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(Original Signature of Member)

116TH CONGRESS
1ST SESSION

H. R.

To amend the Federal Ocean Acidification Research and Monitoring Act of 2009 to establish an Ocean Acidification Advisory Board, to expand and improve the research on Ocean Acidification and Coastal Acidification, to establish and maintain a data archive system for Ocean Acidification data and Coastal Acidification data, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

Ms. BONAMICI introduced the following bill; which was referred to the
Committee on _____

A BILL

To amend the Federal Ocean Acidification Research and Monitoring Act of 2009 to establish an Ocean Acidification Advisory Board, to expand and improve the research on Ocean Acidification and Coastal Acidification, to establish and maintain a data archive system for Ocean Acidification data and Coastal Acidification data, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Coastal and Ocean
3 Acidification Stressors and Threats Research Act of
4 2019” or the “COAST Research Act of 2019”.

5 **SEC. 2. PURPOSES.**

6 (a) IN GENERAL.—Section 12402(a) of the Federal
7 Ocean Acidification Research and Monitoring Act of 2009
8 (33 U.S.C. 3701(a)) is amended—

9 (1) in paragraph (1)—

10 (A) in the matter preceding subparagraph
11 (A), by striking “development and coordina-
12 tion” and inserting “coordination and imple-
13 mentation”;

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

18 (C) in subparagraph (B), by striking “es-
19 tablish” and all that follows before the semi-
20 colon and inserting “maintain and advise an
21 interagency research, monitoring, and public
22 outreach program on ocean acidification and
23 coastal acidification”;

24 (2) in paragraph (2), by striking “establis-
25 ment” and inserting “maintenance”;

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

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

7 (b) **TECHNICAL AND CONFORMING AMENDMENT.**—
8 Section 12402 of the Federal Ocean Acidification Re-
9 search and Monitoring Act of 2009 (33 U.S.C. 3701(a))
10 is amended by striking “**(a) PURPOSES.—**”.

11 **SEC. 3. DEFINITIONS.**

12 Section 12403 of the Federal Ocean Acidification Re-
13 search and Monitoring Act of 2009 (33 U.S.C. 3702) is
14 amended—

15 (1) in paragraph (1), by striking “of the
16 Earth’s oceans” and all that follows before the pe-
17 riod at the end and inserting “and changes in the
18 water chemistry of the Earth’s oceans, coastal estu-
19 aries, and waterways caused by carbon dioxide from
20 the atmosphere and the breakdown of organic mat-
21 ter”;

22 (2) in paragraph (3), by striking “Joint Sub-
23 committee on Ocean Science and Technology of the
24 National Science and Technology Council” and in-

1 serting “National Science and Technology Council
2 Subcommittee on Ocean Science and Technology”;

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

5 (4) by inserting before paragraph (2), as so re-
6 designated, the following new paragraph:

7 “(1) COASTAL ACIDIFICATION.—The term
8 ‘coastal acidification’ means the combined decrease
9 in pH and changes in the water chemistry of coastal
10 oceans, estuaries, and other bodies of water from
11 chemical inputs (including carbon dioxide from the
12 atmosphere), freshwater inputs, and excess nutrient
13 run-off from land and coastal atmospheric pollution
14 that result in processes that release carbon dioxide,
15 acidic nitrogen, and sulfur compounds as byprod-
16 ucts.”; and

17 (5) by adding at the end the following new
18 paragraph:

19 “(5) STATE.—The term ‘State’ means each of
20 the State of the United States, the District of Co-
21 lumbia, the Commonwealth of Puerto Rico, Amer-
22 ican Samoa, Guam, the Commonwealth of the
23 Northern Mariana Islands, the Virgin Islands of the
24 United States, and any other territory or possession
25 of the United States.”.

