PROGRAM PROSPECTUS

WhaleCast Initiative

Building the Future of Predictive Whale Avoidance

Session 1 · Emerging Technologies & Standards ·

October 8-9, 2026 · SAS Institute · Cary, North Carolina

LED BY FATHOM SCIENCE

WITH SAS Duke University

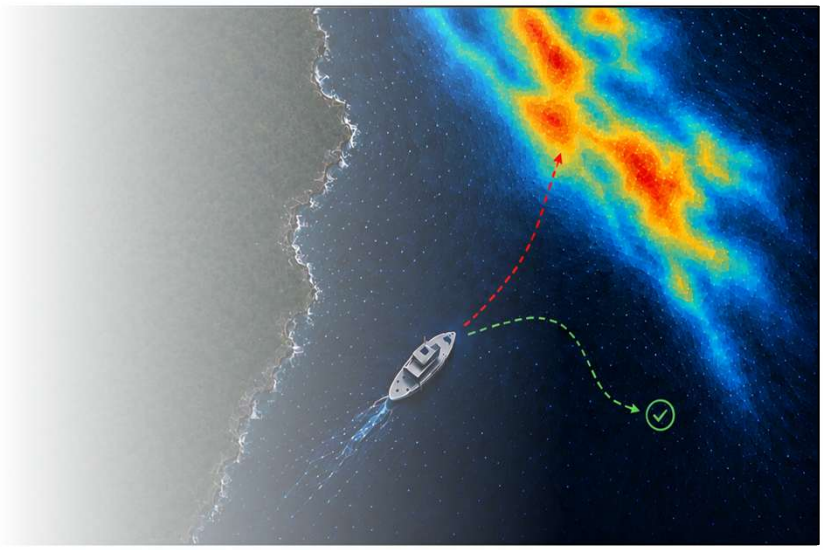
FUNDED IN PART BY NFWF

ABOUT THE PROGRAM

WhaleCast Initiative: Building the Future of Predictive Whale Avoidance

Human activity at sea is rapidly expanding around the globe, increasing the risk of accidental collisions between whales and vessels. At the same time, advances in ocean forecasting, AI, and marine sensing technologies are making predictive whale avoidance possible for the first time. This emerging opportunity inspired the creation of WhaleCast. Fathom Science developed the **WhaleCast Prototype** to explore how ocean forecasting and predictive analytics could help reduce vessel strikes. As the concept evolved, it became clear that the questions surrounding predictive whale avoidance extended beyond any single technology, organization, or product.

Now, with support from the National Fish and Wildlife Foundation (NFWF), the **WhaleCast Initiative** has been established as a collaborative effort to evaluate, validate, and define the scientific, operational, and governance foundations needed to responsibly operationalize predictive whale avoidance. Building upon the WhaleCast Prototype, the initiative is anchored by two leadership sessions over a 12-month period that will bring together experts from conservation, government, industry, academia, and marine technology to determine whether predictive whale avoidance can become a practical and trusted component of conservation and maritime business strategies.



The WhaleCast Initiative recognizes that technologies focused on critically endangered species carry unique responsibilities and require a high degree of transparency. The involvement of private industry and for-profit companies in whale strike mitigation can raise legitimate questions regarding incentives, governance, and the role of commercial interests in conservation. At the same time, meaningful reductions in vessel strike risk will require new solutions developed by industry.

