

116TH CONGRESS  
1ST SESSION

# S. 933

To improve data collection and monitoring of the Great Lakes, oceans, bays, estuaries, and coasts, and for other purposes.

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## IN THE SENATE OF THE UNITED STATES

MARCH 28, 2019

Mr. WHITEHOUSE (for himself and Ms. MURKOWSKI) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

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## A BILL

To improve data collection and monitoring of the Great Lakes, oceans, bays, estuaries, and coasts, 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,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Bolstering Long-Term  
5 Understanding and Exploration of the Great Lakes,  
6 Oceans, Bays, and Estuaries Act” or the “BLUE GLOBE  
7 Act”.

8 **SEC. 2. PURPOSE.**

9 The purpose of this Act is to promote and support—

1           (1) the monitoring, understanding, and explo-  
2           ration of the Great Lakes, oceans, bays, estuaries,  
3           and coasts; and

4           (2) the collection, analysis, synthesis, and shar-  
5           ing of data related to the Great Lakes, oceans, bays,  
6           estuaries, and coasts to facilitate science and oper-  
7           ational decision making.

8   **SEC. 3. FINDINGS.**

9           Congress makes the following findings:

10          (1) The Great Lakes, oceans, bays, estuaries,  
11          and coasts face significant challenges from, among  
12          other things, marine debris, illegal, unreported, and  
13          unregulated fishing, and changing conditions.

14          (2) Most of the ocean floor is mapped only at  
15          a very coarse resolution of 5 kilometers per pixel,  
16          whereas Mars, the Moon, and Venus are mapped at  
17          a much finer resolution of 100 meters per pixel or  
18          better.

19          (3) Many industries, including the fishing and  
20          aquaculture, energy, shipping, insurance, telecommu-  
21          nications, weather and climate forecasting, and tour-  
22          ism industries, among others, use ocean data, wheth-  
23          er or not the industries collect that data themselves.

24          (4) In 2017, the National Oceanic and Atmos-  
25          pheric Administration estimated that United States

1 businesses that collect ocean data or provide en-  
2 hanced ocean data products have overall revenues of  
3 approximately \$58,000,000,000.

4 (5) Although a large amount of data related to  
5 the Great Lakes, oceans, bays, estuaries, and coasts  
6 is collected internationally, nationally, and region-  
7 ally, by international bodies, national agencies, insti-  
8 tutes, private companies, and other entities, that  
9 data collection is often uncoordinated, and the re-  
10 sulting data are not always shared in a timely and  
11 useful manner between those entities.

12 (6) Improved collection, analysis, synthesis, and  
13 sharing of such data will improve our understanding  
14 of, and responses to, the challenges faced by the  
15 Great Lakes, oceans, bays, estuaries, and coasts.

16 (7) Innovation, research, and a skilled work-  
17 force are required to improve our understanding of  
18 the Great Lakes, oceans, bays, estuaries, and coasts  
19 and the challenges they face.

20 (8) According to the National Oceanic and At-  
21 mospheric Administration, in 2015, the ocean and  
22 Great Lakes economy in the United States employed  
23 approximately 3,200,000 people and accounted for  
24 approximately \$320,000,000,000 of the gross do-  
25 mestic product of the United States.

1           (9) The value and impact of the industries re-  
2       lated to the Great Lakes, oceans, bays, estuaries,  
3       and coasts on the economy of the United States are  
4       evidently immense; however, what is known as the  
5       “Blue Economy” is neither consistently defined nor  
6       regularly quantified.

7           (10) The Federal Government has a responsi-  
8       bility to support the monitoring, understanding, and  
9       exploration of the Great Lakes, oceans, bays, estu-  
10      aries, and coasts in pursuit of the national security  
11      and economic and environmental well-being of the  
12      United States, and as a world leader.

13 **SEC. 4. SENSE OF CONGRESS.**

14       It is the sense of Congress that—

15           (1) agencies should optimize data collection,  
16       management, and dissemination, to the extent prac-  
17       ticable, to maximize their impact for research, com-  
18       mercial, regulatory, and educational benefits and to  
19       foster innovation, scientific discoveries, the develop-  
20       ment of commercial products, and the development  
21       of sound policy with respect to the Great Lakes,  
22       oceans, bays, estuaries, and coasts;

23           (2) the United States is a leading member of  
24       the Intergovernmental Oceanographic Commission of  
25       the United Nations Educational, Scientific and Cul-

1 tural Organization, a founding member of the Atlan-  
2 tic Ocean Research Alliance, and a key partner in  
3 developing the United Nations Decade of Ocean  
4 Science for Sustainable Development;

