

119TH CONGRESS
2D SESSION

S. 5273

To improve fisheries stock assessments by incorporating eDNA, and for other purposes.

IN THE SENATE OF THE UNITED STATES

AUGUST 6, 2026

Ms. MURKOWSKI (for herself, Mr. WHITEHOUSE, Mr. SULLIVAN, Mrs. MURRAY, Mr. MERKLEY, Mr. KING, Mr. SCHIFF, and Mr. VAN HOLLEN) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

A BILL

To improve fisheries stock assessments by incorporating eDNA, 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 “Fisheries Science Mod-
5 ernization Act of 2026”.

6 **SEC. 2. DEFINITIONS.**

7 In this Act:

1 (1) ADMINISTRATOR.—The term “Adminis-
2 trator” means the Administrator of the National
3 Oceanic and Atmospheric Administration.

4 (2) EDNA.—The term “eDNA” means DNA
5 or genetic material contained in samples of water or
6 other environmental media.

7 (3) FISHERY-INDEPENDENT.—The term “fish-
8 ery-independent” means observations not taken in
9 the course of pursuing commercial fisheries activity.

10 (4) INDIAN TRIBE.—The term “Indian Tribe”
11 has the meaning given the term in section 4 of the
12 Indian Self-Determination and Education Assistance
13 Act (25 U.S.C. 5304).

14 (5) NATIONAL AQUATIC BIOMOLECULAR CO-
15 ORDINATION NETWORK.—The term “National
16 Aquatic Biomolecular Coordination Network” means
17 the National Aquatic Biomolecular Coordination
18 Network established by section 201.

19 (6) NATIVE HAWAIIAN ORGANIZATION.—The
20 term “Native Hawaiian organization” has the mean-
21 ing given the term in section 6207 of the Elemen-
22 tary and Secondary Education Act of 1965 (20
23 U.S.C. 7517).

1 **SEC. 3. CATEGORICAL EXCLUSION FOR WATER, AIR, AND**
 2 **SEDIMENT COLLECTION.**

3 The collection of water, air, or sediment samples ex-
 4 clusively for eDNA analysis shall not constitute a taking
 5 under the Endangered Species Act of 1973 (16 U.S.C.
 6 1531 et seq.) or the Marine Mammal Protection Act of
 7 1972 (16 U.S.C. 1361 et seq.).

8 **TITLE I—IMPROVING FISHERIES**
 9 **STOCK ASSESSMENTS BY IN-**
 10 **CORPORATING eDNA**

11 **SEC. 101. PILOT STUDY ON USE OF eDNA IN STOCK ASSESS-**
 12 **MENTS.**

13 (a) IN GENERAL.—The Administrator, acting
 14 through the National Marine Fisheries Service, shall carry
 15 out a multi-year pilot study—

16 (1) to evaluate the applicability of eDNA-based
 17 abundance estimation for a range of commercial fish
 18 stocks; and

19 (2) to validate the use of eDNA in Federal fish-
 20 ery stock assessments.

21 (b) LOCATIONS.—The Administrator shall carry out
 22 the pilot study required by subsection (a) in not less than
 23 3 federally managed fisheries representing diverse regions,
 24 diverse stock structures, or areas with limited survey cov-
 25 erage.

1 (c) ELEMENTS.—In carrying out the pilot study re-
2 quired by subsection (a), the Administrator shall—

3 (1) conduct comparisons of eDNA sampling and
4 data from existing fishery-independent survey ap-
5 proaches (such as trawl, acoustic, longline, and opti-
6 cal systems);

7 (2) incorporate eDNA sampling into ongoing
8 surveys to evaluate the potential for cost reductions
9 and reduced uncertainty associated with stock as-
10 sessments;

11 (3) integrate emerging technologies, as feasible,
12 including autonomous or artificial intelligence-en-
13 abled eDNA samplers or processing platforms to in-
14 crease survey efficiencies;

15 (4) evaluate and document the performance of
16 eDNA-based methods for each fishery in which the
17 pilot study is conducted, including the conditions
18 under which eDNA could be used for stock assess-
19 ments and management decisions;

20 (5) engage with the partners described in sub-
21 section (d) throughout study design, sampling, or
22 analysis, as appropriate; and

23 (6) ensure transparency by documenting sam-
24 pling protocols, laboratory workflows, reporting

1 practices, and quality-assurance and quality-control
2 procedures used at each fishery.

