

tence, substituted “Advisory Board established in section 3703(c) of this title” for “National Academy of Sciences in the review of the plan required under subsection (d)”.

Subsec. (b)(1). Pub. L. 117–167, §10645(2)(A), inserted “and social sciences” after “among the ocean sciences”.

Subsec. (b)(2)(B). Pub. L. 117–167, §10645(2)(B)(i), substituted “assess the short-term and long-term” for “improve the ability to assess the” and semicolon for “; and”.

Subsec. (b)(2)(C). Pub. L. 117–167, §10645(2)(B)(ii), amended subpar. (C) generally. Prior to amendment, subpar. (C) read as follows: “provide information for the development of adaptation and mitigation strategies to conserve marine organisms and marine ecosystems;”.

Subsec. (b)(2)(D). Pub. L. 117–167, §10645(2)(B)(iii), added subpar. (D).

Subsec. (b)(3)(F). Pub. L. 117–167, §10645(2)(C)(i), substituted “data management” for “database development”.

Subsec. (b)(3)(J), (K). Pub. L. 117–167, §10645(2)(C)(ii), (iii), added subpars. (J) and (K).

Subsec. (b)(4). Pub. L. 117–167, §10645(2)(D), substituted “ensure an appropriate balance of contribution in establishing” for “set forth”.

Subsec. (b)(5). Pub. L. 117–167, §10645(2)(E), substituted “the best available peer-reviewed scientific reports” for “reports”.

Subsec. (b)(6). Pub. L. 117–167, §10645(2)(F), inserted “and coastal acidification” after “ocean acidification” and substituted “within the United States” for “of the United States”.

Subsec. (b)(8). Pub. L. 117–167, §10645(2)(G)(iii), which directed the substitution of a semicolon for “; and”, could not be executed because “and” had already been struck out at the end of par. (8) by Pub. L. 116–271, §110(a)(1), in the course of adding par. (10). See 2020 Amendment note below.

Pub. L. 117–167, §10645(2)(G)(i), (ii), inserted “and coastal acidification” after “ocean acidification” in two places and substituted “their” for “its”.

Subsec. (b)(11), (12). Pub. L. 117–167, §10645(2)(H)–(J), added pars. (11) and (12).

Subsec. (c)(1)(C). Pub. L. 117–167, §10645(3)(A), struck out “surface” before “ocean chemistry”.

Subsec. (c)(2). Pub. L. 117–167, §10645(3)(B), inserted “and coastal acidification” after “ocean acidification” wherever appearing.

Subsec. (c)(3). Pub. L. 117–167, §10645(3)(C), substituted “inputs,” for “input, and” and inserted “, marine food webs,” after “marine ecosystems” and “, and modeling that supports fisheries management” after “marine organisms”.

Subsec. (c)(5). Pub. L. 117–167, §10645(3)(D), inserted “and coastal acidification” after “ocean acidification”.

Subsec. (c)(8). Pub. L. 117–167, §10645(3)(E), added par. (8).

Subsec. (d). Pub. L. 117–167, §10645(4), added subsec. (d) and struck out former subsec. (d). Prior to amendment, text read as follows: “The Secretary shall enter into an agreement with the National Academy of Sciences to review the plan.”

Subsec. (e). Pub. L. 117–167, §10645(4), struck out subsec. (e). Text read as follows: “In developing the plan, the Subcommittee shall consult with representatives of academic, State, industry and environmental groups, tribal governments, and subsistence users. Not later than 90 days before the plan, or any revision thereof, is submitted to the Congress, the plan shall be published in the Federal Register for a public comment period of not less than 60 days.”

2020—Subsec. (b)(10). Pub. L. 116–271, §110(a), added par. (10).

Subsec. (c)(6), (7). Pub. L. 116–271, §110(b), added pars. (6) and (7).

Subsec. (e). Pub. L. 116–271, §110(c), inserted “, tribal governments, and subsistence users” after “groups”.

