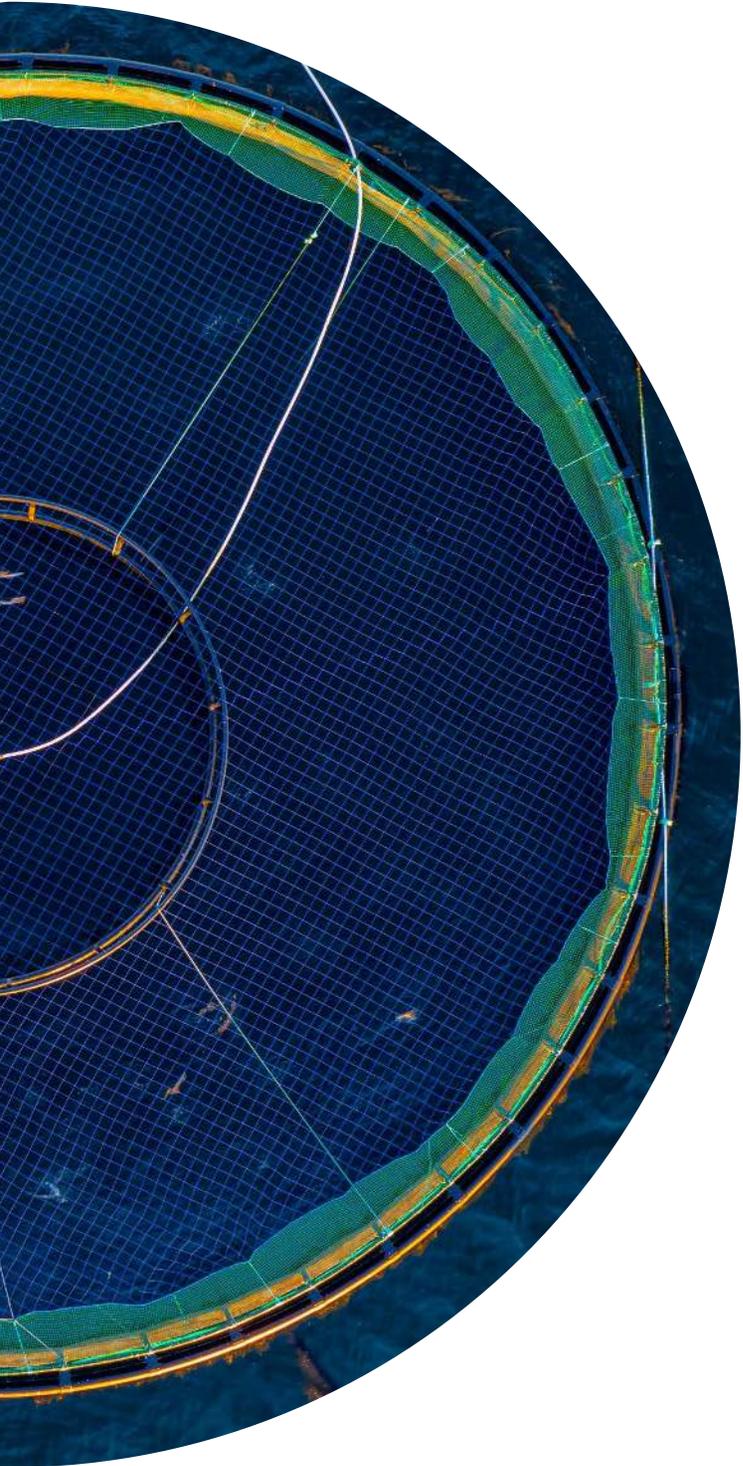


Design Workshop Summary Report

*Multisectoral Scenario Planning and Solution Building for
the Future of U.S. Marine Aquaculture – Spring 2022*

Executive Summary



About this Report

This non-attributional synthesis was prepared by Meridian Institute and Ocean Strategies in Spring 2022 based on the discussions and insights gleaned from the U.S. Marine Aquaculture Multistakeholder Design Workshop, attended by 43 participants representing industry, nonprofits, finance, tribes, and other organizations.

This document includes the executive summary, an excerpt of the full synthesis. For more details on the workshop approach, discussions, and outputs, read the [complete synthesis report](#).