1 **SEC. 4. INTERAGENCY WORKING GROUP.**

2 Section 12404 of the Federal Ocean Acidification Re-
3 search and Monitoring Act of 2009 (33 U.S.C. 3703) is
4 amended—

5 (1) in the heading, by striking “**SUB-**
6 **COMMITTEE**” and inserting “**WORKING GROUP**”;

7 (2) in subsection (a)—

8 (A) in paragraph (1), by striking “Joint
9 Subcommittee on Ocean Science and Tech-
10 nology of the National Science and Technology
11 Council shall coordinate Federal activities on
12 ocean acidification and” and insert “Sub-
13 committee shall”;

14 (B) in paragraph (2), by striking “Wildlife
15 Service,” and inserting “Wildlife Service, the
16 Bureau of Ocean Energy Management, the En-
17 vironmental Protection Agency, the Department
18 of Agriculture, the Department of State, the
19 Department of Energy, the Department of the
20 Navy, the National Park Service, the Bureau of
21 Indian Affairs, the National Institute of Stand-
22 ards and Technology, the Smithsonian Institu-
23 tion,”; and

24 (C) in paragraph (3), in the heading, by
25 striking “CHAIRMAN” and inserting “CHAIR”;

26 (3) in subsection (b)—

1 (A) in paragraph (1), by inserting “, in-
2 eluding the efforts of the National Oceanic and
3 Atmospheric Administration to facilitate such
4 implementation” after “of the plan”;

5 (B) in paragraph (2)—

6 (i) in subparagraph (A), by inserting
7 “and coastal acidification” after “ocean
8 acidification”; and

9 (ii) in subparagraph (B), by inserting
10 “and coastal acidification” after “ocean
11 acidification”;

12 (C) in paragraph (4), by striking “; and”
13 and inserting a semicolon;

14 (D) in paragraph (5)—

15 (i) by striking “developed” and insert-
16 ing “and coastal acidification developed”;
17 and

18 (ii) by striking the period at the end
19 and inserting “and coastal acidification;
20 and”; and

21 (E) by adding at the end the following new
22 paragraph:

23 “(6) ensure that each of the Federal agencies
24 represented on the interagency working group—

1 “(A) participates in the Ocean Acidifica-
2 tion Information Exchange established under
3 paragraph (5); and

4 “(B) delivers data and information to sup-
5 port the data archive system established under
6 section 12406(d).”;

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

8 (A) by inserting “, and to the Office of
9 Management and Budget,” after “House of
10 Representatives”; and

11 (B) in subparagraph (B), by striking “the
12 interagency research” and inserting “inter-
13 agency strategic research”;

14 (5) by redesignating subsection (c) as sub-
15 section (d); and

16 (6) by inserting after subsection (b) the fol-
17 lowing:

18 “(c) ADVISORY BOARD.—

19 “(1) ESTABLISHMENT.—The Chair of the Sub-
20 committee shall establish an Ocean Acidification Ad-
21 visory Board.

22 “(2) DUTIES.—The Advisory Board shall—

23 “(A) not later than 180 days after the
24 Subcommittee submits the most recent report
25 under subsection (d)(2) to Congress—

1 “(i) review such report; and

2 “(ii) submit an analysis of such report
3 to the Subcommittee, the Committee on
4 Commerce, Science, and Transportation of
5 the Senate, the Committee on Science,
6 Space, and Technology of the House of
7 Representatives, and the Committee on
8 Natural Resources of the House of Rep-
9 resentatives;

10 “(B) not later than 180 days after the
11 Subcommittee submits the most recent strategic
12 research plan under subsection (d)(3) to Con-
13 gress—

14 “(i) review such plan; and

15 “(ii) submit an analysis of such plan
16 and the implementation thereof to the Sub-
17 committee, the Committee on Commerce,
18 Science, and Transportation of the Senate,
19 the Committee on Science, Space, and
20 Technology of the House of Representa-
21 tives, and the Committee on Natural Re-
22 sources of the House of Representatives;

23 “(C) provide ongoing advice to the Sub-
24 committee and the interagency working group

1 on matters related to Federal activities on
2 ocean acidification and coastal acidification;

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

5 “(i) efforts to coordinate research and
6 monitoring activities related to ocean acidi-
7 fication and coastal acidification; and

8 “(ii) the best practices for the stand-
9 ards developed for data archiving under
10 section 12406(e);

11 “(E) publish in the Federal Register the
12 charter required under section 9(c) of the Fed-
13 eral Advisory Committee Act (5 U.S.C. App.);

14 “(F) provide the Library of Congress
15 with—

16 “(i) the charter described under sub-
17 paragraph (E);

18 “(ii) any schedules and minutes for
19 meetings of the Advisory Board;

20 “(iii) any documents described in sub-
21 sections (b) and (c) of section 9 of the
22 Federal Advisory Committee Act (5 U.S.C.
23 App.) that are created by the Advisory
24 Board; and

1 “(iv) any reports prepared by the Ad-
2 visory Board; and

3 “(G) establish a publicly accessible web
4 page on the website of the National Oceanic
5 and Atmospheric Administration, that contains
6 the information described in clause (i) through
7 (iv) of subparagraph (F).

