To reauthorize the Federal Ocean Acidification Research and Monitoring Act of 2009, and for other purposes.

IN THE SENATE OF THE UNITED STATES

Mr. Markey (for himself and Mr. Sullivan) introduced the following bill; which was read twice and referred to the Committee on

A BILL

To reauthorize the Federal Ocean Acidification Research and Monitoring Act of 2009, and for other purposes.

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 “Ocean, Coastal, and Estuarine Acidification Necessitates Research Act of 2019” or the “OCEAN Research Act”.

SEC. 2. PURPOSES.

Section 12402 of the Federal Ocean Acidification Research and Monitoring Act of 2009 (33 U.S.C. 3701) is amended—
(1) by striking “(a) PURPOSES.—”;

(2) in paragraph (1)—

(A) in the matter preceeding subparagraph
(A), by striking “development and coordina-
tion” and inserting “coordination and imple-
mentation”; 

(B) in subparagraph (A), by striking
“acidification on marine organisms” and insert-
ing “acidification and coastal acidification on
marine organisms”; and

(C) in subparagraph (B), by striking “es-
tablish” and all that follows and inserting
“maintain an interagency research, monitoring,
and public outreach program on ocean acidifica-
tion and coastal acidification;”;

(3) in paragraph (2), by striking “establishment
of an ocean acidification program” and inserting
“maintenance of an ocean acidification and coastal
acidification program”;

(4) in paragraph (3), by inserting “and coastal
acidification” after “ocean acidification”; and

(5) in paragraph (4), by inserting “and coastal
acidification that take into account other environ-
mental and anthropogenic stressors” after “ocean
acidification”.
SEC. 3. DEFINITIONS.

Section 12403 of the Federal Ocean Acidification Research and Monitoring Act of 2009 (33 U.S.C. 3702) is amended—

(1) in paragraph (1), by striking “of the Earth’s oceans” and all that follows and inserting “and changes in the water chemistry of the Earth’s oceans, coastal estuaries, and waterways caused by carbon dioxide from the atmosphere and the breakdown of organic matter.”;

(2) in paragraph (3), by striking “Joint Subcommittee on Ocean Science and Technology” and inserting “Subcommittee on Ocean Science and Technology of the Committee on Environment”;

(3) by redesignating paragraphs (1), (2), and (3) as paragraphs (2), (4), and (5), respectively;

(4) by inserting before paragraph (2), as so redesignated, the following:

“(1) COASTAL ACIDIFICATION.—The term ‘coastal acidification’ means the combined decrease in pH and changes in the water chemistry of coastal oceans, estuaries, and other bodies of water from chemical inputs (including carbon dioxide from the atmosphere), freshwater inputs, and excess nutrient run-off from land and coastal atmospheric pollution that result in processes that release carbon dioxide,
acidic nitrogen, and sulfur compounds as byproducts which end up in coastal waters.”;

(5) by inserting after paragraph (2), as so redesignated, the following:

“(3) Institution of Higher Education.—
The term ‘institution of higher education’ has the meaning given the term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001).”;

(6) by adding at the end the following:

“(6) State.—The term ‘State’ means each State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, the Virgin Islands of the United States, and any other territory or possession of the United States.

“(7) Tribal Organization.—The term ‘Tribal organization’ has the meaning given the term ‘tribal organization’ in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5304).”.

SEC. 4. INTERAGENCY WORKING GROUP.

