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116TH CONGRESS, 1st Session | HOUSE OF REPRESENTATIVES | REPT. 116–82, Part 1

NATIONAL ESTUARIES AND ACIDIFICATION RESEARCH ACT OF 2019

MAY 23, 2019.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Ms. JOHNSON of Texas, from the Committee on Science, Space, and Technology, submitted the following

REPORT

[To accompany H.R. 988]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science, Space, and Technology, to whom was referred the bill (H.R. 988) to provide for a study by the Ocean Studies Board of the National Academies of Science examining the impact of ocean acidification and other stressors in estuarine environments, having considered the same, report favorably thereon with amendments and recommend that the bill as amended do pass.

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89–006

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I. AMENDMENT

Strike all after the enacting clause and insert the following:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "National Estuaries and Acidification Research Act of 2019" or the "NEAR Act of 2019".

SEC. 2. FINDINGS.

Congress finds the following:

(1) Ocean acidification impacts human health, natural resources, and the environmental, economic, and recreational uses of the coastline.

(2) The current understanding of ocean acidification impacts on estuarine ecosystems is inadequate to fully prepare and manage for changing environmental conditions in nearshore locations.

(3) While pH can be measured with high precision and accuracy in open ocean environments, more understanding of the carbonate system in estuarine ecosystems is needed for precise and accurate measurements and observations.

(4) The interaction of multiple stressors, including salinity, pH, temperature, sea level rise, and nutrient input, within estuarine ecosystems is inadequately understood for managing the health, economic, recreational, and environmental impacts driven by these interactions.

(5) A better understanding is needed of how anthropogenic influences in coastal environments affect estuarine ecosystems.

(6) More integration and coordination is needed among regional, national, and global environmental observations in estuarine environments, supporting prior investments in related topics such as nutrient loading, hypoxia, ocean acidification, and harmful algae bloom research and observational systems.

SEC. 3. STUDY EXAMINING THE IMPACT OF OCEAN ACIDIFICATION AND OTHER ENVIRONMENTAL STRESSORS ON ESTUARINE ENVIRONMENTS.

(a) IN GENERAL.—Not later than 60 days after the date of enactment of this Act, the Secretary of Commerce shall make appropriate arrangements with the Ocean Studies Board of the National Academies under which the Board shall conduct a study that—

(1) examines the existing science of ocean acidification in estuarine environments;

(2) examines the challenges to studying ocean acidification and ocean acidification's interactions with other environment stressors in estuarine environments;

(3) provides recommendations for improving future research with respect to ocean acidification in estuarine environments; and

(4) identifies pathways for applying science in management and mitigation decisions relating to ocean acidification in estuarine environments.

(b) CONTENTS OF STUDY.—The study described under subsection (a) shall include—

(1) the behavior of the carbonate system within estuarine environments;

(2) the interactions of the carbonate system with other biotic and abiotic characteristics of estuarine ecosystems;

(3) how environmental and anthropogenic changes or disturbances could affect abiotic and biotic processes within estuaries;

(4) how estuarine biotic and abiotic processes will be affected under predicted environmental changes;

(5) the current state of data collection, interpretation, storage, and retrieval and observational infrastructure of abiotic and biotic parameters in estuarine ecosystems;

(6) the gaps that exist in understanding the socio-economic and health impacts of ocean acidification in estuaries;

(7) future directions for scientific research; and

(8) pathways for applying science in management and mitigation decisions.

(c) REPORT.—In entering into an arrangement under subsection (a), the Secretary shall request that the Board transmit to Congress a report on the results of the study not later than 24 months after the date of enactment of this Act.

(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this section $1,000,000.

Amend the title so as to read:

A bill to provide for a study by the National Academies of Sciences, Engineering, and Medicine examining the impact of ocean acidification and other stressors in estuarine environments.

II. Purpose of the Bill

H.R. 988, sponsored by Rep. Posey, directs the Secretary of Commerce to work with the National Academies of Sciences, Engineering, and Medicine to produce a study on the impacts of ocean acidification and other environmental stressors on estuarine environments to improve our understanding of these impacts and inform management and mitigation decisions. The bill is cosponsored by Representatives Bonamici, Crist, and Mast.

III. Background and Need for the Legislation

Ocean acidification is the gradual decrease in oceanic pH due primarily to the absorption of excess atmospheric carbon dioxide by seawater. When carbon dioxide gas reacts with seawater, it lowers the pH, which raises the acidity. Acidification is occurring faster in some U.S. coastal regions as a result of local factors such as upwelling of naturally low pH water, changes in freshwater inputs, and high nutrient inputs. One coastal environment where the impacts of ocean acidification are less understood is in estuarine environments.

Estuaries are ecologically and economically important brackish water ecosystems that typically occur where rivers meet the ocean. Estuaries are extremely productive ecosystems that host unique animal and plant communities. They provide many ecosystem services, such as water filtration, migration grounds for birds and nursery grounds for fish and other species, and they are important sources of food, jobs, and recreation for humans. Estuaries are delicate ecosystems and are sensitive to environmental and anthropogenic changes, such as nutrient and other types of pollution, sea level rise, increases in temperature, and ocean acidification. However, there is limited understanding of how ocean acidification and other stressors interact and impact estuaries.

IV. Committee Hearings

For the purposes of section 103(i) of H. Res. 6 of the 116th Congress, the following hearings were used to develop the legislation:

On March 7, 2019, the Honorable Lizzie Fletcher presiding over the Environment Subcommittee of the Committee on Science, Space, and Technology held a hearing focused on climate change impacts on our nation's oceans and coasts, where ocean acidification was discussed as a major associated impact. There were four witnesses: (1) Dr. Sarah Cooley, Director of the Ocean Acidification Program at Ocean Conservancy. Dr. Cooley provided testimony on the science of ocean warming, acidification, and deoxygenation and resulting impacts to marine ecosystems and humans. (2) Dr. Radley Horton, Lamont Associate Research Professor at Columbia University Earth Institute's Lamont-Doherty Earth Observatory. Dr. Horton testified on sea level rise projections and impacts to coastal communities. (3) Dr. Thomas K. Frazer, Professor and Director of the School of Natural Resources and Environment at the

University of Florida. Dr. Frazer testified on the impacts of climate change to fisheries and the need for increased federal investment in research to promote adaptation and mitigation to those changes. (4) Ms. Margaret A. Pilaro, Executive Director of the Pacific Coast Shellfish Growers Association. Ms. Pilaro provided testimony on the impacts of ocean acidification and deoxygenation to shellfish hatcheries and strategies for how their industry has started to adapt.

V. Committee Consideration and Votes

As summarized in Section IV of this report, the Subcommittee on Environment heard testimony in the 116th Congress relevant to the activities authorized in H.R. 988 at a hearing held on February 27, 2019.

On February 6, 2019, Representative Bill Posey of the Committee on Science, Space, and Technology, for himself and Representatives Bonamici and Mast introduced H.R. 988, National Estuaries and Acidification Research (NEAR) Act of 2019, to provide a study by the Ocean Studies Board of the National Academies of Science examining the impact of ocean acidification and other stressors in estuarine environments.