REPORT AUTHORS

Authored by: Meghan Massaua, Madelyn Smith, Maia Hatchett, and Ian Yue

Reviewed by: Steering Committee Members and Ocean Strategies

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We would like to thank the Steering Committee that provided invaluable sectoral insights and guidance in crafting key workshop components:

Rip Cunningham

Angler and Writer
Salt Water Sportsman

Glenn Delaney

Consultant
Southern Shrimp Alliance

Ruth Driscoll-Lovejoy

Senior Manager, Seafood Policy
Environmental Defense Fund

Leigh Habegger

Executive Director
Seafood Harvesters of America

Dane Klinger

Director of Aquaculture
Conservation International

Mike Leonard

Vice President of Government Affairs
American Sportfishing Association

Stacy Schultz

Director of Marketing / Sustainability Coordinator
Fortune Fish & Gourmet

Neil Anthony Sims

Founder and CEO
Ocean Era, Inc.

Diani Taylor

General Counsel
Taylor Shellfish Farms

Kim Thompson

Director, Seafood for the Future
Aquarium of the Pacific

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Executive Summary

Growing demand for sustainable protein has accelerated financial and political investment in aquaculture production in the United States (U.S.). However, ocean stakeholders and coastal community leaders have diverse opinions as to whether the U.S. can develop a sustainable and equitable domestic aquaculture industry and, if so, how to realize such an industry. In response to rising interest in this topic from federal agencies, Congress, investors, companies, and NGOs, Meridian Institute convened a three-day U.S. Marine Aquaculture Multistakeholder Design Workshop in April 2022. Meridian collaborated with Ocean Strategies to bring together 43 leaders across ocean sectors (aquaculture industry, ENGOs, commercial fishing, recreational fishing, aquaculture finance, seafood supply chain, and tribal/community leaders) to share perspectives and brainstorm solutions to challenges regarding the future of marine aquaculture in the U.S. Funding for the workshop was provided by Builders Initiative, a philanthropy that invests in sustainable solutions to societal and environmental challenges, including restorative aquaculture, ocean resilience, and sustainable fisheries management.

The workshop provided a neutral space for ocean stakeholders with an interest in the future of U.S. aquaculture to share perspectives and core values, learn from one another, and move toward solution-oriented conversations. This executive summary documents the range of concerns, opportunities, and solution building options that emerged from workshop discussions (more information on the ideas raised at the workshop can be found in the “Opportunities for Collaborative Solution-Building” section and Appendix A of the full workshop report). This summary also provides insights on a range of stakeholder views and ideas that may be helpful to those working to improve stakeholder engagement on marine aquaculture.

However, **this summary is not an authoritative document, nor a set of consensus recommendations, nor does it endorse a specific course of action.** Rather, it represents a snapshot of stakeholder discussions held at a specific time among a defined group of participants. While the perceptions and concerns of all stakeholders who participated are equally valid, their expertise and knowledge of the science and practice of aquaculture varies. Notably, this summary highlights areas where common ground began to emerge across sectors; as such, this summary can be used to guide future engagement around U.S. aquaculture development.



