Workshop Summary

Mid-Atlantic Regional Planning Body Ecologically Rich Areas Workshop
May 19, 2017
St. Jones National Estuarine Research Reserve
Dover, Delaware

The Mid-Atlantic Regional Planning Body Ecologically Rich Areas (ERAs) Workshop was held on May 19, 2017 at the St. Jones National Estuarine Research Reserve in Dover, Delaware. 49 participants gathered for the presentations and discussion. The morning portion of the meeting was also made available via Skype webinar. Workshop objectives included: (1) Enhance understanding of ongoing work to develop data products characterizing the components of ecological richness including high productivity, high biodiversity, high species abundance, vulnerable and rare resources, and types of ERAs; (2) Obtain stakeholder input on the opportunities and challenges associated with identifying ecologically rich areas; (3) Review efforts to collect expert input that will guide ERA data development and solicit ideas for obtaining additional stakeholder and expert input; and (4) Obtain stakeholder input on criteria the Mid-Atlantic Regional Planning Body could use for selecting a pilot ERA. Workshop findings were reported to the full RPB at the June 20th meeting in Silver Spring, MD.

Welcome and Overview (Laura McKay)
Laura McKay, Lead, Mid-Atlantic Regional Planning Body Ecologically Rich Areas (ERA) Work Group, opened the workshop by welcoming participants and providing an overview of the agenda, as well as a brief summary of the ERA Work Group progress on implementation of the ERA action under the Mid-Atlantic Regional Ocean Action Plan. Darlene Finch (Mid-Atlantic Regional Coordinator, NOAA Office for Coastal Management) provided a facilitator's introduction and an overview of logistics.

Update from the Marine- life and Data and Analysis Team (MDAT) (Pat Halpin)
Pat Halpin presented an "Update from the Marine- life Data and Analysis Team (MDAT)". The presentation can be accessed here. MDAT includes the Marine Geospatial Ecology Lab (MGEL) of Duke University, the NOAA National Centers for Coastal Ocean Science (NCCOS), the NOAA Northeast Fisheries Science Center (NEFSC) and Loyola University Chicago. The presentation provided an overview of the four types of ERAs (fixed, clustered, ambulatory and ephemeral), with general examples from other marine areas, and the five ERA components (productivity, biodiversity, species abundance, vulnerability and rarity). Halpin also provided an update on progress to date in developing summary products from 5,400+ individual species data products. Anticipated updates to the marine mammal and avian individual species products by the end of summer 2017 will result in updates to the summary products for those taxa in the fall, 2017. Emphasis was also placed on the importance of peer review of data sets and summary products and ways in which the team has responded to previous stakeholder

feedback to clarify the composition of data products. It was noted that data exploration models (ISO clustering and Principal Components Analyses, etc.) will not determine ERAs themselves, but simply provide additional biogeographic context for the Work Group and stakeholders to consider in future discussions throughout the process. (See slides 47-49).

A question/answer and discussion session followed the MDAT presentation. Clarifications from this session were taken throughout the presentation.

Discussion related to existing MDAT products developed for the OAP and on the MARCO Ocean Data Portal:

- NCCOS Avian models stem from collection of numerous data providers, NOAA survey and USFWS, and range out to the end of the US Exclusive Economic Zone (EEZ)- 200 nautical miles from shore.
- Generally include aerial or ship based surveys counting birds using transects following scientific design survey efforts. These provide a control for space and time rather than using opportunistic data.
- MDAT generally opts to highlight spatial variability within one map using different colors as opposed to making maps comparable to other maps, where one would lose the level of detail in an individual map.
- Bats are not included in the available Avian data sets, but the importance of considering bat populations in project siting for wind and other uses was acknowledged.
- Maps show a specific time range, but models would need to be adjusted through a substantial level of effort, to show further shifts over time in different ranges if desired by a user.
- Acknowledged that units and spatial resolution are different across species (e.g. kilos of biomass (fish), numbers of whales, biomass for scallops).
- Regarding peer review, it was reiterated that the NCCOS and Loyola avian models and Duke marine mammal models have already been peer reviewed and are considered established by the scientific community. The next round of peer review is to explore different applications of the models. Submission of manuscripts for peer review of modeled data is done by the separate entities that are modeling the data (e.g. NCCOS or Loyola for avian data sets, Duke MGEL for mammal models); submission of a manuscript for peer review of summary methods and products developed by MDAT is being led by MDAT. Summary product method detailed documentation can be found online here.
- Published scientific articles stemming from peer review process are available on the MDAT Website.
- MDAT acknowledged the need to explain each summary data map in writing with more clarity.