On April 9, 2019, the Subcommittee on Environment met to consider H.R. 988 and three other ocean acidification bills. There were no amendments offered to H.R. 988.

Ms. Fletcher moved that the Subcommittee favorably report H.R. 988 to the Full Committee. The motion was agreed to by a voice vote.

The Full Committee on Science, Space, and Technology met to consider H.R. 988 on Wednesday, May 1, 2019.

1. Mr. Posey offered an amendment which modifies the bill according to recommendations from the National Academies of Science, Engineering, and Medicine. These recommendations suggested a different ordering of tasks in the study and that the bill not specify which board performs the study in its own facilities. The amendment also includes an authorized study cost of $1 million. The amendment was agreed to by a voice vote.

Ms. Johnson moved that the Committee favorably report the bill, H.R. 988, as amended, to the House with the recommendation that the bill be approved. The motion was agreed to by a voice vote.

VI. Summary of Major Provisions of the Bill

The National Estuaries and Acidification Research Act (H.R. 988) would provide for a study by the National Academies of Sciences, Engineering, and Medicine to examine the current science of ocean acidification impacts on estuarine environments, and provide recommendations for future scientific research, and pathways to apply science in management and mitigation decisions. The bill requires the National Academies to submit a report to Congress within 24 months of the enactment of the bill, and authorizes appropriations for NOAA of $1.0 million to carry out the one-time study.

VII. Section-by-Section Analysis (By Title and Section)

Section 1. Short title

National Estuaries and Acidification Research (NEAR) Act of 2019

Section 2. Findings

This section outlines the need for improved understanding of the effects of ocean acidification and other environmental stressors in estuaries as well as the need for a more coordinated research effort in estuaries.

Section 3. Study examining the impact of ocean acidification and other environmental stressors on estuarine environments

This section directs the Secretary of Commerce to work with the National Academies of Science to conduct a study on the impacts of ocean acidification and other environmental stressors in estuarine environments. The section outlines requirements for the contents of the study, including the current state of science on ocean acidification in estuarine environments, the effects of human-caused and environmental changes on biotic and abiotic processes in estuaries, the dynamics of the carbonate system of estuaries, and gaps in understanding of socioeconomic and health impacts of ocean acidification on estuaries. A report on the results of the study is to be sent to Congress no later than 24 months after enactment of the bill.

VIII. Committee Views

The Committee recognizes the unique and valuable nature of estuaries as grounds for birds, fish and other species, as well as important sources of food and recreation for humans. Because estuarine environments are very delicate, and provide robust ecosystem services, ocean acidification could have potentially devastating consequences on numerous animal and human communities that rely on estuaries. However, there is currently a lack of understanding of how ocean acidification, and other environmental stressors, impact estuarine environments.

The Committee views a study conducted by the National Academies of Sciences, Engineering, and Medicine as a good step towards understanding how environmental stressors like ocean acidification could impact estuarine environments. The study would provide recommendations for future research opportunities as well as guidance on how to prepare for and adapt to changing environmental conditions. The amended version of H.R. 988 incorporates suggestions from the National Academies of Sciences, Engineering, and Medicine to provide a better flow of report contents and and authorizes appropriations to conduct the study.

IX. Cost Estimate

Pursuant to clause 3(c)(2) of rule XIII of the Rules of the House of Representatives, the Committee adopts as its own the estimate of new budget authority, entitlement authority, or tax expenditures or revenues contained in the cost estimate prepared by the Director

of the Congressional Budget Office pursuant to section 402 of the Congressional Budget Act of 1974.

X. Congressional Budget Office Cost Estimate

U.S. Congress,
Congressional Budget Office,
Washington, DC, May 9, 2019.

Hon. Eddie Bernice Johnson,
Chairwoman, Committee on Science, Space, and Technology,
House of Representatives, Washington, DC.

Dear Madam Chairwoman: The Congressional Budget Office has prepared the enclosed cost estimate for H.R. 988, the NEAR Act of 2019.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Robert Reese.

Sincerely,

Keith Hall,
Director.

Enclosure.

H.R. 988, NEAR Act of 2019
As ordered reported by the House Committee on Science, Space, and Technology on May 1, 2019

By Fiscal Year, Millions of Dollars	2019	2019-2024	2019-2029
Direct Spending (Outlays)	0	0	0
Revenues	0	0	0
Deficit Effect	0	0	0
Spending Subject to Appropriation (Outlays)	0	1	1

		Mandate Effects	
Pay-as-you-go procedures apply?	No		
Increases on-budget deficits in any of the four consecutive 10-year periods beginning in 2030?	No	Contains intergovernmental mandate?	No
		Contains private-sector mandate?	No

H.R. 988 would authorize the appropriation of $1 million for the National Oceanic and Atmospheric Administration to contract with the National Academy of Sciences to report on the effects of ocean acidification in estuarine environments. The report would examine the challenges to studying ocean acidification, provide recommendations for improving future research, and identify ways to apply science while mitigating and managing ocean acidification in estuarine environments. The bill would require the report be completed within two years of enactment.

Assuming appropriated funds are available, CBO estimates implementing H.R. 988 would cost $1 million.

The CBO staff contact for this estimate is Robert Reese. The estimate was reviewed by H. Samuel Papenfuss, Deputy Assistant Director for Budget Analysis.

XI. Federal Mandates Statement

H.R. 988 contains no unfunded mandates.

XII. Committee Oversight Findings and Recommendations

The Committee's oversight findings and recommendations are reflected in the body of this report.

XIII. Statement on General Performance Goals and Objectives

Pursuant to clause (3)(c) of House rule XIII, the goal of H.R. 988 is to direct the Secretary of Commerce to enter into an agreement with the National Academies of Sciences, Engineering, and Medicine to provide for a study that would assess the current state of science of ocean acidification impacts to estuaries, and provide recommendations for future research, and guidance on how to prepare for, and mitigate, currently changing environmental conditions in estuaries. The bill requires the final study be submitted to Congress within 24 months of enactment of this act.

XIV. Federal Advisory Committee Statement

H.R. 988 does not create any advisory committees.

XV. Duplication of Federal Programs

Pursuant to clause 3(c)(5) of rule XIII of the Rules of the House of Representatives, the Committee finds that no provision of H.R. 988 establishes or reauthorizes a program of the federal government known to be duplicative of another federal program, including any program that was included in a report to Congress pursuant to section 21 of Public Law 111–139 or the most recent Catalog of Federal Domestic Assistance.

XVI. Earmark Identification

Pursuant to clause 9(e), 9(f), and 9(g) of rule XXI, the Committee finds that H.R. 988 contains no earmarks, limited tax benefits, or limited tariff benefits.

XVII. Applicability to the Legislative Branch

The Committee finds that H.R. 988 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of section 102(b)(3) of the Congressional Accountability Act (Public Law 104–1).

XVIII. Statement on Preemption of State, Local, or Tribal Law

This bill is not intended to preempt any state, local, or tribal law.

XIX. Changes in Existing Law Made by the Bill, as Reported

This legislation does not amend any existing Federal statute.

