Advisory Council Meeting

December 20, 2021 | Meeting Summary

Developed by the Consensus Building Institute

Meeting-In-Brief

On December 20, 2021, the Responsible Offshore Science Alliance (ROSA) Advisory Council held its sixth meeting, convening 20 members and 9 alternates (a list of Council attendees can be found in Appendix A), as well as 28 Research Advisors. Thirty-six (36) interested others attended the event. At this meeting, ROSA:

- Conducted two discussions on ROSA's outlook for 2022, focusing in on its Regional Framework as well as launching initial ROSA-funded research
- Received brief regional science updates from the National Science Foundation (NSF) Convergence Accelerator Grant and the Responsible Offshore Development Alliance (RODA).
- Received a presentation of a data sharing analysis conducted by RPS and held small group discussions about ROSA's role in increasing data access and usability across projects.

Meeting materials, including the agenda and presentations can be found on ROSA's website: https://www.rosascience.org/advisory-council

Welcome

ROSA Executive Director Lyndie Hice-Dunton welcomed participants and, with Facilitator Patrick Field, oriented participants to meeting topics, agenda, and conversation guidelines.

Regional Science Updates

Sarah Smith, Rutgers University, and Fiona Hogan, RODA, provided regional science updates for attendees.

- Dr. Sarah Smith, FutureBlue Project Manager at Rutgers University, presented on a project funded through NSF's Convergence Accelerator Grant Program focusing on regional climate change projections to enable equitable ocean planning for the blue economy, with the creation of an online decision-support tool called FutureBlue. The project aims to guide offshore development with usable climate impact projections; collaboratively design a decision support tool to integrate climate information into place-based decision-making; and expand socio-ecological literacy by integrating diverse community interests into the data inventories and decision making of the blue

economy. ROSA is one of the project team members, and the project timeline stretches from October 2021 through September 2022. Dr. Smith posed a series of poll questions to the audience to learn more about the aspects of climate change that most affect their decisions, which climate information they wish was more available, and how far into the future climate projections are likely to be useful. *Responses to these questions can be found in Appendix B.*

- Dr. Fiona Hogan, RODA Research Director, presented on RODA's research priorities for 2022, available online here. RODA aims to develop cooperative research approaches and ensure that the research priorities they identified are driven by the fishing industry. Research priorities range across a host of topics: business, communities, and socioeconomics; environmental impacts; fishing regulations and management impacts; monitoring and review recommendations; safety; supply chain; and transmission.

Data Sharing Presentations & Discussion

ROSA Executive Director Lyndie Hice-Dunton shared an overview presentation on data sharing and accessibility, highlighting that this was a priority focus area named by the Advisory Council (AC) in its November 2020 meeting and March 2021 survey. Thanks to the efforts of volunteer members of ROSA's data management subcommittee, ROSA contracted with RPS in late summer 2021, and RPS shared a revised draft report to the subcommittee for review in December 2021.

Gabriella DiPetra, Alicia Morandi, and Joseph Zottoli from RPS then presented on the report, *Fisheries Resource Data Collection Storage, and Accessibility*, sharing the scope and methodology of the project, presenting the different data practices and types from BOEM and fisheries, reviewing existing databases and standards, and concluding with their summary and recommendations. Key takeaways included:

- Currently, privately collected data for which a database does not exist must be hosted on the developer's website or made directly available to users by request. This includes most types of operational data.
- Data should be collected in a format that is compatible with existing surveys and databases through development and inclusion of standardized protocols, effort data, and metadata.
- OSW developers should emulate sampling protocols and gear designs consistent with regional-scale data collection programs wherever possible but must also include surveys that can detect effects at their specific sites.
- No clear protocols or infrastructure are in place for developers to submit or share fisheries independent surveys or monitoring data.

Meeting slides are available to view here.

Following presentations, attendees were organized into small, facilitated breakout groups. Attendees worked in four small groups (organized by Council Members and Research Advisors, Council Alternates and members of the ROSA Board of Directors, and other participants).

Discussion groups surfaced myriad learnings from the report as well as thoughts on how ROSA might increase data access and usability across projects. Key takeaways included:

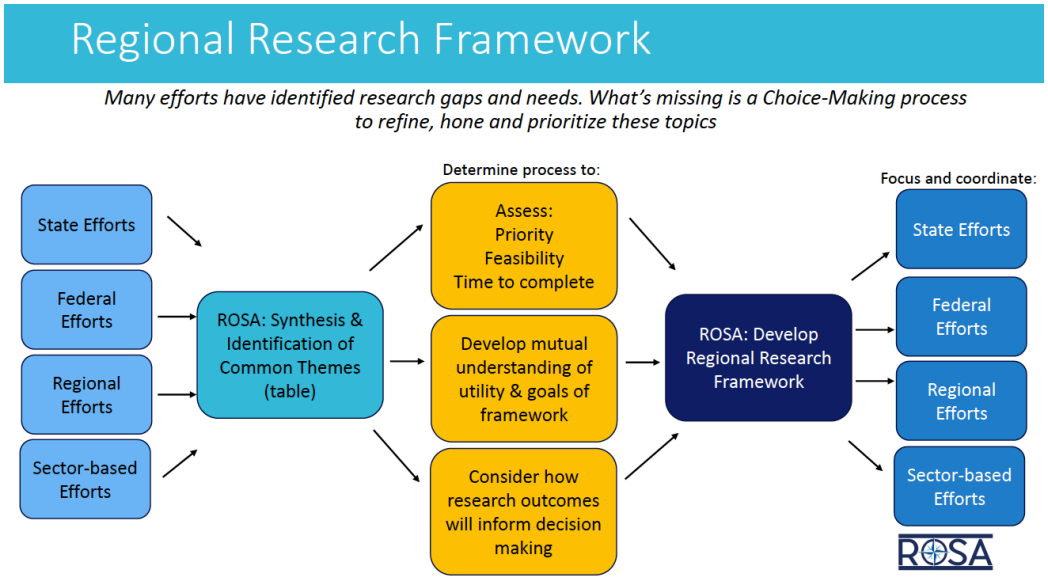
- There is a need to clarify the level of data sharing required, who has access, what the data is, and how the data would be used. Federal agencies need to share clearer guidance on what they are seeking in terms of consistency.
- There is capacity to work on issues in terms of availability of portals and expertise. Without availability and accessibility, where the data is stored and the way it is collected don't matter.
- There is a need to work with OSW developers and states to see what data practices can be mandated, to better understand what developers are already collecting, and to identify gaps. This could also help identify where there is need for more money to support existing or create new portals. Having better access to comparable data from developers can help identify and mitigate impacts more efficiently. The role of the state and federal agencies needs to be defined.
- There is desire to develop standards for what data should be collected. There could be a role in helping define the elements that are needed to be collected.
- Potential paths forward for ROSA:
    - One next step could be to focus on metadata, including getting clearer guidance of what metadata should be included, what consistency measures should be used, and what scale of data is needed.
    - ROSA could participate or lead a working group of data collectors, but it should not be in the position of housing data.
    - ROSA could build on the data for its monitoring guidance, focusing on best practices for data or transparency and potentially holding a workshop for experts to explore this more deeply.

Following report outs from breakout group discussions, Dr. Hice-Dunton shared the next steps for ROSA, with the data management subcommittee reviewing and commenting on the RPS report through mid-January and ROSA reconvening the subcommittee in early 2022 to share feedback from this discussion to further consider ROSA's role in data sharing and accessibility.

ROSA Outlook for 2022: Regional Research Framework

ROSA Executive Director Lyndie Hice-Dunton and ROSA Research Director Mike Pol presented on building a regional research framework, describing the need, purpose, and intent of such a framework to build on work already done through RODA's *Synthesis of the Science* and NYSERDA's *State of the Science* processes and create a shared framework to help focus existing priorities and provide a regional scale for several large state/developer funds being established. The AC identified this framework as a ROSA priority in the March and June 2021 AC meetings, and an initial subcommittee has worked since May 2021 to scope the development of such a framework and consider an RFP to advance a choice-making process to refine, hone, and prioritize research topics. Mike Pol has also developed a synthesis of existing research topics identified in varies sources (also referred to as the "list of lists", see Appendix D) categorizing

the various themes of research across existing products like RODA's recent research priorities, NYSERDA's Fishery-Related topics from its State of the Science workgroup reports, and state-led efforts. Further, ROSA has developed an infographic capturing the role of ROSA in regional science visualized below.



Next steps for ROSA in the development of the framework include refining the framework's scope in early 2022; consider issuing an RFP, coordinating a procurement process, and starting work with a contractor in Spring 2022; and the contractor delivering a report back to ROSA in mid-2022.

Meeting slides are available to view here.

Below are questions and comments that followed ROSA's presentation. Questions are in regular type and responses from ROSA are *italicized*.

- There are time constraints and emergent needs that will need to be acted on prior to the completion of this 6-month work period. Are there plans to move forward with other research in advance of completing this work?
    - *ROSA: That is a big question to explore with the AC – how to act strategically and pursue parallel efforts.*
- It will be essential to ensure that the framework development process is inclusive with clear decision-making and prioritization process. ROSA may not need an RFP, as it itself includes many of the important voices to weigh in. The annual research prioritization process undertaken by Fisheries Management Council may offer some insights for process design.
    - *ROSA: ROSA has some experience with this model; one of the challenges for researchers with this model is that there may not be enough prioritization to pare down the long list of potential research activities.*

- Would the RFP be more process-directed or more substance-directed?
    - *ROSA: We could see the most help on the process side to ensure transparency. As noted, ROSA already engages many of the voices that would need to be included in this process, but we will need support to design a transparent process.*
    - The process should be designed to include a diversity of regional, sector, and knowledge perspectives.

