the ocean. Mr. Stanley is an exceptional human being that dedicates his life to his students. When not teaching or working with troubled youths, he is often fishing. He and his entire family work at the numerous Captain Rollo fundraising events each year to help raise the money necessary to continue helping the kids.

Mr. Doug Brown with the Kappa Alpha PSI Men's Group is granted multiple trips each year by Friends of Rollo. These young people attend schools such as Crenshaw High School, Dorsey High School, Audubon Middle School, Washington Prep High School, Boys Academic Leadership Academy, Culver City Middle School, Morningside High School, Inglewood High School and John Burrows Middle School. These are inner city kids that benefit from the Captain Rollo Kids at Sea program year after year. His letter is attached.

Marcus Farrow with Menformation Project, a youth mentoring program in Los Angeles knows what these trips accomplish. We have granted a fishing trip each year for them over the last 4 years. These young people would not get this experience without Friends of Rollo. Menformation Project's mission is to the point. . . To help our boys succeed in school and stay out of jail!

Facilities that care for children that have lost their parents due to cartel and drug related violence have also been granted Rollo, Kids at Sea trips. Any group that has kids in need are encouraged to apply.

The benefits of exposing young people the experience of being on a boat at sea cannot be overstated. Seeing starfish, mussels, and crabs on the rocks within the marina, the sea lions, dolphin, whales and variety of birds hunting for their next meal are things most have never seen. It all combines with the smells, ocean mist and movement of the boat as the crew makes everything work properly. Children are captivated watching the live sardines and anchovy in the bait tank, learning how to use a rod and reel and catching their first fish. These trips can be life changing for many and create lifelong memories for all. There are adults working careers in the sportfishing industry today that were introduced to the ocean on a Rollo trip. Others have grown up and become marine biologist and involved in research and ocean policy management. They are passionate about protecting our marine resources and others will be taking their own kids fishing someday.

Never Actually Seen the Ocean

Most of the kids served by these trips live within 40 miles of the coast yet it is regularly reported that many of them have never seen the ocean in person before being invited on a Captain Rollo's trip.

Giving children a hands-on introduction to the ocean cannot be replicated with books or videos. The excitement of seeing dolphin playing and swimming near the boat is not something that can be described. The thrill of watching a pelican or cormorant dive into the sea from high above and come up with a meal cannot be explained. The ocean is vast and full of mystery. Many children given the opportunity to be on a boat for the first time, gain an understanding and natural curiosity that stays with them forever.

No Access to the Ocean

Most of our world is covered by water. Except for those that own a boat, or have the resources to pay for a trip, there is no access to the ocean. Most adults in our country have never been on a boat offshore. The chances of children at any age experiencing the adventure is extremely limited. We make it happen.

The Stage is Set

California offers a unique opportunity with the number of sportfishing and whale watching boats, landings and with fish and marine life so close to shore. We would like to provide many more children the opportunity this program offers. The system works well and requires no additional cost, staff or time to ramp up. We can double,

triple or quadruple the number of trips without changing anything. 100% of additional funding will be used to increase the number of kids benefiting.

I want to thank Reps. Salazar and Kamlager-Dove for authoring the Youth Coastal Fishing Program Act. I also want to thank Members of this Subcommittee for co-sponsoring the bill, including Reps. Huffman, Wittman, Peltola, Levin, Case and Dingell.

The bill would create a $2 million grant program within the National Oceanic and Atmospheric Administration (NOAA) for projects that take children fishing in the ocean or Great Lakes, with priority given to projects that serve underserved communities. While similar grant programs exist within other federal land management agencies—such as the National Park Service, U.S. Fish and Wildlife Service and U.S. Forest Service—NOAA has no such program. This bill would bring NOAA in line with other federal management agencies and ensure that equal access to nature can be enjoyed by all children. For the numerous programs around the country like ours where increased funding provides proportional increases in the number of children we can take on trips, this bill will directly benefit youth across the nation's coasts. A relatively small amount of federal funding, matched many times over by private sources, will create meaningful and lasting benefits to our nation's youth.

In addition to its over 30 co-sponsors, the Youth Coastal Fishing Program Act is supported by dozens of recreational fishing, conservation, and environmental education organizations. I urge the Committee to swiftly pass this bill and help ensure its enactment this session on Congress.

Thank you for allowing me the opportunity to share how the Captain Rollo's Kids at Sea program is improving the lives of thousands of children but many more are waiting.

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The following documents were submitted as supplements to Mr. Lum's testimony.

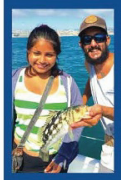
Over 140,000 kids have gone fishing!

Captain Rollo's Kids at Sea organizes marine awareness fishing trips for children who might not otherwise have such an opportunity to witness the beauty and splendor of being on the ocean. Youth are provided with a hands on learning experience and taught about the importance of California's precious marine resources and ecosystems that exist in our coastal waters.

The marine awareness fishing trips consist of 25-50 kids with up to six chaperones on ½ day trips. Rods, reels and tackle are provided as well as a lunch. Kids are instructed in fishing techniques and learn about marine conservation with expert instruction from the Captain and crew on a Coast Guard approved vessel.

We serve all social economic backgrounds including disadvantaged, physically challenged and at risk youth.

For additional information on how your youth group can go fishing, visit us online at: CaptainRollos.org



"Watching young people respond to the open waters, bait their hooks, and reel in a fish with their own two hands was more memorable and satisfying than any classroom lesson."

Wesley M. Warner
Delsea Charter School
Educational Facilitator
Instructor of Science, English, and Robotics

Captain Rollo's is proudly endorsed by:

CAPTAIN ROLLO'S KIDS at SEA
learn. respect. fish.

Our Annual Raffle

This annual event is a great way to support Captain Rollo's marine education program. For information regarding tickets please visit our web site at CaptainRollos.org

To Request A Trip:

Interested parties can request a trip booking by visiting captainrollos.org.

Under the trips section you can fill out the trip request form or simply contact Howard Coolidge at howard@rollokids.org

7/21

Help us take more kids fishing!

The Captain Rollo marine awareness fishing trip program is funded through charitable contributions, grants, year – round fund raising events, legacy donations, product donations and auto pay monthly recurring donations.

Our exciting fundraising events are posted on the Friends of Rollo Facebook page and at CaptainRollos.org. There are many ways to support our program.

Clubs and other Organizations help us each year by selling raffle tickets and holding their own fundraising events on our behalf. We have plenty of ways to work with your group. Please contact us.

Donate Fishing Tackle
Throughout the year we collect used tackle. Your gift donations are tax deductible and help us raise money to get more kids out on trips.

Families often contact us to arrange a donation after a loved one has passed. We greatly appreciate these generous heartfelt gifts as it passes a love of the ocean and fishing from one generation to kids experiencing it for the first time.

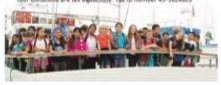
For drop off locations or to arrange pick up, please visit www.CaptainRollos.org.

Monthly Recurring Donations
An easy monthly auto-pay is a convenient and affordable way to support the kids. Credit and debit cards accepted as well as PayPal.

Just $10 per month adds 3 more kids to the program. $25 dollars per month will sponsor 10 kids a year. You can start and stop payments anytime. No obligation whatsoever.

Sponsorship Opportunities
Sponsorships are available and can be tailored to fit your private or company request. 100% of the sponsorships go to funding more excursions at no cost for the kids.

Captain Rollo's/Friends of Rollo is a 501c3 non-profit organization. Your donations are tax deductible. Tax ID number 45-5624805



From our beginning in June of 1999, Captain Rollo's has sponsored over 140,000 children on marine awareness fishing excursions.

CAPTAIN JAMES "ROLLO" HEYN
AUGUST 5, 1959 – FEBRUARY 4, 1999

Captain Rollo's Kids at Sea, also known as Friends of Rollo, is a non-profit educational organization named after **Captain James "Rollo" Heyn** of the long range sportfishing boat, the Royal Polaris. Rollo was famous for his fishing skills and his lifelong passion for the sport. As a youngster, Rollo worked in a tackle shop after school and on weekends. Rollo also worked as a cook and a deckhand during his teen years. Rollo spent 18 years as a crew member aboard the Royal Polaris where his reputation as an angler and a patient teacher grew. Rollo's extensive knowledge and enthusiasm for the fishing industry earned him a special place in the hearts of those that knew him.

