Sustainable Fisheries Goal Implementation Team Meeting Summary

Summer 2021

Chesapeake Bay Program
Science. Restoration. Partnership.

Purpose of the Sustainable Fisheries Goal Implementation Team and Our Biannual Meeting

- Deliver emerging science and improve cross-jurisdictional collaboration to improve fishery management decisions
- Lead forums that bring the management and science communities together to learn about the latest fisheries and habitat science, discuss management implications, identify new science priorities, and identify funding opportunities
- Learn more about the Sustainable Fisheries Goal Implementation Team (Fisheries GIT)

Our Team and Workgroups

GIT Staff:

- Chair: Sean Corson, NOAA
- Vice Chair: Marty Gary, Potomac River Fisheries Commission
- Coordinator: Bruce Vogt, NOAA
- Staffers: Mandy Bromilow, NOAA, and Justin Shapiro, CRC/NOAA

Workgroup Contacts:

- Chesapeake Bay Stock Assessment Committee: Patrick Geer, Virginia Marine Resources Commission
- Fish Habitat Action Team: Justin Shapiro, CRC/NOAA
- Maryland and Virginia Oyster Interagency Teams: Stephanie Westby, NOAA/Andrew Larkin, NOAA
- Forage Action Team: Justin Shapiro, CRC/NOAA
- Invasive Catfish Workgroup: Mandy Bromilow, NOAA

Contents

Day 1: Workgroup Updates in Preparation for Upcoming SRS

Core to the Chesapeake Bay Program's structure is the biannual adaptive management process, better known as SRS. The Fisheries GIT's four outcomes—oyster restoration, blue crab management, forage fish, and fish habitat—are beginning this review process for late summer/fall 2021. As the team prepares to present on progress, create new work plans, and revisit priorities, it is also important to take inventory on the successes of the last two years. In short, the Fisheries outcomes are mostly on target. With only a few delays from COVID-19 restrictions, the Fish Habitat Action Team has completed a number of actions ranging from fish habitat assessment tools, local communications products, and NCBO-funded habitat utilization projects. Oyster restoration is also progressing on schedule as attention is beginning to turn to strategies beyond the "10 tributaries restored by 2025" goal. The Chesapeake Bay Stock Assessment Committee continues to deliver an annual Blue Crab Advisory Report, but funding capacity has limited the ability of the group to oversee additional science projects. The Forage Action Team continues to focus on the development of a suite of indicators to track forage/ecosystem health of the Bay. Below are a few updates highlighting products or ongoing work central to these Fisheries GIT outcomes.

Chesapeake Bay Stock Assessment Committee (CBSAC): 2021 Blue Crab Advisory Report

Presenter: Patrick Geer (VMRC)

Winter Dredge Survey 2020-21					
	Total	Juveniles	Adults	Adult Males	Adult Females
Abundance (millions of crabs)	282	86	197	39	158
Rank (1990-2021) N=32	28th	32nd	13th	28th	10th
Pct Difference from 2020	-30.43%	-53.70%	-10.64%	-50.98%	12.20%
Pct Difference from $Avg_{90\text{-}21}$	-37.73%	-65.54%	-1.45%	-48.94%	24.34%

Figure 1: 2021 Blue Crab Winter Dredge Results (Credit: Patrick Geer, VMRC)

Winter Dredge Survey (WDS) Results: Total blue crab abundance stands at 282 million Bay-wide, 30% below last year's abundance numbers and 37% below the long term average (1990-present). A major driver of these low abundance numbers stems from a low recruitment year for juvenile blue crabs (<60 mm). Abundance stands at 86 million, the lowest recorded number in the 32-year sampling period. Juvenile abundance is variable as environmental factors and dredge efficiency can greatly influence these numbers. Adult males also showed ~50% lower abundance number than 2020 and long-term average. Adult females, on the other hand, have an estimated abundance of 158 million, the 10th highest estimation in the 32-year dredge survey period. These high female numbers are encouraging and seem to reinforce the efficacy of the current management strategy put in place in 2008. It was an average to below-average year for overwintering mortality numbers. Harvest numbers declined slightly in 2020, mostly likely attributable to COVID-19 restrictions and impacts. Using current biological reference points of abundance and exploitation rates, the stock is not overfished and overfishing in not occurring.