5 (3) the Integrated Ocean Observing System and  
6 the Global Ocean Observing System are key assets  
7 and networks that bolster our understanding of the  
8 marine environment;

9 (4) the National Oceanographic Partnership  
10 Program is a meaningful venue for collaboration and  
11 coordination among Federal agencies, scientists, and  
12 ocean users;

13 (5) the National Centers for Environmental In-  
14 formation of the National Oceanic and Atmospheric  
15 Administration should be looked to by other Federal  
16 agencies as a primary, centralized repository for  
17 Federal ocean data;

18 (6) the Marine Cadastre, a joint effort of the  
19 National Oceanic and Atmospheric Administration  
20 and the Bureau of Ocean Energy Management, pro-  
21 vides access to data and information for specific  
22 issues and activities in ocean resources management  
23 to meet the needs of offshore energy and planning  
24 efforts;

1           (7) the regional associations of the Integrated  
 2       Ocean Observing System, certified by the National  
 3       Oceanic and Atmospheric Administration for the  
 4       quality and reliability of their data, are important  
 5       sources of observation information for the Great  
 6       Lakes, oceans, bays, estuaries, and coasts; and

7           (8) the Regional Ocean Partnerships and re-  
 8       gional data portals, which provide publicly available  
 9       tools such as maps, data, and other information to  
 10      inform decisions and enhance marine development,  
 11      should be supported by and viewed as collaborators  
 12      with Federal agencies and ocean users.

13 **SEC. 5. DEFINITION.**

14       In this Act, the term “Administrator” means the  
 15      Under Secretary of Commerce for Oceans and Atmosphere  
 16      in the Under Secretary’s capacity as Administrator of the  
 17      National Oceanic and Atmospheric Administration.

18 **SEC. 6. INCREASED COORDINATION AMONG AGENCIES**

19                               **WITH RESPECT TO DATA AND MONITORING.**

20       (a) INTERAGENCY OCEAN OBSERVATION COM-  
 21      MITTEE.—In addition to its responsibilities as of the date  
 22      of the enactment of this Act, and in consultation with the  
 23      associated advisory committee authorized by section  
 24      12304(d) of the Integrated Coastal and Ocean Observa-

1 tion System Act of 2009 (33 U.S.C. 3603(d)), the Inter-  
2 agency Ocean Observation Committee shall—

3 (1) work with international coordinating bodies,  
4 as necessary, to ensure robust, direct measurements  
5 of the Great Lakes, oceans, bays, estuaries, and  
6 coasts, including oceanographic data;

7 (2) coordinate supercomputing capacity, data  
8 storage capacity, and public access across agencies;  
9 and

10 (3) support cross-agency and multi-platform  
11 synergy, by coordinating overlapping data collection  
12 by satellites, buoys, submarines, gliders, vessels, and  
13 other data collection vehicles and technologies.

14 (b) FEDERAL GEOGRAPHIC DATA COMMITTEE.—In  
15 addition to its responsibilities as of the date of the enact-  
16 ment of this Act, and in consultation with the National  
17 Geospatial Advisory Committee, the Federal Geographic  
18 Data Committee shall—

19 (1) work with international coordinating bodies,  
20 as necessary, to ensure robust, continuous measure-  
21 ments of the Great Lakes, oceans, bays, estuaries,  
22 and coasts, including satellite and geospatial data;

23 (2) coordinate supercomputing capacity, data  
24 storage capacity, and public access across agencies;

1           (3) develop and deploy cross-agency, real-time,  
 2           standardized, centralized, archived, open-source, and  
 3           publicly available databases (using declassified infor-  
 4           mation to the extent possible) for all federally fund-  
 5           ed observational and model data, using the example  
 6           of the World Ocean Database; and

7           (4) support new and old data and metadata cer-  
 8           tification, quality assurance, quality control, integra-  
 9           tion, and archiving.

10       (c) INTERAGENCY COMMITTEE ON OCEAN AND  
 11 COASTAL MAPPING.—In addition to its responsibilities as  
 12 of the date of the enactment of this Act, and in consulta-  
 13 tion with its associated advisory panel authorized by sec-  
 14 tion 12203(g) of the Ocean and Coastal Mapping Integra-  
 15 tion Act (33 U.S.C. 3502(g)), the Interagency Committee  
 16 on Ocean and Coastal Mapping shall—

17           (1) work with international coordinating bodies,  
 18           as necessary, to ensure robust, continuous satellite  
 19           and direct measurements of the Great Lakes,  
 20           oceans, bays, estuaries, and coasts, including bathy-  
 21           metric data;

22           (2) coordinate supercomputing capacity, data  
 23           storage capacity, and public access across agencies;  
 24           and

1           (3) make recommendations on how to make  
2       data, metadata, and model output accessible to a  
3       broader public audience, including through geo-  
4       graphic information system layers, graphics, and  
5       other visuals.