EDDIE BERNICE JOHNSON, Texas
CHAIRWOMAN

XX. EXCHANGE OF COMMITTEE CORRESPONDENCE

FRANK D. LUCAS, Oklahoma
RANKING MEMBER

Congress of the United States
House of Representatives
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
2321 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-6301
(202) 225-6375
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May 14, 2019

Chairman Raúl M. Grijalva
Committee on Natural Resources
U.S. House of Representatives
1324 Longworth House Office Building
Washington, DC 20515

Dear Chairman Grijalva,

I am writing to you concerning H.R. 988, the "National Estuaries and Acidification Research Act of 2019," which was referred to the Committee on Science, Space, and Technology as lead committee and sequentially referred to the Committee on Natural Resources on February 6, 2019.

I appreciate your willingness to work cooperatively on this bill. I acknowledge that your Committee will waive further consideration of H.R. 988 and that this action is not a waiver of future jurisdictional claims by the Committee on Natural Resources over this subject matter.

I will make sure to include our exchange of letters in the *Congressional Record* and legislative reports. Thank you for your cooperation on this legislation.

Sincerely,

Eddie Bernice Johnson
Chairwoman

cc: Ranking Member Frank D. Lucas, Committee on Science, Space, and Technology
Ranking Member Rob Bishop, Committee on Natural Resources
Tom Wickham, Parliamentarian

RAUL M. GRIJALVA OF ARIZONA
CHAIRMAN

DAVID WATKINS
STAFF DIRECTOR

ROB BISHOP OF UTAH
RANKING REPUBLICAN

PARISH BRADEN
REPUBLICAN STAFF DIRECTOR

U.S. House of Representatives
Committee on Natural Resources
Washington, DC 20515

May 16, 2019

The Honorable Eddie Bernice Johnson
Chairwoman
Committee on Science, Space, and Technology
U.S. House of Representatives
2321 Rayburn House Office Building
Washington, DC 20515

Dear Chairwoman Johnson,

In recognition of the goal of expediting consideration of H.R. 988, the "National Estuaries and Acidification Research Act of 2019," the Committee on Natural Resources agrees to waive formal consideration of the bill as to provisions that fall within the Rule X jurisdiction of the Committee on Natural Resources.

The Committee on Natural Resources takes this action with the mutual understanding that, in doing so, we do not waive any jurisdiction over the subject matter contained in this or similar legislation, and that the Committee will be appropriately consulted and involved as the bill or similar legislation moves forward so that we may address any remaining issues within our jurisdiction. Our Committee also reserves the right to seek appointment of conferees to any House–Senate conference involving this or similar legislation.

Thank you for agreeing to include our exchange of letters in the *Congressional Record*. I appreciate your cooperation regarding this legislation and look forward to continuing to work with you as this measure moves through the legislative process.

Sincerely,

Raúl M. Grijalva
Chair

cc: The Honorable Rob Bishop, Ranking Member, Committee on Natural Resources
The Honorable Frank Lucas, Ranking Member, Committee on Science, Space, and Technology
The Honorable Thomas J. Wickham, Jr., Parliamentarian

XXI. PROCEEDINGS OF THE SUBCOMMITTEE MARKUP

MARKUPS: H.R. 1237, COAST RESEARCH ACT OF 2019; H.R. 1716, COASTAL COMMUNITIES OCEAN ACIDIFICATION ACT OF 2019; H.R. 1921, OCEAN ACIDIFICATION INNOVATION ACT OF 2019; AND H.R. 988, NEAR ACT OF 2019

TUESDAY, APRIL 9, 2019

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENVIRONMENT,
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,
Washington, D.C.

The subcommittee met, pursuant to notice, at 2:10 p.m., in room 2318 of the Rayburn House Office Building, Hon. Lizzie Fletcher [Chairwoman of the Subcommittee] presiding.

Chairwoman FLETCHER. Good afternoon. The Subcommittee will come to order. Without objection, the Chair is authorized to declare recess at any time. Pursuant to Committee Rule 2(e) and House Rule 11, the Chair announces that she may postpone roll call votes.

Pursuant to notice, the Subcommittee on the Environment meets to consider the following measures: H.R. 1237, the *COAST Research Act*; H.R. 1716, the *Coastal Communities Ocean Acidification Act of 2019*; H.R. 1921, the *Ocean Acidification Innovation Act of 2019*; and H.R. 988, the *NEAR Act of 2019*.

Welcome to our first Environment Subcommittee markup. Today we will be marking up four bipartisan bills that address an invisible but growing threat to our ocean and coastal economies and communities: Ocean acidification. At our March 7 Subcommittee hearing entitled, "Sea Change: Impacts of Climate Change on Our Nation's Oceans and Coasts," we heard from a variety of experts from the research community and industry who recognized ocean acidification as one of the top threats facing our oceans and coasts. Before going into the bills we will be marking up, I first want to give a brief explanation of why we need to address ocean acidification.

Ocean acidification is the gradual decrease in oceanic pH due to absorption of excess carbon dioxide in the atmosphere. It is often called the "other CO_2 problem" because, like climate change, it is caused primarily by excess CO_2 in the atmosphere. Since the beginning of the Industrial Revolution, the oceans have absorbed about a third of anthropogenic CO_2 emissions, resulting in a 30-percent increase in acidity levels. This increase in ocean acidity can cause

a number of problems that we are only beginning to fully understand.

In the mid-2000s, the multimillion-dollar Pacific Northwest shellfish hatchery industry experienced a near economic collapse due to shellfish larvae struggling to develop shells, which was eventually linked to more acidic ocean waters. This was a wake up call for the shellfish industry, researchers, and coastal communities. Recognizing the growing threat of ocean acidification, Congress enacted the *Federal Ocean Acidification Research and Monitoring Act*, or *FOARM*, in 2009 to support research and monitoring efforts to better understand ocean acidification and its impacts. The bill established the Ocean Acidification Program at the National Oceanic and Atmospheric Administration, NOAA, and the Interagency Working Group on Ocean Acidification, which provides a coordinated response by Federal agencies to understand, monitor, and address ocean acidification.

Since *FOARM* was passed into law, our understanding of ocean acidification impacts has increased substantially. For example, we know much more about why shelled marine organisms, such as oysters, mussels, clams, and corals, are particularly sensitive to low pH conditions. It is also predicted that many other fisheries will be negatively impacted, with some models predicting that acidification will cause widespread declines in fish catch. Thanks to *FOARM*, the engagement of multiple sectors, including Federal and non-Federal researchers, shellfish industry, resource managers, and others, there has been success in adapting the shellfish hatchery industry to ocean acidification. Now we need to help prepare other potentially vulnerable communities and industries. However, there is still a long way to go in understanding, predicting, and preparing for changes in ocean chemistry, which is why we need to enhance existing Federal efforts and add more tools to the toolbox, as the bills we're marking up today will accomplish.