Management Recommendations: At this time, female abundance and exploitation rates are well within acceptable ranges, and as the primary management control lead, CBSAC recommends no management action. That being said, the low juvenile abundance numbers, referenced above, are a cause for concern, as these individuals will enter the fishery in late summer. CBSAC does caution about expected interannual variability and notes sampling issues within this size class. The CBSAC, researchers, and management community will closely monitor additional survey results throughout the summer to corroborate WDS findings.

Report Endorsement: All jurisdictional members of our Executive Committee approved the advisory report and its suggested management actions. Members noted that a close eye should be kept on juvenile and adult male numbers, as it is a potential cause for concern.

The full Blue Crab Advisory Report is available via the Fisheries GIT's website.

Forage Action Team: Using Environmental Drivers to Assess Forage Status—Springtime Warming Indicator

Presenter: Ryan Woodland (UMCES)

This Chesapeake Bay Trust GIT-funded project stems from existing work establishing relationships between environmental factors and Bay forage species. This new work will continue to focus on two key forage taxa: bay anchovy and polychaetes. The principal investigators aim to provide updated forage population indices, explore new variants to these indices, and relate forage numbers to key climate indices. Key biotic and environmental data is being obtained from a number of federal, state, and academic surveys/observational programs. The two major climate indices of focus will be the Atlantic Multidecadal Oscillation as well as the 5° C day index (DD) (defined as the integer day each year at which a cumulative of 500° C is reached). Previous research showed correlation between the DD index and forage abundance. As this project begins progressing, the investigators will explore relationships between population indices and climate indices at various temporal and spatial scales, looking at these relationships from a holistic approach. This one-year project has an expected completion date in spring 2022.

Fish Habitat Action Team: Shoreline Hardening Mapping Layers

Presenter: Justin Shapiro (CRC/NOAA)

Interest in establishing shoreline hardening mapping layers originated from a Chesapeake Bay Trust GIT-funded project carried out by VIMS, establishing threshold effects of altered shorelines on forage species. This project established threshold numbers for species decline at 10-30% hardening in an analysis of multiple forage species and juvenile blue crab. The Forage and Fish Habitat Action Teams wanted to build on this information and consequently added the creation of these GIS layers to their two-year action plans. These layers were completed by the Chesapeake Bay Program GIS team using 2018 shoreline inventory data from VIMS. Both maps are publicly available, with Virginia fully complete and Maryland having layers for four coastal counties. Additional Maryland counties are under development. Next steps include getting these products in the hands of local planners, funders, and additional stakeholders.

Access to GIS layers: Virginia & Maryland

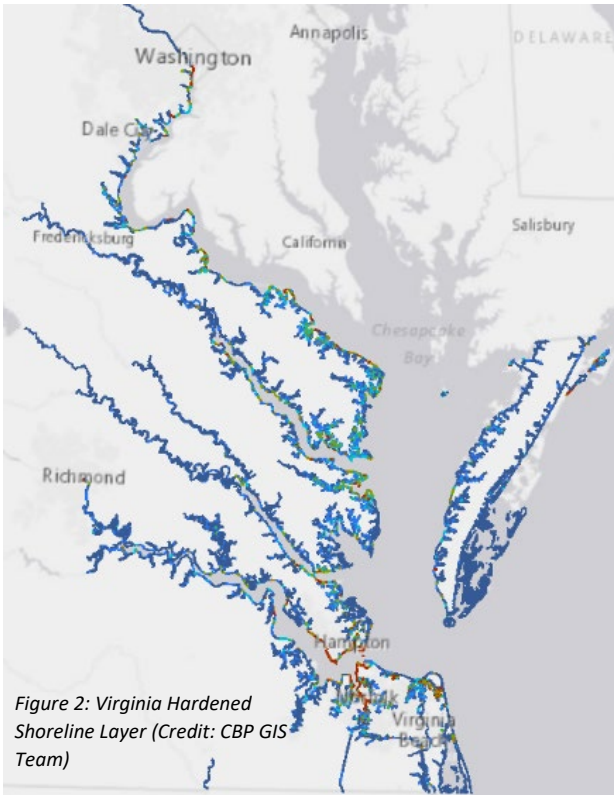


Figure 2: Virginia Hardened Shoreline Layer (Credit: CBP GIS Team)

Day 1: Introduction to Diversity, Equity, Inclusion, and Justice (DEIJ)

At its core, the Fisheries GIT is a public service entity working to provide a healthy fishery resource to all communities in the Chesapeake Bay. With more than 18 million residents in the Bay's watershed, and changing demographics, the time has never been more important to consider what inclusion and equity look like at the Chesapeake Bay Program partnership. As a GIT, we have much to learn, but starting a dialogue is a key first step. Below, our presenters highlight background information about the origins of DEIJ at the Chesapeake Bay Program, examples of DEIJ taking hold across our Fisheries GIT membership, and two key project examples of how we can fund work that interweaves community engagement, diversity, ecosystem health, and fisheries research. A key point to remember is that this the first of, hopefully, many conversations about diverse engagement through our fisheries work.

