

Fisheries Science Modernization Act

Senator Lisa Murkowski

Overview

The Fisheries Science Modernization Act updates federal fisheries science by integrating environmental DNA (eDNA) and other biomolecular tools into NOAA's stock assessments and monitoring programs. eDNA – genetic material shed by organisms into the environment – is an efficient, scientifically validated method for detecting species presence, abundance, and biodiversity. This bill establishes national standards, expands workforce capacity, strengthens interagency coordination, and supports private-sector innovation without imposing new regulatory burdens.

Need for eDNA Legislation

NOAA's stock assessment system is constrained by high operational costs, limited vessel availability, and gaps in survey coverage. Traditional survey methods remain essential but are expensive and geographically limited, especially for rare, cryptic, or nearshore species. eDNA offers the ability to expand survey frequency and geographic reach at lower cost, improve timeliness of data, and strengthen assessments for data-poor fisheries.

Despite eDNA's proven utility, national adoption is slowed by inconsistent protocols, workforce and laboratory capacity gaps, and insufficient coordination among NOAA and other federal monitoring networks. Clear federal standards and predictable demand signals are also needed to unlock private-sector investment in eDNA technologies.

What We Know

- eDNA is a validated, cost-effective tool widely used across government, academia, and industry.
- NOAA is actively developing DNA-based monitoring methods that can complement ecosystem and fisheries surveys, including through the NOAA 'Omics Initiative, other Oceanic and Atmospheric Research (OAR) programs, and NOAA Fisheries Science Centers
- Modern eDNA methods (including autonomous systems) can expand monitoring coverage, reduce costs, and enable sampling in remote or hazardous environments.
- Numerous federal programs already provide testbeds for validation and standardization.
- The absence of standardized national protocols for sampling, laboratory processing, metadata, and QA/QC is a key barrier to widespread adoption and operational use of eDNA.
- The private sector already provides sequencing, analytical services, field sampling equipment, bioinformatics, and interpretive tools for eDNA, and is seeking clear federal standards and consistent demand signals to justify deeper investment in U.S. capacity and workforce.
- Effective deployment requires collaboration among federal agencies, Tribal governments, states, academia, fishermen, and industry.

Major Provisions of the Fisheries Science and Modernization Act

Modernizing Stock Assessments

- Establishes a NOAA eDNA Fishery Stock Assessment Pilot Program to validate methods across diverse regions and species.
- Requires NOAA to develop an agency-wide eDNA Implementation Plan describing how eDNA will be evaluated, validated, and integrated into federally managed fisheries where appropriate.
- Directs NOAA to routinely collect eDNA samples during existing surveys to improve accuracy, expand coverage, and build long-term datasets.
- Integrates eDNA into fisheries research and ecosystem monitoring by amending the Magnuson-Stevens Act.
- Promotes collaboration among NOAA, fishermen, Tribal Nations, academia, and industry.
- Requires annual coordination meetings and reporting to OSTP and Congress to ensure accountability.

Building National eDNA Capacity

- Creates the National Aquatic Biomolecular Coordination Network (NABCN) to develop national standards for sampling, laboratory workflows, QA/QC, metadata, and bioinformatics.
- Establishes a coordinated multi-agency framework enabling consistent biomolecular monitoring across freshwater, estuarine, coastal, and marine environments.
- Expands NOAA's workforce and laboratory capacity while supporting complementary private-sector services.
- Trains NMFS technicians in eDNA collection, handling, and modeling.
- Supports research, innovation, and technology transfer across agencies, academia, Tribal partners, and industry.
- Provides transparent performance standards and predictable procurement pathways to encourage U.S. innovation and commercialization of emerging eDNA tools, including autonomous and AI-enabled sampling systems.