Shared Hopes and Unifying Concepts: Illuminating Commonalities Among Sectors

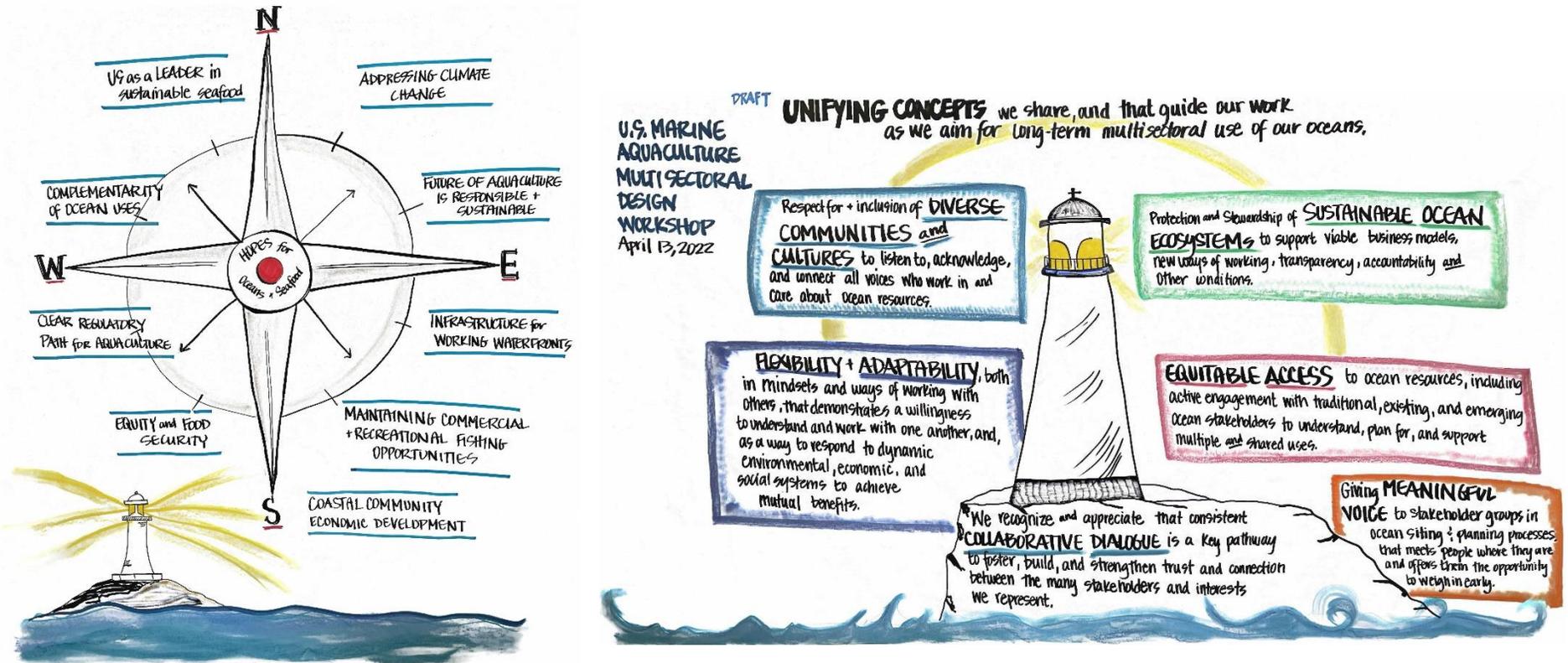


Figure ES-1. The workshop began with a focused discussion on participants’ shared hopes for the future of oceans and seafood, as informed by participant responses to a pre-workshop survey. Meridian also synthesized participant sentiments raised throughout the workshop into a set of unifying concepts, shared with participants on Day 3 of the workshop. Collectively, these shared hopes and unifying concepts create a compass and a lighthouse that can help “guide” multisectoral engagement around the future of U.S. marine aquaculture.

Stakeholder Perspectives on Aquaculture: Interests and Concerns

The workshop was designed around four hypothetical marine aquaculture operations, or “scenarios,” aimed at prompting discussion on U.S. aquaculture development among different stakeholder groups (more information on the scenario exercises can be found in the “Scenario Planning Insights” section and Appendix B of the full workshop summary report). These exercises created space for ocean stakeholders to learn from one another by encouraging workshop participants to share their interests and concerns on aquaculture development, including ways to meet stakeholder needs. Participant input shared in these scenario exercises can be found in Appendix C of the full workshop summary report.

Below is a snapshot of themes and key points that participants raised while going through the scenario exercises (for more details, see the “Scenario Planning Insights” section of the full workshop summary report). Throughout the exercises, numerous participants emphasized the importance of local context in shaping perspectives on aquaculture. The below points illustrate a range of insights about what is important to stakeholders, based on perceived risks and concerns, but they *do not indicate agreement across all participants or sectors*.

TYPE OF AQUACULTURE

- Participants considered shellfish, finfish, and seaweed aquaculture in the scenario exercises.
- Overall, there were fewer concerns about shellfish and seaweed farming than finfish. Participants recognized that shellfish and seaweed farming can provide net environmental benefits, such as improving water quality.
- In all cases, participants deemed local context — such as community dynamics and specific environmental parameters — to be very important.

