

# Fisheries Technical Working Group (F-TWG) Meeting Summary

Friday, September 22<sup>nd</sup>, 2023 from 10:00 am – 1:00 pm EDT

Virtual Meeting

---

## Background

As part of New York State's efforts to responsibly develop offshore wind (OSW) energy, the New York State Energy Research and Development Authority (NYSERDA) convened the Fisheries Technical Working Group (F-TWG) in 2018 to provide input to the state<sup>1</sup>. The F-TWG held a virtual meeting via video conference on September 22, 2023. This summary is intended to capture the key points of discussion and action items identified during the meeting. For topics where there were differences of opinion among F-TWG members, this summary identifies areas of agreement as well as the different perspectives offered during meeting discussions.

There were 55 F-TWG members and other stakeholders in attendance through the Zoom meeting/conference call line. Staff from NYSERDA, HDR, Tetra Tech, the Consensus Building Institute (CBI), and the Cadmus Group, were also present to provide technical, facilitation, and logistics support.

This summary is organized to align with the structure of the meeting agenda (Appendix A). Opinions are generally not attributed to specific F-TWG members. Attendees are referred to interchangeably in the summary as stakeholders, participants, or F-TWG members. This summary provides an overview of the presented information about Master Plan 2.0 and related studies as well as feedback and suggestions regarding the shared information and process.

## Welcome and Introductions

Morgan Brunbauer (NYSERDA) thanked all F-TWG participants and provided an introduction to the meeting and the Master Plan 2.0 process. The meeting is intended to provide more context about Master Plan 2.0.

Pat Field (CBI) provided an overview of ground rules for the meeting:

- Contribute – Your perspectives are important.
- Share time – There is a lot to cover and many people around the table.
- Integrate ideas and pose questions.
- Stay focused on the agenda.
- Avoid multitasking and other distractions.
- We all have our unique challenges in a virtual environment – it will take all of us being mindful to make this work.

The agenda for the meeting was to cover the OSW technical study, then other studies in the Master Plan 2.0, with a main focus on the fish and fisheries study in the Master Plan 2.0

---

<sup>1</sup>For meeting agendas, summaries, and presentations, see: [F-TWG Meeting Summaries - New York State Fisheries Technical Working Group \(nyftwg.com\)](https://nyftwg.com)

Morgan Brunbauer (NYSERDA) gave an overview of Master Plan 2.0 and of OSW development efforts to date, beginning with a review of OSW goals and the process for leasing OSW areas. East coast goals for OSW are large, exceeding 50,000 megawatts (MW), and total federal goals are 110,000 MW by 2050. The Bureau of Ocean Energy Management (BOEM) is the entity that defines OSW lease areas. There are currently federal lease areas off New York coasts. Lease holders have exclusive rights to develop sites for OSW. It is important to note that leases include opportunities to site cables in areas outside of the lease area. Finally, leases are valid for 25 years of operation. In July 2019, New York State (NYS) signed into law the Climate Leadership and Community Protection Act (Climate Act). The more recent goal from the Climate Act is 9 gigawatts (GW) by 2035. The Climate Action Council (CAC), created by the Climate Act, concluded that in order to meet NYS electrification goals mandated by the Climate Act, more areas of OSW (producing 16-18 GW) will likely need to be developed.

Master Plan 2.0 follows previous OSW development efforts, including NYS's Master Plan 1.0, produced in 2018. Master Plan 1.0 was intended as a comprehensive roadmap for advancing development of OSW in a cost-effective and responsible manner.

The key elements of Master Plan 1.0 were to:

- Identify the most favorable areas for potential offshore wind energy development.
- Describe the economic and environmental benefits of offshore wind energy development.
- Address mechanisms to procure offshore wind energy at the lowest ratepayer cost.
- Analyze costs and cost-reduction pathways.
- Recommend measures to mitigate potential impacts of offshore wind energy developments.
- Identify infrastructure requirements and assesses existing facilities.
- Identify workforce opportunities.

Master Plan 1.0 looked at near shore space out to the 60-meter contour, which was the technical limit of OSW at the time. It established the technical working groups (TWGs) and was the beginning of the stakeholder engagement focus of NYS OSW conversations. There is currently a need to create a baseline understanding of the further offshore space as BOEM continues to move ahead with their process for leasing development areas. The intention of Master Plan 2.0 is to add value to the OSW development process through building an understanding of highly sensitive areas that are not suitable for OSW development. Master Plan 2.0 will also seek to understand what areas need further analysis, what data gaps exist in these spaces, and other areas of uncertainty or contention that warrant further exploration. It is important to note that just because an area identified by Master Plan 2.0 doesn't get taken off the map, it does not mean that NYS is saying it is prime for OSW development, but rather that the area needs more exploration.

Master Plan 2.0 objectives are to:

- Serve as organizing principle for all OSW, ensuring the process is robust and transparent.
- Stakeholder engagement.
- Characterize risks and opportunities.

Master Plan 2.0 geographic scope's is the area of analysis (AoA). The AoA extends east from the 60-meter contour, past continental shelf break to the edge of the 3,000-meter contour. It is divided into 3 zones:

- Zone 1: Extends from the 60-meter contour to the continental shelf break.
- Zone 2: Spans the steeply sloped continental shelf break (unique canyon habitats).
- Zone 3: Extends from the continental shelf break out to the 3,000-meter contour.