Background on DEIJ Implementation at the Chesapeake Bay Program

Presenter: Tuana Phillips (EPA), Briana Yancy (CRC/EPA)

The presenters first provided important background on definitions and terminology, which are in the linked presentation above. The Bay Program's Diversity Workgroup and Outcome were established in 2014 and serve as the foundation of these current DEIJ actions. The Workgroup, in collaboration with consultants, established a DEIJ strategy with focuses on advancing DEIJ internally, though mission-related work, and performance of our partners. The strategy recommended program-wide statements, resulting in a signed statement from the Bay Program's Executive Council and Principals Staff Committee. Visit the DEIJ Action Team webpage to learn more about their projects, initiatives, and program-wide actions.

Discussion: Implementing DEIJ at the Fisheries Goal Team and Beyond

Facilitator: Sean Corson (NOAA)

Below are examples of DEIJ initiatives taking hold across our GIT and federal, state, and academic partner organizations.

- **Fisheries GIT and NOAA Chesapeake Bay Office (Sean Corson):**
  - Increasing internal DEIJ pipeline through C-StREAM internship program focused on minority applicants and institutions. These interns directly support NCBO initiatives and Fisheries GIT projects.
  - Increasing DEIJ competency and understanding through monthly "lessons" and conversations with the full NOAA Chesapeake Bay Office staff.
  - Amending language in federal grants to encourage applications from minority-serving institutions or for projects focusing on underserved communities (e.g. recreational fishing engagement project discussed in detail below).
- **Maryland DNR (Lynn Fegley):**
  - Developing internal surveys for staff to identify opportunities for engagement and training.
  - Providing external programming aimed at better engaging Maryland's Latino constituency. This program focuses on children and families through bilingual engagement.
  - Implementing a new recruit, retain, reactivate (R3) plan to engage with recreational anglers. Working on tools to better engage with citizens representing the state's changing demographics.
  - Aiming to improve diversity on DNR's number of citizen advisory commissions.
- **Virginia MRC (Patrick Geer):**
  - Focusing on internal DEIJ training, including implicit bias testing.

    - Forging connections with local HBCU, Hampton University, offering training to serve in laboratory technician roles.
    - Working to ensure fish advisory notices are provided in English and Spanish.
- **Virginia DWR (Mike Bednarski):**
    - Targeting underserved communities with a program called "Fish Local Virginia." This ensures that quality recreational fishing opportunities are provided in urbanized areas. This initiative expands beyond recreational fishing, and hopes to highlight a plethora of outdoor engagement opportunities for a diverse constituency.
- **U.S. Army Corps of Engineers (Keith Lockwood):**
    - Providing technical assistance to communities working to address resiliency and flood risks, focused on underserved and rural communities.
    - From a regulatory perspective, the Corps is focusing on increased outreach to communities when implementing projects impacting wetlands and streams.
- **Morgan State's PEARL (Amanda Knobloch):**
    - Utilizing the diverse student body of Morgan State by creating opportunities in secondary education programs at PEARL.
    - PEARL is putting an increased emphasis on applying for grant opportunities with predominantly white institutions. By creating these partnerships, PEARL can utilize the capacity/facilities of these larger organizations while bringing their emphasis on diverse areas of focus.