DISTANCE FROM SHORE

- Participants varied on preferences for nearshore or offshore development.
- Some sectors raised concerns that we may not yet have the technology to farm efficiently in high-energy, open-water environments and questioned what scale of farm is required to be economically viable offshore.
- Participants also noted that farming in nearshore environments could make monitoring easier and allow for quicker responses to challenges that may arise (e.g., weather, disease).

- Others pointed out that establishing aquaculture farms further offshore can mitigate some environmental impacts and user-group conflicts (e.g., more space, fewer impacts on water quality and substrate).

FARM SCALE AND PILOTS

- In considering scale, participants explored the balance between environmental safeguards and regulatory efficiency to ensure that barriers to entry do not unfairly impact small and historically disadvantaged farmers from entering the aquaculture industry.
- In general, participants raised more concerns about larger scale aquaculture farms.
- Some sectors expressed concern that scaling aquaculture farms to the scale needed to be profitable would impact traditional user groups.
- Others pointed out that farms have to be large enough to generate enough revenue to allow farmers to pay for environmental monitoring efforts and other technologies that reduce adverse impacts to the environment.

- Some sectors were most comfortable with starting aquaculture operations at a small or pilot scale and allowing them to grow over time as the benefits and impacts of marine aquaculture are better understood.
- Others were concerned that having a separate process for pilots would create challenges with securing financing if the tenure of the farm is less certain in that process. Some felt that the existing process is sufficient, and pilots are not needed.

SPECIES SELECTION

- Participants noted that species selection is important for all types of farms.
- Some raised that farming native species may create opportunities for cultural connection and augmenting local wild populations.
- Some sectors expressed concern that the escape of hatchery-raised species may pose a risk of interbreeding between farmed and wild populations, which might result in negative genetic impacts within wild populations.
- Some sectors also expressed concern that introducing nonnative species to marine environments could impact ecosystems and commercial fisheries.

ADDITIONAL SITING CONTEXT AND INSIGHTS ON NOAA’S AQUACULTURE OPPORTUNITY AREAS (AOA)

- Stakeholders generally voiced praise and support for NOAA’s AOA process, noting that it is well-regarded as being rigorous, science-based, and informed by stakeholder input.
- Some participants noted that finer scale information on site characteristics is needed to make specific decisions about farm location and orientation, as well as monitoring and mitigation needs.
- Several participants called for more comprehensive planning to understand cumulative impacts of multiple farms in an area, as well as other new ocean uses like offshore wind development. Interactions between planning for offshore wind and planning for aquaculture were not clear to many, and participants noted that a more consistent approach to ocean space, overall, would be better for engaging many stakeholder communities.

NEARBY COMMUNITY AND STAKEHOLDER ENGAGEMENT

- Throughout the workshop, participants stressed the importance of community support for local aquaculture development and proactive engagement

with communities and ocean users, including tribal governments.

- Several sectors pointed out that it can be challenging for aquaculture operators to engage in a high level of outreach and transparency because it creates opportunities for public criticism, attack, and stalling the permitting and regulatory process.

ROLE OF CERTIFICATIONS AND RATINGS

- Different sectors and communities are interested in individual farms’ operational practices and would like to better understand what the “gold standard” of best management practices looks like.
- Many sectors felt that having sustainability certifications and ratings added value and certainty to projects. Some expressed that certifications and ratings help both companies and consumers understand what sustainable aquaculture means and can help companies go above and beyond regulatory requirements for sustainability.
- However, others noted that certifications are ultimately optional and, where safeguards and best practices are needed, they should be enshrined in regulations.

STATE OF THE SCIENCE

- Participants expressed a range of opinions about whether the state of the science and marine spatial planning efforts are sufficient to sustainably site and operate aquaculture farms.
- Some participants felt there was still significant uncertainty related to how aquaculture farms would impact marine environments.
- Other participants countered that there are significant bodies of research and evidence about marine aquaculture that are just not well communicated to, or understood by, sectors and communities.