Master Plan 2.0 is trying to determine what data is available for these zones, what different uses of the zone are, what gear is used in different fisheries in the AoA, where data gaps exist, and other factors that will help inform analyses of OSW suitability.

Master Plan 2.0 is comprised of a series of Track 1 Studies, including:

- Birds and Bats
- Fish and Fisheries
- Marine Mammals and Sea Turtles
- Benthic Habitats
- Environmental Sensitivity Analysis
- Maritime Assessment: Commercial and Recreational Uses
- Offshore Wind Resource Assessment
- Deep Water Wind Technologies: Technical Concepts
- Technology Assessment and Cost Considerations

The main goals of the environmental studies are to: understand the marine resources in AoA, understand and update knowledge of stressors, review novel stressors from OSW, find data gaps, understand mitigation guidance, and ultimately ID areas for further research to better understand the AoA.

Morgan Brunbauer (NSYERDA) went on to describe the Master Plan 2.0 timeline for 2023:

- April – August: Conducted literature reviews, data gathering, PAC meetings, and TWG environmental and fisheries reviews.
- September: Draft study discussions, review and incorporate feedback. The Environmental Technical Working Group (E-TWG) meeting occurred on 9/11, the F-TWG meeting was on 9/22/23.
- October: Finalize studies by 10/31/23 for internal NYSERDA review. Begin to draft the Areas for Consideration Report.
- November – December: Finalize the Areas for Consideration. Finalize Master Plan 2.0 supporting studies for 2024 (cumulative impacts study, ideas for other studies welcomed).

The overall goal of the timeline is to make a final recommendation to BOEM by early 2024 based on the Master Plan 2.0 process (consideration of studies, input from regional states and stakeholders, and concurrence from State agencies). The recommendation is intended to identify where there are gaps in data, future needs, and what the study findings show and do not show, with the goal of adding value to BOEM process. It is intended to help start conversations about OSW development suitability in the AoA

as early as possible, knowing that these areas need further analysis and further engagement with stakeholders ahead of any future discussions of development.

## Discussion

Patrick Field (CBI) raised a point from previous F-TWG sponsored Office Hours: What gives New York State (NYS) the authority to do these studies in federal waters?

Morgan Brunbauer (NYSERDA) stressed that Master Plan 2.0 is a planning effort and is not intended to usurp federal authority. The process will not create lease areas but will seek to take a holistic look at what data is available, what data is not available, and try to understand what potential areas for development have highest risk. This is a slight departure from the Master Plan 1.0 process, which looked at areas with lowest risk and highest suitability. Master Plan 2.0 aims to create a foundation of understanding and go from there.

Patrick Field (CBI) asked the participants if they have any questions about the overview of Master Plan 2.0 and the history of OSW planning and development activities.

A stakeholder asked if the slides will be available and went on to discuss the OSW goals. How many square miles are predicted to be required to fulfill the OSW goals? The upper ranges of turbines we are looking at now are 15-20 MW turbines, so assuming 15 MW turbines, what is the area that would be under consideration?

Morgan Brunbauer (NYSERDA) responded that the slides will be available after the meeting and went on to address the question about total area. The east coast 50,000 MW goal assuming 15 MW output turbines, would require approximately 3,334 turbines. NYSEERDA thinks that based on current uptake and current goals, there is probably enough space within current lease areas to meet this demand. Meeting the carbon reduction goals included in the Climate Act may necessitate more area be developed for OSW. NYSEERDA does not know what the overall area will be, but this process is trying to build an understanding of potential areas before these development conversations are had. For context, Master Plan 1.0's original area considered was approximately 12,000 square miles, and BOEMs lease areas are within that and are significantly less than the total area considered.

The stakeholder expressed that it would be useful before anything is discussed going forward, to get a realistic idea of how many square miles will be needed. Looking at development initiatives incrementally is not helpful for fisheries. There are only so many open miles of ocean that can be fished as it currently stands, and quantifying the area needed for OSW development up front is very important to understand the degree of potential impact to fisheries.

Morgan Brunbauer (NYSERDA) thanked the participant for this feedback. The east coast states need to communicate about their OSW goals and potential total areas that could be developed with each other and get this information out to stakeholders. It is important to note however, that Master Plan 2.0 is a large area study that is specifically a resource analysis, intended to build knowledge of the AoA, and it will not decide development areas.

A participant asked if Master Plan 2.0 includes an analysis of the transmission side of OSW development as well. Given the cap for facilities bringing power onshore, there would have to be significant number of facilities to bring this energy onshore. Is this something considered in Master Plan 2.0?

Morgan Brunbauer (NYSERDA) responded that Master Plan 2.0 covers transmission. This information can be provided once these studies are concluded.

## Technical Concepts Study

Brian Dresser (Tetra Tech), a technical lead supporting NYSERDA and Master Plan 2.0 efforts, provided an overview of the Technical Concepts Study. The goal of the study is to provide an overview of available technology and environmental issues related to wind development in waters exceeding depths of 60-meter. The study was primarily concerned with floating wind, but next-gen fixed bottom foundations were also investigated. The study specifically addressed a variety of project technical specifications:

- Turbine types
- Anchoring mechanisms
- Mooring designs
- Export and inter-array cables
- Offshore substations

The Technical Concepts Study drew on several case studies:

- Seagreen Scotland – The world’s deepest (59 m [194 ft]) fixed-bottom foundation offshore wind farm (operational since April 2023)
- Hywind Scotland (operational since 2017)
- Kincardine Scotland (operational since 2021)

The study identified potential environmental, and fisheries impacts and mitigation. The study explored broad environmental factors, benthic constraints, and differing degrees of risks to fisheries and gear. It also identified concerns about oceanographic processes and relating to larval transport. A notable takeaway of the report is that anchor type is the determining factor in the other technical specifications, such as mooring design. Anchor type, in turn, is dependent on sediment/ocean bottom type (mud, clay, sand etc.).