3 (d) PARTNERS.—The partners described in this sub-
4 section are—

5 (1) the Regional Fishery Management Councils
6 established under section 302(a) of the Magnuson-
7 Stevens Fishery Conservation and Management Act
8 (16 U.S.C. 1852(a));

9 (2) the Marine Fisheries Commissions, as de-
10 fined under section 3(28) of the Magnuson-Stevens
11 Fishery Conservation Management Act (16 U.S.C.
12 1802(28));

13 (3) Indian Tribes, including Alaska Native Cor-
14 porations, Native Hawaiian organizations, and Na-
15 tive Pacific Islander organizations in Guam, Amer-
16 ican Samoa, and the Commonwealth of the Northern
17 Mariana Islands;

18 (4) fishermen, including cooperative research
19 partnerships;

20 (5) entities eligible to participate in the western
21 Alaska community development quota program es-
22 tablished under section 305(i)(1) of the Magnuson-
23 Stevens Fishery Conservation and Management Act
24 (16 U.S.C. 1855(i)(1));

1 (6) academic institutions and cooperative insti-
2 tutes;

3 (7) private-sector eDNA laboratories, service
4 providers, and technology developers; and

5 (8) State agencies and Federal agencies outside
6 of the National Oceanic and Atmospheric Adminis-
7 tration.

8 (e) ANNUAL REPORT.—Not less frequently than an-
9 nually until the pilot study required by subsection (a) con-
10 cludes, the Administrator shall submit to Congress a re-
11 port describing—

12 (1) the activities, findings, and challenges of the
13 pilot study; and

14 (2) next steps.

15 (f) AUTHORIZATION OF APPROPRIATIONS.—There
16 are authorized to be appropriated to carry out this section
17 such sums as may be necessary.

18 **SEC. 102. IMPLEMENTATION PLAN FOR EVALUATING AND**
19 **INTEGRATING eDNA METHODS IN FEDER-**
20 **ALLY MANAGED FISHERIES.**

21 (a) IN GENERAL.—The Administrator shall develop
22 an implementation plan that builds on the results of the
23 pilot study required under section 101 to provide a struc-
24 tured pathway for evaluating and, where appropriate, inte-
25 grating eDNA methods in federally managed fisheries.

1 (b) ELEMENTS.—The implementation plan required
2 by subsection (a) shall include the following:

3 (1) A process and timeline for evaluating eDNA
4 suitability for fishery-independent abundance esti-
5 mation in Federal stock assessments.

6 (2) A prioritization framework for fisheries
7 based on the economic or subsistence importance of
8 the fishery, the degree to which eDNA may reduce
9 uncertainty in assessments, the degree to which the
10 fishery is data deficient, and geographic representa-
11 tion across all regions of the National Marine Fish-
12 eries Service.

13 (3) An identification of workforce, vessel, lab-
14 oratory, and analytical capacity needs, including op-
15 portunities to collaborate with private-sector or aca-
16 demic laboratories to encourage private-sector in-
17 vestment and to avoid unnecessary duplication.

18 (4) A plan for incorporating validated eDNA
19 data into stock assessment processes and methodolo-
20 gies, consistent with scientific best practices and on-
21 going improvement initiatives of the National Oce-
22 anic and Atmospheric Administration.

23 (5) Support for cooperative research with fish-
24 ermen to expand sampling opportunities and reduce
25 operational costs.

1 (6) Ongoing engagement with partners de-
2 scribed in section 101(d), as appropriate.

3 (7) Alignment with the national standards de-
4 veloped by the National Aquatic Biomolecular Co-
5 ordination Network under section 201(d).

6 (8) An identification of opportunities to improve
7 the efficiency of surveys, expand the coverage of sur-
8 veys, or develop early indicators of ecosystem
9 change, including invasive species, in support of eco-
10 system-based approaches to fisheries management.

11 (9) Appropriate safeguards for the use of ge-
12 netic information, including guidance on the use of
13 genetic stock identification.

14 (c) REPORT.—Not later than 2 years after the date
15 on which the pilot study required by section 101 begins,
16 the Administrator shall submit to Congress a report that
17 summarizes the progress and efficacy of eDNA implemen-
18 tation in Federal fishery management.

19 **SEC. 103. FISHERIES WORKFORCE AND FIELD CAPACITY**
20 **FOR eDNA-ENABLED STOCK ASSESSMENTS.**

21 (a) IN GENERAL.—The Administrator shall expand
22 the workforce and field capacity of the National Marine
23 Fisheries Service, in coordination with other Line Offices
24 of the National Oceanic and Atmospheric Administration,

1 to support the sampling and integration of eDNA into
2 fishery stock assessments.