Section 12404 of the Federal Ocean Acidification Research and Monitoring Act of 2009 (33 U.S.C. 3703) is amended—
(1) in the section heading, by striking “SUB-COMMITTEE” and inserting “WORKING GROUP”;
(2) in subsection (a)—
   (A) by amending paragraph (1) to read as follows:
   “(1) IN GENERAL.—The Subcommittee shall es-
   tablish an interagency working group on ocean acidi-
   fication and coastal acidification.”;
   (B) by amending paragraph (2) to read as
   follows:
   “(2) MEMBERSHIP.—The interagency working
   group on ocean acidification shall be comprised of
   senior representatives from—
   “(A) the National Oceanic and Atmos-
   pheric Administration;
   “(B) the National Science Foundation;
   “(C) the National Aeronautics and Space
   Administration;
   “(D) the United States Geological Survey;
   “(E) the United States Fish and Wildlife
   Service;
   “(F) the Bureau of Ocean Energy Man-
   agement;
   “(G) the Environmental Protection Agen-
   cy;
“(H) the Department of Agriculture;
“(I) the Department of State;
“(J) the Department of Energy;
“(K) the Department of the Navy;
“(L) the National Park Service;
“(M) the Bureau of Indian Affairs;
“(N) the National Institute of Standards and Technology;
“(O) the Smithsonian Institution; and
“(P) such other Federal agencies as the Subcommittee considers appropriate.”; and
(C) in paragraph (3), in the paragraph heading, by striking “CHAIRMAN” and inserting “CHAIR”;
(3) in subsection (b)—
(A) in paragraph (1)—
(i) by inserting “and coastal acidification” after “acidification”; and
(ii) by inserting “, including the efforts of the National Oceanic and Atmospheric Administration to facilitate such implementation” after “of the plan”; 
(B) in paragraph (2)—
(i) in subparagraph (A), by inserting “and coastal acidification” after “ocean acidification”; and
(ii) in subparagraph (B), by inserting “or coastal acidification” after “ocean acidification”;
(C) in paragraph (4), by striking “; and” and inserting a semicolon;
(D) in paragraph (5)—
(i) by inserting “and Coastal” after “Ocean”;
(ii) by striking “developed” and inserting “and coastal acidification developed”; and
(iii) by striking the period at the end and inserting “and coastal acidification; and”; and
(E) by adding at the end the following:
“(6) ensure that each of the Federal agencies represented on the interagency working group—
“(A) participates in the Ocean and Coastal Acidification Information Exchange established under paragraph (5); and
“(B) delivers data and information to support the data archive system established under section 12406(d).”; and

(4) in subsection (c), in paragraph (2)—

(A) in the matter preceding subparagraph (A), by inserting “, and to the Director of the Office of Management and Budget,” after “House of Representatives”; and

(B) in subparagraph (B), by striking “the interagency research” and inserting “interagency strategic research”.

SEC. 5. OCEAN AND COASTAL ACIDIFICATION ADVISORY BOARD.

The Federal Ocean Acidification Research and Monitoring Act of 2009 (33 U.S.C. 3701 et seq.) is amended by inserting after section 12404 the following:

“SEC. 12404A. OCEAN AND COASTAL ACIDIFICATION ADVISORY BOARD.

“(a) ESTABLISHMENT.—The Chair of the Subcommittee shall establish an Ocean and Coastal Acidification Advisory Board (in this section referred to as the ‘Advisory Board’).

“(b) DUTIES.—The Advisory Board shall—
“(1) not later than 180 days before the Subcommittee submits a report under section 12404(c)(2)—

“(A) review a draft of the report;

“(B) submit to the Subcommittee an analysis of the draft for consideration before submitting the report under section 12404(c)(2); and

“(C) concurrently with the submission by the Subcommittee of the report under that section, submit a copy of the analysis provided to the Subcommittee under subparagraph (B) to—

“(i) the Committee on Commerce, Science, and Transportation of the Senate;

and

“(ii) the Committee on Science, Space, and Technology and the Committee on Natural Resources of the House of Representatives;

“(2) not later than 180 days before the Subcommittee submits a strategic research plan under section 12404(c)(3)—

“(A) review a draft of the plan;

“(B) submit to the Subcommittee an analysis of the plan, and recommendations for the
implementation of the plan, for consideration before submitting the plan under section 12404(c)(3); and

“(C) concurrently with the submission of the Subcommittee of the plan under that section, submit a copy of the analysis provided to the Subcommittee under subparagraph (B) to the committees specified in clauses (i) and (ii) of paragraph (1)(C);

“(3) provide ongoing advice to the Subcommittee and the interagency working group established under section 12404 on matters related to Federal activities on ocean acidification and coastal acidification;

“(4) advise the Subcommittee and the interagency working group on—

“(A) efforts to coordinate research and monitoring activities related to ocean acidification and coastal acidification; and

“(B) the best practices for the standards developed for data archiving under section 12406(e);

“(5) publish in the Federal Register a charter;