It is in Rollo's memory that the organization seeks to introduce children to the enjoyment of fishing that Rollo so loved.

To date, we have taken over 140,000 kids fishing from all walks of life and welcome the opportunity to show as many children as possible the wonders of the ocean.

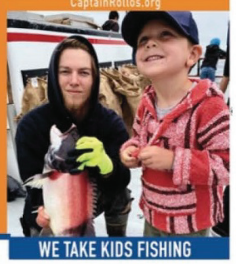
CONTACT US

CAPTAIN ROLLO'S KIDS at SEA
learn. respect. fish.

2580 Ingraham Street, San Diego, CA 92109
Tim@rollokids.org ■ (858) 350-5870
CaptainRollos.org

CAPTAIN ROLLO'S KIDS at SEA
learn. respect. fish.

CaptainRollos.org



WE TAKE KIDS FISHING

CAPTAIN ROLLO'S
KIDS FISHING PROGRAM

June 7, 2023

The Honorable Maria Elvira Salazar
U.S. House of Representatives
1616 Longworth House Office Building
Washington, DC 20515

The Honorable Sydney Kamlager-Dove
U.S. House of Representatives
1419 Longworth House Office Building
Washington, DC 20515

Dear Representatives Salazar and Kamlager-Dove,

Thank you for your leadership in introducing the Youth Coastal Fishing Program Act of 2023. This bill will provide opportunities for youth to experience their local marine or Great Lakes environment, promoting natural resource stewardship and participation in outdoor recreation. 88% of current fishing participants fished before the age of 12, highlighting the importance of being exposed to fishing at a young age. Not only does spending time outdoors fishing provide health benefits, but research has shown that participants in outdoor recreation place higher importance on environmental values and stand as stronger conservation stewards. This is clearly the case with recreational anglers, who collectively contribute $1.7 billion annually to conservation through license fees, excise taxes and direct donations.

Access to nature can be a challenge, particularly for Black, Indigenous and people of color (BIPOC) communities; individuals with access and functional needs; and those adversely affected by poverty. Some of these barriers include a lack of connection to nature and feelings of "otherness" in the outdoors. Early introduction to outdoor recreation in a safe, accessible and inclusive space is needed to grow participation and environmental stewardship.

While other federal land management agencies have dedicated programs to connect the public to nature, there is no such recreation program within the National Oceanic and Atmospheric Administration (NOAA), which manages federal marine fisheries. The Youth Coastal Fishing Program Act fills this gap in NOAA programming, ensuring that youth get the opportunity to connect with their local marine or Great Lakes environment.

We are grateful for your commitment to improving the lives of America's youth by increasing recreational fishing opportunities through the Youth Coastal Fishing Program Act. We are ready to assist you as you work toward the passage of this important legislation.

Sincerely,

American Sportfishing Association
Association of Fish and Wildlife Agencies
Backcountry Hunters & Anglers
BoatU.S.
Bonefish & Tarpon Trust
Center for Sportfishing Policy
Chesapeake Bay Foundation
Chesapeake Conservancy
Coastal Conservation Association Congressional Sportsmen's Foundation Ebony Anglers
Guy Harvey Foundation
Hispanic Access Foundation
Hunters of Color
International Game Fish Association
Izaak Walton League of America
Marine Retailers Association of the Americas
National Fishing in Schools Program
National Marine Manufacturers Association
National Wildlife Federation
Outdoor Afro
Theodore Roosevelt Conservation Partnership
Wild Oceans
Youth Environmental Alliance

For Mike Lum, Rollo's Kids Fishing Program January 9, 2024

Hi Mike,
As you know I was a child psychiatrist for nearly 50 years and a passionate outdoorsman with a huge focus on fishing. I wanted to share a few thoughts on the importance of fishing in my upbringing, and by extension, on children in general.

I grew up in a household with a physician father and nurse mother who were focused on my dad's practice at a level that left no room for involvement with me. I grew up in rural Phoenix and I spent most of my early childhood on my own playing around irrigation ditches, canals, and fields. I saw small fish regularly and tried to catch them with limited success

Fortuitously, when I was 7 or 8 years old, our Japanese gardner saw my plight and invited me to go lake fishing with him. I still fondly remember standing at the front of my house in the dark at 5 or 6 AM, paper bag breakfast and lunch in hand (made the night before), waiting to be picked up. Sadly, I actually felt closer to him than my father.

When I was 13, we moved to Los Angeles to my great sense of loss. I quickly discovered Santa Monica Pier and would have my mom drop me off in the early morning and pick me up at dark. I was essentially a very unhappy child, very lonely, but was able to make a life and family for myself centered on the pier and fishing.

Fishing has been my passion ever since those days. It provided a purpose and focus in my adolescent years when so many around me started to get in trouble. To this day, virtually all of my friends are outdoorsmen and fishermen.

As a child psychiatrist I have seen firsthand the importance of introducing children, ideally before the turmoil of puberty and adolescence, to activities that can bring focus, community, and passion to their life. Many children grow up in environments that make them vulnerable to creating problematic social ties with peers in gangs.They are at risk to bind emotional distress with drugs.

Caring adults who show an interest in these children can have a profoundly positive influence. As happened with me and our gardner, they can be redirected to a focus on something that they would not even know exists without programs like Rollo's Kids, that take kids fishing. Having that introduction involve caring adult figures is a profoundly important element in the success of such activities.

I am now 78 years old. I was on various fishing adventures 123 days last year. My wife is grandmothering with a similar passion. My grandkids are already involved with fishing and I hope it can give them even a tenth of the happiness and meaning it has provided to my life.

Sincerely,
Chris L. Minnick, MD

Santee School District

SCHOOLS
Cajon Park
Carlton Hills
Carlton Oaks
Chet F. Harritt STEAM
Hill Creek
Pepper Dr
PRIDE Academy at Prospect Avenue
Rio Seco
Sycamore Canyon
Alternative
Success Program

January 9, 2024

Captain Rollo's Kids at Sea Fishing Program

As an educator with 29 years of experience, I have witnessed the profound impact of both classroom learning and outdoor experiences, particularly through organizing students' first ocean fishing and marine life awareness trips. Having personally endured a school shooting in 1979, I understand the significance of providing diverse opportunities for students both inside and outside the traditional learning environment. These experiences not only complement academic learning but also serve as crucial outlets for cultivating a healthy mindset. Personally, I have found solace in marine activities and the outdoors as a means to disconnect from trauma and re-engage in a positive mindset.

I am currently teaching in a community day school where students require additional emotional support and positive outlets, I have observed the transformative power of programs like Captain Rollo's Kids at Sea. Many students in this setting lack exposure to the ocean and marine life, and through Rollo's program, the program provides them with their first ocean fishing and marine life awareness trip. The impact extends beyond the immediate learning environment, fostering inspiration and connections that transcend traditional classroom boundaries. Former students frequently return to support others on these adventures or contribute to classroom learning, demonstrating the enduring positive effects of such out-of-classroom experiences.

In my role, I have seen the profound impact of Captain Rollo's program on struggling students, providing them with positive outlets and opportunities to build positive relationships. The program, which also extends its support to other schools, uniquely aligns with setting students up for goal-oriented successes. Students who achieve academic or citizenship goals are rewarded with the opportunity to participate in this program, contributing to their overall success. The tangible improvements in students' achievements underscore the significance of the support and opportunities provided by Captain Rollo's Kids at Sea Program. I am deeply grateful for the positive changes it has brought to the lives of the students I work with and their communities.