Statutory Notes and Related Subsidiaries

REVISED STRATEGIC RESEARCH PLAN

Pub. L. 116–271, title I, §110(d), Dec. 31, 2020, 134 Stat. 3343, provided that: “Not later than one year after the date of the enactment of this Act [Dec. 31, 2020], the Joint Subcommittee on Ocean Science and Technology of the National Science and Technology Council shall submit to Congress a revised strategic research plan under section 12405 of the Federal Ocean Acidification Research And Monitoring Act of 2009 (33 U.S.C. 3704) that includes the matters required by the amendments made by this section.”

§ 3705. NOAA ocean acidification activities

(a) In general

The Secretary shall establish and maintain an ocean acidification program within the National Oceanic and Atmospheric Administration to conduct research, monitoring, coordination, and other activities consistent with the strategic research and implementation plan developed by the Subcommittee under section 3704 of this title that—

(1) includes—

(A) interdisciplinary research among the ocean and atmospheric sciences, and coordinated research and activities to improve understanding of ocean acidification and coastal acidification;

(B) the establishment of a long-term monitoring program of ocean acidification and coastal acidification utilizing existing global and national ocean observing assets, including leveraging, as appropriate, the Integrated Ocean Observing System and the ocean observing assets of other Federal, State, and Tribal agencies, and adding instrumentation and sampling stations as appropriate to the aims of the research program;

(C) prioritization of the location of monitoring instruments, assets, and projects to maximize the efficiency of resources and agency and department missions;

(D) an optimization of understanding of socioeconomic impacts and ecosystem health¹

(E) research to identify and develop adaptation and mitigation strategies and techniques for effectively conserving marine ecosystems as they cope with increased ocean acidification and coastal acidification;

(F) technical assistance to socioeconomically vulnerable States, local governments, Tribal governments, communities, and industries impacted by ocean and coastal acidification to support their development of ocean and coastal acidification mitigation strategies;

(G) as an integral part of the research programs described in this chapter, educational opportunities that encourage an interdisciplinary and international approach to exploring the impacts of ocean acidification and coastal acidification;

(H) as an integral part of the research programs described in this chapter, national public outreach activities to improve the understanding of current scientific knowledge

¹ So in original. Probably should be followed by a semicolon.

of ocean acidification and coastal acidification and their respective impacts on marine resources;

(I) coordination of ocean acidification and coastal acidification research, monitoring, and adaptation and mitigation strategies with other appropriate international ocean science bodies such as the International Oceanographic Commission, the International Council for the Exploration of the Sea, the North Pacific Marine Science Organization, and others;

(J) research to improve understanding of—

(i) the impact of ocean acidification and coastal acidification; and

(ii) how multiple environmental stressors may contribute to and exacerbate ocean and coastal acidification on living marine resources and coastal ecosystems; and

(K) research to support the development of adaptation and mitigation strategies to address the socioeconomic impacts of ocean and coastal acidification on coastal communities;

(2) provides grants for critical research, education, and outreach projects that explore and communicate the effects of ocean acidification and coastal acidification on ecosystems and the socioeconomic impacts of increased ocean acidification and coastal acidification that are relevant to the goals and priorities of the strategic research plan;

(3) incorporates a competitive merit-based process for awarding grants that may be conducted jointly with other participating agencies or under the National Oceanographic Partnership Program under section 8931 of title 10; and

(4) includes an ongoing mechanism that allows industry members, coastal stakeholders, fishery management councils and commissions, non-Federal resource managers, community acidification networks, indigenous knowledge groups, and scientific experts to provide input on monitoring needs that are necessary to support on the ground management, decision making, and adaptation related to ocean acidification and its impacts.

(b) Additional authority

In conducting the Program, the Secretary may enter into and perform such contracts, leases, grants, or cooperative agreements as may be necessary to carry out the purposes of this chapter on such terms as the Secretary considers appropriate.