SEAFOOD ECONOMICS AND MARKET DYNAMICS

- Some participants expressed concern that increasing seafood production from aquaculture would flood local markets, driving down the price of wild-caught seafood and putting commercial fishermen out of business.
- Other sectors remarked that increasing the consistency of domestic seafood supply for some species may stabilize or increase the price point of the product.
- Some sectors perceived aquaculture products as being in direct competition with wild-caught seafood, while others pointed out that U.S. aquaculture products may be in more direct competition with imported, farmed seafood products.
- Participants raised concerns about market dynamics more so for finfish than for shellfish or seaweed aquaculture.



Emerging Areas of Alignment

Meridian identified several emerging areas of alignment across sectors, based on stakeholder ideas raised during workshop discussions. While these areas do not equate to consensus, they do illuminate commonalities among workshop participants that are ripe for further exploration:

- **Local contexts are critically important for aquaculture.** Aquaculture companies, permitting agencies, and others involved in aquaculture development should meet local communities and ocean sectors “where they are at” and engage them on how aquaculture development could fit the community’s/sector’s vision for the future of their coasts and oceans.
- **Strengthening working waterfronts and supporting local economic development are important areas of alignment for fishing and aquaculture communities.** To build trust, ocean sectors can start working together on common issues like seafood infrastructure, working waterfronts, and shared challenges like marine debris and climate change
- **Developing the capacity of U.S. seafood production should be done in a way that increases access to the industry overall and supports equitable workforce development.** Special care should be taken to ensure that the benefits of aquaculture development (e.g., workforce and infrastructure development) are equitably distributed throughout local communities.
- **The ecological and social aspects of oceans are highly dynamic, with growing competition for space between fisheries, aquaculture, recreation, conservation, energy, and other uses.** These real and perceived conflicts can pose significant challenges for ocean users in navigating emerging ocean uses and environmental change.
- **Ocean stakeholders need more collaborative and cross-sectoral discussion spaces.** Public forums and hearings are not typically conducive to constructive dialogue. Rather, there is a need and desire for venues where different ocean sectors can come together to discuss the range of issues affecting the ocean (e.g., marine debris, climate change).
- **Upfront planning processes are needed to understand cumulative impacts** of multiple aquaculture farms in an area and competing ocean uses.
- **Aquaculture development in federal waters may require improved permitting processes** to create a clear regulatory pathway, reassure aquaculture investors on the bankability of their investment, and improve transparency and outcomes for all ocean users.
- **Pilot-scale aquaculture projects offer an opportunity for learning, innovation, and building trust with ocean stakeholders.** Some sectors were most comfortable with starting aquaculture operations at a small scale and allowing them to grow over time as the benefits and impacts of marine aquaculture are better understood.
- **Aquaculture information needs should be addressed in a collaborative and transparent manner rather than through siloed research.** For example, several farms have collaborated on aquaculture research with NGOs and universities, and NOAA’s research strategy recently underwent public comment. There is a need for a collective space for ocean data and information about and relevant to aquaculture in the U.S.
- **There is a need to better communicate existing science and research around aquaculture development** to interested ocean stakeholders through channels and methods that are easily accessible.

Opportunities for Collaborative Solution Building

On Day 3 of the workshop, participants went through a small group exercise, in which they had to identify a collaborative solution that could address one of six challenges related to aquaculture development. While the solutions presented below are the outputs from this small group exercise, they do not represent all viewpoints nor the full consensus of workshop participants. They do, however, outline potential opportunities to address the needs of multiple sectors. Each of these topics is complex and requires further exploration to flesh out exact details and viable pathways toward solutions. Some of these topics are also being addressed, to varying degrees, in parallel spaces and conversations. A more detailed summary can be found in the “Opportunities for Collaborative Solution-Building” section of the full workshop summary report.



This is not a consensus document.

Rather, it captures a range of ideas developed by a multisectoral group and demonstrates the value of third-party spaces for perspective sharing.

Figure ES-2: These six Opportunities for Collaborative Solution Building represent areas where cross-sectoral collaboration could potentially address a challenge related to aquaculture development in the U.S. These opportunities emerged from themes that workshop participants raised during the scenario exercises on workshop Days 1 and 2.