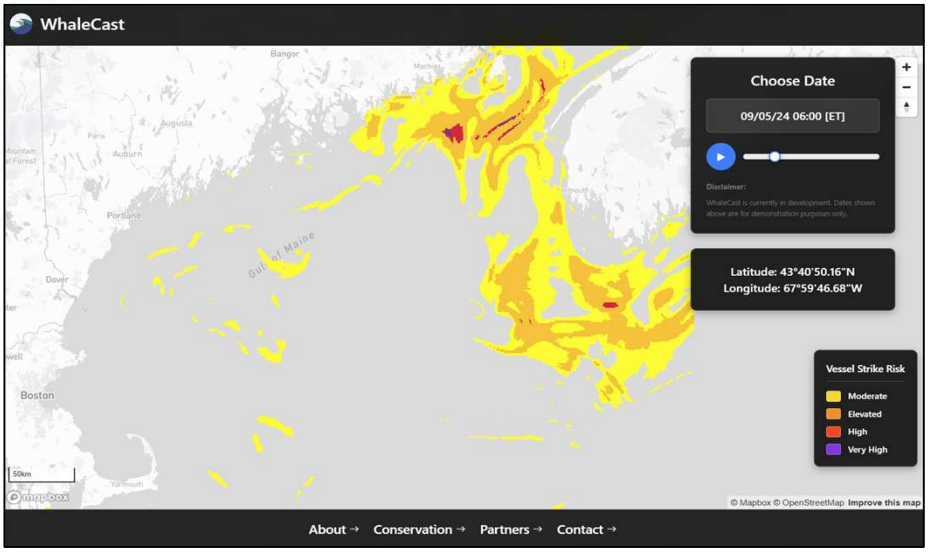
Against this backdrop, the WhaleCast Initiative begins with a simple observation: take almost any maritime technology concept, put the word "whale" in front of it, and chances are it already exists. From thermal imaging and passive acoustics to whale sighting networks and operational awareness platforms, a growing ecosystem of technologies has emerged over the past decade. However, these approaches still operate within a fundamentally reactive framework. The WhaleCast Prototype was not created to replace these efforts, but to explore whether predictive whale avoidance can become a complementary capability, moving from reactive to proactive.

Through open dialogue, the WhaleCast Initiative seeks to determine whether predictive whale avoidance can be responsibly operationalized. The outcome of the WhaleCast Initiative will be an industry white paper outlining a set of recommendations and evaluation frameworks designed to guide the responsible deployment of predictive whale avoidance technologies. While many questions remain, it's clear that predictive technologies will require integration with existing whale monitoring, detection, and information systems. We hope you will join us.

ABOUT FATHOM SCIENCE

Predictive Ocean Intelligence

Fathom Science is an ocean forecasting and marine analytics company built on more than a decade of research and over $20 million in R&D grant funding at North Carolina State University. By combining ocean science, artificial intelligence, and cloud computing, Fathom develops predictive ocean intelligence and decision-support tools for maritime industries worldwide. Its proprietary ARMS ocean forecasting platform enables rapid deployment of high-resolution forecasts anywhere in the world, which can support applications in shipping, ports, offshore energy, recreational boating, and conservation.

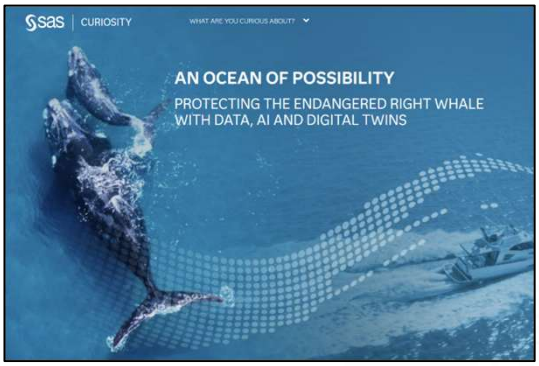


WhaleCast Prototype (whalecast.fathomscience.com)

Building on this forecasting foundation, Fathom Science developed WhaleCast to explore how predictive ocean intelligence could help reduce vessel strike risk to North Atlantic right whales. The WhaleCast Prototype (shown above) integrates high-resolution ocean forecasts with AI-based habitat suitability models trained on tens of thousands of whale sightings to generate three-day forecasts of whale occurrence. By anticipating areas of elevated whale presence several days in advance, WhaleCast provides a foundation for more proactive and informed vessel strike risk mitigation.