(c) 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 and coastal acidification. The Administration may enter into Memoranda of Understanding to—

(1) coordinate monitoring and research efforts among Federal agencies in cooperation with State, local, and Tribal governments and international partners; this may include analysis and synthesis of the results of monitoring and research;

(2) maintain an Ocean Acidification Information Exchange described under section 3703(b)(5) of this title to allow for information to be electronically accessible, including information—

(A) on ocean acidification developed through or used by the ocean acidification program described under subsection (a); or

(B) that would be useful to State governments, local governments, Tribal governments, resource managers, policymakers, researchers, and other stakeholders in mitigating or adapting to the impacts of ocean acidification and coastal acidification; and

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

(d) Data archive system

(1) In general

The Secretary, in coordination with the members of the interagency working group, shall support the long-term stewardship of, and access to, data relating to ocean and coastal acidification through providing the data on a publicly accessible data archive system. To the extent possible, this data archive system shall collect and provide access to ocean and coastal acidification data—

(A) from relevant federally funded research;

(B) provided by a Federal, State, or local government, academic scientist, citizen scientist, or industry organization;

(C) voluntarily submitted by Tribes or Tribal governments; and

(D) from existing global or national data assets that are currently maintained within Federal agencies.

(2) Data standards

The Secretary to, the extent possible, shall ensure all such data adheres to data and metadata standards to support the public findability, accessibility, interoperability, and reusability of such data.

(Pub. L. 111–11, title XII, § 12406, Mar. 30, 2009, 123 Stat. 1440; Pub. L. 115–232, div. A, title VIII, § 809(k)(2), Aug. 13, 2018, 132 Stat. 1843; Pub. L. 116–271, title I, § 111, Dec. 31, 2020, 134 Stat. 3343; Pub. L. 117–167, div. B, title VI, § 10646, Aug. 9, 2022, 136 Stat. 1679.)

Editorial Notes

AMENDMENTS

2022—Subsec. (a). Pub. L. 117–167, § 10646(1)(A), inserted “coordination,” after “research, monitoring,” in introductory provisions.

Subsec. (a)(1). Pub. L. 117–167, § 10646(1)(D), substituted “acidification and coastal acidification” for “acidification” wherever appearing. Amendment was not executed in subpars. (F), (J), and (K) as added by Pub. L. 117–167, § 10646(1)(B)(v), (viii), to reflect the probable intent of Congress.

Subsec. (a)(1)(B). Pub. L. 117–167, § 10646(1)(B)(i), inserted “including leveraging, as appropriate, the Integrated Ocean Observing System and the ocean observing assets of other Federal, State, and Tribal agencies,” after “ocean observing assets.”

Subsec. (a)(1)(C), (D). Pub. L. 117–167, § 10646(1)(B)(iii), added subpars. (C) and (D). Former subpars. (C) and (D) redesignated (E) and (G), respectively.

Subsec. (a)(1)(E). Pub. L. 117–167, §10646(1)(B)(ii), (iv), redesignated subpar. (C) as (E) and substituted “adaptation and mitigation” for “adaptation”. Former subpar. (E) redesignated (H).

Subsec. (a)(1)(F). Pub. L. 117–167, §10646(1)(B)(v), added subpar. (F).

Subsec. (a)(1)(G). Pub. L. 117–167, §10646(1)(B)(ii), redesignated subpar. (D) as (G).

Subsec. (a)(1)(H). Pub. L. 117–167, §10646(1)(B)(ii), (vi), redesignated subpar. (E) as (H), substituted “their respective impacts” for “its impacts”, and struck out “and” at end.

Subsec. (a)(1)(I). Pub. L. 117–167, §10646(1)(B)(vii)(II), which directed the substitution of a semicolon for a period at the end, could not be executed because a semicolon, rather than a period, already appeared at the end.

Pub. L. 117–167, §10646(1)(B)(ii), (vii)(I), redesignated subpar. (F) as (I) and substituted “research, monitoring, and adaptation and mitigation strategies” for “monitoring and impacts research”.

Subsec. (a)(1)(J), (K). Pub. L. 117–167, §10646(1)(B)(viii), added subpars. (J) and (K).

Subsec. (a)(2). Pub. L. 117–167, §10646(1)(D), substituted “acidification and coastal acidification” for “acidification” in two places.

Pub. L. 117–167, §10646(1)(C), substituted “critical research, education, and outreach projects that explore and communicate” for “critical research projects that explore”.