ROSA Outlook for 2022: Launching Initial ROSA-funded Research

ROSA Executive Director Lyndie Hice-Dunton and ROSA Research Director Mike Pol presented on initial thinking for how to launch initial ROSA-funded research in 2022, highlighting the need for ROSA to lead on addressing regional research gaps quickly to keep pace with the accelerating development of OSW. Dr. Hice-Dunton shared a process for administering and completing research, and Dr. Pol spoke to a proposed RFP approach and shared potential research ideas, including techniques, strategies, and/or research to assess regional impacts.

Meeting slides are available to view here.

Following presentations, attendees were organized into small, facilitated breakout groups. Attendees worked in four small groups (organized by Council Members and Research Advisors, Council Alternates and members of the ROSA Board of Directors, and other participants). Discussion groups explored what key areas or themes should be the focus of a ROSA RFP and what criteria should be used to evaluate proposals. Following discussion, attendees participated in a brief virtual poll to report out on their small group discussions. Below is a synthesis of report outs from small group discussions. *Complete poll results can be found in Appendix C.*

- Potential proposal focal areas:
    - Data standards for eDNA to integrate into other data sources
    - Calls for both proposals that are broadly applicable as well as those that are species-specific (e.g., scallop research set-aside program, black sea bass study).
    - Collaborative sampling protocols
    - Highly migratory species (HMS) /recreational fishing efforts
    - Mobile apps to capture information from fishermen
    - Gear standardization
    - Socioeconomic impacts
- Potential proposal evaluation criteria and review process:
    - This could be a two-step review process with a technical review and then a management review, conducted by a subset of AC and ROSA governance bodies.
    - Evaluation criteria could include:
        - Urgency/timeliness
        - Broad applicability to other wind energy areas
        - Modularity
        - Cost (desktop studies are generally cheaper)

        - Inclusion of fishermen/cooperative research
        - Demonstration of best practices, highlighting key points for models and pilot projects
        - Achievable
        - High potential for impact
        - Leverage existing data sources
- Participants raised concerns that $200K would not be enough to advance impactful research, and that ROSA should instead focus its resources on its data sharing and regional framework efforts.
- Some participants noted that ROSA would need to have a clear conflict of interest policy in place prior to issuing an RFP so that ROSA affiliates understand clearly the boundaries of participation in ROSA processes and specific procurements
- Participants noted the challenge of predicting the impact of research without a regional framework in place. There could be potential in funding efforts that help facilitate researchers aligning their requirements.

Next Steps & Adjourn

ROSA Executive Director Lyndie Hice-Dunton closed the meeting with an overview of next steps:

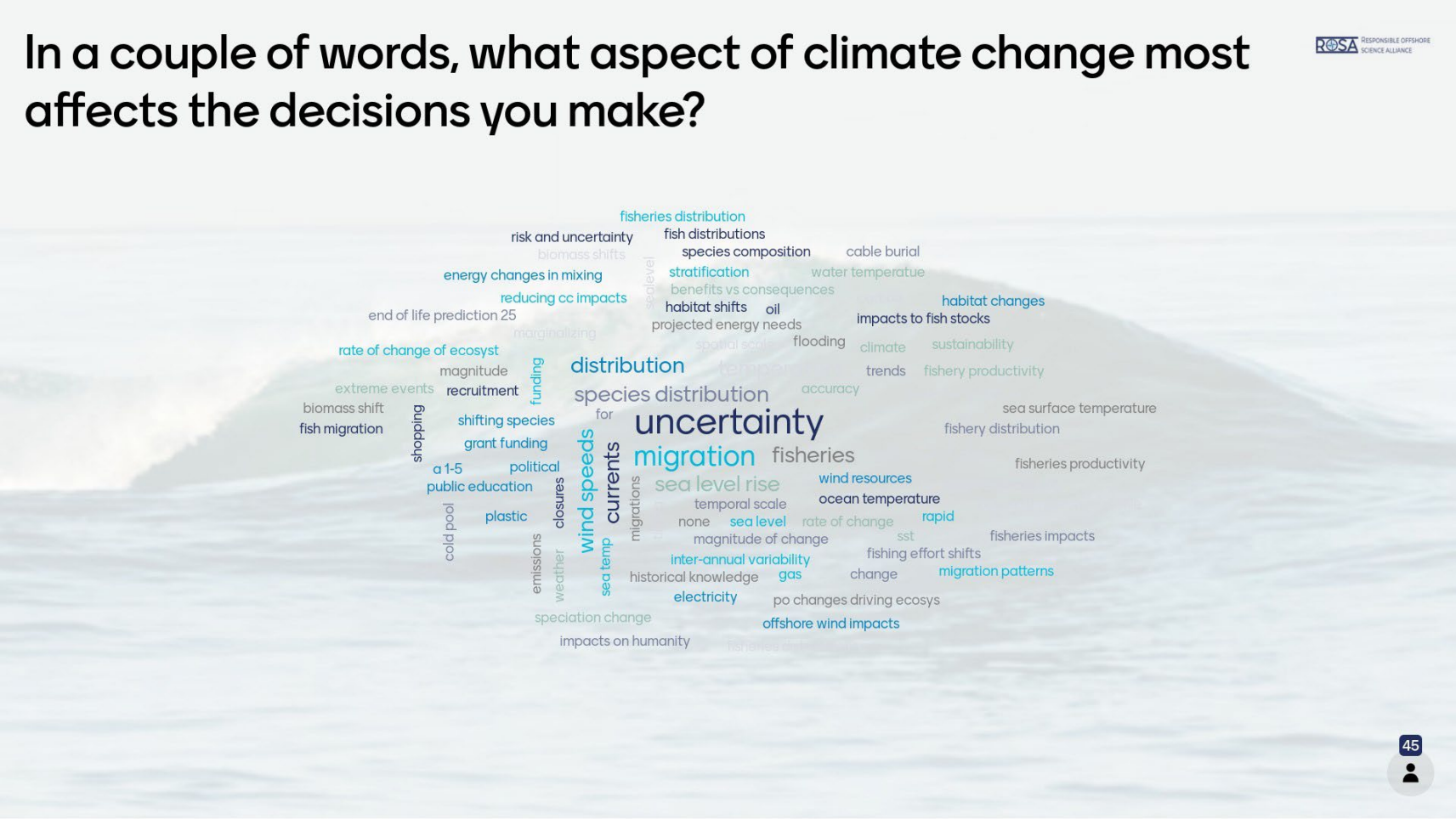
- Data Sharing and Accessibility subcommittee will evaluate RPS report and breakout group feedback to hone and act on suggested next steps
- ROSA and subcommittee will refine scope of Regional Framework-RFP anticipated early 2022
- ROSA will use feedback from breakout groups to determine next steps for ROSA funded research and identify Research Advisors who can help scope RFP
- ROSA staff will continue to address priority topics, including finalizing work plans for subcommittees and discussing strategies
- Please reach out to us with topics of interest for meetings or sector-specific calls (lyndie@rosascience.org or mike@rosascience.org)
- Next quarterly meeting will likely be March 2022