H.R. 1237, the *Coastal and Ocean Acidification Stressors and Threats, COAST, Research Act of 2019*, reauthorizes and updates the *FOARM Act of 2009* to broaden the scope of Federal efforts to better understand the effects of ocean and coastal acidification. H.R. 1716, the *Coastal Communities Ocean Acidification Act of 2019*, supports Federal research and monitoring efforts by identifying the socioeconomic needs of coastal communities vulnerable to ocean acidification through requiring NOAA to conduct vulnerability assessments. H.R. 1921, the *Ocean Acidification Innovation Act of 2019*, creates prize competitions to incentivize innovative solutions to help vulnerable communities better understand, monitor, and respond to ocean acidification. Finally, H.R. 988, the *National Estuaries and Acidification Research, NEAR, Act of 2019*, improves our understanding of the impacts of ocean acidification on our Nation's ecologically and economically important estuarine environments.

Before I yield back, I would also like to place into the record this letter of support for all four bills from Ocean Conservancy. I do so without objection.

[The information referred to follows:]

1300 19th Street NW
8th Floor
Washington DC 20036

Ocean Conservancy

202.429.5609 Telephone
202.872.0619 Facsimile
www.oceanconservancy.org

April 8, 2019

The Honorable Lizzie Fletcher
Chairwoman
Environment Subcommittee
Committee on Science, Space, and Technology
U.S. House of Representatives
Washington, D.C. 20515

The Honorable Roger Marshall
Ranking Member
Environment Subcommittee
Committee on Science, Space, and Technology
U.S. House of Representatives
Washington, D.C. 20515

Dear Chairwoman Fletcher and Ranking Member Marshall:

On behalf of Ocean Conservancy, I write to provide our organization's support for several bills scheduled for markup by the House Science, Space, and Technology Environment Subcommittee, including H.R.1237, the *COAST Research Act of 2019*, H.R.1716, the *Coastal Communities Ocean Acidification Act of 2019*, H.R.1921, the *Ocean Acidification Innovation Act of 2019*, and H.R.988, the *NEAR Act of 2019*. These bills will improve how the federal government prepares for and responds to the impacts from ocean acidification, and deserve further consideration and approval by the Committee and the full U.S. House of Representatives.

Ocean acidification is changing the chemistry of our ocean, and coastal communities are already seeing the effects. As the ocean absorbs much of the carbon dioxide from the atmosphere, it mixes with seawater, causing an increase in the water's acidity. This increase in acidity causes a broad range of negative impacts that disrupt the benefits that ocean systems and resources provide to human communities. Coral reef-associated fisheries and tourism are put at risk as corals, oysters, clams, and other animals struggle to build their shells and skeletons in more acidic waters. Additionally, fishery revenues could decline if ocean acidification decreases the recruitment or slows the growth of lucrative species like sea scallops and red king or Tanner crab.

Following the widespread death of larval shellfish that nearly bankrupted hatcheries in the Pacific Northwest in the mid-2000s because of ocean acidification, Congress took action to better understand the impact of ocean acidification on people and marine resources. In 2009, the *Federal Ocean Acidification Research and Monitoring Act* (FOARAM) was signed into law. FOARAM established the NOAA Ocean Acidification Program and the Inter-Agency Working Group on Ocean Acidification, which provides a coordinated response by U.S. federal agencies to understand, track, and address ocean acidification. Much of our knowledge and understanding of ocean acidification that has emerged in the last decade can be credited to the work authorized by FOARAM, and it is crucial that Congress continue to build upon this foundation to better understand and address the impacts from ocean acidification.

The bills under consideration by the Committee will strengthen our nation's investments in ocean acidification research and monitoring. The *Coastal Communities Ocean Acidification Act of 2019* would better inform federal research and monitoring plans by taking into consideration the needs of coastal communities vulnerable to ocean acidification, and the *Ocean Acidification Innovation Act of 2019* would incentivize technological innovation in our nation's ability to understand, research, monitor, or adapt to ocean acidification. Further, the *NEAR Act of 2019* would improve our ability to understand the impacts from ocean acidification in estuarine environments, and the *COAST Research Act of 2019* would

reauthorize our nation's investments in ocean acidification and broaden the scope of federal work to better understand the effects from acidification not only in the open ocean but also in the coastal zone.

Importantly, each of these bills has support from members of both parties. These members recognize that coastal communities are experiencing the impacts from ocean acidification now, and there is a role for the federal government to play to better understand the science behind acidification and prepare communities for acidification's effects.

We appreciate the Committee's consideration of these bills, and encourage you and your colleagues to swiftly approve these bills and report them to the full U.S. House of Representatives for approval.

Sincerely,

Jeff Watters
Director, Government Relations
Ocean Conservancy

Chairwoman FLETCHER. I'm glad we're marking up this legislation today to address the growing impacts of ocean acidification, and look forward to moving these bills through the markup process, and eventually to the floor.

[The prepared statement of Chairwoman Fletcher follows:]

U.S. HOUSE OF REPRESENTATIVES COMMITTEE ON
SCIENCE, SPACE, & TECHNOLOGY

Opening Statement

Chair Lizzie Fletcher (D-TX)
Subcommittee on Environment

Subcommittee Markup of:
H.R. 1237, the "COAST Research Act of 2019",
H.R. 1716, the "Coastal Communities Ocean Acidification Act of 2019",
H.R. 1921, the "Ocean Acidification Innovation Act of 2019",
and H.R. 988, the "NEAR Act of 2019."
April 9, 2019

Welcome to our first Environment Subcommittee markup. Today, we will be marking up four bipartisan bills that address an invisible but growing threat to our ocean and coastal economies and communities: ocean acidification. At our March 7th Subcommittee hearing, entitled "Sea Change: Impacts of Climate Change on Our Nation's Oceans and Coasts," we heard from a variety of experts from the research community and industry who recognized ocean acidification as one of the top threats facing our oceans and coasts. Before going into the bills we will be marking up, I first want to give a brief explanation of why we need to address ocean acidification.

Ocean acidification is the gradual decrease in oceanic pH due to absorption of excess carbon dioxide (CO2) in the atmosphere. It is often called "the other CO2 problem," because, like climate change, it is caused primarily by excess CO2 in the atmosphere. Since the beginning of the Industrial Revolution, the oceans have absorbed about a third of anthropogenic CO2 emissions, resulting in a 30 percent increase in acidity levels. This increase in ocean acidity can cause a number of problems that we are only beginning to fully understand.

In the mid-2000s, the multi-million dollar Pacific Northwest shellfish hatchery industry experienced a near economic collapse due to shellfish larvae struggling to develop shells, which was eventually linked to more acidic ocean waters. This was a wake-up call for the shellfish industry, researchers, and coastal communities.

Recognizing the growing threat of ocean acidification, Congress enacted the Federal Ocean Acidification Research and Monitoring Act (or FOARAM) in 2009, to support research and monitoring efforts to better understand ocean acidification and its impacts. The bill established the Ocean Acidification Program at the National Oceanic and Atmospheric Administration (NOAA), and the Interagency Working Group on Ocean Acidification, which provides a coordinated response by federal agencies to understand, monitor, and address ocean acidification.

Since FOARAM was passed into law, our understanding of ocean acidification impacts has increased substantially. For example, we know much more about why shelled marine organisms, such as oysters, mussels, clams, and corals, are particularly sensitive to low pH conditions. It is predicted that many other fisheries will be negatively impacted, with some models predicting that acidification will cause widespread declines in fish catch.

