

2020, 134 Stat. 3341; Pub. L. 117-167, div. B, title VI, §10644, Aug. 9, 2022, 136 Stat. 1673.)

Editorial Notes

REFERENCES IN TEXT

Section 14 of the Federal Advisory Committee Act, referred to in subsec. (c)(10), is section 14 of Pub. L. 92-463, which was set out in the Appendix to Title 5, Government Organization and Employees, and was repealed and restated as section 1013 of Title 5 by Pub. L. 117-286, §§3(a), 7, Dec. 27, 2022, 136 Stat. 4204, 4361.

August 9, 2022, referred to in subsec. (c)(10), was in the original “the date of enactment of this Act”, which was translated as meaning the date of enactment of Pub. L. 117-167, which enacted subsec. (c), to reflect the probable intent of Congress.

AMENDMENTS

2022—Pub. L. 117-167, §10644(1), substituted “working group” for “Subcommittee” in section catchline.

Subsec. (a)(1). Pub. L. 117-167, §10644(2)(A), substituted “Subcommittee shall coordinate Federal activities on ocean and coastal acidification and establish and maintain” for “Joint Subcommittee on Ocean Science and Technology of the National Science and Technology Council shall coordinate Federal activities on ocean acidification and establish”.

Subsec. (a)(2). Pub. L. 117-167, §10644(2)(B), substituted “Wildlife Service, the Bureau of Ocean Energy Management, the Environmental Protection Agency, the Department of Agriculture, the Department of State, the Department of Energy, the Department of the Navy, the National Park Service, the Bureau of Indian Affairs, the National Institute of Standards and Technology, the Smithsonian Institution,” for “Wildlife Service.”

Subsec. (a)(3). Pub. L. 117-167, §10644(2)(C), substituted “Chair” for “Chairman” in heading.

Subsec. (b)(2). Pub. L. 117-167, §10644(3)(A), inserted “and coastal acidification” after “ocean acidification” in subpars. (A) and (B).

Subsec. (b)(4). Pub. L. 117-167, §10644(3)(B), substituted semicolon for “; and”.

Subsec. (b)(5). Pub. L. 117-167, §10644(3)(C), inserted “, and contribute to as appropriate,” after “designate” and substituted “and coastal acidification developed” for “developed” and “and coastal acidification; and” for period at end.

Subsec. (c). Pub. L. 117-167, §10644(6), added subsec. (c). Former subsec. (c) redesignated (e).

Subsec. (c)(2). Pub. L. 117-167, §10644(4)(A)(i), (ii), in introductory provisions, inserted “until 2032” after “every 2 years thereafter” and “, and to the Office of Management and Budget,” after “House of Representatives”.

Subsec. (c)(2)(B). Pub. L. 117-167, §10644(4)(A)(iii), substituted “interagency strategic research” for “the interagency research”.

Subsec. (c)(3). Pub. L. 117-167, §10644(4)(B), inserted “until 2031” after “at least once every 5 years”.

Subsec. (c)(4)(A). Pub. L. 117-167, §10644(4)(C), inserted “until 2032” after “and every 6 years thereafter” in introductory provisions.

Subsec. (d). Pub. L. 117-167, §10644(6), added subsec. (d).

Subsec. (e). Pub. L. 117-167, §10644(5), redesignated subsec. (c) as (e).

2020—Subsec. (c)(4), (5). Pub. L. 116-271 added pars. (4) and (5).

Statutory Notes and Related Subsidiaries

CHANGE OF NAME

Committee on Science and Technology of House of Representatives changed to Committee on Science, Space, and Technology of House of Representatives by House Resolution No. 5, One Hundred Twelfth Congress, Jan. 5, 2011.

§ 3704. Strategic research plan

(a) In general

Not later than 2 years after March 30, 2009, and not later than every 5 years following the publication of each subsequent strategic research plan until 2035, the Subcommittee shall develop a strategic plan for Federal research and monitoring on ocean acidification and coastal acidification that will provide for an assessment of the impacts of ocean acidification and coastal acidification on marine organisms and ecosystems and the development of adaptation and mitigation strategies to address the socioeconomic impacts of ocean acidification and coastal acidification and to conserve marine organisms and ecosystems. In developing the plan, the Subcommittee shall consider and use information, reports, and studies of ocean acidification and coastal acidification that have identified research and monitoring needed to better understand ocean acidification and coastal acidification and its potential impacts, and recommendations made by the Advisory Board established in section 3703(c) of this title.