8 “(3) MEMBERSHIP.—The Advisory Board shall
9 consist of 21 members as follows:

10 “(A) 2 representatives of the shellfish and
11 crab industry.

12 “(B) 1 representative of the finfish indus-
13 try.

14 “(C) 1 representative of seafood proc-
15 essors.

16 “(D) 3 representatives from academia, in-
17 cluding both natural and social sciences.

18 “(E) 1 representative of recreational fish-
19 ing.

20 “(F) 1 representative of relevant non-
21 governmental organizations.

22 “(G) 6 representatives from relevant State,
23 local, and Tribal governments.

24 “(H) 1 representative from the Alaska
25 Ocean Acidification Network.

1 “(I) 1 representative from the California
2 Current Acidification Network.

3 “(J) 1 representative from the Northeast
4 Coastal Acidification Network.

5 “(K) 1 representative from the Southeast
6 Coastal Acidification Network.

7 “(L) 1 representative from the Gulf of
8 Mexico Coastal Acidification Network.

9 “(M) 1 representative from the Mid-Atlan-
10 tic Coastal Acidification Network.

11 “(4) APPOINTMENT OF MEMBERS.—The Chair
12 of the Subcommittee shall—

13 “(A) appoint members to the Advisory
14 Board (taking into account the geographical in-
15 terests of each individual to be appointed as a
16 member of the Advisory Board to ensure that
17 an appropriate balance of geographical interests
18 are represented by the members of the Advisory
19 Board) who—

20 “(i) represent the interest group for
21 which each seat is designated;

22 “(ii) demonstrate expertise on ocean
23 acidification or coastal acidification and its
24 scientific, economic, industry, cultural, and
25 community impacts; and

1 “(iii) have a record of distinguished
2 service with respect to ocean acidification
3 or coastal acidification, and such impacts
4 thereof;

5 “(B) give consideration to nominations and
6 recommendations from the members of the
7 interagency working group and the public for
8 such appointments; and

9 “(C) ensure that an appropriate balance of
10 scientific, industry, and geographical interests
11 are represented by the members of the Advisory
12 Board.

13 “(5) TERM OF MEMBERSHIP.—Each member of
14 the Advisory Board—

15 “(A) shall be appointed for a 5-year term;
16 and

17 “(B) may be appointed to more than one
18 term.

19 “(6) CHAIR.—The Chair of the Subcommittee
20 shall appoint one member of the Advisory Board to
21 serve as the Chair of the Advisory Board.

22 “(7) MEETINGS.—Not less than once each cal-
23 endar year, the Advisory Board shall meet at such
24 times and places as may be designated by the Chair
25 of the Advisory Board, in consultation with the

1 Chair of the Subcommittee and the Chair of the
2 interagency working group.

3 “(8) BRIEFING.—The Chair of the Advisory
4 Board shall brief the Subcommittee and the inter-
5 agency working group on the progress of the Advi-
6 sory Board as necessary.

7 “(9) FEDERAL ADVISORY COMMITTEE ACT.—
8 The Federal Advisory Committee Act shall not apply
9 to the Advisory Board, except for subsections (b)
10 and (c) of section 9 and subsections (a) through (d)
11 of section 10 of such Act.”.

12 **SEC. 5. STRATEGIC RESEARCH PLAN.**

13 Section 12405 of the Federal Ocean Acidification Re-
14 search and Monitoring Act of 2009 (33 U.S.C. 3704) is
15 amended—

16 (1) in subsection (a)—

17 (A) by striking “acidification” each place it
18 appears and inserting “acidification and coastal
19 acidification”;

20 (B) in the first sentence—

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

24 (ii) by inserting “address the socio-
25 economic impacts of ocean acidification

1 and coastal acidification and to” after
2 “mitigation strategies to”; and

3 (iii) by striking “marine ecosystems”
4 each place it appears and inserting “eco-
5 systems”; and