ABOUT SAS

Data for Good



curiosity.sas.com

SAS is a global leader in advanced analytics, artificial intelligence, and data management software, helping organizations transform complex data into actionable insights. Through its Data for Good program, SAS applies these capabilities to address environmental, humanitarian, and social challenges. Recent initiatives have included using crowdsourced computer vision and machine learning to identify individual endangered sea turtles in the Galápagos and applying artificial intelligence to monitor rainforest deforestation from satellite imagery.

Most recently, Fathom Science has worked closely with SAS through the WhaleCast initiative to explore how ocean forecasting, advanced analytics, and artificial intelligence can reduce vessel strike risk. As the anchor Corporate Partner of WhaleCast, SAS is providing meeting space at its headquarters in Cary, North Carolina, where the initiative's leadership sessions will be held. This contribution helps create a neutral forum where experts from conservation, maritime operations, ocean science, and technology can come together to examine the opportunities, challenges, and implications of predictive whale avoidance. Together, Fathom Science and SAS are supporting an open dialogue aimed at evaluating how predictive analytics can be responsibly applied to reduce vessel strike risk to endangered whales.

ABOUT DUKE

Connecting Science, Technology, and Ocean Policy

Duke University serves as the academic partner for the WhaleCast initiative, bringing internationally recognized expertise in marine ecology, whale distribution modeling, marine acoustics, emerging monitoring technologies, and ocean policy. Through the Marine Geospatial Ecology Lab and Marine Acoustics and Engineering Lab, Duke is collaborating with Fathom Science to shape the scientific foundations needed to evaluate and responsibly advance predictive whale avoidance technologies.

Duke has also demonstrated national leadership in convening diverse stakeholders to address complex ocean challenges. Through initiatives such as Wildlife and Offshore Wind, Duke has brought together regulators, industry representatives, conservation organizations, and scientists to reduce uncertainty, identify research priorities, and support science-based decision making. Building on this experience, Duke is partnering with Fathom Science and SAS to help ensure that discussions surrounding predictive whale avoidance are grounded in scientific rigor, transparency, and broad stakeholder engagement.

BIOACOUSTICS & ENGINEERING
NOWACEK LAB

Marine Geospatial Ecology Lab · Duke University

WhaleCast STRUCTURE

Two Leadership Sessions

Session 1 (October 8-9, 2026): Technology Landscape & Validation Standards

Focus:
Session 1 focuses on defining the emerging field of predictive whale avoidance and evaluating its potential to become an operational tool for marine mammal conservation and maritime industries. Participants will explore how whale detection technologies, data aggregation platforms, and predictive modeling systems can work together to support this new category of whale avoidance that extends beyond real-time observations alone. The session will examine both the technical feasibility of this approach and the considerations necessary to ensure its responsible use.

SAS Campus · Session 1 Venue

Outputs:
The cornerstone output of Session 1 will be an industry white paper led by Fathom Science in collaboration with Duke University and SAS that establishes an initial framework for predictive whale avoidance. The paper will document consensus recommendations for how predictive whale avoidance systems should be evaluated, validated, and communicated. It will also outline best practices for integrating predictive analytics with complementary technologies to support the responsible operationalization of predictive whale avoidance. Participants will have an opportunity to review and provide feedback on the while paper prior to being released.

Between Session 1 and Session 2, Fathom Science will maintain engagement with participants to further explore technical and operational considerations identified during Session 1. We will also host a WhaleCast webinar and attend the NARW Consortium annual meeting to continue discourse and help inform the agenda of Session 2.

Session 2 (Fall 2027) : Regulatory & Operational Pathways

Focus:
Session 2 focuses on the pathways required to responsibly operationalize predictive whale avoidance. Building on the technical foundations established during Session 1, participants will examine how predictive whale avoidance systems can be integrated into maritime operations, decision-making processes, and existing regulatory frameworks. Discussions will explore the perspectives of regulators, industry, conservation organizations, and technology developers, with particular attention to trust, uncertainty communication, governance, and the conditions necessary for broad stakeholder acceptance.