“(6) provide to the Library of Congress—
“(A) the charter required by paragraph (5); “(B) any schedules and minutes for meetings of the Advisory Board; “(C) any documents that are approved by the Advisory Board; and “(D) any reports and analysis prepared by the Advisory Board; and “(7) establish a publicly accessible page on the website of the National Oceanic and Atmospheric Administration that contains the information described in subparagraphs (A) through (D) of paragraph (6). “(c) MEMBERSHIP.—The Advisory Board shall consist of 24 members as follows: “(1) Two representatives of the shellfish and crab industry. “(2) One representative of the finfish industry. “(3) One representative of seafood processors. “(4) Three representatives from institutions of higher education, including both natural and social sciences. “(5) One representative of recreational fishing. “(6) One representative of relevant nongovernmental organizations.
“(7) Six representatives from relevant State and local governments and Tribal organizations.

“(8) One representative from the Alaska Ocean Acidification Network.

“(9) One representative from the California Current Acidification Network.

“(10) One representative from the Northeast Coastal Acidification Network.

“(11) One representative from the Southeast Ocean and Coastal Acidification Network.

“(12) One representative from the Gulf of Mexico Ocean Acidification Network.

“(13) One representative from the Mid-Atlantic Coastal Acidification Network.

“(14) One representative from the Pacific Islands Ocean Observing System or a similar entity representing—

“(A) the island territories and possessions of the United States in the Pacific Ocean; and

“(B) the State of Hawaii.

“(15) One representative from the Caribbean Regional Association for Coastal Ocean Observing or a similar entity representing Puerto Rico and the United States Virgin Islands.
“(16) One representative from the National Oceanic and Atmospheric Administration, who shall serve as an ex officio member of the Advisory Board without a vote.

“(d) APPOINTMENT OF MEMBERS.—The Chair of the Subcommittee shall—

“(1) appoint members to the Advisory Board (taking into account the geographical interests of each individual to be appointed as a member to ensure that an appropriate balance of geographical interests are represented by the members of the Advisory Board) who—

“(A) represent the interest group for which each seat is designated;

“(B) demonstrate expertise on ocean acidification or coastal acidification and its scientific, economic, industry, cultural, and community impacts; and

“(C) have a record of distinguished service with respect to ocean acidification or coastal acidification, and such impacts;

“(2) give consideration to nominations and recommendations from the members of the interagency working group and the public for such appointments; and
“(3) ensure that an appropriate balance of scientific, industry, and geographical interests are represented by the members of the Advisory Board.

“(e) Term of Membership.—Each member of the Advisory Board—

“(1) shall be appointed for a 5-year term; and

“(2) may be appointed to more than one term.

“(f) Chair.—The Chair of the Subcommittee shall appoint one member of the Advisory Board to serve as the Chair of the Advisory Board.

“(g) Meetings.—Not less than once each calendar year, the Advisory Board shall meet at such times and places as may be designated by the Chair of the Advisory Board, in consultation with the Chair of the Subcommittee and the Chair of the interagency working group.

“(h) Briefing.—The Chair of the Advisory Board shall brief the Subcommittee and the interagency working group on the progress of the Advisory Board as necessary.

“(i) Federal Advisory Committee Act.—Section 14 of the Federal Advisory Committee Act (5 U.S.C. App.) shall not apply to the Advisory Board.”.

SEC. 6. STRATEGIC RESEARCH PLAN.

Section 12405 of the Federal Ocean Acidification Research and Monitoring Act of 2009 (33 U.S.C. 3704) is amended—
(1) by inserting “and coastal acidification” after “acidification” each place it appears;

(2) in subsection (a)—

(A) in the first sentence—

(i) by inserting “, and not later than every 5 years thereafter” after “the date of enactment of this Act”;

(ii) by inserting “address the socio-economic impacts of ocean acidification and coastal acidification and to” after “mitigation strategies to”; and

(iii) by striking “marine ecosystems” each place it appears and inserting “ecosystems”; and

(B) in the second sentence—

(i) by striking “its potential impacts” and inserting “their potential impacts”; and

(ii) by inserting “and recommendations made by the Advisory Board in the review of the plan required under section 12404A(b)(2)(A)” after “subsection (d)”;

(3) in subsection (b)—

(A) in paragraph (1), by inserting “and social sciences” after “among the ocean sciences”;

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(B) in paragraph (2)—

(i) in subparagraph (A), by striking “its physical, chemical, and biological impacts” and inserting “their physical, chemical, and biological impacts, including trends of changes in ocean chemistry,”;