Figure 3: Community Oyster Reef Building (Credit: David Sikorski, MD CCA)

DEIJ in Practice: Multicultural Recreational Fishing Outreach—Bill Burton Pier

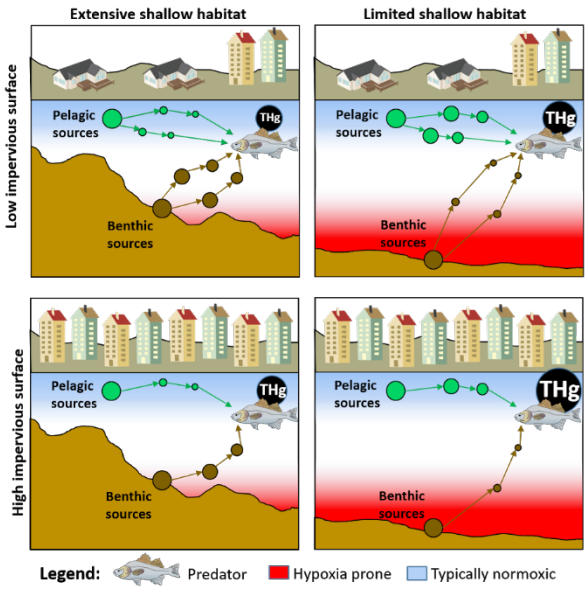
Presenter: Dave Sikorski (Maryland Coastal Conservation Association)

This project, focused in Cambridge, Maryland, is funded by the NOAA Chesapeake Bay Office and the National Fish Habitat Partnership. This outreach project builds on MD CCA's existing oyster reef ball program, aiming to provide additional reef ball habitat to an area that is ecologically important and culturally diverse. In concert with the provided reef ball building, the project proposes to install six bilingual signs along the pier, highlighting the benefit of oyster reefs and providing important seafood consumption information. Engagement goes beyond signage installations, as the project team plans to include community members in the building of the reef ball habitat structures. The final piece of the outreach puzzle is to install an underwater livestream web camera, allowing the public to see, firsthand, the benefits of oyster reef habitat structure.

DEIJ in Practice: Ecological Changes across an Urban Gradient – Patapsco Case Study

Presenter: Ryan Woodland (UMCES)

This recently completed project, funded by the environmental justice focused France-Merrick Foundation, explores the often unexplored question about how ecology changes across, and within, an urban gradient. In an effort to gather community input from the inception, the research team convened a multistakeholder engagement workshop focused on ranking the importance of various research questions and outputs. Workshop suggestions helped guide analysis later on in the project. From a research perspective, the study focused on food web structure across the Baltimore urban gradient, using white perch and its trophic niche (mix of benthic and pelagic foraging), as the model species of study. Six spatial areas were put into focus, ranging in percentage of impervious surface and available shallow water habitat. Results showed that niche area declined with increased impervious area and that benthic availability increased with the presence of shallow water habitat. Essentially, highly impervious areas that lacked shallow water availability increased hypoxia and decreased benthic availability, causing perch to rely only on pelagic forage. These ecological findings also showed a correlation with mercury levels in perch tissue, providing some preliminary evidence that ecosystem health risks may mirror human health.



Factor	Response to urbanization	Source
Proximal land use	↑ Impervious surface ↑ pulsed runoff	A, B B
Shoreline & littoral zone	↑ Armoring ↓ Fringing vegetation ↓ Shallow water area	B B A,B
Estuary basin	↑ Deep water area ↓ Water oxygenation ↕ Salinity regime ↓ Porewater quality ↓ Sediment grain size ↑ Toxicants	A, B A, B B B B B
Hydrology	↕ Residence time ↑ Bottom disturbance	B B
Plants	↓ Seagrasses ↑ Macroalgae ↑ Harmful algal blooms	B B B
Fauna	↓ Biodiversity ↑ Invasive species ↑ Species turnover ↓ Biomass/abundance (sensitive spp.) ↑ Biomass/abundance variability ↑ Toxicant accumulation ↓ Physiological condition	A B B B C A, B A, B
Food web	↕ Production : Respiration ↓ Benthic contribution to food web ↓ Food web complexity ↓ Food web stability	B A, B A, B C

Abiotic conditions

Biotic responses

Figure 4: Conceptual model demonstrating potential correlations between ecosystem and human health (Credit: Ryan Woodland, UMCES)

Day 2: Observations and Habitat Utilization in the Bay: Connections to Living Resources and Fisheries Management

A major theme across the Fisheries GIT has been an increased focus on tools and products that can better link estuarine habitat condition to living resources. Whether increasing our general observational capacity, establishing species-specific habitat suitability indices, or putting an increased emphasis on regional decision support tools, there seems to a plethora of projects and lots of momentum behind this theme. Below we highlight a number of ongoing, or recently funded, projects that connect to this theme of utilizing observations and habitat to better manage living resources from an ecosystem-based approach. Beyond funding and supporting this work, we feel it central to the Fisheries GIT's purpose to connect these initiatives with our members and their organizational/management interests.