Future considerations and potential next steps for Technical Concepts Study include:

- Pilot studies on next-gen fixed OSW technology.
- Exploring the potential for shared anchor, mooring, and platform designs to minimize project footprints.
- Looking at design options that specifically minimize impacts on fisheries.
- Looking at impacts of infrastructure on oceanographic processes like upwelling, especially in underwater canyons.
- Exploring any F-TWG recommendations for future considerations.

This study will be finalized this fall along with the other site assessment studies, and there will be another F-TWG meeting to go over the results, given how important it is for fisheries.

## Environmental Studies

Kate Estler (HDR) provided an overview of the Master Plan 2.0 environmental studies. The goals and objectives of these studies are to compile and synthesize the best publicly available data for four key resource groups within the AoA:

- Marine mammals and sea turtles
- Birds and bats
- Fish and fisheries
- Benthic habitat

The studies:

- Review and summarize existing literature on the potential stressors associated of each phase of deep water OSW on each resource.
- Provide existing guidance for avoiding, minimizing and mitigating impacts to each resource from deep water OSW.
- Discuss gaps in data and identify opportunities for future studies that may improve the understanding of each resource.

The studies incorporated stakeholder and state agency engagement. The stakeholders involved in this process include:

- Environmental Technical Working Group (E-TWG)
- Fisheries Technical Working Group (F-TWG)
- Project Advisory Committees (PAC)
- Bureau of Ocean Energy Management (BOEM)
- Offshore Wind (OSW)

HDR has been compiling comments from 15+ stakeholder groups and trying to incorporate as many of these as possible/appropriate into the studies. Some of these comments will inform future MP studies, or other processes. Note, some slides presented today reflect older information that does not have integrated feedback, this will change in the final versions of the studies.

## Marine Mammal and Sea Turtle Study

Dr. Kristen Ampela (HDR) provided an overview of the Marine Mammal and Sea Turtle Study. This study assigned marine mammals and sea turtles to 11 receptor groups based on sensitivities to specific stressors with input from the PAC. The operationalization of risk is based on a variety of different factors (i.e., hearing range, depths the species occur at, etc.). There is intentional redundancy between the receptor groups, one species could fit into several groups based on sensitivities to different stressors.

The study made use a variety of datasets, including:

- Marine Mammals
  - Habitat-based Marine Mammal Density Models for the U.S. Atlantic (Roberts et al. 2023)
  - NYSERDA OPA Aerial Surveys (Normandeau Associates Inc. and APEM Ltd. 2021)
  - WCS Vessel Surveys for Baleen Whales in the New York Bight (King et al. 2021)

- Mid-Atlantic Marine Mammal Tagging Studies (Baird et al. 2015, 2016, 2017, 2018, 2019, Foley et al. 2021; Engelhaupt et al. 2022, Ampela et al. 2023)
- Sea Turtles
  - East Coast Turtle Density Models (Sparks and DiMatteo 2023)

The study also conducted a literature review that focused on information about fixed and floating OSW that has become available since Master Plan 1.0. The study was particularly interested in exploring deep water areas off the continental slope and further east. Appendix A of the study has details on what datasets were used to build the models.

Some key takeaways from the Marine Mammal and Sea Turtle Study include:

- The continental slope is incredibly important.
- North Atlantic right whales show heavy use of the continental shelf between Nantucket and Oceanographer Canyon.
- Sea turtles are most common in shelf waters in the southwestern portion of Zone 1.
- Leatherback turtles are shown to have high densities in different zones depending on time of year. Higher density in Zone 3 in the spring.

The study did also identify several areas of data gaps.

Data gaps for marine mammals:

- Sighting records used for density estimation may be limited due to cryptic surface behavior or lack of ID to species (e.g., seals and pilot whales).
- Little is known about hearing sensitivity of baleen whales and their reactions to pile driving.

Data gaps for turtles:

- There is limited information on the distribution and habitat use of different sea turtle age classes, such as post-hatchling versus non-hatchling sea turtles, although this is more complete data than what was available in the past.

Data gaps for stressors:

- It is unclear what impacts in-water structures will have on ocean mixing, stratification, and primary productivity.
- It is unclear what the level of operational noise from the large, 12+ MW turbines currently planned for U.S. OSW will be.
- There is uncertainty about electromagnetic fields and the potential impacts (e.g., from undersea power cables).

The study identified several future considerations and key takeaways. One important thing to note is that species distributions are shifting, and this emphasizes that visual surveys and tagging should continue to be conducted to keep pace of changes. It is also important to further explore the essential continental shelf break area, which is important for marine mammals in particular. Finally, there are underexplored risks regarding sea debris that could become involved with OSW developments, increasing entanglement risks.