SAS Campus · Session 1 Venue

Outputs:
The cornerstone output of Session 2 will be a stakeholder-informed white paper outlining a roadmap for advancing predictive whale avoidance. The roadmap will identify opportunities and barriers to adoption, outline best practices for communicating uncertainty and predictive risk, and provide recommendations for integrating predictive whale avoidance into operational and regulatory decision-making. It will also document perspectives from industry, regulators, NGOs, academia, and technology developers, helping establish a shared foundation for the future governance and deployment of predictive whale avoidance technologies.

SESSION 1 AGENDA

Day 1

Thursday October 8, 2026 · SAS Institute, Cary, North Carolina · 9:00 AM – 4:30 PM

9:00 – 9:30	*Arrival, Coffee & Networking*
9:30 – 10:00	**Welcome & Program Overview** Establishes the goals of WhaleCast 2.0 Session 1 and introduces the central question: Can emerging technologies be integrated to operationalize predictive whale avoidance? Outlines the program's open innovation approach and highlights the role of the SAS Data for Good program. SAS Representative Fathom Representative
10:00 – 10:30	**Ground Setting** Overview of the global challenge of marine mammal vessel strikes and efforts underway to reduce risk. The discussion narrows its focus to the North Atlantic Right Whale along the U.S. East Coast, reviewing the current population status, major threats, historical mitigation efforts, and ongoing management/regulatory challenges. Keynote Speaker 1 TBD: Global challenge of whale avoidance Keynote Speaker 2 TBD: North Atlantic Right Whale vessel strike landscape

	Day 1 Continued
10:30 – 11:00	**Define Impact** Highlights why marine mammal avoidance is both a conservation challenge and an operational issue for ocean industries. Speakers share perspectives from shipping, offshore construction, sailing, marine infrastructure, and ocean technology on how whale avoidance influences planning, safety, and sustainability goals. Industry Representatives Sponsors
11:00 – 11:15	*Morning Break*
11:15 – 12:00	**Technology Landscape: Advanced Sensors** Explores emerging technologies for detecting whales in the marine environment — thermal imaging, passive acoustics, active sonar, and AI-enabled computer vision. Speakers discuss technology capabilities, limitations, and operational experience, and their potential role in predictive whale avoidance systems. Speakers TBD
12:00 – 1:30	*Lunch*
1:30 – 2:15	**Technology Landscape: Advanced Modeling** Explores technologies designed to forecast whale occurrence based on environmental conditions, habitat preferences, and ocean dynamics. Topics include habitat suitability models, density surface models, and emerging predictive systems — and the challenges of using forecasts to support avoidance decision-making. Speakers TBD
2:15 – 3:00	**Technology Landscape: Data Aggregators** Explores platforms that integrate whale observations, sensor detections, management information, and other data into operational awareness systems. Discussion covers how information is collected, synthesized, and communicated to support conservation and maritime decision-making. Speakers TBD
3:00 – 3:15	*Afternoon Break*
3:15 – 4:15	**Interactive Session: Integrating the Whale Avoidance Technology Landscape** Central Question: "**Can it be done**?" Brings together the insights and technologies presented throughout the day to assess whether predictive whale avoidance can be operationalized through an integrated technology ecosystem. Participants identify strengths, limitations, and roles of existing sensing, aggregation, and modeling technologies.
4:15 – 4:30	**Day 1 Closing Remarks** Summarizes key insights and themes that emerged throughout the day, including opportunities and challenges associated with integrating sensing technologies, operational awareness systems, and predictive models into future whale avoidance frameworks. Fathom Representative