Hypoxia Monitoring in the Bay: Establishment of Bay Program Collaborative Group

Presenter: Peter Tango (USGS)

Building off of a 2020 GIT-funded project to pilot a portable, cost-effective sensor array for real-time water quality data collection, as well as requests to improve Chesapeake Bay hypoxia monitoring and assessment, the Chesapeake Bay Program's Integrated Monitoring Network has established a subgroup focused on creating a hypoxia monitoring "research to operation" proposal for Bay Program leadership. In the short-term (8 months), the team will provide a report containing sampling designs, costs, and agency roles to the Principals' Staff Committee part of a larger monitoring program review. The NOAA Chesapeake Bay Office recently purchased two vertical profilers to be deployed in late summer as a secondary pilot. The collaborative team has already provided insights regarding profiler site and sensor placement. In the longer term, the team will work to improve design, coordinate with modeling efforts, and plan for data integration and management. The Fisheries GIT and management partners see great potential with this collaborative team and will continue to assist in implementing this program and linking its capabilities to fish habitat condition.

Developing a Chesapeake Bay Acoustic Telemetry Array: Status Update

Presenter: Kevin Schabow (NOAA)

As discussed at previous Fisheries GIT meetings, the NOAA Chesapeake Bay Office and partners are deploying a series of acoustic telemetry receivers in the Chesapeake Bay, creating a backbone in key strategic locations. These receivers are important for tracking species and obtaining long-term data. At the Bay mouth, NOAA, in partnership with VMRC, has obtained and deployed 16 receivers (with an additional four receivers planned for deployment) critical for tracking the movement of species in and out the estuary. Moving northward to the mid Bay, UMCES received a donation for receiver deployments at Cedar Point, forming a five-receiver array. Finally, an additional five to six receivers are being acquired to form a northern Bay Bridge array. These will be managed and deployed by Maryland DNR, hopefully in late summer 2021. This receiver data is collected and sent to the

Figure 5: NOAA telemetry array sites (Credit: NCBO)

Mid-Atlantic Acoustic Telemetry Observations System (MATOS), an online data repository with more than 60 mid-Atlantic telemetry projects. NCBO will continue supporting research that uses these arrays and their observational capabilities.

Examining the Movement Ecology and Habitat Utilization of Black Sea Bass in the Chesapeake Bay (Telemetry Techniques)

Presenter: Samir Patel (Coonamessett Farm Foundation)

This project was funded by the NOAA Chesapeake Bay Office, specifically supporting actions outlined by the Fish Habitat Action Team. The project investigators aimed to tag and track black sea bass movement and compare these findings to existing environmental data. A number of inshore and offshore fishing days resulted in 214 samples/tagged fish. Another tagging trip is scheduled for late summer 2021, focused primarily on fish near shipwrecks. Videos of the tagging process can be seen in the presentation linked above. More results will be shared with the Fisheries GIT as they become available.

Summer Flounder Habitat Availability in the Chesapeake Bay

Presenter: Jim Gartland (VIMS)

This proposed work has recently been submitted for a NOAA Sustainable Fisheries funding opportunity, and aims to support an increased focus on ecosystem approaches to fisheries management (EAFM) in the Chesapeake Bay. As the Mid-Atlantic Fisheries Management Council (MAFMC) works to create a framework to operationalize EAFM, summer flounder has been documented as a stock at risk, and lacks important estuary specific information/indicators. With this stated need in mind, the team at VIMS aims to build upon existing modeling work (habitat niche models and high-resolution hydrographic models) to develop an annual habitat suitability index for summer flounder in the Chesapeake Bay. The team also plans to investigate relationships between summer flounder abundance and water temperature in the Bay. From a temporal perspective, the team will use hydrographic data from March-November and will calculate average monthly temperatures in a given year. These numbers will be used in the summer flounder habitat niche model to calculate an average habitat suitability index level. This exciting work has potential to generate Bay-specific ecosystem indicators for risk assessments, identify drivers for summer flounder decline, and yield insights into the bimodal relationship between summer flounder abundance and water temperature. Beyond those applications, this project will hopefully serve as a framework for future species-specific habitat indicators.