The Marine Mammals and Sea Turtle Study has sought to incorporate comments and feedbacks received from stakeholders including:

- Utilize additional references.
- Better characterize existing ambient noise in New York Bight (NYB) to put noise from OSW development (particularly low frequency [LF] noise) into context.
- Better explain uncertainty associated with marine mammal density models.
- Include more thorough discussion of operational noise levels, and to what extent these can be inferred from European OSW farms.

## Discussion

A stakeholder raised again the usefulness of having the expected total square mile scope of these developments. Whatever that total area is should be understood and analyzed alongside the spatial mapping of these animal populations, showing what percentage of their habitat is expected to be impacted.

Patrick Field (CBI) asked if the Cumulative Impacts Study will address the stakeholder's concerns about uncertainty regarding the total area that could be needed for development?

Morgan Brunbauer (NYSERDA) responded that the scope of the Cumulative Impacts Study is still being determined. Any feedback on what should be included is appreciated.

## Birds and Bats Study

Dr. Wing Goodale is a Senior Science Director at the Biodiversity Research Institute and provided an overview of the Birds and Bats study. The study looked at 4 bat species, including cave hibernating & migratory tree bats (tree bats migrate offshore), and 63 bird species. The study paid particular attention to protected species. The analysis focused on a spatial risk assessment and made use of boat-based and aerial survey data, including passive acoustics (to measure bat data), and tagging data. The study sought to actively identify data gaps by species.

The study included exposure and vulnerability assessments. Exposure is defined as the likelihood of occurrence by species in different areas of the AoA. Exposure data was integrated with vulnerability data, which tended to be behavioral vulnerability that was linked to collisions within the AoA. The study mostly used Marine-life Data and Analysis Team (MDAT) models for the exposure and vulnerability assessments, but also drew on tagging data.

The end results of the study include a spatial risk assessment for each species and species group that show varying exposure, vulnerability, and population vulnerability. When looking at this data in this way there are 2 main takeaways:

- There are higher risk areas on shelf edge break and in northeast of AoA.
- There are significant data gaps in Zone 3.

Future considerations for this line of research include assessing the potential benefits of:

- Incorporating updated MDAT models. Current models include data up to ~2016, there are new models with more up to date data.
- Increasing coverage of tracking data in AoA.



- Increasing survey coverage in AoA.
- Supporting research on continental shelf break.
- Developing integrated model of survey, track data.
- Improving colony data, including foraging range analyses.
- Testing and verifying mitigation measures offshore.
- Improving information on seabird colony data.

The main comment themes received to date from industry, ENGOs, and other stakeholders incorporated into the study include:

- Noise from floating is less than pile driving for fixed construction.
- Additional pelagic species in the region lack documentation and should be explored.
- Changes in prey quantity/quality as a stressor due to bottom disturbance and new structures should be explored more.

## Benthic Habitats Study

Dr. Andrew Davies (University of Rhode Island) presented an overview of the Benthic Habitats study. The Benthic Habitats Study is a new addition to the Master Planning process, it was not a part of Master Plan 1.0. This is because as we move deeper offshore, there is a greater need to consider the benthic habitat. The study defined three biological receptor groups: deep-sea corals, sponges, and sea pens, and 1 physical receptor group: hard substrate. The study explored multiple datasets that were available within the AoA.

For biological data it made use of:

- Occurrence records for the distribution of the receptor groups. This data was from publicly available databases including the National Oceanic and Atmospheric Administration (NOAA) Deep-sea Coral Data Portal and the Ocean Biodiversity Information System. This data shows where species occurrences have been found but is not necessarily the best representation of species distributions due to incomplete effort data in much of the AoA for these receptors.
- Species distribution models for the receptor groups were obtained from peer-reviewed regional model outputs developed by NOAA for the United States continental shelf area (Kinlan et al., 2020). Which the study used to statistically extrapolate potential species distributions from known occurrences and the calculation of species niches, providing an estimation of potential distribution patterns in areas that have not yet been sampled.
- A literature review determined the potential impacts from anthropogenic activities that may occur during OSW development.

The study made use of the following for physical habitat data:

- Geophysical:
  - Bathymetry (compiled by TNC 2010, updated 2020)
  - Backscatter (limited coverage, USGS; Butman et al. 2017)
- Geomorphology:
  - TNC (The Nature Conservancy) updated seabed topographic forms (TNC 2010, updated 2020)

- Derived from bathymetry and backscatter (limited coverage, USGS; Butman et al. 2017)
- Sediment types:
  - TNC interpolated soft sediment type (TNC 2010, updated 2020)
  - Modeled hard bottom likelihood (limited coverage, Battista 2019)

The study had the following key takeaways:

- Zone 1 doesn't contain as many observations of selected receptors.
- Zone 2 contains most observations of all receptors and has the greatest species richness.
- Zone 3 is the least studied region of AoA.
- Species distribution models largely supported observed distribution patterns from occurrence records, showing Zone 2 as the most populated area of the AoA.
- Prominent differences in the overall depth and large-scale bathymetric features of the seafloor are evident in regional bathymetric data.
- There is nearly complete bathymetric coverage for the AoA.
- TNC's 2020 geomorphology dataset that covered the AoA showed Zone 1 to be primarily a low flat, consistent with its position on the continental shelf.
- Geomorphology present in regular patterns highlighted several canyons along the shelf break in Zone 2, with those patterns continuing to the edge of Zone 3.
- TNC's (2020) dataset showed the outer continental shelf is primarily sandy with patchy distributions of gravel and mud in some locations.
- The continental slope marks a transition from predominant sand to predominant mud, and offshore of the slope, muds dominant the deep abyssal plain.
- Patchy areas of gravel are generally associated with the Hudson Canyon and Hudson Shelf Valley and areas with higher rugosity, particularly along the continental slope.
- Hard bottom habitat is found largely in Zone 2, where canyons incise the slope. However, areas of hard bottom can be difficult to detect in regional analyses.
- Comprehensive and high-resolution data on seafloor structure and composition is incredibly important to proper siting for offshore energy development and protection of biological resources and ecosystem services.