6   **SEC. 7. INTERAGENCY OCEAN EXPLORATION COMMITTEE.**

7       (a) ESTABLISHMENT.—The President shall establish  
8       a committee to promote the exploration and improved un-  
9       derstanding of the oceans, to be known as the “Inter-  
10      agency Ocean Exploration Committee”.

11      (b) MEMBERSHIP.—The Interagency Ocean Explo-  
12      ration Committee shall be composed of not fewer than one  
13      senior-level representative from each of the following Fed-  
14      eral agencies:

15           (1) The Department of the Navy.

16           (2) The Department of the Interior.

17           (3) The Department of Commerce.

18           (4) The department in which the Coast Guard  
19      is operating.

20           (5) The Office of Management and Budget.

21           (6) The Council on Environmental Quality.

22           (7) The Office of Science and Technology Pol-  
23      icy.

24           (8) The Department of State.

25           (9) The National Science Foundation.

1           (10) The National Aeronautics and Space Ad-  
2           ministration.

3           (11) The Subcommittee on Ocean Science and  
4           Technology of the National Science and Technology  
5           Council.

6           (12) The elements of the intelligence commu-  
7           nity (as defined in section 3 of the National Security  
8           Act of 1947 (50 U.S.C. 3003)), as the President  
9           considers appropriate.

10          (c) DUTIES.—The Interagency Ocean Exploration  
11          Committee shall—

12               (1) cultivate public-private partnerships, includ-  
13               ing with Federal agencies, academic institutions,  
14               nongovernmental organizations, technology compa-  
15               nies, and international partners, to develop and de-  
16               ploy advanced technologies to explore and charac-  
17               terize the oceans; and

18               (2) coordinate the application of existing inno-  
19               vative technologies and development of emerging  
20               technologies to promote the understanding, mapping,  
21               and collection of data describing the oceans and the  
22               changes the oceans are experiencing and are antici-  
23               pated to experience in the future, such as changes  
24               in temperature, salinity, oxygenation, and acidity,  
25               and the biological consequences of those changes.

1 **SEC. 8. COMMITTEE ON OCEAN POLICY.**

2 (a) ESTABLISHMENT.—There is established in the  
3 Executive Office of the President a Committee on Ocean  
4 Policy, which—

5 (1) succeeds the Ocean Policy Committee estab-  
6 lished on June 19, 2018, by Executive Order 13840  
7 (83 Fed. Reg. 29431; relating to ocean policy);

8 (2) shall continue the activities of that com-  
9 mittee as it was in existence on the day before the  
10 date of the enactment of this Act; and

11 (3) shall carry out the functions described in  
12 subsection (b).

13 (b) FUNCTIONS.—The Committee on Ocean Policy  
14 shall—

15 (1) facilitate coordination and integration of  
16 Federal activities in ocean and coastal waters to in-  
17 form ocean policy and identify priority ocean re-  
18 search, technology, and data needs; and

19 (2) engage and collaborate with stakeholders,  
20 including Regional Ocean Partnerships, to address  
21 ocean-related matters that may require interagency  
22 or intergovernmental solutions.

1 **SEC. 9. TECHNOLOGY INNOVATION TASK FORCE TO COM-**  
2 **BAT ILLEGAL, UNREPORTED, AND UNREGU-**  
3 **LATED FISHING.**

4 (a) ESTABLISHMENT.—The President shall establish  
5 a technology innovation task force (in this Act referred  
6 to as the “IUU Tech Force”) to combat IUU fishing.

7 (b) LEADERSHIP.—The IUU Tech Force shall be led  
8 by the Director of the National Maritime Intelligence-Inte-  
9 gration Office, who shall coordinate with the National  
10 Ocean Counsel Committee on IUU Fishing and Seafood  
11 Fraud.

12 (c) MEMBERSHIP.—The IUU Tech Force shall be  
13 composed of not fewer than one senior-level representative  
14 from each of the following Federal agencies:

15 (1) The Department of the Navy.

16 (2) The Department of Justice.

17 (3) The Department of the Interior.

18 (4) The Department of Agriculture.

19 (5) The Department of Commerce.

20 (6) The Department of Labor.

21 (7) The Department of Health and Human  
22 Services.