Improved Site-Specific Methods for Quantifying Oyster-Related Denitrification

Presenter: Jeffrey Cornwell (UMCES)

This project, headed by UMCES, was recently funded by the Chesapeake Bay Program GIT funding process, specifically for the oyster restoration outcome. Beyond tributary restoration, the Fisheries GIT oyster team has a need to quantify site-specific nitrogen removal from oysters and to develop new best management practices which can be used as a credit for local government planners. We know that oyster-related denitrification has very high rates, but these measurements are costly and difficult to obtain, which highlights the purpose of this project: to develop an *in situ* chamber approach to decrease personnel and time needed to quantify denitrification rates. UMCES proposed methods involve a testing system lowered to the bay floor (that accounts for leakage through elemental tracers) and does not require the use of divers, cutting down on manpower days. If this lander approach proves reliable, this project has the potential to create a cost-effective, efficient, and replicable method for gathering site-specific oyster denitrification rates. With a recent kickoff meeting just taking place, this project will be carried out through early-mid 2022.

Figure 6: Proposed lander design utilizing mop heads at bottom (Credit: Jeff Cornwell, UMCES)

Synthesis of Environmental Impacts on Key Fishery Resources in Chesapeake Bay

Presenter: Mandy Bromilow (NOAA NCBO)

The NOAA Chesapeake Bay Office has recently started to contribute Bay-specific environmental and species narratives to regional products such as the Northeast Fisheries State of the Ecosystem Report. These seasonal summaries aim to inform managers about recent environmental conditions and link these conditions to living resources, serving as an important connection to ecosystem-based fisheries management. The summaries currently include water temperature, salinity, and satellite observations from NOAA, as well as streamflow data from USGS (freshwater streamflow data helps to corroborate collected tidal buoy data). The most recent narrative synthesized by NCBO was for winter 2020-21. The data sources mentioned above showed a slightly warmer than average winter and a slightly below average winter for salinity. From a living resources perspective, it is not expected that the close-to-average winter temperatures would have significant impacts, while lower salinities may affect striped bass recruitment and forage abundance. Other conditions not accounted for also play an important role on species. NCBO will continue using existing and future observational data sources to craft more detailed narratives.

Rising Watershed and Bay Temperatures—Ecological Implications and Management Responses

Presenter: Nora Jackson (CRC/Healthy Watersheds Goal Implementation Team)

The focus of this funded Scientific and Technical Advisory Committee (STAC) workshop is to summarize major findings on the ecological impacts of rising water temperatures in the tidal and non-tidal portions of the Bay and to recommend solutions to mitigate these impacts. The Fisheries GIT has committed time and resources to synthesize information for the tidal portion of this STAC workshop (planned for early 2022). There are 10 synthesis elements, one of which is tidal fisheries and management impacts, which will be headed by NCBO and the Fisheries GIT. As a starting point for the Fisheries GIT's synthesis work, the team has used NOAA's Northeast species and habitat climate vulnerability rankings. These profiles provide specific temperature sensitivity and climate vulnerability scores for key fish in the Chesapeake Bay. In order to cover a broad spectrum of ecological, cultural, and economic importance, the synthesis team explored vulnerability under the context of oysters, blue crab, summer flounder, striped bass, and key forage. These species were cross-walked with corresponding habitat scores key to their various life history stages. The team also presented on existing management frameworks, specifically NOAA's Climate Ready Fisheries and Climate Science Strategy. The team will continue to explore management frameworks, gather input from the management community, and identify existing knowledge gaps we have about temperature impacts/thresholds on key Bay species.

Northeast Habitat Climate Vulnerability Assessment

Presenter: Emily Farr (NOAA)

This NOAA Office of Habitat Conservation habitat assessment, mentioned briefly in the above presentation, aims to provide regional resource managers with a tool to efficiently assess the vulnerability of habitats to climate change. This assessment covers 52 habitats across the Northeast coast, ranging from marine, to estuarine, to riverine. The assessment framework calculates vulnerability by combining a number of sensitivity and exposure attributes (scored by expert participants). Major trends showed that biotic and coastal habitats are most vulnerable. Accompanying these ranking scores are habitat narratives, which provide specific information about sensitivity, exposure, and directional drivers. The team is now focused on connecting these ranked habitats with species utilization (at various life stages). Future recommendations include climate models with estuarine resolution, finer-scale assessments, and assessing rivers under a different framework.