6 (C) in the second sentence, by inserting
7 “and recommendations made by the Advisory
8 Board in the review of the plan required under
9 subsection (e)” after “subsection (d)”;
10 (2) in subsection (b)—

11 (A) in paragraph (1), by inserting “and so-
12 cial sciences” after “among the ocean sciences”;

13 (B) in paragraph (2)—

14 (i) in subparagraph (A), by striking
15 “impacts” and inserting “impacts, includ-
16 ing trends of changes in ocean chemistry,”;

17 (ii) in subparagraph (B)—

18 (I) by striking “improve the abil-
19 ity to assess the” and inserting “as-
20 sess the short-term and long-term”;
21 and

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

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

1 “(C) provide information for the—

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

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

8 “(iii) assessment of the effectiveness
9 of such adaptation and mitigation strate-
10 gies;”; and

11 (iv) by adding at the end the following
12 new subparagraph:

13 “(D) improve research on—

14 “(i) ocean acidification and coastal
15 acidification;

16 “(ii) the effect of environmental
17 stressors on each other, including research
18 on the effect of changes in water chem-
19 istry, changes in sediment delivery, hy-
20 poxia, and harmful algal blooms, on ocean
21 acidification and coastal acidification; and

22 “(iii) the effect of environmental
23 stressors on marine resources and eco-
24 systems;”;

25 (C) in paragraph (3)—

1 (i) in subparagraph (F), by inserting
2 “and management” after “database devel-
3 opment”;

4 (ii) in subparagraph (H) by striking
5 “and” at the end; and

6 (iii) by adding at the end the fol-
7 lowing new subparagraphs:

8 “(J) assessment of adaptation and mitiga-
9 tion strategies; and

10 “(K) education and outreach activities;”;

11 (D) in paragraph (4), by striking “set
12 forth” and inserting “ensure an appropriate
13 balance of contribution in establishing”;

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

17 (F) in paragraph (6)—

18 (i) by inserting “and coastal acidifica-
19 tion” after “ocean acidification”; and

20 (ii) by striking “of the United States”
21 and inserting “within the United States”;

22 (G) in paragraph (7)—

23 (i) by striking “outline budget re-
24 quirements” and inserting “estimate budg-
25 et requirements for each of the fiscal years

1 of the plan for full implementation of each
2 element of the plan”; and

3 (ii) by inserting “over the course of
4 10 years” after “under the plan”;

5 (H) in paragraph (8)—

6 (i) by inserting “and coastal acidifica-
7 tion” after “ocean acidification” each place
8 it appears;

9 (ii) by striking “its” and inserting
10 “their”; and

11 (iii) by striking “; and” at the end
12 and inserting a semicolon;

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

15 (J) by adding at the end the following new
16 paragraph:

17 “(10) describe monitoring needs necessary to
18 support potentially affected industry members,
19 coastal stakeholders, fishery management councils
20 and commissions, non-Federal resource managers,
21 and scientific experts on decision-making and adap-
22 tation related to ocean acidification and coastal
23 acidification.”;

24 (3) in subsection (c)—

1 (A) in paragraph (1)(C), by striking “sur-
2 face”;

3 (B) in paragraph (2), by inserting “and
4 coastal acidification” after “ocean acidifica-
5 tion”;

6 (C) in paragraph (3)—

7 (i) by striking “input, and” and in-
8 serting “inputs,”;

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

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

14 (D) in paragraph (5), by inserting “and
15 coastal acidification” after “ocean acidifica-
16 tion”; and

17 (E) by adding at the end the following new
18 paragraph:

19 “(6) Research to understand related and cumu-
20 lative stressors and other biogeochemical processes
21 occurring in conjunction with ocean acidification and
22 coastal acidification.”; and

23 (4) by striking subsection (e) and inserting the
24 following:

1 “(e) **ADVISORY BOARD EVALUATION.**—Not later
2 than 60 days before a plan is submitted to Congress, the
3 Subcommittee shall provide the Advisory Board estab-
4 lished under section 12404(e) a copy of the plan.

5 “(f) **PUBLICATION AND PUBLIC COMMENT.**—Not
6 later than 90 days before the strategic research plan, or
7 any revision thereof, is submitted to Congress, the Sub-
8 committee shall publish the plan in the Federal Register
9 and provide an opportunity for submission of public com-
10 ments for a period of not less than 60 days.”.