Dr. Hice-Dunton and Mike Pol thanked attendees for their time, participant, and engagement.

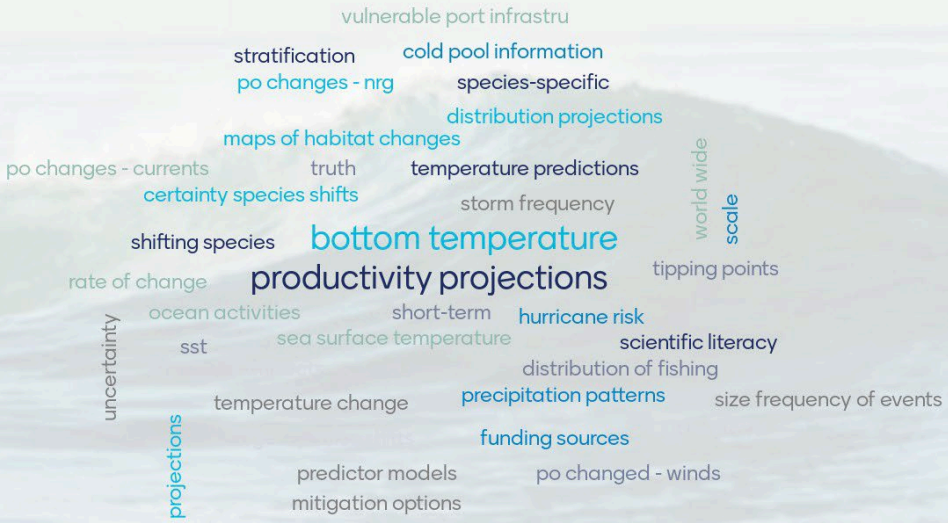
Appendix A | ROSA Council Member and Alternates Attendance