3 (b) ACTIVITIES.—In carrying out subsection (a), the
4 Administrator shall—

5 (1) train and deploy survey technicians to col-
6 lect eDNA samples during fishery-independent sur-
7 veys;

8 (2) expand cooperative research partnerships
9 with fishermen to broaden spatial and temporal cov-
10 erage of sample collection and analysis, where fea-
11 sible;

12 (3) develop field protocols aligned with the na-
13 tional standards developed by the National Aquatic
14 Biomolecular Coordination Network under section
15 201(d);

16 (4) coordinate with the partners described in
17 section 101(d) for cost-effective processing and sam-
18 ple analysis;

19 (5) support training for personnel of the Na-
20 tional Marine Fisheries Service in eDNA sample col-
21 lection, handling, quality assurance and quality con-
22 trol procedures, and modeling to maintain core ex-
23 pertise in producing, interpreting, and translating
24 eDNA data into information useful for stock assess-
25 ments; and

1 (6) evaluate emerging technologies, including
 2 autonomous eDNA samplers or processing plat-
 3 forms, to increase methodological efficiencies.

4 **SEC. 104. ROUTINE COLLECTION OF eDNA SAMPLES IN ON-**
 5 **GOING SURVEYS.**

6 (a) IN GENERAL.—The Administrator shall incor-
 7 porate, in accordance with subsection (b), the routine col-
 8 lection of eDNA samples into ongoing fishery surveys to
 9 the extent—

10 (1) such additional data improves fisheries as-
 11 sessments or reduces costs; and

12 (2) does not disrupt core operations.

13 (b) ELEMENTS.—The collection of eDNA samples
 14 carried out under subsection (a) shall—

15 (1) use standards or best practices developed by
 16 the National Aquatic Biomolecular Coordination
 17 Network under section 201(d);

18 (2) be integrated into existing surveys;

19 (3) support the development of long-term eDNA
 20 time series across regions and fisheries;

21 (4) include robust archival bio- and data-reposi-
 22 tories, fisheries and ecosystem relevant reference
 23 voucher databases, and end-to-end data management
 24 systems; and

1 (5) enable the evaluation of potential survey ef-
2 ficiencies and expanded coverage of surveys at mini-
3 mal additional cost.

4 **SEC. 105. AMENDMENTS TO MAGNUSON-STEVENSON FISHERY**
5 **CONSERVATION AND MANAGEMENT ACT.**

6 (a) IN GENERAL.—The Magnuson-Stevens Fishery
7 Conservation and Management Act (16 U.S.C. 1801 et
8 seq.) is amended by adding at the end the following:

9 **“SEC. 409. ENVIRONMENTAL DNA AND OTHER ENVIRON-**
10 **MENTAL NUCLEIC ACIDS-BASED METHODS.**

11 “The Secretary shall, to the extent practicable, incor-
12 porate environmental DNA and other environmental nu-
13 cleic acids-based methods into fisheries research, fishery-
14 independent surveys, stock assessments, and ecosystem
15 monitoring—

16 “(1) based on the best scientific information
17 available; and

18 “(2) guided by—

19 “(A) the implementation plan required by
20 section 102 of the Fisheries Science Moderniza-
21 tion Act of 2026; and

22 “(B) the national standards developed by
23 the National Aquatic Biomolecular Coordination
24 Network under section 201(d) of that Act.”.

1 (b) CLERICAL AMENDMENT.—The table of contents
 2 at the beginning of the Magnuson-Stevens Fishery Con-
 3 servation and Management Act is amended by adding at
 4 the end the following:

“Sec. 409. Environmental DNA and other environmental nucleic acids-based
 methods.”.

5 **TITLE II—ENHANCING UNITED**
 6 **STATES COMPETITIVENESS**
 7 **THROUGH eDNA**

8 **SEC. 201. NATIONAL AQUATIC BIOMOLECULAR COORDINA-**
 9 **TION NETWORK.**

10 (a) ESTABLISHMENT.—There is established a coordi-
 11 nated, multi-agency initiative, to be known as the “Na-
 12 tional Aquatic Biomolecular Coordination Network” (in
 13 this section referred to as the “Network”), to improve the
 14 reliability and operational use of eDNA across freshwater,
 15 estuarine, coastal, and marine environments.

16 (b) GOVERNANCE AND STRUCTURE.—

17 (1) LEAD AGENCY.—The National Oceanic and
 18 Atmospheric Administration shall serve as the lead
 19 agency of the Network.

20 (2) CO-CHAIRS.—The Network shall be co-
 21 chaired by the Administrator and a representative of
 22 the Office of Science and Technology Policy.