Update on Northeast Regional Habitat Assessment (NRHA)

Presenter: Jessica Coakley (MAFMC)

This multipartner initiative aims to describe and characterize estuarine, coastal, and offshore fish habitat distribution, abundance, and quality. This assessment focuses on 65+ species noted as important to regional and state managers. Inshore and offshore products include data inventories, species profiles, habitat modeling, GIS products, and habitat data visualization/support tools. A number of these products are near completion or in development, with a goal of fall 2021 for completion. After internal reviews, the team hopes to finalize and distribute this suite of stakeholder products by the summer of 2022.

The Distribution Mapping and Analysis Portal (DisMAP)

Presenter: Melissa Karp (NOAA)

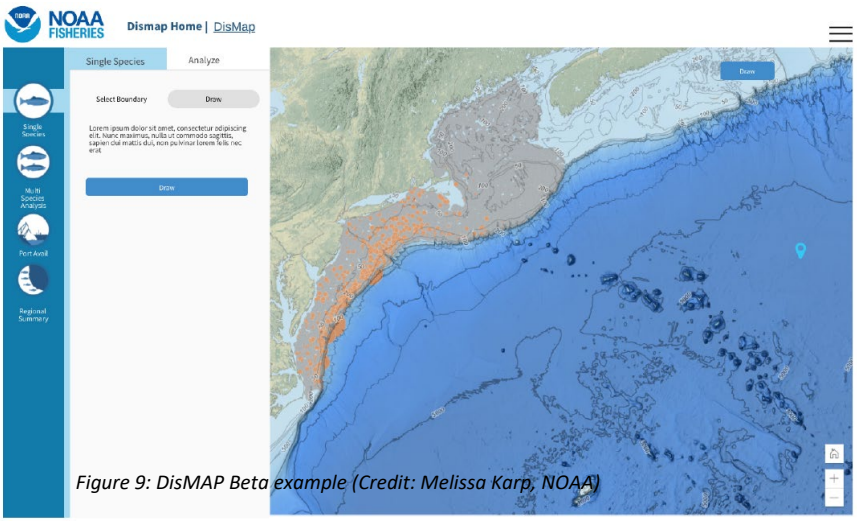


Figure 9: DisMAP Beta example (Credit: Melissa Karp, NOAA)

The driver of this NOAA Fisheries product is the interest and need to better understand species responses to changing climatic conditions and corresponding management implications. This product will use extensive species information and deliver the information consistently across all NOAA regions. Other distribution maps already exist, but a national map focused on species distribution and management implications has not been created. The DisMAP interface will have five modules: single-species distributions, multispecies overlap and interactions, species sights and human interactions, regional summaries, and data downloads. This product will be useful to a number of nontechnical and technical users, highlighting its diversity of capabilities and data offerings. DisMAP is currently in beta, with opportunities for improvements and new features in the future.

Appendix A: Other Funded Work

The Chesapeake Bay Program partnership ranges far and wide across the watershed. Even with 15+ presentations over the duration of the meeting, we were not able to hear about all of the exciting and applicable projects funded by NCBO and the Fisheries GIT. Below are some other highlights.

Integrative Assessment of the Quality of Shallow Tributary Forage Habitats for Striped Bass in the Chesapeake Bay

PI: Matthew Ogburn (SERC)

This project looks to quantify the quality of shallow tributary habitats for young-of-year (YOY) striped bass based on forage potential (diet data). Gut analysis is being conducted, including traditional morphological analysis as well as genetic barcoding, providing more specifics about individual species presence. Initial genetic analysis show varied diet compositions, including key shallow tributary forage species. Gut contents also varied by tributary, maybe due to salinity or habitat differences.

The Value of Shallow Tributary Habitats of the Upper Chesapeake Bay to the Summer Flounder

PI: Matthew Ogburn (SERC)

This research aims to quantify shallow tributaries as foraging habitats and nurseries for YOY summer flounder in the Bay. Diet samples are ongoing and will be reported out similar to the striped bass results described above. Additional work looking at catch per unit effort highlighted spatial variation by tributary and by season, showing highest abundance numbers in the Tangier and Pocomoke sounds (and declining abundance at lower salinity sites). Overall, YOY abundance is stable or increasing in contrast to the coast-wide recruitment index.