23 (8) The department in which the Coast Guard  
24 is operating.

25 (9) The Office of Management and Budget.

26 (10) The Council on Environmental Quality.

1           (11) The Office of Science and Technology Pol-  
2       icy.

3           (12) The Office of the United States Trade  
4       Representative.

5           (13) The United States Agency for Inter-  
6       national Development.

7           (14) The Department of State.

8           (15) The National Science Foundation.

9           (16) The National Aeronautics and Space Ad-  
10      ministration.

11          (17) The Subcommittee on Ocean Science and  
12      Technology of the National Science and Technology  
13      Council.

14      (d) DUTIES.—The IUU Tech Force shall—

15          (1) cultivate public-private partnerships, includ-  
16      ing with Federal agencies, academic institutions,  
17      nongovernmental organizations, technology compa-  
18      nies, and international partners, to develop and de-  
19      ploy advanced technologies to identify and combat  
20      IUU fishing;

21          (2) identify opportunities to declassify and  
22      make more publicly available imagery from the De-  
23      partment of Defense and the department in which  
24      the Coast Guard is operating and other information

1 that can be used to identify IUU fishing or be used  
 2 in enforcement actions against violators; and

3 (3) coordinate the application of existing inno-  
 4 vative technologies and development of emerging  
 5 technologies to address—

6 (A) IUU fishing; and

7 (B) associated forced labor, human traf-  
 8 ficking, and other illicit activities.

9 (e) DEFINITIONS.—In this section:

10 (1) INNOVATIVE TECHNOLOGIES.—The term  
 11 “innovative technologies” includes the following:

12 (A) Improved satellite imagery and track-  
 13 ing.

14 (B) Advanced electronic monitoring equip-  
 15 ment.

16 (C) Vessel location data.

17 (D) Improved genetic, molecular, or other  
 18 biological methods of tracking sources of sea-  
 19 food.

20 (E) Electronic catch documentation and  
 21 traceability.

22 (F) Such other technologies as the Admin-  
 23 istrator considers appropriate.

24 (2) IUU FISHING.—The term “IUU fishing”—

(A) means illegal fishing, unreported fishing, or unregulated fishing (as such terms are defined in paragraph 3 of the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, adopted at the 24th Session of the Committee on Fisheries of the Food and Agriculture Organization of the United Nations in Rome on March 2, 2001); and

(B) includes fishing activities conducted in contravention of applicable laws and regulations related to labor conditions.

**SEC. 10. WORKFORCE DEVELOPMENT.**

(a) WORKFORCE DEVELOPMENT PROGRAM.—The Administrator shall develop a workforce development program, in consultation with the following:

(1) The Secretary of Defense.

(2) The Commandant of the Coast Guard.

(3) The Chief of Engineers of the Army Corps of Engineers.

(4) The Secretary of Education.

(5) The Director of the Office of Management and Budget.

(6) The Administrator of the National Aeronautics and Space Administration.

1           (7) The Assistant Director for Geosciences of  
2 the National Science Foundation.

3           (8) The Secretary of the Navy.

4           (9) The Director of the Office of Science and  
5 Technology Policy.

6           (10) The Secretary of Labor.

7           (11) The heads of other relevant Federal agen-  
8 cies.

9           (12) The Interagency Ocean Observation Com-  
10 mittee and the associated advisory committee au-  
11 thorized by section 12304(d) of the Integrated  
12 Coastal and Ocean Observation System Act of 2009  
13 (33 U.S.C. 3603(d)).

14           (13) The Federal Geographic Data Committee  
15 and the National Geospatial Advisory Committee.

16           (14) The Interagency Committee on Ocean and  
17 Coastal Mapping and its associated advisory panel  
18 authorized by section 12203(g) of the Ocean and  
19 Coastal Mapping Integration Act (33 U.S.C.  
20 3502(g)).

21           (15) The Interagency Ocean Exploration Com-  
22 mittee established under section 7.

23           (16) The Committee on Ocean Policy estab-  
24 lished under section 8.

1           (17) The IUU Tech Force established under  
2       section 9.

3           (18) Non-Federal partners and other experts.