Sincerely,

Chris Stanley
Santee Teacher

Kappa Alpha Psi Fraternity, Inc.
Long Beach Inglewood South Bay
ALUMNI CHAPTER
P.O. BOX 587
INGLEWOOD, CA 90309
Training for Leadership Since 1911

January 9, 2024

Howard Coolidge
Friends of Rollo
2580 Ingraham St.
San Diego, CA. 92109

Dear Howard,

On behalf of the Krimson and Kream Foundation and the Long Beach South Bay Alumni Chapter of Kappa Alpha Psi Fraternity Inc., we would like to thank *"Friends of Rollo"* for their years of service to our youth fishing program. Your continued support since 2016 has provided an opportunity for over 30 youth each outing to have a fishing experience. The 2 trips per year have served youth from the cities of Compton, Los Angeles, Inglewood, and Long Beach. That is over 360 youth since we started. (No trips in 2019 or 2020 due to COVID-19)

The primary goal of our program is to expose our participants to a variety of learning experiences. Most of our participants are youth of color, from single parent homes and attend schools that are 100% free or reduce lunch. We emphasize these points to show that without your support these students may never have had an opportunity to have this experience. The secondary goal is to celebrate students who have improved both their academic and social/emotional growth. Our students not only enjoy the experience of fishing, but they enjoy getting away from the day-to-day grind of inner-city life. The event provides awareness of alternative recreational opportunities for our youth. Because of the chaperones (Classroom Teachers) we use, it increases student engagement, academic achievement, and social development by providing teachers opportunities to build relationships outside the classroom. Other development impact on our participants include:

- *Acquire knowledge and participate in activities that support and develop new ideas and inventions that shape future endeavors and make a difference within a global community*
- *The activity will provide an extracurricular activity that requires participants to multi-task.*
- *Apply problem solving skills and logical thinking to make informed decisions.*
- *They will learn about sea life, and why certain breeds have size and quantity limits.*

...ONE KAPPA...

Kappa Alpha Psi Fraternity, Inc.
Long Beach Inglewood South Bay
ALUMNI CHAPTER
P.O. BOX 587
INGLEWOOD, CA 90309
Training for Leadership Since 1911

- Communicate effectively to convey and receive information in written, oral, and technical situations with people from diverse backgrounds.
- They will learn how man have an impact on global ecology Engage in opportunities to explore post-secondary educational and career pursuits.

In closing, we look forward to continuing our collaboration with *Friends of Rollo* in our efforts to provide fishing opportunities for our youth.

Sincerely,

Douglas C. Brown, Sr.

Douglas C. Brown, Sr. M.Ed.
Guide Right Committee Member
Kappa Alpha Psi Fraternity Inc.
Long Beach Inglewood South Bay Alumni
310-780-8507
dcb7695@gmail.com

THE MENFORMATION PROJECT™

"It is easier to raise strong boys... than to repair broken men."

January 13, 2024

RE: CAPTAIN ROLLO'S KIDS AT SEA

THE MENFORMATION PROJECT, INC. is a community-based nonprofit organization providing group mentoring & academic coaching for boys of color (ages 8 to 17 years). Since 2009, we have mentored hundreds of boys in Los Angeles County.

Our mission is to help our boys succeed in school & stay out of jail !!!

One relationship building activity we offer is our annual ocean fishing trip, made possible by Captain Rollo's Kids at Sea. Parents could not afford the costly expense of a half-day boat trip full of boys and mentors.

We have numerous stories of inner-city boys who have never been on a boat in the ocean seeing the shore for the first time in wonderment.

It is a lifetime memory when a boy catches his first fish, and we take photos:

Post Office Box 18916
Los Angeles, CA 90018
www.menformation.org
(310) 984-6931

RE: CAPTAIN ROLLO'S KIDS AT SEA
Page 2

We have taken fishing trips since 2011 when we were introduced to Howard @ Captain Roll's Kids at Sea, formerly know as Friends of Rollo. James "Rollo" Heyn must have been a remarkable force for good, because his friends continue the work in his name.

The team of mentors @ MENFORMATION are grateful for the way Captain Roll's Kids at Sea makes it possible for us to give our boys a fun filled day, including lunch, on the boat. These are memories that creates a bond which can last a lifetime.

Any funds you invest in Captain Roll's Kids at Sea, will produce a priceless return of positively changing the trajectory of a boy's life.

We highly recommend that you make that commitment.

Gratefully,

Marcus Bruce Farrow
Co-Founder & Chairman

Post Office Box 18916
Los Angeles, CA 90018
www.menformation.org
(310) 984-6921

Mr. BENTZ. Thank you. I thank the witnesses for their testimony, and will now recognize Members for 5 minutes each for questions.

Representative Carl, you are recognized.

Mr. CARL. Thank you, Mr. Chairman.

Mr. Raines, it is truly an honor to have you here today. You are probably the most recognized name on the Gulf Coast, and we don't want you involved in politics, by the way, but we will keep you at the University of South Alabama. We are very proud of the work you have done there.

Most of you that don't know, he has actually helped discover the last slave ship, and we are in the process now of trying to retrieve

that and actually build a museum around the slave ship to tell the story. So, he is a Renaissance man. What can I say?

Your dedication has successfully brought attention to the ancient cypress forest in the Gulf of Mexico. We have both highlighted the economic importance of preserving the underwater treasure for local fishermen and tourists. Can you speak a little more on why the protection of the underwater forest again, potentially, the exploration is so important?

Mr. RAINES. Thank you, Representative Carl. Yes. The forest, digging up these trees simply to make furniture or electric guitars out of them would be akin to digging up the mud holes of Yellowstone National Park because you found there was some economic benefit in them.

The forest, where it is, is a piece of our landscape that no one has ever imagined seeing. And it is there now, so we can reap benefits, both scientifically from learning about the past climate, but also exciting the minds of anyone who visits it, who hears about it, who sees it. It is one of those rare moments where it captures people's attention in a way that makes them instantly understand what climate change means and how the climate has changed previously.

My video started partway through so you all didn't get to see the ancient shoreline, where it was back then, but it was another 40 or 50 miles off the Gulf Coast. So, I have been speaking about the forest and showing this documentary and the way people light up when they hear about it, you see the scientific connections happening in real time.

And I am also a charter captain. All of these bills here touch on my livelihood in various ways.

This interaction with nature is one of the greatest things about America. You go to other countries and you can't do that. And part of that is the way we have protected it going back 200 years, the beginning of our national parks and all of that kind of thing. And that is the way the underwater forest should be viewed. It should be protected like a national park, and that is what the National Marine Sanctuary Program does.

The reason we are here in Congress doing this, rather than going through the traditional national marine sanctuary process, is because when I presented this to the National Marine Sanctuary office in Galveston they said, "You should probably go through Congress for this," because the state of Alabama wanted the site to be open so people could use it so they could fish there. You saw how many fish are there, so they could dive there, and they could anchor their boats there. Working with the state, the way we came about it was coming through Congress to design the bill so that it would serve all the interests of those affected.

Right now, there are no laws, period, that protect the forest. The only reason the furniture companies haven't been able to harvest the wood is because they don't know where it is.

After we put the bill up in Congress, I actually got a phone call from a man who had been pestering me for the coordinates for several years saying, "Well, I don't need the coordinates now. They are in the bill." Well, I told him I helped draft that portion of the

bill, and we designed an area about 4 miles wide. And the forest is a smaller area than that. Good luck finding it.

The idea that it would be exploited commercially is something, you have seen a few pictures of it. I just can't imagine we would let that happen for both what it means to the public to be able to see it and know it exists, and to science. It is a unique climate record. And the idea that we have actually found insects out there now, we are really getting into Jurassic Park territory, so we can bring some of these creatures back to life.

But it is a unique destination, and I hope that you all will preserve it.

Mr. CARL. Well, you have done an incredible job protecting it, because myself and a mutual friend of ours, Sean Sullivan, we both have been trying to get the coordinates because we want to fish it, to be quite honest.

[Laughter.]

Mr. CARL. Real quickly, Mr. Lum, I appreciate what you are doing, sir. I helped secure a few hundred acres in south Mobile County that has virgin timber on it, and what I want to do is bring those kids out of the inner city that don't get a chance to see a tree other than what is downtown, and teach them how to identify those trees as they walk around. And maybe, just maybe, we can flip that positive switch in them and have a horticulture show back up in 6 or 7 years, versus another statistic in a crime scene. So, thank you for your work and your efforts. Thank you, sir.

Mr. Chairman, I yield my time.

Mr. BENTZ. Thank you.

Ranking Member Huffman, you are recognized for 5 minutes.

Mr. HUFFMAN. [Inaudible.]

Mr. BENTZ. Sure, certainly.

Mr. COURTNEY. Well, thank you, Mr. Chairman. Thank you, Ranking Member Huffman. And it is good to see my colleague from Alabama, Mr. Carl, here today, who used to be a colleague on the Armed Services Committee, but he entered the cloistered life of the Appropriations Committee.

Mr. CARL. The dark side.