11 **SEC. 6. NOAA OCEAN ACIDIFICATION ACTIVITIES.**

12 Section 12406 of the Federal Ocean Acidification Re-
13 search and Monitoring Act of 2009 (33 U.S.C. 3705) is
14 amended—

15 (1) in subsection (a)—

16 (A) in the matter preceding paragraph (1),
17 by inserting “coordination,” after “research,
18 monitoring,”;

19 (B) in paragraph (1)—

20 (i) in subparagraph (B)—

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

- 1 (II) by inserting “and agency
2 and department missions, prioritizing
3 the location of monitoring instru-
4 ments, assets, and projects to maxi-
5 mize the efficiency of resources and to
6 optimize understanding of socio-
7 economic impacts and ecosystem
8 health” after “research program”;
- 9 (ii) in subparagraph (C)—
- 10 (I) by striking “adaptation” and
11 inserting “adaptation and mitigation”;
12 and
- 13 (II) by inserting “and supporting
14 socioeconomically vulnerable commu-
15 nities and industries” after “marine
16 ecosystems”;
- 17 (iii) in subparagraph (E), by striking
18 “its impacts” and inserting “their respec-
19 tive impacts”;
- 20 (iv) in subparagraph (F), by striking
21 “monitoring and impacts research” and in-
22 serting “research, monitoring, and adapta-
23 tion and mitigation strategies”; and
- 24 (v) by adding at the end the following
25 new subparagraph:

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

3 “(i) other environmental stressors on
4 ocean acidification and coastal acidifica-
5 tion;

6 “(ii) multiple environmental stressors
7 on living marine resources and coastal eco-
8 systems; and

9 “(iii) adaptation and mitigation strat-
10 egies to address the socioeconomic impacts
11 of ocean acidification and coastal acidifica-
12 tion.”;

13 (C) in paragraph (2), by striking “critical
14 research projects that explore” and inserting
15 “critical research and education projects that
16 explore and communicate”; and

17 (D) in paragraphs (1), (2), and (3), by
18 striking “acidification” each place it appears
19 and inserting “acidification and coastal acidifi-
20 cation”; and

21 (2) by adding at the end the following new sub-
22 sections:

23 “(c) RELATIONSHIP TO INTERAGENCY WORKING
24 GROUP.—The National Oceanic and Atmospheric Admin-
25 istration shall serve as the lead Federal agency responsible

1 for coordinating the Federal response to ocean acidifica-
2 tion and coastal acidification, by—

3 “(1) leading the interagency working group in
4 implementing the strategic research plan under sec-
5 tion 12405;

6 “(2) coordinating monitoring and research ef-
7 forts among Federal agencies in cooperation with
8 State, local, and international partners;

9 “(3) maintaining an Ocean Acidification Infor-
10 mation Exchange described under section
11 12404(b)(5) to allow for information to be electroni-
12 cally accessible, including information—

13 “(A) on ocean acidification developed
14 through or used by the ocean acidification pro-
15 gram described under section 12406(a); or

16 “(B) that would be useful to State govern-
17 ments, local governments, Tribal governments,
18 resource managers, policymakers, researchers,
19 and other stakeholders in mitigating or adapt-
20 ing to the impacts of ocean acidification and
21 coastal acidification; and

22 “(4) establishing and maintaining the data ar-
23 chive system under subsection (d).

24 “(d) DATA ARCHIVE SYSTEM.—

1 “(1) ESTABLISHMENT.—The Secretary, in co-
2 ordination with members of the interagency working
3 group, shall provide for the long-term stewardship
4 of, and access to, data relating to ocean acidification
5 and coastal acidification by establishing a data ar-
6 chive system that processes, stores, archives, pro-
7 vides access to, and incorporates to the extent pos-
8 sible, such data collected—

9 “(A) through relevant federally-funded re-
10 search; and

11 “(B) by a Federal agency, State agency,
12 local agency, Tribe, academic scientist, citizen
13 scientist, or industry organization.

14 “(2) EXISTING GLOBAL OR NATIONAL DATA AS-
15 SETS.—In establishing the data archive system
16 under paragraph (1), the Secretary shall ensure that
17 existing global or national data assets (including the
18 data assets of the National Centers for Environ-
19 mental Information, the Integrated Ocean Observing
20 System, and other existing data systems within Fed-
21 eral agencies) are incorporated to the greatest extent
22 possible.