(ii) in subparagraph (B)—

(I) by striking “improve the ability to assess the” and inserting “assess the short-term and long-term”;

and

(II) by striking “; and” at the end and inserting a semicolon;

(iii) by amending subparagraph (C) to read as follows:

“(C) provide information for the—

“(i) development of adaptation and mitigation strategies to address the socio-economic impacts of ocean acidification and coastal acidification;

“(ii) conservation of marine organisms and ecosystems; and

“(iii) assessment of the effectiveness of such adaptation and mitigation strategies; and”; and
(iv) by adding at the end the following:

“(D) improve research on—

“(i) ocean acidification and coastal acidification;

“(ii) the interactions between and effects of multiple combined stressors including changes in water chemistry, changes in sediment delivery, hypoxia, and harmful algal blooms, on ocean acidification and coastal acidification; and

“(iii) the effect of environmental stressors on marine resources and ecosystems;”;

(C) in paragraph (3)—

(i) in subparagraph (F), by striking “database development” and inserting “data management”;

(ii) in subparagraph (H), by striking “; and” and inserting a semicolon; and

(iii) by adding at the end the following:

“(J) assessment of adaptation and mitigation strategies; and

“(K) education and outreach activities;”;

“(L) the development and dissemination of ocean acidification research products;”;

“(M) the development of collaborative research and management decisions on global ocean acidification; and

“(N) the establishment of a national management strategy for ocean acidification.”;
(D) in paragraph (4), by striking “set forth” and inserting “ensure an appropriate balance of contribution in establishing”;

(E) in paragraph (5), by striking “reports” and inserting “the best available peer-reviewed scientific reports”;

(F) in paragraph (6), by striking “of the United States” and inserting “within the United States”;

(G) in paragraph (7), by striking “outline budget requirements” and inserting “estimate costs associated for full implementation of each element of the plan by fiscal year”;

(H) in paragraph (8)—

(i) by striking “its” and inserting “their”; and

(ii) by striking “; and” and inserting a semicolon;

(I) in paragraph (9), by striking the period at the end and inserting “; and”;

(J) by adding at the end the following:

“(10) describe monitoring needs necessary to support potentially affected industry members, coastal stakeholders, fishery management councils and commissions, non-Federal resource managers,
and scientific experts on decisionmaking and adaptation related to ocean acidification and coastal acidification.”;

(4) in subsection (c)—

(A) in paragraph (1)(C), by striking “surface”;

(B) in paragraph (3)—

(i) by striking “input, and” and inserting “inputs,”;

(ii) by inserting “, marine food webs,” after “marine ecosystems”; and

(iii) by inserting “, and modeling that supports fisheries management” after “marine organisms”; and

(C) by adding at the end the following:

“(6) Research to understand related and cumulative stressors and other biogeochemical processes occurring in conjunction with ocean acidification and coastal acidification.”; and

(5) by striking subsection (e) and inserting the following:

“(e) ADVISORY BOARD EVALUATION.—Not later than 180 days before the strategic research plan is submitted to Congress under section 12404(c)(3), the Subcommittee shall provide the Advisory Board established

...
under section 12404A a copy of the plan for purposes of review under subsection (b)(2)(A) of such section.

“(f) Publication and Public Comment.—Not later than 90 days before the strategic research plan is submitted to Congress under section 12404(c)(3), the Subcommittee shall—

“(1) publish a draft of the plan in the Federal Register; and

“(2) provide an opportunity for submission of public comments for a period of not less than 60 days.”.

SEC. 7. NOAA OCEAN AND COASTAL ACIDIFICATION ACTIVITIES.