1 (c) PARTICIPATING AGENCIES.—The Network shall
2 include one or more representatives from each of the fol-
3 lowing:

4 (1) The National Oceanic and Atmospheric Ad-
5 ministration.

6 (2) The United States Geological Survey.

7 (3) The Environmental Protection Agency.

8 (4) The United States Fish and Wildlife Serv-
9 ice.

10 (5) The National Science Foundation.

11 (6) The Department of Agriculture and the
12 Forest Service.

13 (7) The Office of Naval Research.

14 (8) The Bureau of Indian Affairs of the De-
15 partment of the Interior.

16 (9) The Smithsonian Institution.

17 (10) The Bureau of Ocean Energy Manage-
18 ment.

19 (11) The National Institutes of Health.

20 (12) The National Aeronautics and Space Ad-
21 ministration.

22 (13) The Council on Environmental Quality.

23 (14) The Regional Fishery Management Coun-
24 cils.

1 (15) The National Institute of Standards and
2 Technology.

3 (16) Such other agencies as the co-chairs of the
4 Network may designate based on the roles of such
5 agencies in aquatic or environmental monitoring, sci-
6 entific standard-setting, or environmental review
7 processes.

8 (d) RESPONSIBILITIES.—The Network shall coordi-
9 nate Federal eDNA-related activities across the full aquat-
10 ic continuum (including lakes, rivers, reservoirs, estuaries,
11 coastal waters, and offshore environments), including by—

12 (1) developing national standards for the use of
13 eDNA across freshwater, estuarine, coastal, and ma-
14 rine environments;

15 (2) developing a standardized approach for
16 eDNA sampling, laboratory workflows, reporting
17 practices, and analytical consistency;

18 (3) ensuring agencies use compatible methods
19 and data formats, enabling eDNA results to be com-
20 pared, combined, and jointly analyzed across pro-
21 grams and regions;

22 (4) designating pilot testbeds across the Na-
23 tional Estuarine Research Reserve System, the Na-
24 tional Estuary Program, the National Ecological Ob-
25 servatory Network, the National Aquatic Resource

1 Surveys, the Integrated Ocean Observing System,
2 the National Science Foundation Long-Term Eco-
3 logical Research program, and other similar pro-
4 grams, to evaluate and intercalibrate methods under
5 diverse environmental and operational conditions;

6 (5) establishing means of quality assurance and
7 quality control training, method verification, pro-
8 ficiency testing, shared reference materials, and
9 interagency calibration;

10 (6) coordinating with States, Indian Tribes,
11 Native Hawaiian organizations, Native Pacific Is-
12 lander organizations in Guam, American Samoa, and
13 the Commonwealth of the Northern Mariana Is-
14 lands, and regional partners to ensure broad applica-
15 bility and uptake of national standards;

16 (7) developing open-access data practices with
17 appropriate protections for Tribal data sovereignty;

18 (8) identifying opportunities to reduce duplica-
19 tion, integrate monitoring efforts, and align Federal
20 investments in DNA-based monitoring tools; and

21 (9) coordinating with existing national and
22 international frameworks, including observing sys-
23 tems, communities of practice, and established data-
24 sharing and delivery systems.

1 (e) ANNUAL MEETING TO GATHER INFORMATION.—

2 In addition to the responsibilities described in section (d),
 3 the Network shall meet annually to gather information on
 4 non-aquatic applications of eDNA and eRNA methods, in-
 5 cluding sampling of terrestrial and atmospheric environ-
 6 ments.

7 (f) ANNUAL REPORT.—

8 (1) IN GENERAL.—Not less frequently than
 9 once each year, the Administrator shall submit a
 10 performance report to the Office of Science and
 11 Technology Policy.

12 (2) ELEMENTS.—Each report required by para-
 13 graph (1) shall include the following:

14 (A) Progress on standards and protocols.

15 (B) Updates on interagency coordination.

16 (C) Results from testbeds and method vali-
 17 dation.

18 (D) Recommendations for future research
 19 and monitoring priorities.

20 (E) Identified gaps or resource needs.

21 (F) Identified non-aquatic applications of
 22 eDNA and eRNA methods as described in sec-
 23 tion (e).