Mr. COURTNEY. That is right. Again, I just wanted to follow up Mr. LaLota's comments this morning.

I am the lead Democratic sponsor on the Long Island Sound Restoration and Stewardship Reauthorization Act. And, again, I listened to his testimony earlier, and I am not going to belabor it.

And I just ask for the record that my written remarks be entered.

Mr. BENTZ. Without objection.

[The prepared statement of Mr. Courtney follows:]

PREPARED STATEMENT OF THE HON. JOE COURTNEY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CONNECTICUT

Thank you, Chairman Bentz and Ranking Member Huffman, for allowing me to waive on to the Subcommittee for this hearing. I appreciate the Subcommittee considering these four important water bills, particularly H.R. 5441, the "Long Island Sound Restoration and Stewardship Reauthorization Act of 2023", which I introduced along with my Long Island Sound Caucus co-chair Nick LaLota from New York.

This time-sensitive, bipartisan bill would reauthorize the Long Island Sound Restoration and Stewardship Act, which expired at the end of the 2023 fiscal year. Congress must reauthorize this important program as soon as possible to ensure that federal funds can continue to preserve and protect this ecological resource and economic asset.

Long Island Sound is a national treasure—more than 20 million citizens live within an hour drive of its shores, and the Sound contributes over $9.4 billion annually to the regional economy from commercial and recreational fishing, ecotourism, and other water dependent businesses. Residents across the CT and NY also rely on the Sound for recreational opportunities, including fishing, sailing, and swimming.

In 1985, Congress created the Long Island Sound Study (LISS) to identify and address the major environmental problems affecting the Long Island Sound. The Study was authorized at $40 million annually through the Long Island Sound Restoration Act. Through the Long Island Sound Study, a bi-state Comprehensive Management Plan has been developed and is being implemented. In 2006 Congress also passed the Long Island Sound Stewardship Act, which provided federal dollars for projects to restore the coastal habitat to help revitalize the wildlife population, coastal wetlands, and plant life. These two programs were combined and reauthorized in 2018 through the Long Island Sound Restoration and Stewardship Act.

Federal investment in the Long Island Sound has helped federal, state, and local agencies as well as regional and local stakeholders to coordinate and fund the natural resource and watershed management activities around Long Island Sound.

Thanks to federal funding, the amount of nitrogen entering the Long Island Sound from sewage treatment plants have been reduced by 70.3% compared to the 1990s, hypoxic conditions have been reduced by 58% compared to the 1990s, over 2,239 acres of coastal habitat have been restored, and 570 conservation projects have been funded.

Congress on a bipartisan basis recognizes the importance of this funding. In FY23, Long Island Sound received $40 million, the largest funding level in the history of the program. The House and Senate have also both included $40 million for Long Island Sound in their FY 2024 appropriations bills.

To ensure that Congress can continue to provide this critical funding for Long Island Sound, we must move quickly and pass the Long Island Sound Restoration and Stewardship Reauthorization Act—a straightforward 5-year reauthorization at $65 million, the current authorization level.

Mr. COURTNEY. Thank you. And, again, just to set the stage a little bit in terms of Connecticut's interest in this legislation, I represent the 2nd Congressional District, whose coastline extends basically from the Connecticut River to the Rhode Island border. It is the largest part of Long Island Sound in terms of Members of Congress. But also, Congresswoman Rosa DeLauro is to the west of me and through New Haven County. And then further to the west is Congressman Jim Himes, who represents Fairfield County. And they are enthusiastic supporters of this legislation.

Again, there has been amazing progress, as Nick pointed out in his comments. This program was started back in 1985. It was pretty meager funding. But with Rosa's help, particularly, we have really gotten serious about efforts to clean up the Sound. It is an amazing body of water, as has been said. A lot of stakeholders of incredible variety in terms of the maritime industry. It is the largest operating military installation in New England with the Groton Submarine Base, which is in my district, and they all have to figure out a way to co-exist, to make sure that we protect the biodiversity of Long Island Sound.

Again, at the base, by the way, that was a Superfund site up until recently. It was established back in the late 1860s, and they had been dumping coal ash and God knows what else. And they have almost completely finished the cleanup of the base, and it is

no longer a problem in terms of the water quality and the marine life of Long Island Sound.

Mr. Pickerell, I heard some of your testimony, as well. Thank you for being here. And one last point is that if you look at New England, it is basically one big watershed that sort of feeds into Long Island Sound. And, obviously, that has been a big focus of the restoration. Maybe you could sort of comment in terms of other examples of the work that has been done because of this program.

Mr. PICKERELL. Sure, thank you.

There are a myriad of projects that are going on, obviously. In my written testimony, there are links to those reports that go over some of those in detail.

But some of the stuff we have been doing which is nice is a bi-state effort in terms of water quality monitoring, which I mentioned, which is a community-based program, stakeholder-driven, and it is wonderful because it involves folks at UConn, us at Cornell on the island. We do different water bodies, so that is wonderful.

The work with lobster pots is going on. Lobster pot removal is going on, on both sides of the Sound. We did some, I believe, initially, with Mystic Aquarium was one of the first, but we started in 2010 removing lobster traps from the Sound. We have done mostly the central spine. We look to the east now, as well. That is great, because it is a collaborative effort with the local towns in Suffolk County on our side.

As you well know, Connecticut and states north of that, six states in total, are most of the watershed. So, a lot of the effort goes into that watershed all the way up to the Canadian border. So, the fact that they are looking at things like stormwater inputs, non-point source pollution, which are all impacting water quality in the Sound, is very important. So, that is going on, and that is with the municipalities, with the counties, with the states.

Things like shellfish restoration, there is a lot of interest on both sides. I think, for good or bad, Connecticut is ahead of New York in terms of that. There is more of a sense of supporting shellfish restoration as well as shellfish aquaculture. And that is one thing I really wanted to highlight, is that it is, with regard to economic development, the most potential is in aquaculture, whether it is seaweed, kelp, or the oysters, which used to be a very historic fishery in Long Island Sound.

So, to the extent that we can try to support those small businesses that are running in the Sound there, it is a green industry, they are removing carbon, they are removing nitrogen. It is economic development. The oysters are wonderful that come out of the Sound, so we want to look at that, as well.

Mr. COURTNEY. Almost as good as California's.

[Laughter.]

Mr. PICKERELL. Yes.

Mr. COURTNEY. Well, I think I am running out of time. But again, thank you for being here and your testimony.

I want to thank again Congressman LaLota. We have worked together on this bill, and it is very bipartisan, two states, bicameral. All good.

With that, I yield back.

Mr. HUFFMAN. A two-state solution?
Mr. COURTNEY. That is right.
Mr. BENTZ. Thank you.
Mr. Graves, you are recognized for 5 minutes.
Mr. GRAVES. Thank you, Mr. Chairman.

I want to thank you all for being here today, I appreciate your testimony.

Congressman Carl introduced legislation on amending the National Marine Sanctuary Act, and tries to protect the underwater forest in the Gulf of Mexico. I am from Louisiana and represent the coastal area, as well, and I am a huge fan of the abundant ecological productivity that occurs as a result of the unique conditions of the Gulf of Mexico. Ninety percent of the freshwater inputs to the Gulf come as a result of waterways into the Gulf from Louisiana, and again creates a really productive estuary, and it creates an opportunity for multiple uses of the Gulf of Mexico.

And I thought that Congressman Carl did a great job in trying to strike that balance and ensuring Mr. Raines that fishing opportunities and others continue. But it is not just about recreational commercial fishing, it is energy production and other things.

Mr. Scholz, do you see anything in the way that Congressman Carl struck the balance in his legislation that would prevent this from being implemented and ensuring this continued balance in multiple uses of the Gulf?

Mr. SCHOLZ. Thank you for the question. No, the legislation is designating. We have had a number of sanctuaries that have been designated directly through legislation, 3 of the 15 we currently have, and there is nothing inconsistent. In fact, it just serves as the boundary conditions for what we would have to develop as a management plan.

Mr. GRAVES. Great, thank you very much.