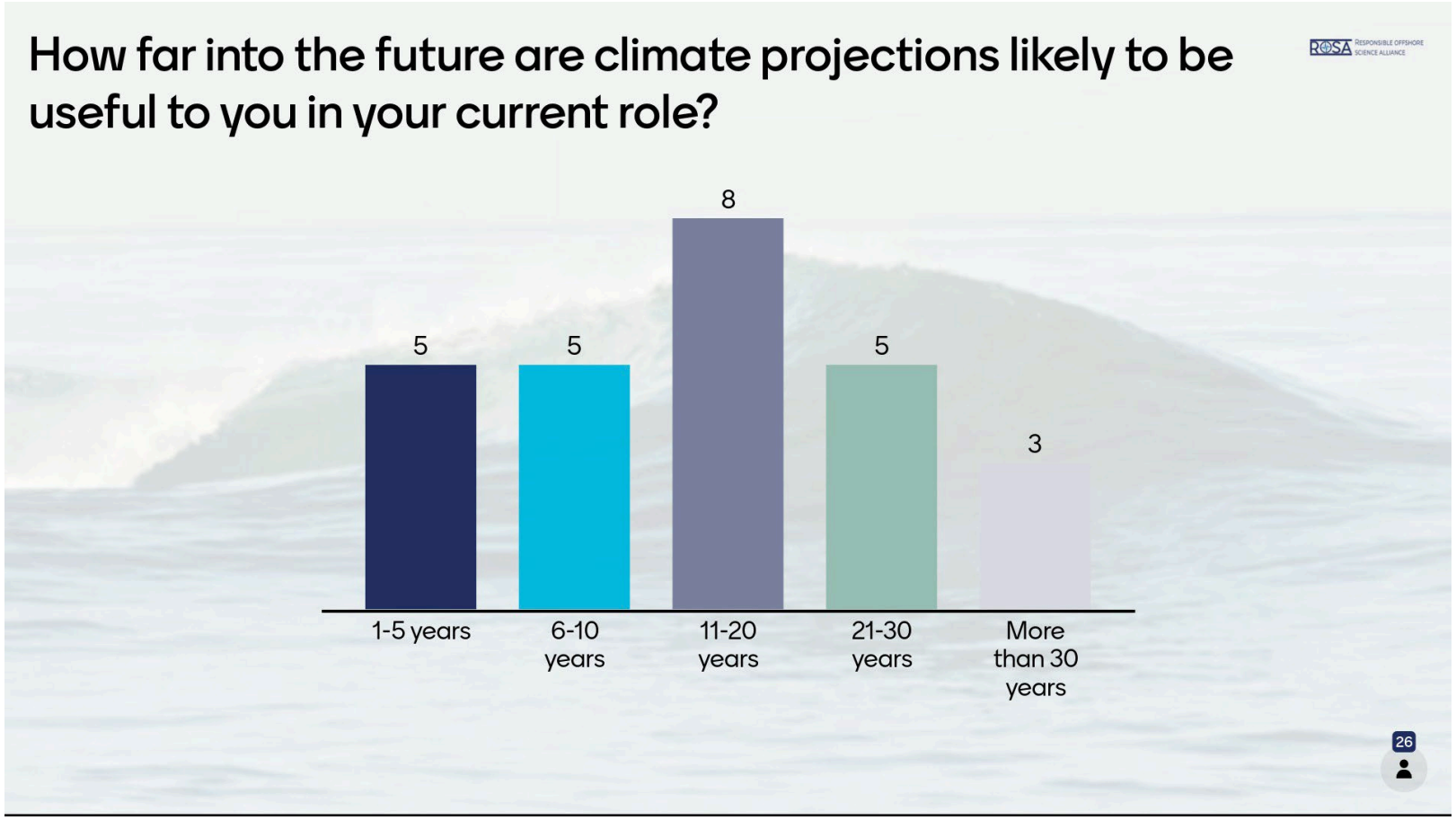
Peter Aarrestad	Connecticut Department of Energy and Environmental Protection
Katie Almeida	The Town Dock
Michelle Bachman	New England Fishery Management Council
Chris Batsavage	North Carolina Department of Environmental Quality
Robert Beal	Atlantic States Marine Fisheries Commission
Samuel Beirne	Maryland Energy Administration
Bonnie Brady	Long Island Commercial Fishing Association
Morgan Brunbauer	New York State Energy Research and Development Authority
Colleen Brust	New Jersey Department of Environmental Protection
Douglas Christel	Greater Atlantic Regional Fisheries Office
Joe Cimino	New Jersey Department of Environmental Protection
Greg DeCelles	Orsted
Willy Goldsmith	American Saltwater Guides Association
Brian Hooker	Bureau of Ocean Energy Management
Lane Johnston	Responsible Offshore Development Alliance
Greg Lampman	New York State Energy Research and Development Authority
Kirk Larson Jr.	Lindsay L Inc.
Andy Lipsky	Northeast Fisheries Science Center
Frederick Mattera	Commercial Fisheries Center of Rhode Island
Catherine McCall	Maryland Department of Natural Resources
Connor McManus	Rhode Island Department of Environmental Management
Ruth Perry	Mayflower Wind Energy
Mike Pierdinock	CPF Charters
Kathleen Reardon	Maine Department of Marine Resources
Eric Reid	Commercial fishing consultant
Sarah Schumann	Commercial fishing deckhand & Shining Sea Fisheries Consulting
Mike Sissenwine	New England Fishery Management Council
David Stormer	Delaware Department of Natural Resources and Environmental Control
Alison Verkade	Greater Atlantic Regional Fisheries Office

Appendix B: NSF Convergence Accelerator Grant Program Poll Results



In a couple of words, what climate information do you wish was more available?