Thanks to FOARAM and the engagement of multiple sectors, including federal and non-federal researchers, shellfish industry, resource managers, and others, there has been success in adapting the shellfish hatchery industry to ocean acidification. Now, we need to help prepare other potentially vulnerable communities and industries.
However, there is still a long way to go in understanding, predicting, and preparing for changes in ocean chemistry, which is why we need to enhance existing federal efforts and add more tools to the toolbox, as the bills we're marking up today will accomplish.

H.R. 1237, the Coastal and Ocean Acidification Stressors and Threats (COAST) Research Act of 2019, reauthorizes and updates the FOARAM Act of 2009 to broaden the scope of federal efforts to better understand the effects of ocean and coastal acidification.

H.R. 1716, the Coastal Communities Ocean Acidification Act of 2019, supports federal research and monitoring efforts by identifying the socioeconomic needs of coastal communities vulnerable to ocean acidification through requiring NOAA to conduct vulnerability assessments.

H.R. 1921, the Ocean Acidification Innovation Act of 2019, creates prize competitions to incentivize innovative solutions to help vulnerable communities better understand, monitor, and respond to ocean acidification.

Finally, H.R. 988, the National Estuaries and Acidification Research (NEAR) Act of 2019, improves our understanding of the impacts of ocean acidification on our nation's ecologically and economically important estuarine environments.

Before I yield back, I would also like to place into the record this letter of support for all four bills from Ocean Conservancy. Without objection.

I'm glad we're marking up this legislation today to address the growing impacts of ocean acidification and look forward to moving these bills through the markup process, and eventually to the floor.

Chairwoman FLETCHER. I now recognize Ranking Member Marshall to present his opening remarks.

Mr. MARSHALL. Yes, I thank you so much, Chairwoman Fletcher, for holding this markup today. But before I begin my statement, I want to welcome the newest member of our Subcommittee, my very good friend Congresswoman Jenniffer González-Colón. As Puerto Rico's only representative in Congress, she brings a unique and valued perspective to our Subcommittee, especially on ocean acidification, the topic of today's legislation. I look forward to working with her as a Member of this Subcommittee.

Now, while Kansas may be very far from our Nation's coastlines, discussing the impact of our climate on the country's resources is of top importance to our farmers and producers, both in Kansas, as well as across the country. As a grandfather, as well as an avid outdoorsman, I believe that we need to leave this world better than we found it for the next generation, and I hope this legislation we'll be discussing today will bring us one step closer to finding innovative solutions to the challenge of ocean acidification.

In 2009, Congress first passed the *Federal Ocean Acidification Research and Monitoring Act*, which was intended to help the National Oceanic Atmospheric Administration better understand the effects of ocean acidification on the ocean environment. You can't say this too quickly. There's too big of words, and they kind of run together there. Lots of vowels. This law created the Interagency Working Group on Ocean Acidification, which is made up of 14 different agencies and institutions to coordinate research and resource management related to ocean acidification. Despite their efforts, we learned in a hearing hosted by this Subcommittee in February that there's still more we can do to address the causes and impacts of the changing ocean chemistry, especially as it pertains to coastal regions. The measures today have been offered by a bipartisan group of members representing coastal districts most impacted by ocean acidification.

Whether through better coordination across Federal agencies, or through expansion and improvements to existing programs, these bills modify the way that we approach changes to marine ecosystems. The Earth's oceans are always in a state of evolution, and the steps we're taking today can improve the sustainability and overall health of our ecosystems, while still encouraging innovative approaches to addressing these fluctuations. I thank my colleagues for their leadership in addressing this issue, and encourage the Members of this Subcommittee to support these bills. Thank you, and I yield back.

[The prepared statement of Mr. Marshall follows:]

Opening Statement of Ranking Member Roger Marshall at Environment Subcommittee Markup of Ocean Health Legislation

Apr 9, 2019

Opening Statement

Thank you, Chairwoman Fletcher, for holding this markup today. Before I begin my statement, I want to welcome the newest member of our subcommittee, Congresswoman Jenniffer González-Colón. As Puerto Rico's only representative in Congress, she brings a unique perspective to our subcommittee, especially on ocean acidification, the topic of today's legislation. I look forward to working with her as a member of this subcommittee.

While Kansas may be far from our nation's coastlines, discussing the impact of our climate on the country's resources is of top importance to our farmers and producers both in Kansas as well as across the country. As a grandfather as well as an avid outdoorsman, I believe that we need to leave this world better than we found it for the next generation, and I hope that the legislation we will be discussing today will bring us one step closer to finding innovative solutions to the challenge of ocean acidification.

In 2009, Congress first passed the Federal Ocean Acidification Research and Monitoring Act, which was intended to help the National Oceanic and Atmospheric Administration (NOAA) better understand the effects of ocean acidification on the ocean environment. This law created the Interagency Working Group on Ocean Acidification, which is made up of 14 different agencies and institutions to coordinate research and resource management related to ocean acidification.

Despite their efforts, we learned in a hearing hosted by this subcommittee in February that there is still more that we can do to address the causes and

impacts of the changing ocean chemistry, especially as it pertains to coastal regions.

The measures today have been offered by a bipartisan group of Members representing coastal districts most impacted by ocean acidification. Whether through better coordination across federal agencies or though expansion and improvements to existing programs, these bills modify the way that we approach changes to marine ecosystems.

The earth's oceans are always in a state of evolution and the steps we're taking today can improve the sustainability and overall health of our ecosystems, while still encouraging innovative approaches to addressing these fluctuations.

I thank my colleagues for their leadership in addressing this issue and encourage the Members of this subcommittee to support these bills.

I

116TH CONGRESS
1ST SESSION

H. R. 988

To provide for a study by the Ocean Studies Board of the National Academies of Science examining the impact of ocean acidification and other stressors in estuarine environments.

IN THE HOUSE OF REPRESENTATIVES

FEBRUARY 6, 2019

Mr. POSEY (for himself, Ms. BONAMICI, and Mr. MAST) introduced the following bill; which was referred to the Committee on Science, Space, and Technology, and in addition to the Committee on Natural Resources, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

---

A BILL

To provide for a study by the Ocean Studies Board of the National Academies of Science examining the impact of ocean acidification and other stressors in estuarine environments.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "National Estuaries and Acidification Research Act of 2019" or the "NEAR Act of 2019".

SEC. 2. FINDINGS.

Congress finds the following:

(1) Ocean acidification impacts human health, natural resources, and the environmental, economic, and recreational uses of the coastline.

(2) The current understanding of ocean acidification impacts on estuarine ecosystems is inadequate to fully prepare and manage for changing environmental conditions in nearshore locations.

(3) While pH can be measured with high precision and accuracy in open ocean environments, more understanding of the carbonate system in estuarine ecosystems is needed for precise and accurate measurements and observations.

(4) The interaction of multiple stressors, including salinity, pH, temperature, sea level rise, and nutrient input, within estuarine ecosystems is inadequately understood for managing the health, economic, recreational, and environmental impacts driven by these interactions.

(5) A better understanding is needed of how anthropogenic influences in coastal environments affect estuarine ecosystems.

(6) More integration and coordination is needed among regional, national, and global environmental observations in estuarine environments, supporting

1 prior investments in related topics such as nutrient
2 loading, hypoxia, ocean acidification, and harmful
3 algae bloom research and observational systems.