SESSION 1 AGENDA

Day 2

Friday October 9, 2026 · SAS Institute, Cary, North Carolina · 9:00 AM – noon

9:00 – 9:30	*Morning Arrival*
9:30 – 10:30	**Interactive Session: Responsible Deployment of Predictive Whale Avoidance** Central Question: "**Should it be done**?" Explores the potential benefits and risks of predictive whale avoidance technologies. Discussion covers whether predictive systems can meaningfully contribute to conservation and maritime operations, while examining concerns around uncertainty, misuse, overreliance, and risk compensation. Participants identify principles for responsible deployment.
10:30 – 11:30	**Interactive Session: Validation & Performance Frameworks** Central Question: "**What standards should be met**?" Explores approaches for validating predictive whale avoidance technologies — including performance metrics, forecasting horizons, uncertainty quantification, and independent evaluation. Participants discuss what constitutes operationally meaningful skill and identify best practices for evaluating future predictive systems.
11:30 – 12:00	**Day 2 Closing Remarks & Program Preview** Summarizes key insights and recommendations from Day 2 regarding responsible deployment and validation frameworks. Concludes with a preview of WhaleCast 2.0 Session 2 in Fall 2027, which will explore regulatory, operational, and stakeholder frameworks needed for deployment.

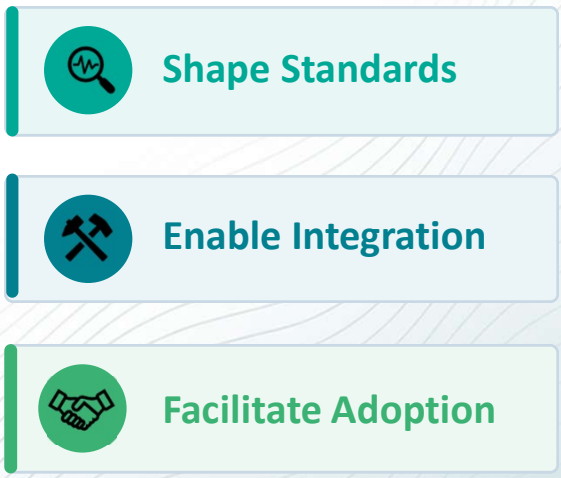
Session 2, Fall 2027 Agenda: Determined after Session 1

PARTICIPATING

Join the Conversation!

Your participation will help shape the scientific standards, operational frameworks, and governance that guide the future of predictive whale avoidance. For government, NGOs, and academia, this is an opportunity to contribute the research and expertise needed for responsible evaluation and implementation. For industry and technology developers, participation helps ensure emerging standards support diverse approaches while creating a pathway for your technologies to be integrated into future predictive systems and operational workflows.

The objective is not to promote any particular technology, organization, or solution, but to bring together diverse perspectives. We welcome skepticism, critical analysis, and open discussion. The strongest outcomes will emerge through testing assumptions, identifying knowledge gaps, and building consensus on the scientific foundations of predictive whale avoidance. We hope you will join us!



GET INVOLVED

Contact & Next Steps

The WhaleCast Initiative leadership sessions will be conducted as closed-door, invitation-only meetings to encourage candid discussion. The sessions will be facilitated by the Fathom Science team, with an independent scribe present to document discussions, key themes, areas of agreement, outstanding questions, and recommended next steps. To encourage open dialogue, published materials will not attribute statements, viewpoints, or comments to specific individuals or organizations unless explicit permission is provided.

To learn more about WhaleCast, sponsorship opportunities, or participation in Session 1, please reach out to the Fathom Science team.

Taylor Shropshire, Ph.D.
WhaleCast Initiative Lead
tshropshire@fathomscience.com
Raleigh, North Carolina

Amelia Laursen
WhaleCast Initiative Coordinator
alaursen@fathomscience.com
Raleigh, North Carolina

Roy He, Ph.D.
Founder
rhe@fathomscience.com
Raleigh, North Carolina

WhaleCast
Initiative

Building the Future of Predictive Whale Avoidance