23 “(e) STANDARDS, PROTOCOLS, AND PROCEDURES.—
24 With respect to the data described in subsection (d), the
25 Secretary, in coordination with members of the inter-

1 agency working group, shall establish standards, protocols,
2 or procedures for—

3 “(1) processing, storing, archiving, and pro-
4 viding access to such data;

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

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

9 “(4) sharing such data with State, local, and
10 Tribal government programs, potentially affected in-
11 dustry members, coastal stakeholders, fishery man-
12 agement councils and commissions, non-Federal re-
13 source managers, and academia.

14 “(f) DISSEMINATION OF OCEAN ACIDIFICATION
15 DATA AND COASTAL ACIDIFICATION DATA.—The Sec-
16 retary, in coordination with members of the interagency
17 working group, shall disseminate the data described under
18 subsection (d) to the greatest extent practicable by sharing
19 such data on full and open access exchanges, including
20 the Ocean Acidification Information Exchange described
21 in section 12404(b)(5).

22 “(g) REQUIREMENT.—Recipients of grants from the
23 National Oceanic and Atmospheric Administration under
24 this subtitle that collected data described under subsection
25 (d) shall—

1 “(1) collect such data in accordance with the
2 standards, protocols, or procedures established pur-
3 suant to subsection (e); and

4 “(2) submit such data to the Secretary, in ac-
5 cordance with any rules promulgated by the Sec-
6 retary.”.

7 **SEC. 7. NSF OCEAN ACIDIFICATION ACTIVITIES.**

8 Section 12407 of the Federal Ocean Acidification Re-
9 search and Monitoring Act of 2009 (33 U.S.C. 3706) is
10 amended—

11 (1) by striking “ocean acidification” each place
12 it appears and inserting “ocean acidification and
13 coastal acidification”;

14 (2) in subsection (a)—

15 (A) in the matter preceding paragraph

16 (1)—

17 (i) by striking “continue to carry out
18 research activities on ocean acidification
19 which shall”;

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

23 (iii) by striking “its impacts” and in-
24 serting “their respective impacts”;

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

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

5 (D) in paragraph (3)—

6 (i) by striking “and its impacts” and
7 inserting “and their respective impacts”;
8 and

9 (ii) by striking the period at the end
10 and inserting “; and”; and

11 (E) by adding at the end the following new
12 paragraph:

13 “(4) adaptation and mitigation strategies to ad-
14 dress socioeconomic effects of ocean acidification and
15 coastal acidification.”; and

16 (3) by adding at the end the following:

17 “(d) REQUIREMENT.—Recipients of grants from the
18 National Science Foundation under this subtitle that col-
19 lect data described under section 12406(d) shall—

20 “(1) collect data in accordance with the stand-
21 ards, protocols, or procedures established pursuant
22 to section 12406(e); and

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

1 **SEC. 8. NASA OCEAN ACIDIFICATION ACTIVITIES.**

2 Section 12408 of the Federal Ocean Acidification Re-
3 search and Monitoring Act of 2009 (33 U.S.C. 3707) is
4 amended—

5 (1) by striking “ocean acidification” each place
6 it appears and inserting “ocean acidification and
7 coastal acidification”;

8 (2) in subsection (a), by striking “its impacts”
9 and inserting “their respective impacts”; and

10 (3) by adding at the end the following new sub-
11 section:

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

15 “(1) collect such data in accordance with the
16 standards, protocols, or procedures established pur-
17 suant to section 12406(e); and

18 “(2) submit such data to the Administrator and
19 the Secretary, in accordance with any rules promul-
20 gated by the Administrator or the Secretary.”.

21 **SEC. 9. AUTHORIZATION OF APPROPRIATIONS.**

22 Section 12409 of the Federal Ocean Acidification Re-
23 search and Monitoring Act of 2009 (33 U.S.C. 3708) is
24 amended—

25 (1) in subsection (a), by striking “subtitle—”
26 and all that follows through paragraph (4) and in-

1 serting the following: “subtitle \$30,500,000 for each
2 of the fiscal years 2019 through 2023.”; and
3 (2) in subsection (b), by striking “subtitle—”
4 and all that follows through paragraph (4) and in-
5 serting the following: “subtitle \$20,000,000 for each
6 of the fiscal years 2019 through 2023.”.