4 **SEC. 3. STUDY EXAMINING THE IMPACT OF OCEAN ACIDIFI-**
5 **CATION AND OTHER ENVIRONMENTAL**
6 **STRESSORS ON ESTUARINE ENVIRONMENTS.**

7 (a) IN GENERAL.—Not later than 60 days after the
8 date of enactment of this Act, the Secretary of Commerce
9 shall make appropriate arrangements with the Ocean
10 Studies Board of the National Academies under which the
11 Board shall conduct a study that—

12 (1) examines the existing science of ocean acidi-
13 fication in estuarine environments;

14 (2) examines the challenges to studying ocean
15 acidification and ocean acidification's interactions
16 with other environment stressors in estuarine envi-
17 ronments;

18 (3) provides recommendations for improving fu-
19 ture research with respect to ocean acidification in
20 estuarine environments; and

21 (4) identifies pathways for applying science in
22 management and mitigation decisions relating to
23 ocean acidification in estuarine environments.

24 (b) CONTENTS OF STUDY.—The study described
25 under subsection (a) shall include—

1 (1) the current state of data collection, inter-
2 pretation, storage, and retrieval and observational
3 infrastructure of abiotic and biotic parameters in es-
4 tuarine ecosystems;
5 (2) how environmental and anthropogenic
6 changes or disturbances could affect abiotic and bi-
7 otic processes within estuaries;
8 (3) how estuarine biotic and abiotic processes
9 will be affected under predicted environmental
10 changes;
11 (4) the behavior of the carbonate system within
12 estuarine environments;
13 (5) the interactions of the carbonate system
14 with other biotic and abiotic characteristics of estua-
15 rine ecosystems;
16 (6) the gaps that exist in understanding the
17 socio-economic and health impacts of ocean acidifica-
18 tion in estuaries;
19 (7) future directions for scientific research; and
20 (8) pathways for applying science in manage-
21 ment and mitigation decisions.
22 (c) REPORT.—In entering into an arrangement under
23 subsection (a), the Secretary shall request that the Board
24 transmit to Congress a report on the results of the study

1 not later than 24 months after the date of enactment of
2 this Act.

○

Chairwoman FLETCHER. Without objection, the bill is considered as read, and open to amendment at any point. I recognize myself briefly to comment on the bill, and I will submit these comments into the record, in the interest of time. Does anyone else wish to be recognized? Are there any amendments? If no, then, a reporting quorum being present, I move that the Committee on Science, Space, and Technology report H.R. 988 to the full Committee, with a recommendation that the bill be approved.

Those in favor of the motion will signify by saying aye.

Opposed, no.

The ayes have it, and the bill is favorably reported. Without objection, the Motion to Reconsider is laid upon the table. I ask unanimous consent that the staff be authorized to make any necessary technical and conforming changes to the bill. Without objection, so ordered. Members will have two subsequent calendar days in which to submit supplemental, minority, or additional views on the measure.

I want to thank the Members for their attendance. This concludes our Subcommittee markup.

[Whereupon, at 2:34 p.m., the Subcommittee was adjourned.]

○

XXII. PROCEEDINGS OF FULL COMMITTEE MARKUP

MARKUPS: H.R. 34, ENERGY AND WATER RESEARCH INTEGRATION ACT OF 2019; H.R. 2397, AMERICAN MANUFACTURING LEADERSHIP ACT; H.R. 1237, COAST RESEARCH ACT OF 2019; H.R. 1716, COASTAL COMMUNITIES OCEAN ACIDIFICATION ACT OF 2019; H.R. 1921, OCEAN ACIDIFICATION INNOVATION ACT OF 2019; AND H.R. 988, NEAR ACT OF 2019

WEDNESDAY, MAY 1, 2019

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,
Washington, D.C.

The Committee met, pursuant to notice, at 10 a.m., in room 2318 of the Rayburn House Office Building, Hon. Eddie Bernice Johnson [Chairwoman of the Committee] presiding.

Chairwoman JOHNSON. Good morning. The Committee will come to order. And without objection, the Chair is authorized to declare recess at any time. Pursuant to Committee rule 2(e) and House rule XI, the Chair announces that she may postpone roll call votes.

Pursuant to notice, the Committee meets to consider the following measures—and before I start into the measures, let me say that it is historic for me and that this is the first time I'm presiding over a markup of the Full Committee—H.R. 34, *Energy and Water Research Integration Act of 2019*; H.R. 2397, *American Manufacturing Leadership Act*—that's the reauthorization—and H.R. 1237; *COAST Research Act*; H.R. 1716, *Coastal Communities Ocean Acidification Act of 2019*; H.R. 1921, *Ocean Acidification Innovation Act of 2019*; and H.R. 988, *NEAR Act of 2019*. And I want to welcome everyone to our first Full Committee markup on Science, Space, and Technology for the 116th Congress.

Today, we meet to markup six good bipartisan bills. Each of these bills address critical issues facing our Nation. First, we are considering H.R. 34, the *Energy and Water Research Integration Act of 2019*. I'll say more about this bill in a minute, but for now, I'll just say that the bill addresses complex ties between water and energy production in America.

As water resources are increasingly strained all across our country, in fact, across the world, I think it is critical that we better use and conserve those resources. I want to thank Ranking Mem-

ber Lucas for being an original cosponsor of the bill and helping me to make a good bill even better. We both come from a part of the country where a drop of water has long been a precious commodity. Unfortunately, as water resources are increasingly strained around the country, more and more people are realizing that water is going to be a precious resource in places we never think of as arid.

Next, we will consider H.R. 2397, the *American Manufacturing Leadership Act*, which is sponsored by the Research and Technology Chairwoman Stevens. This bill reauthorizes, updates, and improves the RAMI program, which was originally created by our colleagues Tom Reed and Joseph Kennedy in 2014. The RAMI program provides crucial support to American manufacturing that results in good, high-paying jobs for our constituents. I strongly support this bill, which is why I'm an original cosponsor, along with several of my Republican colleagues.

We will then take up four bills which addresses the issue of ocean acidification: H.R. 1237, the *COAST Research Act*, sponsored by Congresswoman Bonamici; H.R. 1716, the *Coastal Communities Ocean Acidification Act of 2019*, sponsored by Ms. Pingree; H.R. 1921, the *Ocean Acidification Innovation Act of 2019*, sponsored by Mr. Kilmer; and H.R. 988, the *NEAR Act of 2019*, sponsored by Mr. Posey. These bills collectively reauthorize and improve our government's research and response efforts to ocean acidification.

As we learned at the Environment Subcommittee hearing in March, the effects of ocean acidification are already showing up in our coastal communities. We need to have a much better understanding of this issue and how we can mitigate its effects to our coastal regions, and the bills before us today put us on the right path.

I look forward to a productive markup today and then moving these good bipartisan bills to the full House for passage. I also want to take a moment to thank our Ranking Member and his staff for their constructive input on the bills before us today. I can't promise that we will agree on every piece of legislation that comes before the Committee, but I will promise that we will try hard to do that to reach consensus whenever possible. That makes for better legislation, and ultimately makes it more likely that we can actually help address our constituents' needs.