Section 12406 of the Federal Ocean Acidification Research and Monitoring Act of 2009 (33 U.S.C. 3705) is amended—

(1) in the section heading, by inserting “AND COASTAL” after “OCEAN”;

(2) by inserting “and coastal acidification” after “acidification” each place it appears;

(3) in subsection (a)—

(A) in the matter preceding paragraph (1)—

(i) by inserting “coordination,” after “research, monitoring,”; and
(ii) by striking “and implementation”;

(B) in paragraph (1)—

(i) in subparagraph (B)—

(I) by inserting “including the Integrated Ocean Observing System and the ocean observing assets of other Federal and State agencies,” after “ocean observing assets,”; and

(II) by inserting “and agency and department missions, prioritizing the location of monitoring instruments, assets, and projects to maximize the efficiency of resources and to optimize understanding of socioeconomic impacts and ecosystem health” after “research program”;

(ii) in subparagraph (C)—

(I) by striking “adaptation” and inserting “adaptation and mitigation”; and

(II) by inserting “and supporting socioeconomically vulnerable communities and industries” after “marine ecosystems”;

(iii) in subparagraph (E)—
(I) by striking “its impacts” and inserting “their impacts”; and

(II) by striking “; and” and inserting a semicolon;

(iv) in subparagraph (F)—

(I) by striking “monitoring and impacts research” and inserting “research, monitoring, and adaptation and mitigation strategies”; and

(II) by striking the semicolon and inserting “; and”; and

(v) by adding at the end the following:

“(G) research to improve understanding of the effect of—

“(i) other environmental stressors on ocean acidification and coastal acidification;

“(ii) multiple environmental stressors on living marine resources and coastal ecosystems; and

“(iii) adaptation and mitigation strategies to address the socioeconomic impacts of ocean acidification and coastal acidification.”;
(C) in paragraph (2), by striking “critical research projects that explore” and inserting “critical research and education projects that explore and communicate”; and

(4) by adding at the end the following:

“(e) RELATIONSHIP TO INTERAGENCY WORKING GROUP.—The National Oceanic and Atmospheric Administration shall serve as the lead Federal agency responsible for coordinating the Federal response to ocean acidification and coastal acidification, by—

“(1) leading the interagency working group established under section 12404 in implementing the strategic research plan under section 12405;

“(2) coordinating monitoring and research efforts among Federal agencies in cooperation with State and local governments, Tribal organizations, and international partners;

“(3) maintaining the Ocean and Coastal Acidification Information Exchange required by section 12404(b)(5) to allow for information to be electronically accessible, including information—

“(A) on ocean acidification and coastal acidification developed through or used by the ocean acidification and coastal acidification program described in subsection (a); or
“(B) that would be useful to State or local governments, Tribal organizations, resource managers, policymakers, researchers, and other stakeholders in mitigating or adapting to the impacts of ocean acidification and coastal acidification; and

“(4) establishing and maintaining the data archive system under subsection (d).

“(d) DATA ARCHIVE SYSTEM.—

“(1) MANAGEMENT.—The Secretary, in coordination with members of the interagency working group established under section 12404, shall provide for the long-term stewardship of, and access to, data relating to ocean acidification and coastal acidification by establishing and maintaining a data archive system that the National Centers for Environmental Information uses to process, store, archive, provide access to, and incorporate to the extent possible, such data collected—

“(A) through relevant federally funded research; and

“(B) by a Federal, State, or local agency, Tribal organization, scientist at an institution of higher education, citizen scientist, or industry organization.
“(2) EXISTING GLOBAL OR NATIONAL DATA ASSETS.—In establishing and maintaining the data archive system under paragraph (1), the Secretary shall ensure that existing global or national data assets (including the data assets maintained by the National Centers for Environmental Information, the Integrated Ocean Observing System, and other existing data systems within Federal agencies) are incorporated to the greatest extent possible.

“(e) STANDARDS, PROTOCOLS, AND PROCEDURES.—

The Secretary, in coordination with members of the interagency working group established under section 12404, shall establish and revise as necessary the standards, protocols, or procedures for—

“(1) processing, storing, archiving, and providing access to data described in subsection (d);

“(2) the interoperability and intercalibration of such data;

“(3) the collection of any metadata underlying such data; and

“(4) sharing such data with State and local governments, Tribal organizations, potentially affected industry members, coastal stakeholders, fishery management councils and commissions, non-Fed-
eral resource managers, and institutions of higher education.

“(f) Dissemination of Ocean Acidification Data and Coastal Acidification Data.—The Secretary, in coordination with members of the interagency working group established under section 12404, shall disseminate the data described in subsection (d) to the greatest extent practicable by sharing such data on full and open access exchanges, including the Ocean and Coastal Acidification Information Exchange required by section 12404(b)(5).

