NET GAINS ALLIANCE

May 5, 2021

Dear NOAA Leadership -

Over the past four years, the Net Gains Alliance, a broad collaboration of fisheries stakeholders, has worked to accelerate the digital transformation of the National Marine Fisheries Service (NMFS) and the United States fisheries community. We believe that America's oceans, the communities and jobs that depend on them, and the people they feed all need and deserve best-in-class data systems that are designed with users and draw on modern technology. We've funded over $1m in projects to promote fisheries data modernization and helped support the Fisheries Information Management and Modernization (FIMM) process.

Historically, NOAA's satellite and mapping programs have held the spotlight as data leaders, while NMFS's data innovations have flown under the radar. We believe that underestimates NMFS' capacity, and that at a time when climate change is adding uncertainty to environmental predictions we need all NOAA hands on deck to understand the dynamics of our ocean ecosystems and the social and economic impacts of those changes. Through our work we have engaged with fishermen, processors, technology vendors, conservation advocates, academics, lawyers, Council members, and state and NOAA agency staff who are ready and eager to support NMFS in building the next generation of digital services for fisheries. As you chart a course for NOAA under this Administration, we encourage you to:

- **Invest in NMFS staff data capacity**. This includes hiring FTEs under the new data scientist classification, offering professional development for existing staff, and providing training in data literacy for non-IT staff to inform management planning and support better technology policy development. Hiring freezes have undercut NMFS' ability to grow its in-house data management and analytics teams. Contractors and fellows can bring in valuable expertise but NMFS also needs to maintain its core data management capacity over the long-term. We also recommend hiring project and product managers with software development experience, and/or training existing staff in these cross-functional skills. NMFS' Science and Technology Division has been supporting communities of practice (PSGs) as one forum for professional development across regions and teams; these efforts should be continued and expanded to connect NMFS staff not only across science centers, regions, and Fishery Information Networks, but also with other NOAA offices and external partners.

- **Update data access policies and practices**. The most common concerns we hear are about data access, whether that's a sense that data exist but are difficult to find and use or that systems aren't designed to handle complex permissioning for new data sources, like video. There's a prevailing sentiment that current protocols, practices, and policies are limiting NMFS and its partners in getting the right data to the right users at the right time, while also implementing data security measures that create trust in the system. We recognize that the Magnuson-Stevens Fishery Conservation and Management Act sets the framework for NMFS'

information management and that that language on data has changed little since 1976, when computers were the size of a garage, not a deck of cards. However, we believe NMFS has room to lead on data access and update both its policies and the technical implementation of those rules. We strongly support the the 2020 FIMM Memorandum recommendation that the agency "establish a coordinated process to develop and review the legal, technical, policy, and governance aspects of NMFS information management policies" and that part of that process should include cross-functional teams to ensure that data systems and permissions align with policy goals.

- **Design collaborative data value chains.** The future of fisheries information is a blend of sources, crossing the traditional lines of fishery-dependent and fishery-independent: digital monitoring systems on commercial and recreational boats, public/citizen science initiatives, private companies selling sensor data to both agencies and industry. NMFS and its partners have started developing technical specifications that allow private vendors to develop products that satisfy both regulatory reporting requirements and business analytics. These types of programs, where NMFS sets standards that foster a robust marketplace of products and enable all parties to derive value from a data stream, should be supported and expanded. Study fleets and other collaborative research programs can contribute valuable fisheries information and add crucial flexibility to the agency's data collection options, a need highlighted by last year's disruptions to NMFS' at-sea research surveys due to COVID-19. NMFS should uphold best practices for scientific integrity (per NAO 202-735D-2) in these collaborations, and support policies and protocols that ensure transparency, traceability and data quality in fisheries data value chains.

- **Support explainable AI for fish**. NMFS already applies its own AI tools to fisheries habitat mapping and in pilot programs for species identification. The private sector is also actively developing and deploying AI in applications like electronic monitoring and underwater surveys. While NOAA's AI Strategy and 2021-2025 AI Strategic Plan include stakeholder outreach and education programs, the recommendations do not expressly address AI explainability and trustworthiness, which are of particular importance when AI is applied to decisions with economic and compliance implications. We encourage NMFS to look to NIST guidance on this topic, to engage with vendors and the fishing industry as you develop standards, and to consider how you will audit the proprietary algorithms of those companies. We also encourage NMFS to accelerate its release of an open database of labeled fish imagery to support further advances in AI for fish.

- **Point to purpose.** NMFS is a mission-driven organization, acting as steward of a public resource. Its data programs operate in service of that mission but data discussions are sometimes relegated to IT and technical teams. One way to support cross-office, cross-functional engagement that will set data programs up for success — from collection to communications (aka through the complete data lifecycle) — is to engage in data strategy and visioning exercises. The data governance program developed under FIMM is facilitating some of these critical conversations, and we encourage NOAA leadership to commit to data strategy and governance work. Some of the achievements to come for ocean data will be a result of changing business rules and policies, not legacy upgrades. Data governance provides space to innovate and align around purpose, across all of NMFS expertise.

We appreciate your time in considering these recommendations, and look forward to continuing to collaborate with you in advancing these critical priorities for the benefit of America's oceans and fisheries.

Sincerely,

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