[The prepared statement of Chairwoman Johnson follows:]

I want to welcome everyone to our first Full Committee markup of the Committee on Science, Space, and Technology for the 116th Congress. Today we meet to markup six good bipartisan bills. Each of these bills addresses critical issues facing our Nation.

First, we are considering H.R. 34, the *Energy and Water Research Integration Act of 2019*. I'll say more about this bill in a minute. For now, I'll just say that the bill addresses the complex ties between water and energy production in America.

As water resources are increasingly strained all across our country, I think it is critical that we better use and conserve those resources. I want to thank Ranking Member Lucas for being an original cosponsor of the bill and helping me to make a good bill even better. We both come from a part of the country where a drop of water has long been a precious commodity. Unfortunately, as water resources are increasingly strained around the country, more and more people are realizing that water is going to be a precious resource in places we never would think of as arid.

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Chairwoman JOHNSON. So I now recognize the Ranking Member to present his opening remarks.

Mr. LUCAS. Thank you, Chairman Johnson, for holding this markup.

Today, we'll consider six bipartisan bills. The first is H.R. 34, the *Energy and Water Research Integration Act*, a bill that aims to improve our understanding of the critical relationship between energy and water. Water and energy management is a regional issue with diverse challenges, ranging from agriculture and biofuels production to natural gas production. The energy-water nexus research authorized in this bill would improve efficiency and production in both sectors. That's why I cosponsored this legislation, and I'm committed to working with Chairwoman Johnson to move this bill forward.

I also want to thank the Chairwoman for working with us to incorporate comments from the Department of Energy and other stakeholders, which we've addressed through a bipartisan Manager's Amendment this morning.

Our second bill this morning is the *American Manufacturing Leadership Act*. This legislation reauthorizes and amends the bipartisan *Revitalize American Manufacturing and Innovation Act of 2014*. It includes important reforms to better coordinate centers for manufacturing innovation funded by all relevant agencies and incorporates GAO recommendations on the management. This bill also prioritizes manufacturing work force development and outreach to small and medium-sized manufacturers.

Next, we'll consider four bills addressing the issue of ocean acidification. H.R. 1237, the *COAST Act*, reauthorizes and updates the *Federal Ocean Acidification Research and Monitoring Act of 2009*. This bill will reauthorize ocean and coastal acidification research, monitoring, adoption programs, and improve coordination between Federal agencies exploring this challenge.

H.R. 1716, the *Coastal Communities Ocean Acidification Act of 2019*, directs the National Oceanic and Atmospheric Administration to study the impact of ocean acidification could have on our coastal communities and identify potential mitigation strategies.

H.R. 1921, the *Ocean Acidification Innovation Act of 2019*, creates a Federal prize competition to encourage innovative approaches to understanding this challenge or developing solutions to ocean acidification.

And finally, H.R. 988, the *NEAR Act of 2019*, sponsored by Congressman Posey, authorizes the National Academies of Science to conduct a study on the impacts of ocean acidification and their environmental stressors on the coastal waterways.

The research authorized in these four bills will bring us one step closer to finding innovative solutions to the challenge of ocean acidification and will improve the sustainability and overall health of our ecosystems. I want to thank the bipartisan group of Members representing coastal districts who developed this legislation.

And once again, thank you, Chairwoman Johnson, for holding today's markup, and I encourage the Members of the Committee to support these bills.

I yield back the balance of my time.

[The prepared statement of Mr. Lucas follows:]

Thank you, Chairman Johnson, for holding this mark-up. Today we will consider six bipartisan bills.The first is H.R. 34, the *Energy and Water Research Integration Act*, a bill that aims to improve our understanding of the critical relationship between energy and water.

Water and energy management is a regional issue with diverse challenges, ranging from agriculture and biofuels production to natural gas production.

The energy-water nexus research authorized in this bill could improve efficiency and production in both sectors. That's why I cosponsored this legislation, and I'm committed to working with Chairwoman Johnson to move this bill forward.

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Once again, thank you Chairwoman Johnson for holding today's mark-up, and I encourage the Members of this Committee to support these bills.

I yield the balance of my time.

Chairwoman JOHNSON. Thank you very much.

The CLERK. H.R. 988, a bill——
[The bill follows:]

I

116TH CONGRESS
1ST SESSION

H. R. 988

To provide for a study by the Ocean Studies Board of the National Academies of Science examining the impact of ocean acidification and other stressors in estuarine environments.

IN THE HOUSE OF REPRESENTATIVES

FEBRUARY 6, 2019

Mr. POSEY (for himself, Ms. BONAMICI, and Mr. MAST) introduced the following bill; which was referred to the Committee on Science, Space, and Technology, and in addition to the Committee on Natural Resources, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

---

A BILL

To provide for a study by the Ocean Studies Board of the National Academies of Science examining the impact of ocean acidification and other stressors in estuarine environments.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "National Estuaries and Acidification Research Act of 2019" or the "NEAR Act of 2019".

SEC. 2. FINDINGS.

Congress finds the following:

(1) Ocean acidification impacts human health, natural resources, and the environmental, economic, and recreational uses of the coastline.

(2) The current understanding of ocean acidification impacts on estuarine ecosystems is inadequate to fully prepare and manage for changing environmental conditions in nearshore locations.

(3) While pH can be measured with high precision and accuracy in open ocean environments, more understanding of the carbonate system in estuarine ecosystems is needed for precise and accurate measurements and observations.

(4) The interaction of multiple stressors, including salinity, pH, temperature, sea level rise, and nutrient input, within estuarine ecosystems is inadequately understood for managing the health, economic, recreational, and environmental impacts driven by these interactions.

(5) A better understanding is needed of how anthropogenic influences in coastal environments affect estuarine ecosystems.

(6) More integration and coordination is needed among regional, national, and global environmental observations in estuarine environments, supporting

1 prior investments in related topics such as nutrient
2 loading, hypoxia, ocean acidification, and harmful
3 algae bloom research and observational systems.

4 **SEC. 3. STUDY EXAMINING THE IMPACT OF OCEAN ACIDIFI-**
5 **CATION AND OTHER ENVIRONMENTAL**
6 **STRESSORS ON ESTUARINE ENVIRONMENTS.**

7 (a) IN GENERAL.—Not later than 60 days after the
8 date of enactment of this Act, the Secretary of Commerce
9 shall make appropriate arrangements with the Ocean
10 Studies Board of the National Academies under which the
11 Board shall conduct a study that—

12 (1) examines the existing science of ocean acidi-
13 fication in estuarine environments;

14 (2) examines the challenges to studying ocean
15 acidification and ocean acidification's interactions
16 with other environment stressors in estuarine envi-
17 ronments;

18 (3) provides recommendations for improving fu-
19 ture research with respect to ocean acidification in
20 estuarine environments; and

21 (4) identifies pathways for applying science in
22 management and mitigation decisions relating to
23 ocean acidification in estuarine environments.