Mr. Lum, in looking at the other legislation that has been introduced by Congressman Salazar in coastal fishing, I noted in your testimony you referred to Dr. Minnick, a child psychologist, that talked about the benefits of fishing. I know that Mr. Huffman often talks about how I was an altar boy growing up and a perfect kid, which is true, certainly, but I will say there is something about being stuck within the gunwales of the boat that prevent kids from getting in a whole lot of trouble sometimes. And I am just curious if you could expand upon some of the discussions you have had with Dr. Minnick with the benefits of promoting fishing for kids.

Mr. LUM. Thank you. We have been doing this now for 24 years, our organization alone. And in all of those years, we have had countless examples of children that otherwise would be in deep trouble if it weren't for exposure to fishing, being on the ocean for the first time, and then, of course, having exposure to the marine life, being exposed to marine life mammals that they get to see on these fishing trips.

We have found that the fishing aspect of it is all important and the reason that they really want to go. The learning experience they get from it really is a life-changing experience for many, many of these children.

The groups that we help report back to us that not only as an incentive to help their children as they work towards a trip, we have a school teacher in San Diego that for 17 consecutive years has taken a fifth grade class out. And it is now to the point where the entire school awaits for the fifth grade so that they can go out and go on this fishing trip. But it is not like everybody gets to go. There are incentives, there are rules, they work towards it. It is a culture now within the school, so much so that some of the other schools are now asking for similar trips.

So, there is no question that exposing children at a young age to an opportunity to be on the ocean is very beneficial and does keep them out of trouble.

Mr. GRAVES. Thank you. Dr. Anderson, off the Gulf Coast of Louisiana we have, as you know, the largest dead zone on the continent as a result of the largest watershed in the continent draining two-thirds of the United States. Can you talk a little bit about some of the partnerships and the benefits to overall science as a result of the things like the Gulf mapping hypoxia and efforts along those lines?

Dr. ANDERSON. Sure, and thank you.

Hypoxia is a very challenging problem because the actual dead zone that you are referring to is out in the Gulf of Mexico, but the causes stretch all the way up into Minnesota and the entire stretch of the Mississippi. So, you obviously need state and Federal partnerships.

Mr. GRAVES. And Canada, by the way.

Dr. ANDERSON. And Canada as well, yes. I stand corrected.

And it is a problem that you have also out on the West Coast of the country, but a very different kind of a mechanism where, instead of large rivers entering and dumping all this material in, it is deep water, low oxygen. And, again, that requires partnerships with other agencies and states, as well.

I am running out of time here, but you are correct. It is a very broad Federal and state problem.

Mr. GRAVES. Thank you very much. I appreciate it.

Mr. Raines, I had a couple of questions for you, but I will submit those for the record.

I certainly appreciate you and Mr. Pickerell being here, and I yield back.

Mr. BENTZ. Thank you.

We will try again, Ranking Member Huffman, you are recognized for 5 minutes.

Mr. HUFFMAN. Thanks, Mr. Chairman. This is an excellent panel. I want to thank all of you.

Mr. Raines, I could spend all my time and a lot more talking to you about this amazing underwater forest. Let me just thank you for the work that you are doing with Mr. Carl and others, and for being such a great Ambassador for marine sanctuaries. We hope to see you back and collaborate with you in lots of ways.

Mr. Lum, thanks for sharing your personal story about the impact that fishing has had on you. If I had had access to the coast when I was growing up as a kid, I may never have stopped fishing. Unfortunately, I grew up in the Midwest, so the trauma in my childhood was that I had to suffer through warm water fishing,

catching crappie and bluegill and stuff like that. I was even too far south to get the good stuff like walleye and fish of a thousand casts, the muskie.

But now that I am on the California coast, I do get access to all of that, and it makes me appreciate even more how difficult it is, certainly, for a lot of kids, for a lot of families with children. When I fish in the lakes in Marin County, I am always delighted when I see a kid with a fishing rod. Where I grew up, all the kids had fishing rods and knew what to do with it. But every time I see that, there is a little twinkle in their eye. I can tell they are going to be lifelong fishermen, and I know that somebody took the time, maybe a neighbor like yours, or a parent, or a scout leader or somebody, to introduce them and to create that spark.

So, I think it is wonderful, what you have done and what this legislation is attempting to support. Do you want to speak a little more to how these types of programs can really be transformative for families with kids who just would never have that kind of access without a little help?

Mr. LUM. Thank you. And, yes, there are children all over the country that have similar situations, don't have access to the ocean, but they still find that the freshwater access is therapeutic, as well.

We have a friend and a big supporter who is a 50-year child psychiatrist, and he discovered fishing when he was very young in the outskirts of Phoenix. And he had his family gardener, who found out he was interested in fishing. The gardener liked to fish, so he kind of took him under his wing. And he has since moved to California and served out his 50 years as being, like I mentioned, a psychiatrist. He believes wholeheartedly that fishing and access to the ocean is therapeutic and helpful for the kids.

There is really no question about that at all. Many of the groups that we grant trips to every year, and we grant between 60 and 100 trips every year, depending on what our funding is. Everyone consistently comes back to us and say we are saving kids. We are keeping kids out of jail. We are keeping kids on the straight and narrow, and we are giving them something other than gangs and drugs to long to be part of.

So, that, to me, just says it all, and we hear it over and over after all the years of doing it. We are only limited by our funding.

Mr. HUFFMAN. Well, thank you for that great work.

Dr. Anderson, I want to talk with you about harmful algal blooms. I will use the acronym HAB that everybody seems to be using here. But I know that this is a problem all over the place, including in my district. We have seen this affect our most lucrative fishery in California, Dungeness crab, multiple times in recent years, and the hypoxic conditions that result after these HABs decompose, of course, have terrible effects.

It seems to me that, with climate change and increased warming, this problem is only going to get worse. Could you speak to how you see that playing out, and maybe making this an even greater challenge?

Dr. ANDERSON. Yes, thank you. You have hit the nail right on the head. The combination of the climate and many other factors is making these problems worse, and the Dungeness crab situation is a perfect example.

But we are seeing these not just along the coast of California and Oregon, but other places, as well. When you take a look at the changing situation, add to that the fact that there are multiple new syndromes that we are having to deal with in this country over the past decade or two, so we are not only having more problems, but they are getting worse, and climate change is just one example.

But for example, in California, the organism that is causing the toxin that is affecting the Dungeness crabs is one that doesn't grow very well when it gets warm, but it is now being replaced by another that does grow well. And we now know that it makes more toxin when it is grown generation, after generation, after generation under warmer conditions. So, even though it might get too hot for one species, another one is going to move right in, and it looks like it could even be worse.

So, there are so many climate stories, but there is no question that we are just beginning to get a feeling for how much of a change we have to deal with.

Mr. HUFFMAN. Thank you.

I yield back.

Mr. BENTZ. Thank you.

Chair Westerman, you are recognized for 5 minutes.

Mr. WESTERMAN. Thank you, Chairman Bentz, and thank you for the witnesses for being here today. And this is a hearing I have been looking forward to for quite some time.

Mr. Raines, I watched your documentary on the underwater forest. And being a forester, I am just totally fascinated by what you have found.

And my friend from Alabama, Mr. Carl, had been telling me about the underwater forest there, and there are so many questions. I could spend a lot of time asking you about it, but I am fascinated that originally you thought this was 12,000 to 18,000 years ago. And if you look at sea level charts, the sea level was about where it would have been 12,000 to 18,000 years ago, but then you couldn't use the carbon dating because it was off the record of carbon dating. And now, with different analysis, you are thinking, what, 70,000 years ago when the sea level was back, and it is just fascinating to think that the sea levels have fluctuated that much over a huge time period, but we have an actual organic link back to that time.

And my first question is what kind of new theories and hypotheses has this opened up for the scientific community to actually have samples from these trees that they believe are 70,000 years old?

And how much more do you think we can learn from it? It seems like there is so much science that could come out of this discovery that we may not even understand right at the moment.

Mr. RAINES. Yes. Well, one of the things about the forest that makes it so unique is that it was protected, and it didn't disappear. It is wood, and wood decays under water. And this was covered, so it was preserved, but it is a fact that trees are rooted in the ground they were growing in, so we have the entire ecosystem, we have the soil microbes and soil creatures. We have actually some beetles in the wood of some of the trees that were buried in place.

They believe the forest was overwhelmed very quickly by floodwaters coming from the glacial melt at the beginning of the Ice Age, so they can actually see the succession of the water level rising in the plants as marsh grasses moved in, and then freshwater grasses. These things retreated and stuff as the salt water came in.