Habitat Utilization and Ecosystem Connectivity in the Southern Mid-Atlantic Bight

PI: Adena Schonfeld (VIMS)

Disproportionate increases in ocean heat content in the Atlantic Ocean are leading to increased Chesapeake Bay hypoxic events and a shift of marine species poleward. When looking at adult summer flounder, the stock is not overfished and overfishing is not occurring, but abundance in the Bay has declined. This phenomena leads to this research, aiming to quantify habitat utilization of summer flounder in the Bay by examining a number of abiotic habitat variables. Results showed a bimodal relationship with temperature, leading the investigators to believe that hypoxic events in cooler, deeper waters may be forcing flounder to warmer, shallower waters. Next steps include further investigation into the relationship between dissolved oxygen, temperature, flounder abundance, and other drivers of poleward shifts.

Quantifying Habitat Suitability for Forage Fishes in the Chesapeake Bay: A Coupled Modeling Approach Using Fishery Surveys and a Hydrodynamic Model

PI: Mary Fabrizio (VIMS)

This model was focused on four forage species: bay anchovy, juvenile spot, juvenile weakfish, and juvenile spotted hake. Nine environmental variables (including salinity and habitat) were used as model inputs, answering questions about the distribution/abundance of forage species and seasonal variation in forage production. Results showed a correlation between habitat extent and forage abundance for bay anchovy and juvenile spot. Also, seasonal variability was more pronounced than annual variability.

Appendix B: Membership and Public Attendance for Fisheries GIT Meeting

A.K. Leight (NOAA, NCCOS)
Alexis Park (MDNR)
Alicia Logalbo (USACE)
Allison Colden (CBF)
Amanda Knobloch (Morgan State PEARL)
Anissa Foster (NOAA NCBO)
Bob Beal (ASMFC)
Breck Sullivan (CRC/CBP)
Briana Yancy (CRC/CBP)
Bruce Vogt (NOAA, NCBO)
Caitlyn Johnstone (Alliance for the CB)
Chris Moore (CBF)
Claire Huang
Clint Morgeson (VDWR)
Daniel Ryan (DOEE)
David Kazyak (USGS)
Dave Sikorski (MD CCA)
David Maginnes
Drew Hobbs (UMCES)
Edward Houde (UMCES)
Emily Farr (NOAA)
Eric Brittle (VDWR)
Eric Schott (IMET)
Fredrika Moser (UMCES)
Glenn Davis (MDNR)
Greg Allen (EPA)
Jake Solyst (Alliance for the CB)
James Gartland (VIMS)
James Uphoff (DNR)
Jason Kahn (NOAA)
Jeffrey Cornwell (UMCES)
Jennifer Starr (Alliance for the CB)
Jessica Coakley (MAFMC)
Jorge Holzer (UMD)
Joshua Ramirez (NOAA NCBO)
Justin Shapiro (CRC/NOAA NCBO)
Karl Blankenship (Bay Journal)
Katlyn Fuentes (CRC/CBP)
Keith Lockwood (USACE)
Kevin Schabow (NOAA, NCBO)
Kimberly Koelsch (USACE)
Kristin Saunders (UMCES/CBP)
Laura McKay (VDEQ)
Leon Tillman (USDA)
Lisa Havel (ASMFC)
Lora Harris (UMCES)
Lynn Fegley (MDNR)
Mandy Bromilow (NOAA NCBO)
Marek Topolski (MDNR)
Mark Hoffman (CBC)
Martin Gary (PRFC)
Matt Ogburn (SERC)
Melissa Karp (NOAA)
Mike Bednarski (VDWR)
Nora Jackson (CRC/CBP)
Pat Campfield (ASMFC)
Pat Geer (VMRC)
Peter Himchak (Omega Protein)
Phong Trieu (MWCOG)
Peter Tango (USGS/CBP)
Renee Thompson (USGS/CBP)
Ryan Woodland (UMCES)
Samir Patel (CFF)
Sara Coleman (ORP)
Sean Corson (NOAA, NCBO)
Somers Smott (VMRC)
Stan Sedwick
Steve Faulkner (USGS)
Suzanne Bricker (NOAA, NCCOS)
Tamara O'Connell (MDNR)
Tom Ihde (Morgan State)
Tom Miller (UMCES)
Tom Parham (MDNR)
Tom Powers
Troy Tuckey (VIMS)
Tuana Phillips (EPA)
Vyacheslav Lyubchich (UMCES)
Ward Slacum (ORP)
Wilmelie Cruz (NOAA NCBO)
Yan Jiao (Virginia Tech)