The study identified the following knowledge and data gaps:

- Understanding of biological process lessens further offshore.
- There is incomplete understanding of species distribution in AoA.
- There is incomplete understanding of taxonomic information for many deep-sea species, and we do not understand genetic connectivity patterns for most species and regions.
- There is poor understanding of species responses to natural environmental variability and anthropogenic change.
- While regional scale bathymetric information exists, higher resolution products (including derived backscatter metrics) are generally lacking from public access.
- Standardized terminology is lacking for geomorphological characterization.
- Sediment and seabed form data are available but lack high precision. Quantitative hard bottom likelihood data are limited to only a portion of the AoA.

Future considerations for the Benthic Habitats study include exploring the potential benefits of:

- Improving understanding of the distribution of benthic species and physical habitat within the AoA, particularly for Zones 1 and 3, and developing finer scale habitat maps for Zone 2.
- Establishing environmental and ecological baselines for benthic receptor groups in areas where activities may be conducted. Particularly in Zone 2 where the highest abundances of receptors are found.
- Exploring experimental assessment of the response of benthic receptors at different life stages. Particularly addressing little known impacts such as sound, changes in water quality, atmospheric and current dynamics, and EMF.
- Exploring the implications of changing climate on cumulative impacts from OSW energy development, if any.
- Conducting sustained monitoring to establish ongoing ecosystem impacts, if any.

## Fisheries Stakeholder Engagement

Brian Dresser (Tetra Tech) provided an overview of the fisheries stakeholder engagement efforts of the past several months. Over the summer, there were a series of F-TWG sponsored Office Hour meetings. The goal of these meetings was to explore specific concerns of fishermen that operate within the AoA and build on what has heard from other engagement efforts.

During the previous F-TWG meeting in April, these Office Hour meetings were agreed upon as an effective way forward during the summer months, rather than having formal F-TWG meetings. The Office Hours had a more informal setting where participants were able to join at any time during the 2-hour sessions, provide feedback and comments, and ask questions. Many of the F-TWG members participating into today's meeting were present for one or more of the Office Hours.

As part of the Office Hours, Tetra Tech compiled a comment synthesis that looked at previous comments and input from other OSW development processes, using input from a variety of areas including the Central Atlantic, Gulf of Maine, and the Pacific. It was expected that similar technology employed in these different areas would generate similar concerns about potential impacts from stakeholders.

Common identified themes in the comments related to:

- Fishery exclusion
- Upwelling impacts
- Navigational safety
- Transit
- Radar impacts
- A variety of other concerns

These common comments informed round table discussions about specific concerns in which participants weighed in on the comment categories, identified missing topics, and discussed potential prioritization of concerns.

There was a considerable amount of feedback from the stakeholders during the Office Hour meetings. This feedback is being developed into a memo that will supplement the Fish and Fisheries study. The input has already been provided to the HDR team and is actively being integrated into the studies.

Examples of key Office Hour feedback included:

- All identified comment categories are important.
- Other studies and reports should be utilized to build more complete understandings of the AoA.
- The focus should be on cumulative impacts.
- Oceanographic processes are incredibly important, and understanding the impacts of OSW development on them will be necessary.
- There are significant scallop populations in Zone 1 and populations of red crab in Zones 2 and 3.
- Highly migratory species are concern across the AoA.
- Clear understandings of the technical components and overall footprint of OSW developments are important to assess potential impacts on fisheries.
- The three-dimensional footprint of floating OSW will have significant impacts on fisheries and will exclude certain fisheries more so than fixed bottom due to the presence of components suspended in the water column.
- Siting deep water OSW as closely together as possible makes the most sense, in order to minimize the overall footprint.

## Fish and Fisheries Study

Dr. Dave Davis (HDR) provided an overview of the Fish and Fisheries study. The study looked at the following receptor groups:

- Habitat
- Fish species
- Commercial and recreational fisheries

The study made use of a variety of datasets for each receptor group and reviewed relevant literature and reports. Datasets were confirmed through PAC input and included bottom trawl data, dredge surveys, essential fish habitat (EFH) mapping and more. Habitat Mapping Camera (HABCAM) data has been requested but isn't integrated into the report yet. A full list of datasets and how they were applied in the study can be found in Appendix A of the report.

The study identified the following habitat features:

- There are 63 species with EFH in the AoA.
- There are 39 with EFH for every life stage in the AoA.
- There is a juvenile Atlantic cod habitat area of particular concern (HAPC) in the AoA.
- There are HAPCs in the underwater canyons in the AoA.
- There is a HAPC for tilefish in Veatch Canyon.