The scientists have only been there a few times. Most of the original wood samples I brought up myself in a bucket, with a lift bag, and that is what ended up at Lawrence Livermore. Now, they have been able to get out there with sediment cores and things like that. We have actually found a few more spots that have more trees in them that are still fully buried, and these trees are 9 feet under sand.

So, at the site, surrounding the part that was exposed during Hurricane Ivan, we have pristine sections of the forest. That is where the real science is going to, we are going to get a lot out of that because the site where we have done all the work has been exposed and it was exposed in about 2004 when Ivan came through. So, to have right adjacent to those trees that have never been exposed since 70,000 years ago, that is where the scientists really get excited about what they are going to find and see.

Mr. WESTERMAN. And it is fascinating that with the ocean level cycles, and correct me if I am wrong, but there was a forest there, it was inundated and flooded rapidly, covered the forest with mud, but then there was another Ice Age that exposed that land to the air again. So, part of this, the history of this forest, it has not always been under water, yet it was still able to survive.

Mr. RAINES. Yes. Well, one of the interesting things is cypress trees are not salt tolerant. So, what that tells you, the fact that these trees are 10 miles off the coast tells you that the shoreline for the Gulf of Mexico was much, much further offshore, even still.

One of the interesting things that I learned doing the work there in the underwater forest and the documentary was these repetitive cycles of Ice Ages. Every 100 to 40,000 years or so we would have these dips and climbs. And one of the things we have seen in the forest was how quickly the water came up. Where they are talking about the rate of sea level rise today, well, it has actually risen much faster in geologic time. And I think we are seeing that happening now in real time. The Gulf of Mexico has the highest sea level rise in the United States. And it has accelerated, it is faster than they expected it to be.

The forest is actually yielding real-time warnings for the nation right now when we study how quickly the sediments change there and things.

Mr. WESTERMAN. But the relative amount of rise right now compared to 400 feet of rise and fall is hard to fathom.

Mr. RAINES. Well it is. And you are talking over 100 million years. But the scale we need to be thinking about is over 100 years and 1,000 years. And what we are seeing in the forest is that sea levels came up.

We were talking about worst case scenario for the next 100 years was 6 feet, potentially. Well, in the forest we have seen 10 feet in 100 years. So, that is, to me, the message of the forest and the warning. And, again, it brings that science home in a way people

can really understand. I mean, I think you have experienced that, seeing the documentary and kind of understanding, oh, this happens quickly.

So, it has a lot left to teach us unless we let it all be turned into coffee tables.

Mr. WESTERMAN. And it is also fascinating that bald cypress are in the same family with giant sequoias and redwoods, which are some of the oldest living organisms on the planet today.

Mr. RAINES. Well, that is the other thing the forest does. We don't know what the Gulf Coast looked like before we started cutting it down. The entire Gulf Coast has been logged multiple times over the last 200 years. When they were logging Alabama, Louisiana, Mississippi——

Mr. BENTZ. If I may, can you wind it up?

Mr. RAINES. Oh, sure. The trees were the size of that giant one I showed. These trees were 30 feet around. That was the South. That was our coastal forest.

Mr. WESTERMAN. Thank you.

Mr. BENTZ. Thank you. The Chair recognizes Congresswoman Hoyle from the great state of Oregon.

Ms. HOYLE. Thank you, Mr. Chair, also from the great state of Oregon.

Thank you very much for your testimony today. It was a really interesting panel to listen to. But my question, after a comment, is for Mr. Lum.

I also, like Representative Huffman, had some opportunity to fish when I was younger, at camp. And don't knock it. In Queens, in Jamaica Bay, when my uncle would jerry-rig a beer can with fishing line, and we would fish for porgies out in Jamaica Bay, which I ended up finding out was one of the most polluted bodies of water in the country, but it is now a wildlife refuge. Story for another day. Don't knock it.

But you, in your testimony, mentioned Captain Rollo's Kids at Sea Program, which works with kids that wouldn't otherwise be able to get out on the ocean to go out and have these experiences, and I think it really is wonderful. And it is transformational when you expose children to things like this, to the outdoors, to nature, to healthy outdoor opportunities without beer cans.

So, what I would like to know is how do you go about reaching out to these schools, and finding these kids, how does that program work? Because I think that this is an excellent example that we should replicate all over the country.

Mr. LUM. Well, thank you for that question.

We have a very unique situation in California in that we have sport fishing landings that run from the San Diego area up beyond the Bay area by San Francisco. And these sport fishing landings operate hundreds of boats. We have over 200 licensed sport fishing boats that take people out, 25 to 70 people sometimes on both fishing and whale watching trips. So, that doesn't exist elsewhere. We have somewhat of a unique opportunity which we have taken full advantage of.

We don't have to go out of our way to solicit groups of children. They come to us. A lot of it is word of mouth. We are quite popular in the California area. We are at a lot of events, people see us, we

are known. And the biggest question that we get is, what is the gimmick? What is the catch? You are not just going to give us a trip. Well, that, in fact, is what we do. If the group can contact us, and we can conclude that it is logical that they go, we want to know how many kids, we want to know what their area is, where they are located.

Of course, we only have so much money each year to work with, so we prioritize and we take the inner city kids, we take the kids in need before we take the rest. But once a school or a group starts with us, we don't allow them to come back and take the same kids over and over. It is a one-time thing.

Now, in the case of the school teacher I referenced, he has a different class every year, of course, so it is new kids every single year, and we will continue to grant him.

So, they come to us. We don't really have to go to them. And at this point, I would love the opportunity to go out and reach for more, but it would take more money in order to do that.

Ms. HOYLE. Thank you, Mr. Lum. I am lucky enough to live on the McKenzie River in Oregon. I can fly fish across the street from my house, and we have a lot of guides that are really interested in outreach, and I will certainly be talking to them about your program. So, thank you for being here today.

And I yield the balance of my time.

Mr. BENTZ. Thank you.

Mr. Duarte, you are recognized for 5 minutes.

Mr. DUARTE. Thank you, Mr. Chairman. I appreciate it.

Mr. Scholz, you have done some work on algal blooms throughout the United States. I represent an area in the San Joaquin Valley in California where we are greatly impacted by water policy. Delta water issues are a big deal. There are a lot of municipalities around the delta that are discharging non-tertiary treated water into the San Joaquin Delta, causing algal blooms and nutrient issues that would lead to algal blooms.

Have you studied this in your work at the administration?

Mr. SCHOLZ. I do believe, between the partnership that we have in the interagency working group with EPA, where we co-chair with EPA, that across the interagency working group there has been effort in that area. I am not specifically aware of it myself right now, but we would be happy to get back to you on details.

Mr. DUARTE. Well, I am very interested in it because these algae blooms are a big problem. We are sending a lot of Clean Water Act compliance money to the municipalities, to California, for block grants. And it is not getting down to where the rubber meets the road in preventing these kind of discharges that are screwing up the delta, and it is causing us to use a very large amount of our surface water resources to flush the delta because we are using it for a toilet.

And do any of the others on the panel have comments on this issue? Have you had experience or background?

Please, Mr. Raines.

Mr. RAINES. We are seeing all these issues associated with algal blooms in Alabama. A lot of it is non-point source pollution, it is coming from homeowners, it is coming from septic systems. Mobile Bay, which is one of the Gulf's largest estuaries, has its own dead

zones, multiple dead zones, and we are seeing that in all our coastal waters.

So, you are talking about treatment, and treatment is a big issue. But I think a lot of your problem may be out of the bounds of treatment in terms of sewer plant or anything like that. That is certainly the case in Alabama.

Mr. DUARTE. Yes, I know in California there has been actual research that tied the, especially the Sacramento municipal waste discharges, non-tertiary treated, to providing large amounts of nutrients that have impacted the delta smelt, which is endangered, probably non-existent at this point, and also interfering with the salmon hatcheries and salmon runs.

Mr. Anderson, I read in your testimony you have touched on some of these areas. Do you have any thoughts on these matters of what we can do better to make sure that the Clean Water Act compliance money is keeping these types of non-tertiary treated municipal wastes from going into our waterways?