4       (b) DUTIES.—The workforce development program  
5       developed under subsection (a) shall—

6           (1) support undergraduate and graduate edu-  
7       cation in the fields of engineering, marine sciences,  
8       data science and analytics, machine learning, robot-  
9       ics, cybersecurity, and other fields related to the ad-  
10      vancement of the monitoring, collection, synthesis,  
11      and analysis of data relating to the Great Lakes,  
12      oceans, bays, estuaries, and coasts;

13          (2) support citizen science and public outreach  
14      related to the Great Lakes, oceans, bays, estuaries,  
15      and coasts that may encourage people to develop sci-  
16      entific skills and to enter the fields described in  
17      paragraph (1);

18          (3) promote diversity in the fields described in  
19      paragraph (1); and

20          (4) build on existing science, technology, engi-  
21      neering, and math (known as “STEM”) education,  
22      veterans’ training, and programs to support indige-  
23      nous people and other underrepresented groups to  
24      facilitate education and training through programs  
25      that include—

1 (A) grants to members of the Armed  
 2 Forces and veterans for vocational training or  
 3 other educational opportunities in the fields of  
 4 engineering, marine sciences, and data manage-  
 5 ment and collection;

6 (B) grants to marine trade associations,  
 7 engineering associations, and other professional  
 8 organizations to provide apprenticeships; and

9 (C) scholarships for trade schools, voca-  
 10 tional institutes, institutions of higher edu-  
 11 cation, and educational coalitions such as the  
 12 Alaska Native Science and Engineering Pro-  
 13 gram.

14 (c) DEFINITIONS.—In this section:

15 (1) INSTITUTION OF HIGHER EDUCATION.—The  
 16 term “institution of higher education” has the  
 17 meaning given that term in section 101(a) of the  
 18 Higher Education Act of 1965 (20 U.S.C. 1001(a)).

19 (2) VETERAN.—The term “veteran” has the  
 20 meaning given that term in section 101 of title 38,  
 21 United States Code.

22 **SEC. 11. ACCELERATING INNOVATION AT COOPERATIVE IN-**  
 23 **STITUTES.**

24 (a) FOCUS ON EMERGING TECHNOLOGIES.—The Ad-  
 25 ministrator shall ensure that the goals of the Cooperative

1 Institutes of the National Oceanic and Atmospheric Ad-  
2 ministration include focusing on advancing or applying  
3 emerging technologies, which may include—

4           (1) applied uses and development of real-time  
5           and other advanced genetic technologies and applica-  
6           tions, including such technologies and applications  
7           that derive genetic material directly from environ-  
8           mental samples without any obvious signs of biologi-  
9           cal source material;

10           (2) deployment of, and improvements to, the  
11           durability, maintenance, and other lifecycle concerns  
12           of advanced unmanned vehicles, regional small re-  
13           search vessels, and other research vessels that sup-  
14           port and launch unmanned vehicles and sensors; and

15           (3) supercomputing and big data management,  
16           including data collected through electronic moni-  
17           toring and remote sensing.

18       (b) DESIGNATION OF NEW INSTITUTES.—The Ad-  
19       ministrator may carry out subsection (a) by—

20           (1) incorporating the goals described in that  
21           subsection into one or more Cooperative Institutes in  
22           existence on the date of the enactment of this Act;  
23           or

1           (2) designating through a competitive selection  
2           process the development of not more than 2 new Co-  
3           operative Institutes to carry out those goals.

4           (c) DATA SHARING.—Each Cooperative Institute  
5           shall ensure that data collected from the work of the insti-  
6           tute, other than classified, confidential, or proprietary  
7           data, are archived and made publicly accessible.

8           (d) COORDINATION WITH OTHER PROGRAMS.—The  
9           Cooperative Institutes shall work with the Interagency  
10          Ocean Observation Committee, the regional associations  
11          of the Integrated Ocean Observing System, and other  
12          ocean observing programs to coordinate technology needs  
13          and the transition of new technologies from research to  
14          operations.

15          (e) AUTHORIZATION OF APPROPRIATIONS.—

16               (1) IN GENERAL.—There are authorized to be  
17               appropriated such sums as may be necessary to  
18               carry out this section.

19               (2) LIMITATION ON USE OF FUNDS.—No funds  
20               authorized to be appropriated to carry out this sec-  
21               tion may be obligated or expended for the construc-  
22               tion of new buildings or facilities for Cooperative In-  
23               stitutes.

1 **SEC. 12. BUILDING DATA SOURCES.**

2 (a) ENGAGING INDIGENOUS, SUBSISTENCE, AND  
3 FISHING COMMUNITIES.—

4 (1) IN GENERAL.—The Administrator shall es-  
5 tablish opportunities to engage indigenous, subsist-  
6 ence, and fishing communities to understand the  
7 needs of those communities and to provide improved  
8 products and services that are practical and useful  
9 to those communities, including collecting and inte-  
10 grating traditional ecological data and narrative  
11 records into national datasets.