Engagement and Collaboration Among Ocean Sectors — One of the most called for ideas across the workshop was opportunities to **create forums for meaningful engagement among ocean sectors** to build relationships, foster cross-sectoral communication, and advance solutions-oriented thinking. One idea raised was to create **non-project specific, community or regional roundtables** that allow sectors to come together to hold **cross-cutting ocean planning and visioning discussions**. Stakeholders often feel that project-based discussions happen so late in a development process that stakeholder input is not meaningfully accounted for; as such, project-based discussions are not set up to build cross-sector relationships.

Economic Development and Community Engagement — To enhance community engagement, **developing a guide for aquaculture companies that outlines approaches for engaging stakeholders** can help **ensure people have a voice in, and benefit from, aquaculture development in their communities**. This guide could map out ways to assess a community's economic and social characteristics (which can inform engagement strategies and practices) and provide insight to how different sectors prefer to engage in permitting processes.

Building Domestic Seafood Infrastructure — Creation of additional avenues to **catalyze investments in shoreside, transportation, workforce, and green infrastructure** to meet the needs of multiple forms of seafood production (wild-caught, farmed, recreational, subsistence) was another major takeaway from workshop discussions. Infrastructure investments could focus on prioritizing community needs, augmenting existing seafood infrastructure (e.g., building a new processing facility), and developing new technologies.

Regulatory Reform — Many (though not all) participants identified the need to create a **clear, efficient, and stepwise permitting process for aquaculture in federal waters** with mechanisms for **clear agency leadership, farm performance and accountability, and data collection**. Three complementary solutions were discussed by a

subset of participants, and would need to be advanced in concert with one another to address the needs and interests of a wide range of stakeholders: 1) a multistakeholder process to establish **best management standards** for aquaculture in federal waters, 2) legislation to **designate NOAA as the lead agency** for aquaculture permitting, and, 3) **expansion of marine spatial planning** efforts for the U.S. ocean environment to include consideration of cumulative impacts and multiple ocean industries. Note that these are preliminary ideas developed by a subset of the meeting participants and do not reflect consensus. In reviewing this workshop summary, some participants expressed opposition to these ideas, as they view the current regulatory process as sufficient.

Public Education, Outreach, and Communications on Seafood — Creating a **national campaign about consuming more domestic seafood** could **educate consumers and foster local and cultural connections to seafood**. American consumers, overall, have a low awareness of the benefits of seafood (including commercial, recreational, farmed, and subsistence) and many narratives about seafood contain misinformation or do not accurately represent domestic practices. A national marketing campaign could help **shift inaccurate narratives, bolster education and awareness of US seafood, and increase seafood consumption** throughout the U.S.

Addressing Economic and Environmental Research Needs — To meet the need for distributing relevant aquaculture information and research to interested stakeholders, participants suggested building a **central web-based platform that integrates existing data on aquaculture from multiple sources**. This solution could address the concern that research to inform aquaculture development is not readily available to a range of stakeholders. A broad array of data and information is needed (e.g., environmental baseline data, best practices, emerging research on newer questions around species and ecological interactions) to answer key questions and collating it in a central location could facilitate understanding and advance research.

LOOKING AHEAD

While the future of aquaculture in the U.S. is unknown, cross-sectoral discussions at the workshop helped advance understanding among stakeholders who, in other contexts, may be at odds with one another. The insights and opportunities outlined here can serve as a guiding light for discussion on key issues and enhanced collaborative solutions for the future of U.S. aquaculture.

Enthusiasm for continued collaboration among participants indicates opportunities for continued multisectoral engagement to find new ways of doing business. Areas ripe for continued discussion and solution building include engagement with coastal communities, improved planning, and coordination across ocean users, developing common data tools, and building infrastructure that can serve multiple needs in the seafood space. Ultimately, the outcomes of this workshop illustrate how useful multisectoral solution-building conversations are in helping sectors find common ground.



For more details on the workshop approach, discussions, and outputs, read the [full synthesis report](#).

 CONTACT US

Meghan Massaua
mmassaua@merid.org

Ian Yue
iyue@merid.org

Brett Veerhusen
brett@oceanstrat.com

Georgie Heaverley
georgie@oceanstrat.com