The study identified the following species takeaways:

There were 190 species identified. The most abundant species in Zones 1 and 2 were found to be:

- Longfin squid
- Butterfish
- Sea scallop
- Spiny dogfish

- Haddock

Zone 3 was found to be generally data sparse. The most abundant species in Zone 3 were found to be:

- Monkfish
- Longfin squid
- Butterfish
- Hake species
- Summer flounder
- American lobster

The study focused on listed threatened & endangered species, including Atlantic sturgeon, giant manta, and oceanic whitetip shark. There was also a focus on NOAA trust resources & species of concern including highly migratory species (HMS), diadromous species, and forage and shellfish species.

For commercial and recreational fisheries data, the study found 17 fishery management plans (FMPs) in AoA that facilitated mapping of prime recreational fishing locations, NOAA fishery observer data, fishing vessel hauls, and integrated USGC automatic identified system (AIS), NOAA vessel monitoring system (VMS) tracking data, and fishing industry revenue data.

The study had two main conclusions:

- EFH are widely distributed in Zone 1 and most of Zone 2.
- Most HMS EFH occurs along shelf break and seaward in Zones 2 and 3.

The Fish and Fisheries study identified the following knowledge uncertainties & data gaps:

- Uncertainties around what future fisheries surveys will show given climate change and other changes.
- Spatial data is limited in Zone 2 and 3 for some species (i.e., highly migratory species).
- Recent research prioritization is expected to enhance knowledge of potential impacts to fisheries, but this is a current area of uncertainty.
- There are uncertainties around hydrodynamic and Oceanographic Changes.
- There are still significant uncertainties about the characteristics and potential impacts of deep water floating wind technology.
- Overall impacts of climate change and how they will relate to the OSW development process requires further exploration.

The Fish and Fisheries study identified the following future considerations and potential next steps:

- Build off ongoing fishing industry feedback (i.e., office hours) during OSW planning and siting to mitigate impacts to historical fishing and sampling locations.
- Conduct preliminary and baseline studies of habitat, species, and fisheries.
- Establish research prioritization (i.e., assessing impacts to larval fish, habitat conversion, and EMF).
- Continue biological monitoring to assess impacts as deep water OSW technology develops.

- Address feedback that specifically raised concerns about data gaps, including sampling gear limitations; survey sampling locations vs. industry fishing locations; limitations of data provided with confidentiality protections.
- Have more discussions around sampling gear limitations; survey sampling locations vs. industry fishing locations; and limitations of data provided with confidentiality protections.
- Incorporate more datasets requested during Office Hour feedback (i.e., Automatic Identification System (AIS), Vessel Monitoring System (VMS), and Sea Scallop Dredge/Habitat Camera (HABCAM) data).

## Discussion

A participant asked if the rotational scallop areas are included in the mapping part of the study? Were they included as a particular area of concern? These areas in Zone 2 matter a great deal to the scallop industry and are already mapped. There would be benefits to overlaying these mapped areas on top of the mapping products of the Fish and Fisheries study.

Dave Davis (HDR) responded that this feedback is appreciated and will be considered in the report.

A participant added in chat: “We have some updated species distribution models that we are used to revise EFH - developed for the Northeast Regional Habitat Assessment - those may be useful to you. Some information is here but we have more recent model runs offline:”

<https://nrha.shinyapps.io/dataexplorer/#!/>

A stakeholder shared that during the Office Hours there were concerns raised about using just trawl data for measuring abundance of shellfish. Has this been addressed?

Dave Davis (HDR) responded that we have incorporated dredge survey data for scallops.

A participant asked about the dark-red circles on the fish abundance maps that appear to show really refined spots of high abundance. Has there been any work done to try to understand why the data is appearing like this? Is this the result of the influence of a particular dataset or specifically high-catch (outlier) survey tows?

Dave Davis (HDR) responded that the maps present a weighted average, but these identified data distributions could be influenced by individual trawls. The study looked at a 10-year data period, so there is a hope that this longer-term timescale would mitigate the potential that any one trawl could influence the dataset to a large degree. HDR can look at the data to see if an explanation for these data can be identified.

The participant expressed concerns that the weights per unit of effort for scallops presented on the map seem off, and asked if this was the total weight of the animal including the shell?

Dave Davis (HDR) responded that it is likely total weight of sea scallops in the dredge, including shells, but HDR can confirm this.

A stakeholder asked if each point on the presented maps represent a different trip? Are these individual vessel positions, or are they masked for confidentiality?

Dave Davis (HDR) said that this data is intended to be masked for confidentiality using the Rule of 3. Each point represents 3 or more boats – will confirm that is the case for the data presented in the report.

A participant asked if they have included Virginia Institute of Marine Science data? This was one of data sets raised during Office Hours and is important to include.

HDR responded that they have reached out for this data and hopes to include it in the final report.

Morgan Brunbauer (NYSERDA) reiterated that there are several limitations in many of the datasets and encouraged participants to identify limitations and additional datasets. The Master Plan 2.0 process aims to identify data gaps as accurately as possible.

A participant reiterated that when looking at fisheries uncertainty, something that will be important is total area required to reach OSW or Climate Act goals. As OSW energy goals continue to increase, so does the cumulative space occupancy of the ocean by leases, potentially displacing fisheries. Additionally, the profit margin for commercial fishing vessels is very small so even impacting 5% of a fishery (for example) might effectively wipe out the fishery given the small profit margin. A piecemeal approach of looking at the AoA does not work for fishery interests. When fisheries are excluded from a particular area it may wipe out the profit margin completely.