12 (2) DATA RIGHTS.—In carrying out paragraph  
13 (1), the Administrator shall—

14 (A) consider issues relating to data owner-  
15 ship; and

16 (B) ensure that indigenous, subsistence,  
17 and fishing communities retain any specific  
18 rights or ownership of data provided to Federal  
19 agencies.

20 (b) REPORT TO CONGRESS.—

21 (1) REPORT REQUIRED.—Not later than one  
22 year after the date of the enactment of this Act, the  
23 Administrator shall submit to Congress a report  
24 identifying potential opportunities to encourage vol-  
25 untary actions and partnerships between the Na-  
26 tional Oceanic and Atmospheric Administration and

1 non-Federal partners to increase and enhance data  
2 collection.

3 (2) OPPORTUNITIES FOR PARTNERSHIP.—The  
4 opportunities described in paragraph (1) may in-  
5 clude opportunities that can be pursued in conjunc-  
6 tion with Federal permits, leases, and other actions  
7 requiring Federal approval or funding, such as  
8 partnering with companies to acquire and share  
9 bathymetric data or supplying fishermen with sen-  
10 sors that can collect data through fishing gear.

11 **SEC. 13. OCEAN INNOVATION PRIZE AND PRIORITIZATION.**

12 (a) OCEAN INNOVATIVE PRIZES.—The Adminis-  
13 trator, in consultation with the heads of relevant Federal  
14 agencies, including the Secretary of Defense, and in con-  
15 junction with nongovernmental partners, as appropriate  
16 and at the discretion of the Administrator, shall establish  
17 at least one Ocean Innovation Prize to catalyze the rapid  
18 development and deployment of data collection and moni-  
19 toring technology related to the Great Lakes, oceans, bays,  
20 estuaries, and coasts in at least one of the areas specified  
21 in subsection (b).

22 (b) AREAS.—The areas specified in this subsection  
23 are the following:

24 (1) Improved eDNA analytics and deployment  
25 with autonomous vehicles.

1           (2) Plastic pollution detection, quantification,  
2           and mitigation, including with respect to used fish-  
3           ing gear and tracking technologies to reduce or  
4           eliminate bycatch.

5           (3) Advanced satellite data and other advanced  
6           technology for improving scientific assessment.

7           (4) New stock assessment methods using sat-  
8           ellite data or other advanced technologies.

9           (5) Identifying forced labor or human traf-  
10          ficking (or other illicit activity) often associated with  
11          IUU fishing (as defined in section 9).

12          (6) Advanced electronic fisheries monitoring  
13          equipment and data analysis tools, including im-  
14          proved fish species recognition software, confidential  
15          data management, data analysis and visualization,  
16          and storage of electronic reports, imagery, location  
17          information, and other data.

18          (7) Autonomous and other advanced surface ve-  
19          hicles, underwater vehicles, or airborne platforms for  
20          data collection and monitoring.

21          (8) Artificial intelligence and machine learning  
22          applications for data collection and monitoring re-  
23          lated to the Great Lakes, oceans, bays, estuaries,  
24          and coasts.

25          (9) Coral reef ecosystem monitoring.

1           (10) Electronic equipment, chemical or biological  
2           cal sensors, data analysis tools, and platforms to  
3           identify and fill gaps in robust and shared continuous  
4           data related to the Great Lakes, oceans, bays,  
5           estuaries, and coasts to inform global earth system  
6           models.

7           (11) Means for protecting aquatic life from injury  
8           or other ill effects caused, in whole or in part,  
9           by monitoring or exploration activities.

10          (12) Discovery and dissemination of data related  
11          to the Great Lakes, oceans, bays, estuaries,  
12          and coasts.

13          (13) Water quality monitoring, including improved  
14          detection and prediction of harmful algal blooms  
15          and pollution.

16          (14) Enhancing blue carbon sequestration and  
17          other ocean acidification mitigation opportunities.

18          (15) Such other areas as may be identified by  
19          the Administrator.

20          (c) PRIORITIZATION OF PROPOSALS.—In selecting recipients  
21          of Small Business Innovation Research (SBIR) and Small  
22          Business Technology Transfer (STTR) solicitations and  
23          interagency grants for ocean innovation, including the  
24          National Oceanographic Partnership Program, the  
25          Administrator shall prioritize proposals for fiscal years

1 2020 and 2021 that address at least one of the areas spec-  
 2 ified in subsection (b).