(b) Contents of the plan

The plan shall—

(1) provide for interdisciplinary research among the ocean sciences and social sciences, and coordinated research and activities to improve the understanding of ocean chemistry that will affect marine ecosystems;

(2) establish, for the 10-year period beginning in the year the plan is submitted, the goals and priorities for Federal research and monitoring which will—

(A) advance understanding of ocean acidification and its physical, chemical, and biological impacts on marine organisms and marine ecosystems;

(B) assess the short-term and long-term socioeconomic impacts of ocean acidification;

(C) provide information for the development of adaptation and mitigation strategies to address—

(i) socioeconomic impacts of ocean acidification and coastal acidification;

(ii) conservation of marine organisms and ecosystems;

(iii) assessment of the effectiveness of such adaptation and mitigation strategies; and

(D) improve research on—

(i) ocean acidification and coastal acidification;

(ii) the interactions between and effects of ocean and coastal acidification and 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 or effects of clauses (i) and (ii) on marine resources and ecosystems;

(3) describe specific activities, including—

(A) efforts to determine user needs;

(B) research activities;

(C) monitoring activities;

(D) technology and methods development;

(E) data collection;

- (F) data management;
- (G) modeling activities;
- (H) assessment of ocean acidification impacts;
- (I) participation in international research efforts;
- (J) assessment of adaptation and mitigation strategies; and
- (K) education and outreach activities;

(4) identify relevant programs and activities of the Federal agencies that contribute to the interagency program directly and indirectly and ensure an appropriate balance of contribution in establishing the role of each Federal agency in implementing the plan;

(5) consider and utilize, as appropriate, the best available peer-reviewed scientific reports and studies conducted by Federal agencies, the National Research Council, or other entities;

(6) make recommendations for the coordination of the ocean acidification and coastal acidification research and monitoring activities within the United States with such activities of other nations and international organizations;

(7) outline budget requirements for Federal ocean acidification research and monitoring and assessment activities to be conducted by each agency under the plan;

(8) identify the monitoring systems and sampling programs currently employed in collecting data relevant to ocean acidification and coastal acidification and prioritize additional monitoring systems that may be needed to ensure adequate data collection and monitoring of ocean acidification and coastal acidification and their impacts;

(9) describe specific activities designed to facilitate outreach and data and information exchange with stakeholder communities;

(10) make recommendations for research to be conducted, including in the social sciences and economics, to address the key knowledge gaps identified in the Ocean Chemistry Coastal Community Vulnerability Assessment conducted under section 3703(c)(4)¹ of this title;

(11) describe monitoring needs necessary to support potentially affected industry members, coastal stakeholders, fishery management councils and commissions, Tribal governments, non-Federal resource managers, and scientific experts on decision-making and adaptation related to ocean acidification and coastal acidification; and

(12) describe the extent to which the Subcommittee incorporated feedback from the Advisory Board established in section 3703(c) of this title.

(c) Program elements

The plan shall include at a minimum the following program elements:

(1) Monitoring of ocean chemistry and biological impacts associated with ocean acidification at selected coastal and open-ocean monitoring stations, including satellite-based monitoring to characterize—

- (A) marine ecosystems;
- (B) changes in marine productivity; and

(C) changes in ocean chemistry.

(2) Research to understand the species specific physiological responses of marine organisms to ocean acidification and coastal acidification, impacts on marine food webs of ocean acidification and coastal acidification, and to develop environmental and ecological indices that track marine ecosystem responses to ocean acidification and coastal acidification.

(3) Modeling to predict changes in the ocean carbon cycle as a function of carbon dioxide and atmosphere-induced changes in temperature, ocean circulation, biogeochemistry, ecosystem and terrestrial inputs, modeling to determine impacts on marine ecosystems, marine food webs, and individual marine organisms, and modeling that supports fisheries management.

(4) Technology development and standardization of carbonate chemistry measurements on moorings and autonomous floats.

(5) Assessment of socioeconomic impacts of ocean acidification and coastal acidification and development of adaptation and mitigation strategies to conserve marine organisms and marine ecosystems.

(6) Research to understand the combined impact of changes in ocean chemistry and other stressors, including sediment delivery, hypoxia, and harmful algal blooms, on each other and on living marine resources, including aquaculture and coastal ecosystems.

(7) Applied research to identify adaptation strategies for species impacted by changes in ocean chemistry including vegetation-based systems, shell recycling, species and genetic diversity, applied technologies, aquaculture methodologies, and management recommendations.

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

(d) Publication

Concurrent with the submission of the plan to Congress, the Subcommittee shall publish the plan on a public website.

(Pub. L. 111–11, title XII, § 12405, Mar. 30, 2009, 123 Stat. 1438; Pub. L. 116–271, title I, § 110(a)–(c), Dec. 31, 2020, 134 Stat. 3343; Pub. L. 117–167, div. B, title VI, § 10645, Aug. 9, 2022, 136 Stat. 1677.)

Editorial Notes

REFERENCES IN TEXT

Section 3703(c)(4) of this title, referred to in subsec. (b)(10), was redesignated as section 3703(e)(4) of this title by Pub. L. 117–167, div. B, title VI, § 10644(5), Aug. 9, 2022, 136 Stat. 1674.

AMENDMENTS

2022—Subsec. (a). Pub. L. 117–167, § 10645(1), substituted “acidification and coastal acidification” for “acidification” wherever appearing; in the first sentence, inserted “, and not later than every 5 years following the publication of each subsequent strategic research plan until 2035” after “March 30, 2009” and “address the socioeconomic impacts of ocean acidification and coastal acidification and to” after “mitigation strategies to” and substituted “ecosystems” for “marine ecosystems” in two places; and in the second sen-

¹ See References in Text note below.

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.