1 **SEC. 202. RESEARCH, INNOVATION, AND TECHNOLOGY**
2 **TRANSFER.**

3 To support the development and operational use of
4 reliable and cost-effective eDNA tools, the Administrator,
5 in coordination with the agencies participating in the Na-
6 tional Aquatic Biomolecular Coordination Network, may
7 carry out activities that—

8 (1) facilitate scientific advancement in eDNA
9 methods, including development of species detection
10 markers, improved field sampling tools, maintenance
11 and expansion of genetic reference libraries, and an-
12 alytical workflows aligned with the national stand-
13 ards developed by the National Aquatic Biomolecular
14 Coordination Network under section 201(d);

15 (2) encourage methodological innovation
16 leveraging National Oceanic and Atmospheric Ad-
17 ministration ocean engineering capabilities, including
18 exploration, development, and testing of autono-
19 mous, automated, or artificial intelligence-enabled
20 eDNA sampling technologies where those tech-
21 nologies may increase the efficiency of surveys or re-
22 duce costs;

23 (3) support technological innovation in the de-
24 tection of DNA and RNA from environmental sam-
25 ples, including the tools, informatics pipelines, and
26 modeling that will be used for such innovation;

1 (4) promote bidirectional technology transfer
2 among Federal agencies, academic researchers, In-
3 dian Tribes, Native Hawaiian organizations, Native
4 Pacific Islander organizations in Guam, American
5 Samoa, and the Commonwealth of the Northern
6 Mariana Islands, and private-sector firms involved in
7 sequencing, sampling equipment, bioinformatics, and
8 the provision of eDNA services;

9 (5) develop and publish performance expecta-
10 tions, including minimum reliability, repeatability,
11 and quality assurance and quality control require-
12 ments, to guide Federal procurement of eDNA tools
13 and services and support market entry by United
14 States innovators;

15 (6) ensure that research and innovation efforts
16 support and reflect the national standards and best
17 practices developed under section 201(d) for sam-
18 pling, laboratory workflows, metadata, and
19 bioinformatics; and

20 (7) provide periodic updates to Congress, incor-
21 porated into the annual reports required by section
22 201(f), summarizing research progress, private-sec-
23 tor engagement, and remaining scientific or oper-
24 ational gaps.

1 **SEC. 203. STRENGTHENING THE CAPABILITIES OF THE LAB-**
2 **ORATORY AND ANALYTICAL WORKFORCE.**

3 (a) IN GENERAL.—To ensure the National Oceanic
4 and Atmospheric Administration and Federal partners can
5 effectively use eDNA and eDNA-based monitoring tools
6 while supporting the growth of United States eDNA serv-
7 ice providers, the Administrator, in coordination with the
8 National Aquatic Biomolecular Coordination Network,
9 may carry out activities that strengthen the capabilities
10 of the laboratory and analytical workforce of the National
11 Oceanic and Atmospheric Administration.

12 (b) ACTIVITIES.—Activities carried out under sub-
13 section (a) may include—

14 (1) supporting training programs and fellow-
15 ships through the national sea grant college program
16 maintained under section 204(a) of the National Sea
17 Grant College Program Act (33 U.S.C. 1123(a)) and
18 other academic institutions to build expertise in
19 eDNA sampling, genomics, molecular ecology, and
20 bioinformatics;

21 (2) establishing partnerships and cooperative
22 agreements with private-sector eDNA laboratories,
23 equipment manufacturers, bioinformatics firms, and
24 technology developers—

25 (A) to facilitate technical skill transfer;

1 (B) to train personnel of the National Oce-
2 anic and Atmospheric Administration to be in-
3 formed and capable clients;

4 (C) to ensure interoperability between pub-
5 lic and private workflows; and

6 (D) to develop fit-for-purpose uncrewed
7 aquatic sampling technologies;

8 (3) expanding the in-house laboratory capacity
9 of the National Oceanic and Atmospheric Adminis-
10 tration—

11 (A) to receive and process samples at a
12 basic operational level;

13 (B) to support method development and
14 benchmarking aligned with the national stand-
15 ards developed by the National Aquatic Bio-
16 molecular Coordination Network under section
17 201(d); and

18 (C) to maintain internal quality assurance
19 and quality control expertise sufficient to verify
20 vendor performance;

21 (4) encouraging the National Oceanic and At-
22 mospheric Administration and partner agencies to
23 contract with accredited external laboratories and
24 service providers for routine eDNA sample proc-
25 essing, sequencing, and interpretation, when feasible,

1 cost-effective, and consistent with the national
2 standards developed by the National Aquatic Bio-
3 molecular Coordination Network under section
4 201(d); and

5 (5) ensuring that any Federal workforce or lab-
6 oratory activities are fully interoperable with the na-
7 tional standards and protocols developed by the Na-
8 tional Aquatic Biomolecular Coordination Network
9 under section 201(d) for sampling, reporting, and
10 analytical consistency, supporting shared reference
11 materials, proficiency testing, and calibration across
12 Federal agencies and private partners.

○