Subsecs. (c), (d). Pub. L. 117–167, §10646(2), added subsecs. (c) and (d).

2020—Subsec. (a)(4). Pub. L. 116–271 added par. (4).

2018—Subsec. (a)(3). Pub. L. 115–232 substituted “section 8931 of title 10” for “section 7901 of title 10”.

Statutory Notes and Related Subsidiaries

EFFECTIVE DATE OF 2018 AMENDMENT

Amendment by Pub. L. 115–232 effective Feb. 1, 2019, with provision for the coordination of amendments and special rule for certain redesignations, see section 800 of Pub. L. 115–232, set out as a note preceding section 3001 of Title 10, Armed Forces.

§ 3706. NSF ocean acidification activities

(a) Research activities

The Director of the National Science Foundation shall continue to carry out research activities on ocean acidification and coastal acidification which shall support competitive, merit-based, peer-reviewed proposals for research, observation, and monitoring of ocean acidification and coastal acidification and their respective impacts, including—

- (1) impacts on marine organisms, including species cultured for aquaculture, and marine ecosystems;
- (2) impacts on ocean, coastal, and estuarine biogeochemistry;
- (3) the development of methodologies and technologies to evaluate ocean acidification and coastal acidification and their respective impacts; and
- (4) impacts of multiple stressors on ecosystems exhibiting hypoxia, harmful algal blooms, or sediment delivery, combined with changes in ocean chemistry; and
- (5) adaptation and mitigation strategies to address socioeconomic effects of ocean acidification and coastal acidification.

(b) Consistency

The research activities shall be consistent with the strategic research plan developed by

the Subcommittee under section 3704 of this title.

(c) Coordination

The Director shall encourage coordination of the Foundation’s ocean acidification and coastal acidification activities with such activities of other nations and international organizations.

(d) Requirement

Recipients of grants from the National Science Foundation under this chapter that collect data described under section 3705(d) of this title shall—

(1) collect data in accordance with the standards, protocols, or procedures established pursuant to section 3705(d) of this title; and

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

(Pub. L. 111–11, title XII, §12407, Mar. 30, 2009, 123 Stat. 1441; Pub. L. 116–271, title I, §112, Dec. 31, 2020, 134 Stat. 3344; Pub. L. 117–167, div. B, title VI, §10647, Aug. 9, 2022, 136 Stat. 1680.)

Editorial Notes

AMENDMENTS

2022—Pub. L. 117–167, §10647(1), substituted “ocean acidification and coastal acidification” for “ocean acidification” wherever appearing in text.

Subsec. (a). Pub. L. 117–167, §10647(2)(A), substituted “their respective impacts” for “its impacts” in introductory provisions.

Subsec. (a)(3). Pub. L. 117–167, §10647(2)(B), substituted “and their respective impacts” for “and its impacts”.

Subsec. (a)(5). Pub. L. 117–167, §10647(2)(C), (D), added par. (5).

Subsec. (d). Pub. L. 117–167, §10647(3), added subsec. (d).

2020—Subsec. (a). Pub. L. 116–271 amended subsec. (a) generally. Prior to amendment, text read as follows: “The Director of the National Science Foundation shall continue to carry out research activities on ocean acidification which shall support competitive, merit-based, peer-reviewed proposals for research and monitoring of ocean acidification and its impacts, including—

- “(1) impacts on marine organisms and marine ecosystems;
- “(2) impacts on ocean, coastal, and estuarine biogeochemistry; and
- “(3) the development of methodologies and technologies to evaluate ocean acidification and its impacts.”

§ 3707. NASA ocean acidification activities

(a) Ocean acidification activities

The Administrator of the National Aeronautics and Space Administration, in coordination with other relevant agencies, shall ensure that space-based monitoring assets are used in as productive a manner as possible for monitoring of ocean acidification and coastal acidification and their respective impacts.

(b) Program consistency

The Administrator shall ensure that the Agency’s research and monitoring activities on ocean acidification and coastal acidification are carried out in a manner consistent with the strategic research plan developed by the Subcommittee under section 3704 of this title.