Another participant agreed with the total area comment and expanded on the point. An earlier slide referenced compensatory mitigation -- If the solution is to pay the fishing industry to not fish, the industry will disappear. This will decrease the values of permits. The next generation will have no incentive to continue the industry if this is the case. Compensatory mitigation should not be viewed as the only way to mitigate, if it is then the industry will disappear. The priority should be avoidance.

Morgan Brunbauer (NYSERDA) responded that this feedback is appreciated. Definitive decisions are far off, and compensatory mitigation is just one option for mitigation. NYS's stance is to work through the mitigation hierarchy, which focuses on avoidance. NYSEERDA is aware of the compensation conversation, and this can be explored in more detail at a different time. It is important to understand what the Master Plan 2.0 data is showing for all these fisheries in order to establish best practices for avoidance. BOEM will go through similar processes and Master Plan 2.0 is trying to jumpstart these conversations by identifying what are the data showing and what gaps exist. As BOEM works through their process, this information will inform avoidance decisions.

Participants expressed concern that the results from Master Plan 1.0 that were not favorable to fishery interests will be repeated. During this process, many of the avoidance mitigation efforts were found by developers to be too expensive to implement, and they were not. Their experience with NYSEERDA has not given them much faith. During the Empire Wind leasing process fishing interests showed significant fishing activities in the lease area, with significant support from NOAA and other stakeholders. The lease area was still finalized despite these data-driven concerns.

Morgan Brunbauer (NYSERDA) responded that this feedback is appreciated.

## Environmental Sensitivity Analysis

Francisco Brilhante (HDR) provided an overview of the Environmental Sensitivity Analysis. The study reviewed stressors, risk weighting, and overall methodology in Master Plan 1.0 and other relevant risk

assessment models. It developed a model to incorporate the temporal and spatial risks identified in the individual studies on the marine resources from potential stressors and the level of risk associated with the stressors on a particular receptor during each phase of OSW development. Finally, it provided geographic depictions of relative high and low areas of potential conflict for OSW development and associated stressors.

The study made use of a literature review, referring to Master Plan 1.0, other OSW development research, as well as academic literature. Many of these studies had similar spatial multi-criteria decision analysis frameworks and similar workflows.

The study established an overall conceptual framework and worked to define areas of risk or suitability through the evaluation of input data. This data was then rescaled, weighted, and combined to create an overall understanding of risk and suitability of OSW development in the AoA. Research was divided in 5 organizational levels:

- Overall Sensitivity
  - The relative environmental sensitivity on a common scale (e.g., 0 to 1 or High/Med/Low)
- Resources
  - The four primary marine resource groups.
- Receptors
  - An individual or group of like individuals that could be stressed by OSW development.
- Stressors
  - For any receptor, the possible stressors that could impact it.
- Phase
  - The relative prevalence of each stressor during each phase of OSW development.

The study made use of a variety of datasets, identified by individual study leads and subject matter experts (SMEs). The study does not necessarily include all data evaluated and reviewed in the spatial analysis.

The study used the BOEM lease blocks (6 km on a side, 36 km squared) to divide the AoA. It rescaled receptor data sets to a common “sensitivity” scale, then weighted the data. It is important to note that weighting is often a difficult or challenging part of research, as weights are inherently subjective.

To determine appropriate weighting, an analytic hierarchy process for determining weights was used:

- Expert elicitation was used.
- SME questionnaires were used to make pairwise comparisons.
- This was informed by operations research / decision theory.

Note, the weights presented on the weighting methodology slide are example numbers and are not the results of the Environmental Sensitivity Analysis.

After rescaling data, mapping this data to BOEM blocks, and computing weights, the study creates weighted sum overlay for each lease block in the AoA, providing a general overview of risk and suitability of OSW in the AoA.



The Environmental Sensitivity Analysis identifies data gaps and defines and quantifies uncertainty based on two components.

- Percent completeness of data.
- Confidence of data accuracy. This is a more nuanced concept, representing the degree to which data accurately reflects the receptor.
  - This requires significant expertise.
  - There is higher confidence in Zones 1 and 2 due to more data.

The key takeaway results of the study include:

- Zones 1 and 2 have the greatest risk for marine mammals and sea turtles.
- The data is sparse in Zone 3.
- Marine mammals and sea turtles have the highest risk during the construction phase.
- There are overall sensitivity data gaps for birds and bats, but the most sensitivity occurs in the border of Zones 1 and 2 at the continental slope.
- Birds and bats have the highest risk during the post-construction phase.
- There are data gaps in Zone 3 for fish and fisheries.
- Zone 1 has the most coverage for fish and fisheries.
- Zone 1 has moderate risk for fish and fisheries around the continental shelf and extending into Hudson Canyon.
- Highest impact for fish and fisheries was shown to occur during the construction and decommission phases.
- There is moderate risk to benthic habitats in Zone 2.
- There are areas of higher benthic habitat risk near canyon edges and shelf breaks.
- Benthic data in Zone 3 is sparse, with less than 50% overall coverage.

## Discussion

A stakeholder asked whether this includes Vessel Monitoring System (VMS) data? if so, the grid scale is so small you will get lots of zeros.

Kate Estler (HDR) responded that it does not include VMS data right now. VMS data will be included in final version.

The stakeholder explained that VMS pulling rate is 1 pull per hour, so even at the slowest towing rate of 4 knots, there maybe would be 1 pull in a grid square. You could get around this by making bigger grids or overlay with heat maps. We cannot share single point data that is not anonymized using the Rule of 3.