Dr. ANDERSON. I definitely have an opinion there. For the longest time, most of the work in the United States was funded through NOAA, through HABHRCA, dealing with the ocean, coastal waters, and the Great Lakes. But the EPA was not heavily engaged, and that has been something we have been working very hard to get. That is their mandate, to have to deal with the fresh waters. And nowadays, we have not only the EPA, we have the U.S. Geological Survey, we have the Corps of Engineers also, all weighing in on these freshwater issues.

But in terms of pollution, there is no question that there is a very strong connection between pollution and certain types of this slimy material I was talking about in my testimony, the pond scum and so forth. Those species do extremely well in these polluted waters, and they are something that we will have to deal with with controls of nutrient inputs in watersheds. But it is a long-term problem.

One of the other aspects of the HABHRCA legislation is research into control methodologies. So, if you could actually attack those blooms, suppress them, remove them, and we have technologies that are being used for that, both marine and fresh water that are under development.

So, we can have the long-term approach through the Clean Water Act.

Mr. DUARTE. But importantly, not to cut you off, I really appreciate your testimony here, but most importantly is we have point source discharges happening that the EPA is not regulating at its maximum.

I am from California. Fourteen percent of the state is mapped as vernal pool habitat for fairy shrimp, and the EPA is taking great interest in regulating under the Clean Water Act mud puddles. But what I am hearing from you is the EPA is not taking great interest in very feasibly accomplished management of discharge from municipal waste facilities.

Dr. ANDERSON. Well, part of what I am saying is that it is changing, that that was true some years ago when we could not get EPA really to come to the table with funding and so forth. Now they are. Now they are interested. They have the harmful algal

bloom program. They are part of a lot of our conferences and so forth. So, the times are changing.

Mr. DUARTE. It is 2024. The Clean Water Act was put into effect in 1972 or 1974. It is about time for times to be changing, isn't it? This is kind of insane to me, as a farmer, being regulated on 16-square-foot vernal pools when you are clearly saying the EPA has been AWOL on regulating municipal waste discharges into our waterways.

Dr. ANDERSON. Well, they were AWOL when it comes to algal blooms specifically. That is where my knowledge is.

Mr. DUARTE. But algal blooms based on nutrient discharges from municipal waste facilities.

Dr. ANDERSON. That is what is changing. And even for the small scale they were not involved. But now I think everyone is recognizing both the small and the large-scale impacts, and the EPA is, at least I have many colleagues now, funded and working with the EPA. So, it has changed in the harmful algal bloom field in a positive direction, maybe not as fast as everyone would like, but it has changed.

Mr. DUARTE. How exciting.

I yield back.

Mr. BENTZ. Thank you. Mr. LaLota, you are recognized for 5 minutes.

Mr. LALOTA. Thank you, Chairman Bentz. As you know, I don't serve on this Committee, so I appreciate your indulgence in allowing me to waive on to not only testify earlier, but to ask a few questions today and to discuss the importance of reauthorizing the Long Island Sound Program.

Mr. Pickerell, a fellow Long Islander, it is good to see you here today, sir. Thank you so much for your work as the Marine Program Director of the Cornell Cooperative Extension of Suffolk County, and for your hard work and dedication to making sure the Long Island Sound is safe and prosperous for so many of us Long Islanders to enjoy.

We only have 4 or 5 minutes, so I wanted to ask you about five questions in that time.

First, a rough estimate, if you wouldn't mind, how many people every day are affected by the Long Island Sound, whether directly or indirectly?

Mr. PICKERELL. It has to be tens of thousands if you consider the size of the watershed up into Connecticut. Long Island, not as many, but yes, definitely tens of thousands, for sure. Hundreds of thousands, probably, if you go into Connecticut. Tens of thousands on the north shore of Long Island.

Mr. LALOTA. And would you describe in which ways are some of those folks affected by the Long Island Sound?

Mr. PICKERELL. Recreation, commercial fishing, recreational fishing, esthetics, boating, swimming, all of those things. Transportation, of course, the ferries, there is also transportation going east and west within the Sound.

Mr. LALOTA. Yes, awesome. Those are some of the very direct ways. How about indirect? How about, like, the water quality issues, especially if the water quality in the Long Island Sound is

tainted. Could that number grow from the hundreds of thousands that you mentioned?

Mr. PICKERELL. If the water quality was improved?

Mr. LALOTA. Right.

Mr. PICKERELL. Sure. That could actually impact people's livelihoods, their jobs.

Mr. LALOTA. Yes.

Mr. PICKERELL. So, whether it is aquaculture or wild harvest of shellfish or fin-fish, that could increase and bring more money to those communities, to their families to put food on the table, things like that.

Mr. LALOTA. When considering those indirect measures, and you are the expert, not me, but my memo suggests that 23 million people are affected by the Long Island Sound when considering all those indirect measures, as well.

But let me ask you this. We are here to talk about the Long Island Sound Reauthorization Program. What would happen if the program never existed?

Mr. PICKERELL. We wouldn't see the milestones reached that have been achieved so far. There have been so many projects of all different natures that have taken place that have helped to restore habitat, fisheries, recreation, education, all these things. And without that I wouldn't be able to employ some of my staff, and we have a staff of over 80 that are working throughout the region. Some of those are funded through funding from the EPA, National Fish and Wildlife Foundation, Projects on the Sound.

Mr. LALOTA. Awesome. So, we have made tremendous progress over the decades authorizing funds into that program, folks who have worked and dedicated themselves to ensure quality in the Long Island Sound. And we have made progress over decades doing that.

What if we stopped funding that today? What would life look like moving forward for those millions of people affected by the Long Island Sound if all of a sudden Uncle Sam stopped sending the money?

Mr. PICKERELL. We would actually go in reverse. So, those improvements that have happened would start to wane, and we wouldn't see any advancement in habitat value, habitat amount, all those things I talked about. We need to keep this going so that momentum maintains itself.

And we need to revise the CCMP. That is going to be done in 2025. The last revision was in 2015. That is a living document that needs to be considered on a regular basis with local stakeholder input, and we need that funding to continue that planning process so that these local groups and scientists can get together and decide where to go with this program.

Mr. LALOTA. Great. And of all the things that that funding goes to fund, what would you say is the most important program? I know there are many.

Mr. PICKERELL. Yes.

Mr. LALOTA. And I know they have a wide reach. But of all the different programs that the program funds, what would you say is the most important?

Mr. PICKERELL. I would say programs that affect the input of nitrogen into the Sound. So, that is myriad ways it gets in there, but it is stormwater, point, non-point source pollution, overland flow. Those things affect everything from oxygen concentrations, ocean acidification, die-offs. It is the most important thing, is to control that nitrogen getting into the watershed.

Mr. LALOTA. And we have just about a minute left and I have two more questions.

Mr. PICKERELL. Yes.

Mr. LALOTA. Focusing on the recreational, can you describe some of the recreational activities that folks enjoy, both from Connecticut and Long Island, and from the region in and around the Long Island Sound?

Mr. PICKERELL. Recreational activities, I am kind of close to shell fishing and fin-fishing, so there are many boats throughout the harbors on both coasts that go out to recreational fish. So, stripers are big in the Sound, people fish from the beach. Other recreational activities are swimming, boating, all those good things.

Mr. LALOTA. And one last question with about the 20 seconds I have remaining. How about the economic impact? What is the economic impact of the Sound, and what is important to the region there?

Mr. PICKERELL. So, funding from the program. Since its inception, I believe the economic impact of this program we are looking at today is about $96 million as of a couple of years ago. There has been about $54 million of investment and then about $40 million and change has been brought to the table through matching funds.

The value of the estuary itself, the whole watershed, is $1 trillion.

Mr. LALOTA. Yes. Thanks for your work, I appreciate your testimony. I appreciate the work of the folks who are with you.

And I hope that is obvious to my colleagues here in Washington that the reauthorization of the Long Island Sound Program is vital to not only Long Islanders in Connecticut, but to the entire region.

Thanks, Chairman, I yield back.

Mr. BENTZ. Thank you. I want to thank the witnesses for their testimony and the Members for their questions.

The members of the Committee may have some additional questions for the witnesses, and we will ask you to respond to those in writing. Under Committee Rule 3, members of the Committee must submit questions to the Subcommittee Clerk by 5 p.m. Eastern Time on Tuesday, January 23. The hearing record will be held open for 10 business days for these responses.