3 **SEC. 14. REAUTHORIZATION OF NOAA PROGRAMS.**

4 (a) NOAA OCEAN EXPLORATION PROGRAM.—Sec-  
 5 tion 12006 of the Omnibus Public Land Management Act  
 6 of 2009 (33 U.S.C. 3406) is amended—

7 (1) in paragraph (6), by striking “and”;

8 (2) in paragraph (7), by striking the period at  
 9 the end and inserting “; and”; and

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

11 “(8) \$60,000,000 for each of fiscal years 2019  
 12 through 2024.”.

13 (b) OCEAN AND COASTAL MAPPING INTEGRATION  
 14 ACT.—Section 12207 of the Ocean and Coastal Mapping  
 15 Integration Act (33 U.S.C. 3506) is amended—

16 (1) in subsection (a)—

17 (A) in paragraph (3), by striking “and”;

18 (B) in paragraph (4), by striking the pe-  
 19 riod at the end and inserting “; and”; and

20 (C) by adding at the end the following:

21 “(5) \$45,000,000 for each of fiscal years 2019  
 22 through 2024.”; and

23 (2) in subsection (b), by adding at the end the  
 24 following:

1           “(5) \$15,000,000 for each of fiscal years 2019  
2           through 2024.”.

3           (c) HYDROGRAPHIC SERVICES IMPROVEMENT ACT  
4 OF 1998.—Section 306 of the Hydrographic Services Im-  
5 provement Act of 1998 (33 U.S.C. 892d) is amended—

6           (1) in paragraph (1)—

7                 (A) in subparagraph (C), by striking  
8                 “and”;

9                 (B) in subparagraph (D), by striking the  
10                period at the end and inserting “; and”; and

11               (C) by adding at the end the following:

12                   “(E) \$71,000,000 for each of fiscal years  
13                   2019 through 2024.”;

14           (2) in paragraph (2)—

15                 (A) in subparagraph (C), by striking  
16                 “and”;

17                 (B) in subparagraph (D), by striking the  
18                period at the end and inserting “; and”; and

19               (C) by adding at the end the following:

20                   “(E) \$34,000,000 for each of fiscal years  
21                   2019 through 2024.”;

22           (3) in paragraph (3)—

23                 (A) in subparagraph (C), by striking  
24                 “and”;

1 (B) in subparagraph (D), by striking the  
 2 period at the end and inserting “; and”; and

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

4 “(E) \$38,000,000 for each of fiscal years  
 5 2019 through 2024.”;

6 (4) in paragraph (4)—

7 (A) in subparagraph (C), by striking  
 8 “and”;

9 (B) in subparagraph (D), by striking the  
 10 period at the end and inserting “; and”; and

11 (C) by adding at the end the following:

12 “(E) \$45,000,000 for each of fiscal years  
 13 2019 through 2024.”; and

14 (5) in paragraph (5)—

15 (A) in subparagraph (C), by striking  
 16 “and”;

17 (B) in subparagraph (D), by striking the  
 18 period at the end and inserting “; and”; and

19 (C) by adding at the end the following:

20 “(E) \$35,000,000 for each of fiscal years  
 21 2019 through 2024.”.

22 **SEC. 15. BLUE ECONOMY VALUATION.**

23 (a) MEASUREMENT OF BLUE ECONOMY INDUS-  
 24 TRIES.—The Administrator, the Director of the Bureau  
 25 of Economic Analysis, the Commissioner of the Bureau

1 of Labor Statistics, the Secretary of the Treasury, and  
2 the heads of other relevant Federal agencies, shall  
3 prioritize the collection, aggregation, and analysis of data  
4 to measure the value and impact of industries related to  
5 the Great Lakes, oceans, bays, estuaries, and coasts on  
6 the economy of the United States, including living re-  
7 sources, marine construction, marine transportation, off-  
8 shore mineral extraction, ship and boat building, tourism,  
9 recreation, subsistence, and such other industries the Ad-  
10 ministrator considers appropriate (known as “Blue Econ-  
11 omy” industries).

12 (b) COLLABORATION.—In carrying out subsection  
13 (a), the Administrator shall—

14 (1) work with the Director of the Bureau of  
15 Economic Analysis and the heads of other relevant  
16 Federal agencies to develop a Coastal and Ocean  
17 Economy Satellite Account that includes national  
18 and State-level statistics to measure the contribution  
19 of the Great Lakes, oceans, bays, estuaries, and  
20 coasts to the overall economy of the United States;  
21 and

22 (2) collaborate with national and international  
23 organizations and governments to promote consist-  
24 ency of methods, measurements, and definitions to  
25 ensure comparability of results between countries.