How far into the future are climate projections likely to be useful to you in your current role?
RPSA
Responsible Offshore Science Alliance
8
5
5
5
3
1-5 years
6-10 years
11-20 years
21-30 years
More than 30 years
26

Appendix C: Launching Initial ROSA-funded Research in 2022 Poll Results

What key areas or themes should be the focus of this RFP?

- novel survey methods/technology that can be used around turbines
- integrating existing data sources
- socio economic studies
- establishing framework for collecting baseline data for all areas of interest to be researched
- Consider focusing recreational fishing effort impacts to HMS only for this RFP
- Funded projects should support the development of a regional framework
- Coordination standardization socioeconomics
- develop regional framework requirements that other funding mechanisms (state, federal, private) could require.
- standardized methodology for recreational fishing baseline data at a regional/coastwide scale.
- First Develop Plan then Standardize MONITORING REQUIRMENTS that each project is required to follow for each phase-- pre, during, post, post decommission.
- Utilizing the dollars to advance the regional research framework or the data sharing and consistency rather than new and limited by dollars research.
- Data access and management
- Fish Stock Assessments, ecosystem impacts associated with noise/acoustics
- Achieving consistency in approaches across fisheries monitoring projects
- There are too many to pick from. It would be better if ROSA developed a plan to narrow the focus for applicants. It will make it harder to evaluate different projects otherwise
- Commercial fishing impacts, species specific impacts that contribute to commercial fishing
- Either one. a study to explicitly respond to a stakeholder concern (get a definitive answer or use the money on a regional framework.
- Focus on engaging recreational anglers for hook and line studies on key gamefish to keep costs low and accomplish outreach at same time
- integration of fisheries data and regional scales; recommendations for standardization
- Research that helps establish baselines at a scale relative to the Wind Areas (biological, socio-econ, etc.)
- benthic habitats or species
- Develop a regional framework to provide fair compensation to displaced fishers as a result of OSW. Would need to apply across all affected fisheries and be of a sufficient duration (which should be defined as part of the project).
- Establish triggers based on findings, and maintain a end goal from the research. Do not collect research for research's sake. What research will answer a helpful question that could be used regionally. What questions have already been answered.
- Work with Advisors to determine if current financial scope is enough to fund a project that could answer a specific need.
- Framework coordination

- Desktop exploration of existing surveys (trawl, acoustic monitoring, etc.) to develop spatial-temporal picture of regional habitat use.
- Maybe a 1-year cheap study could be cataloging the eDNA of the region to get a baseline catalog? Not sure how much that costs. Just get the eDNA for the existing species cataloged to support future research
- eDNA catalog for the regions - so future monitoring has a catalog
- A desktop study is best aligned with the available funding. Where to focus is less clear but drawing lines between the research framework and the work or working on research framework ideas seems most suited.
- Develop clearly defined objectives for what monitoring is intended to address: how is an “adverse impact” defined? At what temporal and spatial scale? What decisions or actions are triggered when an "impact" is identified?
- due to the amount of the funds available, I think this research would be best suited for desktop type studies or made available only with cost sharing. One of the most regionally applicable areas of research is ecosystem scale modelling
- social science work would get a bigger bang for the buck. FEK seems like something that people are interested in which has no dedicated funding currently, and $200K could go a long way in FEK work.
- Spatial-temporal dynamics of key fisheries and habitats
- With the short amount of time and funding, one thrust could be modeling non-extractive methods for fisheries monitoring and/or increasing use of commercial partners, while also using spatial statistics to go from project-specific to regional level
- gear standardization for monitoring creation of a data portal and/or clearinghouse for OSW reports
- Socio economic data will be critical in the near future. It can be more cost effective than spending funds on "on the water" assets and data collection. One year worth of data of this type is useless over a long term
- Is the research being done accurately? Is it being done during multiple conditions? Is it unbiased?
- preconstruction monitoring of data poor fisheries
- Facilitating the integration of ongoing research or monitoring projects into a regional framework. Determine what is working, what is not, and how we can improve upon what is being done.
- Gear standardization, new gear types and sampling technique protocols

What criteria should be used to evaluate proposals?

- collection of recreational spatial effort data
- construction impacts
- Connectivity and applicability
- scientific integrity
- achievable objectives and collaboration regionally or with industry of a specific area
- technical quality
- no conflict-of-interest issues