I would also ask unanimous consent to enter into the hearing record a letter to the Subcommittee from the Congressional Sportsmen's Foundation in support of H.R. 897 and H.R. 3925.

Without objection, so ordered.

[The information follows:]

CONGRESSIONAL SPORTSMEN'S FOUNDATION

January 17, 2024

Hon. Cliff Bentz, Chairman
Hon. Jared Huffman, Ranking Member
Committee on Natural Resources
Subcommittee on Water, Wildlife and Fisheries
1324 Longworth House Office Building
Washington, DC 20515

Dear Chairman Bentz and Ranking Member Huffman:

In advance of the Subcommittee's January 18, 2024 hearing, the Congressional Sportsmen's Foundation (CSF) would like to offer the following statement for the record in support of two bills before the Subcommittee. Specifically, CSF strongly supports the Youth Coastal Fishing Program Act (H.R. 3925) and the Alabama Underwater Forest National Marine Sanctuary and Protection Act (H.R. 897).

While the nation's coastline represents less than 10% of the contiguous land area in the United States, around 40% of our population lives near the coast. The close proximity of so many Americans to our rich marine and Great Lakes resources provides a perfect opportunity to introduce young people to recreational fishing and instill a deep appreciation of our nation's marine and freshwater environments. NOAA is the only federal land and water management agency that does not have a dedicated recreational program to introduce the public to the outdoors. The bipartisan and bicameral Youth Coastal Fishing Program Act (H.R. 3925) would create another pathway for federal agencies responsible for management of our natural resources to connect the public with those resources.

The bipartisan Alabama Underwater Forest National Marine Sanctuary and Protection Act (H.R. 897) seeks to protect a recently discovered underwater cypress forest off the coast of Alabama. This highly unique substrate provides habitat for fish, an exceptional destination for divers, and a rare opportunity for researchers to explore our nation's biological and geological history dating back at least 50,000 years. While the bill seeks to protect this historic national treasure, it specifically ensures that the public will be able to experience the monument through activities like recreational fishing and diving.

Both pieces of legislation are important to the nation's saltwater angling community. CSF sincerely appreciates the Subcommittee for scheduling a hearing on these bills, and we urge the full House Committee on Natural Resources to report each favorably during the next timely Committee business meeting.

Sincerely,

CHRIS HORTON,
Senior Director, Fisheries Policy

Mr. BENTZ. With that, the Subcommittee stands adjourned.
[Whereupon, at 11:29 a.m., the Subcommittee was adjourned.]

[ADDITIONAL MATERIALS SUBMITTED FOR THE RECORD]

PREPARED STATEMENT OF THE HON. SUZANNE BONAMICI, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OREGON

ON H.R. 6235

Thank you, Chairman Bentz and Ranking Member Huffman, for holding this legislative hearing, and for inviting me to testify in support of H.R. 6235, the Harmful Algal Bloom and Hypoxia Research and Control Amendments Act.

This legislation would prepare and protect communities and ecosystems from the devastating effects of harmful algal blooms—known as HABs—and hypoxia events. Heat, decaying vegetation, and human activity in water systems are causing HABs to occur with increasing frequency. HABs produce cyanobacteria, which can accumulate in high doses in aquatic wildlife and, if consumed, can cause short-term memory loss, seizures, coma, and death. Hypoxia, low levels of oxygen, is caused by increased water temperature and excess nutrients, and can cause die-off of fish, shellfish, coral, and aquatic plants. My bill would improve monitoring, research, and community and federal response to HAB and hypoxia events to prevent and control disasters in our water systems.

According to the National Centers for Coastal Ocean Science, a single major HAB event can cost up to $100 million in seafood supply disruption, environmental damage, and health effects. Dead zones caused by hypoxia can destabilize fish and shellfish stocks and kill off entire populations of aquatic species.

Astoria, a coastal city in the district I represent, is home to one of two labs that test for HABs in Oregon. This bill would streamline assessments to better understand the causes of HABs and hypoxia and their economic and socio-cultural effects. Additionally, the bill would create the National HAB Observing Network to leverage ongoing monitoring and forecasting projects. It would also authorize the HAB Control Technologies Incubator program at NOAA to encourage development and deployment of cutting-edge monitoring technologies. These projects will equip researchers and communities with the tools they need to mitigate the risks that contribute to these events and respond effectively.

Harmful algal blooms can occur in any water system, not just those in coastal communities. Last summer, a month-long HABs event in the Ross Island Lagoon on the Willamette River triggered health advisories in the Portland area. It happens in the Great Lakes and other bodies of water as well.

My bill would also improve research, forecasting, and response duties for freshwater and estuarine HABs at the Environmental Protection Agency, and equip NOAA to act as the lead agency for HABs activities. It would provide resources to communities affected by HAB or hypoxia events of significance for recovery and restoration efforts.

Harmful algal blooms and hypoxia events threaten the health of our marine and freshwater ecosystems and our communities. My bill will improve research and coordination at NOAA and EPA, and help communities better protect against and respond quickly to these disasters.

I'm grateful that many provisions of my bill were included as a bipartisan amendment, filed with Representative Posey, to the Weather Act Reauthorization Act, which was reported favorably out of the Science, Space, and Technology Committee last November. I am also appreciative of the support of our Senate partners, Senators Tammy Baldwin and Dan Sullivan.

Thank you, again, for considering this critical legislation and inviting me to testify about its importance. I yield back the remainder of my time.

Statement for the Record

U.S. Fish and Wildlife Service

on H.R. 5441, Long Island Sound Restoration and Stewardship Reauthorization Act of 2023

The U.S. Fish and Wildlife Service (Service) appreciates the opportunity to submit this statement for the record on H.R. 5441, the Long Island Sound Restoration and Stewardship Reauthorization Act of 2023. H.R. 5441 would reauthorize certain conservation and stewardship programs in the Long Island Sound (Sound). These programs are led by the Environmental Protection Agency (EPA). The Service's statement focuses on our work in collaboration with the EPA and other partners in the Long Island Sound. We defer to the EPA to provide a position on this legislation but note that EPA's collaborative work through the programs that would be reauthorized by H.R. 5441 is an important component in efforts to conserve the natural resources of the Long Island Sound.

The Long Island Sound includes 12 priority habitats that are home to a variety of species considered of greatest conservation need in both New York and Connecticut and protected under the Endangered Species Act. Thriving coastal habitats also provide important ecosystem services and serve as buffers to elevated tides and wave action during storm events, making coastal communities more resilient to climate change.

The Service has a long history of coordinating with partners to conserve and restore the health of the Sound through the Long Island Sound Study (LISS), a cooperative effort involving the EPA, other federal and state agencies, researchers, user groups, and local partners. Together we are working to improve the conservation of wildlife and the habitats and waters they depend on within the Sound. Service biologists serve on several LISS committees, including the Federal Partners Coordination Team, a newly formed collaboration that focuses on building efficiencies across agencies to accomplish shared goals. In this role, the Service brings expertise on federal trust species and coastal habitats that informs the prioritization of research and restoration needs within the Sound.

In 2005, the LISS initiated the Long Island Sound Futures Fund (Fund) grant program, which last year awarded more than $12 million to support 39 projects working to improve the health of Long Island Sound. This effort was led by the Service, the EPA, and the National Fish and Wildlife Foundation.

Restoration of priority habitats has been a focus of partnership efforts within the Sound. The LISS has worked with the Service on several priorities within the Sound, including restoring vital habitat for threatened and endangered wildlife like piping plovers and roseate terns. One focus area for these species has been New York's Great Gull Island, which has the largest breeding colony of endangered roseate terns in the Northeast. The LISS has provided grants through the Fund for important management efforts to improve nesting habitat on the island. The Service supports these grants by providing technical expertise to identify and prioritize vegetation management strategies to improve nesting habitat on the island. Every fall and spring since 2012, the Service has coordinated the treatment of invasive plants on the island, which is key to the recovery and success of the breeding population of the roseate tern at this sentinel site.

Improved water quality and riverine restoration following the investment of LISS, EPA, and Service funds has also led to the recovery of migratory and forage fish that support terns and other marine wildlife throughout the Sound and beyond. These water quality improvements support thriving habitats, the species that depend on them, and benefit local communities. The Service is proud to work closely with the EPA and LISS partners to improve wildlife habitat and water quality, increase resilience and sustainability, and secure a healthy future for Long Island Sound.