

(B) Form of report**(i) Initial report**

The initial report required under subparagraph (A) shall include the information described in clauses (i) through (viii) of that subparagraph on a national level.

(ii) Subsequent reports

Each report required under subparagraph (A) after the initial report—

(I) may describe the information described in clauses (i) through (viii) of that subparagraph on a national level; or

(II) may consist of separate reports for each region of the National Oceanic and Atmospheric Administration.

(iii) Regional reports

If the Subcommittee opts to prepare a report required under subparagraph (A) as separate regional reports under clause (ii)(II), the Subcommittee shall submit a report for each region of the National Oceanic and Atmospheric Administration not less frequently than once during each 6-year reporting period.

(C) Appropriate committees of Congress defined

In this paragraph and in paragraph (5), the term “appropriate committees of Congress” means the Committee on Commerce, Science, and Transportation of the Senate, the Committee on Science, Space, and Technology of the House of Representatives, and the Committee on Natural Resources of the House of Representatives.

(5) Monitoring prioritization plan

Not later than 180 days after the date of the submission of the initial report under paragraph (4)(A), the Subcommittee shall transmit to the appropriate committees of Congress a report that develops a plan to deploy new sensors or other applicable observing technologies such as unmanned maritime systems—

(A) based on such initial report;

(B) prioritized by—

(i) the threat to coastal economies and ecosystems;

(ii) gaps in data; and

(iii) research needs; and

(C) that leverage existing platforms, where possible.

(Pub. L. 111–11, title XII, §12404, Mar. 30, 2009, 123 Stat. 1437; Pub. L. 116–271, title I, §109, Dec. 31, 2020, 134 Stat. 3341.)

Editorial Notes

AMENDMENTS

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

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, the Subcommittee shall develop a strategic plan for Federal research and monitoring on ocean acidification that will provide for an assessment of the impacts of ocean acidification on marine organisms and marine ecosystems and the development of adaptation and mitigation strategies to conserve marine organisms and marine ecosystems. In developing the plan, the Subcommittee shall consider and use information, reports, and studies of ocean acidification that have identified research and monitoring needed to better understand ocean acidification and its potential impacts, and recommendations made by the National Academy of Sciences in the review of the plan required under subsection (d).

(b) Contents of the plan

The plan shall—

(1) provide for interdisciplinary research among the ocean 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) improve the ability to assess the socioeconomic impacts of ocean acidification; and

(C) provide information for the development of adaptation and mitigation strategies to conserve marine organisms and marine 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) database development;

(G) modeling activities;

(H) assessment of ocean acidification impacts; and

(I) participation in international research efforts;

(4) identify relevant programs and activities of the Federal agencies that contribute to the interagency program directly and indirectly and set forth the role of each Federal agency in implementing the plan;

(5) consider and utilize, as appropriate, reports and studies conducted by Federal agencies, the National Research Council, or other entities;

(6) make recommendations for the coordination of the ocean acidification research and monitoring activities of 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 prioritize additional monitoring systems that may be needed to ensure adequate data collection and monitoring of ocean acidification and its impacts;

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

(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) 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 surface ocean chemistry.

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

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

(5) Assessment of socioeconomic impacts of ocean 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.

(d) National Academy of Sciences evaluation

The Secretary shall enter into an agreement with the National Academy of Sciences to review the plan.

(e) Public participation

In developing the plan, the Subcommittee shall consult with representatives of academic, State, industry and environmental groups, trib-

al 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.

(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.)

Editorial Notes

AMENDMENTS

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, 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;

(B) the establishment of a long-term monitoring program of ocean acidification utilizing existing global and national ocean observing assets, and adding instrumentation and sampling stations as appropriate to the aims of the research program;

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

(D) 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;

(E) as an integral part of the research programs described in this chapter, national public outreach activities to improve the understanding of current scientific knowledge of ocean acidification and its impacts on marine resources; and

(F) coordination of ocean acidification monitoring and impacts research with other appropriate international ocean science bodies such as the International Oceanographic