- contribution to the regional framework
- Results likely to be broadly applicable and foundational to future work
- It has direct regional outcomes or influence
- fit w/ priorities scientific merit experience
- A designated rubric developed by ROSA for evaluation that is voted on by research advisory group, and board.
- Combination of ROSA, NMFS, and States with Academia
- scientific rigor, deep understanding of data and scaling effects
- ability to scale regionally/nationally
- Partnerships, industry engagement, and data/methodology sharing and review
- address major knowledge gaps, 2) broad applicability across projects/regions, 3) feasibility of conducing the work with a quick turnaround time (field-based studies may not be as feasible).
- they have to be scientifically solid, designers of the studies to work with user groups etc
- Must be relevant and broadly applicable.
- Standard criteria - not sure why this is being asked? Relevance to RFP, budget, deliverables, skill of team, timeline, etc.
- develop regional research plan first, coordinate review process with other funders to streamline
- Study the spatial and temporal disturbance to fish by survey activity
- stakeholder interest, scientific merit/quality and expected impact. Impact is the most important, but it depends on the other two.
- Experience of the proposal team, are there clear benefits to identified stakeholders
- Relatively short term (no more than 3 years), results could be applied throughout a region; cooperative research
- Funding leverage commercial fishing engagement
- Has this already been answered by other studies/species? Can this answer a critical question?
- The goal/objective of the work should be clearly defined. A scoring matrix can then be assembled based on expertise, value, costs, timelines, cost-sharing etc.
- engagement with the fishing industry. show evidence in grant reports of how the project integrates fishing industry input
- Focused projects that have very specific tasks and deliverables to ensure something comes out of the project. Collaborative research
- Work with states/feds/other orgs to understand their RFP selection criteria to find common themes. Understand ways to bring cooperative research with fishermen into a criteria
- Impacts
- targeted outcomes, mechanistically driven (e.g., noise, emf, vibrations)
- Utility, industry collaboration and need
- can the scope of work be accomplished in a short time period? is the proposal able to advance the ROSA priorities? does the proposed work have applicable throughout the region?

- Listen to the fisherman
- eDNA catalogue
- regional relevance
- timeline and future applicability
- cost-effectiveness. since the pool of funds is limited, prioritize projects that are able to do more with less (i.e., leveraging other funds, lower overhead)
- How quick can it be completed?
- How they build upon and/or integrate into ongoing efforts, how well they meet research priorities, how well they promote regional monitoring and standardization.
- Catalog the eDNA - supports more research
- results need to be fast
- can be scaled to the nation
- look to get matching funds from infrastructure bill

Appendix D: Synthesis of research topics related to offshore wind development along the Atlantic Coast

Common Themes	Research Topics	Source
Impacts to fishing	Novel harvest methods	NJ
	Changes to spatial or temporal distribution of fishing or revenue	MA, BOEM, RODA
	Regulatory restrictions and economic impact from shifting target species, fishing gears, and/or locations	RODA
	Model risk (impacts to) for mobile gear	NJ, NJ2, RODA
	Model socio-economic impacts to key species	NJ
	Effects on radar and navigation safety	NJ, RODA
	Impacts of new fishing areas at foundations	NJ, RODA
	Model increased vessel interactions (*particularly radio congestion) due to creation of traffic corridors and other congestion	NJ2, *RODA
	Model cumulative impact of all WEAs including economic losses, food supply, labor pool, and economic justice by port/community	NJ, MA, RODA
	Estimate catch composition change	MA
	Develop and implement methods to assess impact on recreational fisheries	NJ2, RODA
	Direct and cumulative impacts to seafood supply, cost, and markets	RODA
Impacts to fishing (cont.)	Impacts on mutual assistance and rescue	RODA

Common Themes	Research Topics	Source
	Model allision risk for number and positions of turbines, and transit lanes	RODA
	Potential benefits to fishermen, including alterative occupations	RODA
	Impacts to traditions	RODA
	Net economic impacts from loss of fishing-related revenues compared to offshore wind development	RODA
	Broad scale cost-benefit analysis of impacts to fishing and seafood production, compared to other food production methods and/or increased importation of seafood, in terms of food security, carbon footprint, and greenhouse gas emissions	RODA
	Changes to infrastructure, including displacement, fuel cost and supply, and maintenance facilities due to displacement by offshore wind development	RODA
	Changes in fuel consumption and vessel maintenance due to increased transit distance	RODA
	Changes to cost of insurance	RODA
Impacts to resource monitoring	Novel survey methods	NJ
	Adapt existing surveys and calibrate new time series	NJ2
	Effect on stock assessments and the impact of additional uncertainty	NEFMC, RODA
	Model data integration	NJ
Impacts to resource	Investigate use of turbine structures for passive monitoring	NJ, BOEM

Common Themes	Research Topics	Source
monitoring (cont.)		
Impacts to habitat/ecosystem	Improve spatial resolution of habitat distributions and characterize temporal (e.g., interannual, seasonal) variability	NEFMC, NYSOS-B
	Identify changes to key seafloor and water column habitat and features, including currents and sediment transport, (* by foundations, cable routes and attachments)	MA, BOEM, NYSOS-EC, NYSOS-B, *RODA
	Identify & evaluate valuable bottom habitats (e.g., spawning areas, nursery grounds) and model potential changes by reproductive phase and life stage	MA, NJ2, NYSOS-B
	Link physical changes to biological changes, (*particularly on mollusks, invertebrates, and finfish)	NYSOS-EC, *RODA
	Compare natural and artificial substrata in structure, diversity, and function	NYSOS-B
	Determine recovery time of seafloor disturbed by construction	NYSOS-B
	How does inter-turbine distance affect connectivity?	NYSOS-B
	How does increased grazing of epifauna affect primary productivity/nutrient cycling?	NYSOS-B
	Determine and characterize climax communities	NYSOS-B
	Effects of heat	NYSOS-B, RODA
	Temperature and other impacts due to energy removal	RODA
	Interactions with hypoxic areas and/or ocean acidification	RODA