“(g) Requirement.—Recipients of grants from the National Oceanic and Atmospheric Administration under this subtitle that collect data described in subsection (d) shall—

“(1) collect such data in accordance with the standards, protocols, or procedures established pursuant to subsection (e); and

“(2) submit such data to the data archive system under subsection (d), in accordance with any rules promulgated by the Secretary.”.
SEC. 8. OCEAN ACIDIFICATION COLLABORATIVE RESEARCH GRANTS.

The Federal Ocean Acidification Research and Monitoring Act of 2009 (33 U.S.C. 3701 et seq.) is amended by inserting after section 12406 the following:

“SEC. 12406A. OCEAN ACIDIFICATION COLLABORATIVE RESEARCH GRANTS.

“(a) DEFINITIONS.—In this section:

“(1) ACADEMIC COMMUNITY.—The term ‘academic community’ includes faculty and other representatives of institutions of higher education and other schools, researchers, scientists, and natural resource managers.

“(2) SEAFOOD INDUSTRY.—The term ‘seafood industry’ includes shellfish growers, shellfish harvesters, commercial fishermen, recreational fishermen, other members of the seafood harvesting or supply chain, and organizations representing any of such groups.

“(b) GRANTS.—The Secretary shall provide grants for collaborative research projects on ocean acidification developed and conducted through partnerships between the seafood industry and the academic community.

“(c) CRITERIA FOR APPROVAL.—The Secretary may not provide a grant for a project under this section unless the project is—
“(1) consistent with the themes identified under the strategic research plan developed by the Sub-committee under section 12405; and

“(2) designed to—

“(A) develop and support partnerships, communications, and shared understanding between the seafood industry and the academic community;

“(B) include the seafood industry in research on ocean acidification;

“(C) deliver research, monitoring, or adaptation results which will benefit both the seafood industry and the academic community;

“(D) incorporate into the research agenda the expertise of both the seafood industry, including their unique understanding of the natural environment, and the academic community;

“(E) promote better understanding of seafood industry research questions and priorities within the academic community;

“(F) promote wider understanding of ocean acidification among the academic community, the seafood industry, and other stakeholders as appropriate; and
“(G) include appropriately balanced support from both the seafood industry and the academic community.

“(d) PRIORITY.—The Secretary shall prioritize funding under this section to projects which—

“(1) address ecosystems and communities vulnerable to the impacts of ocean acidification;

“(2) demonstrate support from local stakeholders, such as representatives of States or other governmental jurisdictions, community organizations, tribes, or educational institutions, as appropriate, located within the region in which the project will be undertaken; or

“(3) utilize seafood industry assets as research and monitoring platforms.

“(e) IMPLEMENTATION GUIDELINES.—Not later than 180 days after the date of enactment of this section, the Secretary, in collaboration with the Subcommittee, shall issue implementation guidelines under this section, including criteria and priorities for grants. Those guidelines shall be developed in consultation, as appropriate, with—

“(1) State, regional, and local decisionmakers with ocean acidification experience;
“(2) the seafood industry and other marine-dependent industries;
“(3) formal and informal educators, including both those within academia and those who are not;
“(4) tribes;
“(5) nongovernmental organizations involved in ocean acidification research, prevention, or adaptation; and
“(6) any other appropriate community stakeholders.

“(f) CONTENTS OF PROPOSALS.—Each proposal for a grant under this section shall include—
“(1) a description of the qualifications of the individuals or entities who will conduct the project;
“(2) a plan for ensuring full participation and engagement of both industry and academic community participants, including a description of how each partner will contribute expertise to the project in terms of design, execution, and interpretation of results;
“(3) a plan for the dissemination of the results of the research project, which may include—
“(A) educational programs;
“(B) presentations to members of the seafood industry, the academic community, and community stakeholders;

“(C) scientific publication; and

“(D) delivery to appropriate representatives of States or other government jurisdictions who would use the information;

“(4) a description of how the project is consistent with the program elements described in section 12405(c); and

“(5) any other information the Secretary considers necessary for evaluating the eligibility of the project for funding under this section.

“(g) ALTERNATIVE PARTICIPANTS.—The Secretary may make a grant under this section to a partnership in which a marine-dependent industry is substituted for the seafood industry if the proposed project serves the purposes of this section. In such a case, the participation and interests of that marine-dependent industry shall be substituted for those of the seafood industry in applying the requirements of this section.