24 (b) CONTENTS OF STUDY.—The study described
25 under subsection (a) shall include—

1 (1) the current state of data collection, inter-
2 pretation, storage, and retrieval and observational
3 infrastructure of abiotic and biotic parameters in es-
4 tuarine ecosystems;
5 (2) how environmental and anthropogenic
6 changes or disturbances could affect abiotic and bi-
7 otic processes within estuaries;
8 (3) how estuarine biotic and abiotic processes
9 will be affected under predicted environmental
10 changes;
11 (4) the behavior of the carbonate system within
12 estuarine environments;
13 (5) the interactions of the carbonate system
14 with other biotic and abiotic characteristics of estua-
15 rine ecosystems;
16 (6) the gaps that exist in understanding the
17 socio-economic and health impacts of ocean acidifica-
18 tion in estuaries;
19 (7) future directions for scientific research; and
20 (8) pathways for applying science in manage-
21 ment and mitigation decisions.
22 (c) REPORT.—In entering into an arrangement under
23 subsection (a), the Secretary shall request that the Board
24 transmit to Congress a report on the results of the study

1 not later than 24 months after the date of enactment of
2 this Act.

○

Chairwoman JOHNSON. Without objection, the bill is considered as read and open to amendments at any point.

I recognize Mr. Posey, the bill's sponsor, to make any comments on the bill.

Mr. POSEY. Thank you, Madam Chair and Ranking Member.

Today, I ask the Committee to favorably report the *National Estuaries and Acidification Research Act, NEAR*, H.R. 988, but first, I have an amendment at the desk.

Chairwoman JOHNSON. The clerk will report the amendment.

The CLERK. Amendment number 1 offered by Mr. Posey. Page 4——

[The amendment of Mr. Posey follows:]

AMENDMENT TO H.R.

OFFERED BY MR. POSEY OF FLORIDA

Page 4, strike lines 1 through 15 and insert the following:

1 (1) the behavior of the carbonate system within
2 estuarine environments;
3 (2) the interactions of the carbonate system
4 with other biotic and abiotic characteristics of estua-
5 rine ecosystems;
6 (3) how environmental and anthropogenic
7 changes or disturbances could affect abiotic and bi-
8 otic processes within estuaries;
9 (4) how estuarine biotic and abiotic processes
10 will be affected under predicted environmental
11 changes;
12 (5) the current state of data collection, inter-
13 pretation, storage, and retrieval and observational
14 infrastructure of abiotic and biotic parameters in es-
15 tuarine ecosystems;

Page 5, after line 2, add the following:

1 (d) AUTHORIZATION OF APPROPRIATIONS.—There
2 are authorized to be appropriated to carry out this section
3 $1,000,000.

Amend the long title so as to read: "To provide for a study by the National Academies of Sciences, Engineering, and Medicine examining the impact of ocean acidification and other stressors in estuarine environments.".

Chairwoman JOHNSON. I ask unanimous consent to dispense with the reading, and without objection, so ordered.

I recognize the gentleman for 5 minutes to explain his amendment.

Mr. POSEY. Thank you, Madam Chair.

The amendment modifies my proposed act based on comments from the National Academies of Sciences, Engineering, and Medicine. The Academies of Sciences, Engineering, and Medicine have provided guidance on a better ordering of tasks of the study and prefer that we do not specify in the legislation which board have their facilities perform actual study. The amendment also includes an authorized study cost of $1 million.

I want to thank Congresswoman Bonamici and Congressman Mast for working with me to advance this important legislation. I'd like to move that the Committee adopt the amendment.

Chairwoman JOHNSON. Sorry. Thank you, Mr. Posey.

Any other comments on the—Ms. Bonamici?

Ms. BONAMICI. Thank you, Chairwoman Johnson. I move to strike the last word.

Chairwoman JOHNSON. So ordered.

Ms. BONAMICI. I'm pleased to join my fellow Co-Chair of the congressional Estuary Caucus, Congressman Posey, in supporting this amendment and the underlying bill.

We know that estuaries and near-shore waters are also experiencing the consequences of our inaction to address ocean and coastal acidification, and research has not kept pace with the needs of coastal communities. I'm proud to be an original cosponsor of the *National Estuaries and Acidification Research*, or *NEAR Act*. The bill would direct the National Academies of Science Oceans Study Board to conduct a study that examines the existing science of ocean acidification in estuary environments and provide recommendations to improve further research and management to inform mitigation decisions.

Ocean and coastal acidification often present itself in the context of other coastal processes like runoff, erosion, and up-welled water from the oceans, making it difficult to measure its individual effects on estuary environments. This study will address these significant research gaps and urge need—and urgent need for information on ocean and coastal acidification in estuaries.

I support Congressman Posey's amendment to include authorizing language for the National Academies study. As I have mentioned several times today, with the limited Federal resources that currently exist for ocean acidification research, it's important to clarify that the congressional intent that funds are authorized in the *Federal Ocean Acidification Research and Monitoring Act* should not be diverted for the study. We must provide additional authorization.

I want to thank Congressman Posey for his leadership, thank also Congressman Mast and others supporting this bill. I urge all of my colleagues to support this bill in the Committee and I—and on the floor, and I yield back the balance of my time.

Chairwoman JOHNSON. Thank you, Ms. Bonamici.

Any further comments on the bill?

If no, then the vote will occur on the amendment.

All in favor, say aye.

Those opposed, nay.

The ayes have it, and it's agreed to.

Are there any further amendments to the bill?

If not, then a reporting quorum being present, I move that the Committee on Science, Space, and Technology report H.R. 988, as amended, to the House, with a recommendation that the bill be approved.

Those in favor of the motion will signify by saying aye.

Those opposed, nay.

The ayes have it. The bill is favorably reported.

Without objection, the motion to reconsider is laid on the table.

I ask unanimous consent that the staff be authorized to make any necessary technical and conforming changes to the bill. Without objection, so ordered.

Members will have 2 subsequent calendar days in which to submit supplementary minority or additional views on the measure.

And we're going to recess for 10 minutes, and then we'll come back and have the roll call votes, and so the purpose of making sure everyone is notified that a vote will be occurring. So we're in recess. We're trying to finish before the House goes in session.

[Recess.]

Chairwoman JOHNSON. The Committee will come to order.

We are reassembled for the consideration of two amendments. The question is on the Weber number 4 amendment, and the clerk will report—well, I guess just call the roll.

The CLERK. Chairwoman Johnson?

Chairwoman JOHNSON. No.

The CLERK. Chairwoman Johnson, no.

Ms. Lofgren?

Ms. LOFGREN. No.

The CLERK. Ms. Lofgren, no.

Mr. Lipinski?

[No response.]

The CLERK. Ms. Bonamici?

Ms. BONAMICI. No.

The CLERK. Ms. Bonamici, no.

Mr. Bera?

Mr. BERA. No.

The CLERK. Mr. Bera, no.

Mr. Lamb?

Mr. LAMB. No.

The CLERK. Mr. Lamb, no.

Mrs. Fletcher?

Mrs. FLETCHER. No.

The CLERK. Mrs. Fletcher, no.

Ms. Stevens?

Ms. STEVENS. No.

The CLERK. Ms. Stevens, no.

Ms. Horn?

Ms. HORN. No.

The CLERK. Ms. Horn, no.

Ms. Sherrill?

Ms. SHERRILL. No.

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