Another stakeholder agreed with the other participant, highlighting that single point data does not show mobile activity.

Kate Estler (HDR) responded that HDR will circle back with VMS data to make sure it is being anonymized correctly using the Rule of 3.

A stakeholder asked what assumptions are being made about operation in the post-construction phase, especially for mobile gear fisheries.

Dave Davis (HDR) responded that post construction assumptions were that fisheries can continue to operate.

The stakeholder expressed exasperation and serious concerns that the inputs from the fishing industry aren't being adequately integrated into this ongoing work. During Office Hours it was repeatedly discussed that floating OSW will effectively preclude a large amount of fishing activity in the development areas due to inter-array cables suspended in the water column. Why do the assumptions made in this study not account for this for the post-construction phase?

A participant agreed with the other stakeholder. Inter-array cables suspended in the water column are exclusionary for mobile gear, period. There is considerable data from European OSW developments that show this. At some point NYSERDA needs to acknowledge complete fisheries exclusions.

Patrick Field (CBI) stressed that this is important feedback that should be taken back and considered. Understanding what assumptions are going into these models will be absolutely essential to address.

Morgan Brunbauer (NYSERDA) agreed completely. We have to look at and check the accuracy of the assumptions made about the post-construction impacts on fisheries here. While fishing activities will not be restricted by United States Coast Guard or developers, the feasibility of fishing activities in a floating offshore wind array may be highly limited. The technology, location of wind arrays and layout, and overall area are very important concepts that will drive fishing feasibility across the AoA and more conversations need to had to flush out these topical areas.

A stakeholder asked about the details of the weightings. Do fish and fisheries have different weights, is there a combined overall weight for the resources?

HDR responded that fish and fisheries have equal weight. There is not a combined weight for all the resources. Weighting was informed by SME elicitation, including study authors, and was informed through literature consultation and PAC input.

Another participant asked if the weighting across all resources isn't done as part of this study, is it known if BOEM will do this and decide the weighting?

Patrick Field (CBI) responded that BOEM uses a different suitability model and assigns weights in its model across resources/issues.

A stakeholder appreciated that the resources have been weighted separately in the Environmental Sensitivity Analysis. In the past, BOEM has aggregated fisheries with other resources, effectively obscuring the impacts on fisheries.

A stakeholder stressed that for the weighting process, it is important to define what's going to result from a decision to not put a windfarm in this spot, in order to focus on avoidance. Say the impact on fisheries for a certain spot is very high, but is lower than it for marine mammals, will one or the other be prioritized?

## Conclusions and Next Steps

Patrick Field (CBI) provided a final overview of key takeaways from the meeting:

- There are concerns and uncertainty about how VMS data is being used in the studies, there needs to be confirmation that data is being anonymized using the Rule of 3.
- Weighting is incredibly important, especially across resources, and the ways weights were defined should be clearly presented.
- There are serious concerns about post-construction for floating OSW and the impacts on fisheries, especially mobile gear fisheries, due to the presence of inter-array cables, this should be reflected in the assumptions made in the studies.
- Understanding what the overall area needed to meet OSW and Climate Act goals is important for understanding potential levels of impact, a piecemeal approach is significantly less useful.
- It is important to remember that some models are useful, but all models are wrong, we need to focus on making these models as useful as possible.

Morgan Brunbauer (NYSERDA) provided final thoughts and a review of next steps. It is clear after today's meeting that there are parts of the Master Plan 2.0 studies that need to be more contextualized, or completely revisited (such as assumptions about post-construction impacts on mobile gear fisheries). We need to be making the most accurate assumptions we can, and we would like to thank all participants who raised these important concerns during the meeting. NYSERDA, Tetra Tech, and HDR will take this feedback into account to make a more accurate reflection of F-TWG concerns. HDR is in the process of taking and integrating comments, the reports will be finalized by the end of October, then subject to a process of internal review, and will be released publicly by the end of the year.

## Appendix A: Meeting Agenda

### **New York State Fisheries Technical Working Group (F-TWG)**

22 September 2023, 10 am - 1:00 pm ET

Zoom Link: <https://us06web.zoom.us/j/88918572031?pwd=VzgxVnNnd2wvZ2pxZWNO3BxUHZLZz09>

<b><u>Time</u></b>	<b><u>Agenda Item</u></b>
10:00 –10:10 am	<b>Welcome</b> <ul style="list-style-type: none"><li>• Introductions</li><li>• Meeting agenda and ground rules</li></ul>
10:10 –10:20 am	<b>Masterplan 2.0: Overview</b> <ul style="list-style-type: none"><li>• Overview</li><li>• Deep water wind technologies</li><li>• Goals for environmental studies</li></ul>
10:20 –10:40 am	<b>Technical Concepts Study Overview</b>
10:40 am –11:10 pm	<b>Masterplan 2.0: Key Findings</b> <ul style="list-style-type: none"><li>• Marine Mammals &amp; Sea Turtles</li><li>• Birds &amp; Bats</li><li>• Benthic Habitats</li></ul>
11:10 to 12:00	<b>Masterplan 2.0: Key Findings Fish and Fisheries</b> <ul style="list-style-type: none"><li>• Fish and Fisheries Study</li></ul>
12:00	<b>Break</b>
12:10	<b>Environmental Sensitivity Analysis</b>
12:50 – 1:00 pm	<b>Next Steps</b>