“(h) PROJECT REPORTING.—Each grantee under this section shall provide periodic reports as required by the Secretary. Each such report shall include all informa-
tion required by the Secretary for evaluating the progress and success of the project.

“(i) Matching Requirements.—

“(1) In general.—Except as provided in paragraph (2), the total amount of Federal funding for a collaborative research project supported under this section may not exceed 85 percent of the total cost of such project. For purposes of this paragraph, the non-Federal share of project costs may be provided by in-kind contributions and other noncash support.

“(2) Waiver.—The Secretary may waive all or part of the matching requirement under paragraph (1) if the Secretary determines that no reasonable means are available through which applicants can meet the matching requirement and the probable benefit of such project outweighs the public interest in such matching requirement.

“(j) Funding.—Of the amount authorized to be appropriated by section 12409(a) for each of fiscal years 2020 through 2024, $5,000,000 shall be available to provide grants under this section.”.
SEC. 9. NSF OCEAN AND COASTAL ACIDIFICATION ACTIVITIES.

Section 12407 of the Federal Ocean Acidification Research and Monitoring Act of 2009 (33 U.S.C. 3706) is amended—

(1) in the section heading, by inserting “AND COASTAL” after “OCEAN”;

(2) by inserting “and coastal acidification” after “acidification” each place it appears;

(3) in subsection (a)—

(A) in the matter preceding paragraph (1)—

(i) by striking “continue” and all that follows through “which shall”;

(ii) by striking “proposals for re-search” and inserting “proposals for the researching”; and

(iii) by striking “its impacts” and inserting “their impacts”;

(B) in paragraph (1), by striking “marine ecosystems” and inserting “ecosystems”; and

(C) in paragraph (2), by striking “; and” at the end and inserting a semicolon;

(D) in paragraph (3)—

(i) by striking “and its impacts” and inserting “and their impacts”; and
(ii) by striking the period at the end and inserting “; and”; and

(E) by adding at the end the following:

“(4) adaptation and mitigation strategies to address socioeconomic effects of ocean acidification and coastal acidification.”; and

(4) by adding at the end the following:

“(d) REQUIREMENT.—Recipients of grants from the National Science Foundation under this section that collect data described under section 12406(d) shall—

“(1) collect data in accordance with the standards, protocols, or procedures established pursuant to section 12406(e); and

“(2) submit such data to the Director and the Secretary, in accordance with any rules promulgated by the Director or the Secretary.”.

SEC. 10. NASA OCEAN AND COASTAL ACIDIFICATION ACTIVITIES.

Section 12408 of the Federal Ocean Acidification Research and Monitoring Act of 2009 (33 U.S.C. 3707) is amended—

(1) in the section heading, by inserting “AND COASTAL” after “OCEAN”; and

(2) in subsection (a)—
(A) in the subsection heading, by inserting “AND COASTAL” after “OCEAN”; and

(B) in the text, by striking “acidification and its impacts” and inserting “acidification and coastal acidification and their impacts”;

(3) in subsections (b) and (c), by inserting “and coastal acidification” after “acidification” each place it appears; and

(4) by adding at the end the following:

“(d) REQUIREMENT.—Researchers from the National Aeronautics and Space Administration that collect data described under section 12406(d) shall—

“(1) collect such data in accordance with the standards, protocols, or procedures established pursuant to section 12406(e); and

“(2) submit such data to the Administrator and the Secretary, in accordance with any rules promulgated by the Administrator or the Secretary.”.

SEC. 11. AUTHORIZATION OF APPROPRIATIONS.

Section 12409 of the Federal Ocean Acidification Research and Monitoring Act of 2009 (33 U.S.C. 3708) is amended—

(1) in subsection (a), by striking “subtitle—” and all that follows and inserting the following:
“subtitle $35,500,000 for each of fiscal years 2020 through 2024.”; and

(2) in subsection (b), by striking “subtitle—” and all that follows and inserting the following: “subtitle $20,000,000 for each of fiscal years 2020 through 2024.”

SEC. 12. 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 National Academies of Sciences, Engineering, and Medicine (referred to in this Act as the “National Academies”) under which the National Academies 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 environmental stressors in estuarine environments, including harmful algal blooms, nutrient loading, and hypoxia;
(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 National Academies 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.