Common Themes	Research Topics	Source
Impacts to fish populations	Monitor fish communities at artificial reefs near wind farms	NJ, MA
	Examine fish condition changes for key species (*at all life stages)	MA, *RODA
	Identify changes to spatial distribution and migration for key species, including invasives (*due to noise)	MA, NJ2, NYSOS-B, RODA, *NYSOS-FAI
	Identify and monitor key species for impact from siting, construction, operation	MA, NJ2, NYSOS-FAI, NYSOS-B
	Model cumulative impacts to fish populations/community structures considering all WEAs	NJ, NYSOS-B
	Monitor development of biological communities on the turbine and surrounding scour protection	BOEM, NYSOS-B, RODA
	Impacts from decommissioning and abandoned structures	RODA
	Mortality from construction and operations	RODA
	Effects of recruitment and populations of fish, shellfish, and community structure (predator-prey relationships)	RODA
Impacts to fish from noise, vibration, and sound pressure	Impacts to key species in all life stages	NYSOS-FAI
	Focus on behavioral response and not just hearing	NYSOS-FAI, RODA
	Review studies on surf clams and structure-oriented fish	NJ
	Conduct sensitivity studies for key species	NYSOS-FAI

Common Themes	Research Topics	Source
	Impact on fish distribution	BOEM, RODA
	Mortality and other effects during construction (*pile driving)	NJ, *RODA
	Develop field research site	NYSOS-FAI
	Examine and test noise mitigation for demersal and benthic species	NJ, NYSOS-FAI
	Monitor operational sound (*intensively over a long term)	*NYSOS-FAI, RODA
	Effects of sound pressure on shellfish	RODA
	Effects of geophysical and geotechnical surveys on invertebrates and fish	RODA
Impacts to fish from EMF	Test mitigation for summer flounder	NJ
	Evaluate impact of offshore wind development and aquaculture on behavior, migration, reproductive success, and survivorship of key species: (*Pacific coast salmon, finfish, shellfish, squid, whelk, HMS stocks, crabs)	NEFMC, *RODA
	Effect on predatory-prey interactions (e.g., locational cues)	NYSOS-B
	Effect on sessile organisms and early-life stages	NYSOS-B
	Effects at individual, population, and ecosystem levels	RODA
*Impacts from changes in light level	Effects on burial depth of infauna and demersal species	RODA, *NYSOS-EC
	Effects on pelagic species, especially vertical distribution	RODA

Common Themes	Research Topics	Source
Measure regional and cumulative impacts	Coordination among adjacent lease areas, integrate or standardize methods	SM, ROSA; NYSOS-EC; NYSOS-B
	How to best assess these impacts/develop methods and metrics (*sound-related in particular)	BOEM, NYSOS-EC, NYSOS-B, (*NYSOS-FAI)
Other	Is the impact meaningful?	NAS
	Assess existing data and identify knowledge gaps	NYSOS-FAI
	Balance laboratory and field studies	NYSOS-FAI
	Disentangle climate change effects from OSW development effects	NYSOS-B, RODA
	Where should data be housed?	NYSOS-B
	Effects of mussel buildup on structures and cleaning strategies	RODA
	Effects on harmful algal blooms	RODA

Sources (and abbreviation) for Table 1:

- NJ email on priorities from C. Brust (NJ)
- NJ 2021 R&M Priorities (NJ2)
- DMF document Management Objectives and Research Priorities for Offshore Wind and Fisheries (MA)
- BOEM Environmental Studies Program Studies Development Plan (2022-23)
- SMAST Fishermen Workshops Report and Studies Recommendations (SM) - document does not easily translate into this framework.
- NEFMC Research Priorities and Data Needs, 2021-2025 (NEFSC)

- National Academy of Sciences Proceedings of a 2018 Workshop on Atlantic Offshore Renewable Energy Development and Fisheries (NAS)
- ROSA research prioritization from commercial fishing sector caucus
- 2020 State of the Science Workgroups reports
    - Environmental Change (NYSOS-EC)
    - Fishes & Aquatic Invertebrates (NYSOS-FAI)
    - Benthos (NYSOS-B)
- RODA Research Priorities 2022 (RODA)

Also reviewed:

- Rutgers study (Ecological Monitoring and Mitigation Policies…) was consulted but not found appropriate.
- WGOWDF E-evaluation Report
- Offshore Wind in the Northeast Region (NE and MA FMC webpage)

Other possible additional sources:

- Synthesis of the Science section reports (*in progress*)
- PNNL/NREL Synthesis of Environmental Effects Research (SEER) research briefs (*in progress*)
- NY F-TWG