1       (c) REPORT.—Not less frequently than once every 2  
 2 years, the Administrator, in consultation with the Director  
 3 of the Bureau of Economic Analysis, the Commissioner  
 4 of the Bureau of Labor Statistics, the Secretary of the  
 5 Treasury, and the heads of other relevant Federal agen-  
 6 cies, shall publish a report that—

7           (1) defines the Blue Economy, in coordination  
 8 with academia, industry, nongovernmental organiza-  
 9 tions, and other relevant experts;

10          (2) makes recommendations for updating North  
 11 American Industry Classification System (NAICS)  
 12 reporting codes to reflect the Blue Economy; and

13          (3) provides a comprehensive estimate of the  
 14 value and impact of the Blue Economy with respect  
 15 to each State and territory of the United States, in-  
 16 cluding—

17           (A) the value and impact of—

18               (i) economic activities that are de-  
 19 pendent upon the resources of the Great  
 20 Lakes, oceans, bays, estuaries, and coasts;

21               (ii) the population and demographic  
 22 characteristics of the population along the  
 23 coasts;

24               (iii) port and shoreline infrastructure;

1 (iv) the volume and value of cargo  
 2 shipped by sea or across the Great Lakes;  
 3 and

4 (v) data collected from the Great  
 5 Lakes, oceans, bays, estuaries, and coasts,  
 6 including such data collected by businesses  
 7 that purchase and commodify the data, in-  
 8 cluding weather prediction and seasonal  
 9 agricultural forecasting; and

10 (B) to the extent possible, the qualified  
 11 value and impact of the natural capital of the  
 12 Great Lakes, oceans, bays, estuaries, and coasts  
 13 with respect to tourism, recreation, natural re-  
 14 sources, and cultural heritage, including other  
 15 indirect values.

16 **SEC. 16. ADVANCED RESEARCH PROJECTS AGENCY-**  
 17 **OCEANS.**

18 (a) AGREEMENT.—Not later than 45 days after the  
 19 date of the enactment of this Act, the Administrator shall  
 20 seek to enter into an agreement with the National Acad-  
 21 emy of Sciences to conduct the comprehensive assessment  
 22 under subsection (b).

23 (b) COMPREHENSIVE ASSESSMENT.—

24 (1) IN GENERAL.—Under an agreement be-  
 25 tween the Administrator and the National Academy

1 of Sciences under this section, the National Acad-  
2 emy of Sciences shall conduct a comprehensive as-  
3 sessment of the need for and feasibility of estab-  
4 lishing an Advanced Research Projects Agency–  
5 Oceans (ARPA–O).

6 (2) ELEMENTS.—The comprehensive assess-  
7 ment carried out pursuant to paragraph (1) shall in-  
8 clude—

9 (A) an assessment of how an ARPA–O  
10 could help overcome the long-term and high-risk  
11 technological barriers in the development of  
12 ocean technologies, with the goal of enhancing  
13 the economic, ecological, and national security  
14 of the United States through the rapid develop-  
15 ment of technologies that result in—

16 (i) improved data collection, moni-  
17 toring, and prediction of the ocean environ-  
18 ment, including sea ice conditions;

19 (ii) overcoming barriers to the appli-  
20 cation of new and improved technologies,  
21 such as high costs and scale of operational  
22 missions;

23 (iii) improved management practices  
24 for protecting ecological sustainability;

1 (iv) improved national security capac-  
 2 ity;

3 (v) improved technology for fishery  
 4 population assessments;

5 (vi) expedited processes between and  
 6 among Federal agencies to successfully  
 7 identify, transition, and coordinate re-  
 8 search and development output to oper-  
 9 ations, applications, commercialization, and  
 10 other uses; and

11 (vii) ensuring that the United States  
 12 maintains a technological lead in devel-  
 13 oping and deploying advanced ocean tech-  
 14 nologies;

15 (B) an evaluation of the organizational  
 16 structures under which an ARPA-O could be  
 17 organized, which takes into account—

18 (i) best practices for new research  
 19 programs;

20 (ii) metrics and approaches for peri-  
 21 odic program evaluation;

22 (iii) capacity to fund and manage ex-  
 23 ternal research awards; and

24 (iv) options for oversight of the activ-  
 25 ity through a Federal agency, an inter-

1                   agency organization, nongovernmental or-  
2                   ganization, or other institutional arrange-  
3                   ment; and

4                   (C) an estimation of the scale of invest-  
5                   ment necessary to pursue high priority ocean  
6                   technology projects.

7           (c) REPORT.—Not later than 18 months after the  
8   date of the enactment of this Act, the Administrator shall  
9   submit to Congress a report on the comprehensive assess-  
10   ment conducted under subsection (b).

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