- Example map of cetacean vulnerability was in regard to noise. Groups of cetacean species were organized based on sensitivity to noise in the low, mid and high frequency ranges. The example map shows areas of high probability of occurrence for groups of species that are sensitive to noise (low, mid, high-frequency). "Vulnerability" here means species that are vulnerable to the effect from noise. The question about the definition of "vulnerable" and whether all maps using that language were mapping that ERA component was mentioned a few times throughout the workshop.
- Secondary productivity is shown by models that start with primary productivity and cascade into secondary productivity; secondary productivity products also include NOAA NEFSC continuous plankton transects data.
- The Chlorophyll A map product shows measurements relative to other locations in a specific season; areas nearshore have higher relative measure of primary productivity when compared to areas offshore.
- There is an ability for a Portal user to zoom in and out- data layers are available for download from the MDAT website for users to exclude out a smaller subset than the Mid-Atlantic region using GIS software.

Discussion related to new data products being developed to support ERA Components:

- Some relevant data layers describing "ERA components" are already located on the MARCO Ocean Data Portal, but the SeaSketch survey contains additional map layers that are currently being considered for inclusion in data product synthesis of ERA components. SeaSketch is providing an interim data viewer for scientific review of new data and appropriateness of various data for illustrating each component. It is envisioned that some or all of these data eventually could be added to the Portal.
- MDAT has new Avian Aggregation and Persistence models from Loyola University with approximately 32 data products for each of 40 species. These are being prototyped for inclusion on regional data portals and possible development into summary map products anticipated to be available by the end of Summer 2017.
- Principal Components Analysis (PCA) data exploration maps simply show where data would cluster itself across all of the 80+ dimensions of data for fish, birds and mammals. Interpretation is difficult; however, it provides a signature for those components. The mean value of all data sets could be provided, but no clear further explanation of why the data are clustering is possible by simply clicking on the map.
- In response to what the MDAT team has learned or what they were surprised by in the data exploration, the PCA results provided components that look as expected, such as known areas of importance (nearshore, shelfbreak, etc.) emerging as the primary components explaining areas of high abundance. So no surprises or new findings emerged from the early stages of data exploration and synthesis.

Overview of SeaSketch Survey (Jay Odell)

Jay Odell, Mid-Atlantic Ocean Data Portal Team, presented an *External Review of ERA Data Products Development – Update on Work in Progress."* The presentation can be accessed here and noted that the SeaSketch survey was originally designed to obtain feedback from experts in the Northeast region on data and methods to support Important Ecological Areas Components (IEAs). The survey was adapted to apply to the review of data and methods to support ERA Components in the Mid-Atlantic, and originally shared with a group of Mid-Atlantic technical experts in early May 2017. The SeaSketch survey is maintained by Emily Shumchenia, on contract with the Northeast Regional Ocean Council and the MARCO Ocean Data Portal Team. Odell provided a summary of key questions presented in the survey for each of the ERA components (slides 2-6), emphasized the significant time the survey took to fully complete, and thanked those who had responded. Data products assembled to support ERA components 1-3 (productivity, biodiversity, abundance) have been reviewed since ~July 2016, whereas data products supporting components 4 and 5 (vulnerability and rarity), have been more recently assembled and thus have received relatively less attention. Reviewers in both regions have indicated the need for more time with the survey and more time to understand the >100 data products that relate to the five components. Odell noted the survey is on-going and may be revised to address additional updated data products becoming available in Fall 2017. Initial feedback from respondents in both the Northeast and Mid-Atlantic included:

- General sense that work is "on the right track"
- Preference for established, peer-reviewed, published methods
- Retain multiple data products per component and category because they are useful for a variety of different applications

The IEA/ERA Data Guide is available here while access to the survey itself is available upon request to Laura McKay at laura.mckay@deq.virginia.gov. A short video tutorial provides an introduction to SeaSketch and how to navigate the survey interface. Odell provided a similar overview demonstration of SeaSketch at the end of his presentation.

A question/answer and discussion session followed Odell's presentation. Highlights from discussion included:

- Consideration of pelagic habitat is important, and that movement to a 3-D analysis which considers oceanographic data is crucial, including collaboration with the Integrated Ocean Observing System (IOOS) community.
- Mid-Atlantic Fishery Management Council staff noted the Council's on-going Essential Fish Habitat (EFH) process and associated fish modeling efforts, and the Council's desire to collaborate with MDAT on scientific analysis.
- It was clarified that Component 4, Areas of High Vulnerability, contains two categories. The first category relates to those species and habitats that are

fragile or sensitive to disturbances due to their life history traits and hence are inherently vulnerable (e.g., deep sea corals). The second category relates to known stressor-based sensitivities, and references several existing MDAT data products developed for ocean planning efforts (e.g., total abundance of cetaceans sensitive to high-frequency sound). Neither of these categories capture or relate to the realized occurrence or risk of environmental or anthropogenic disturbances.

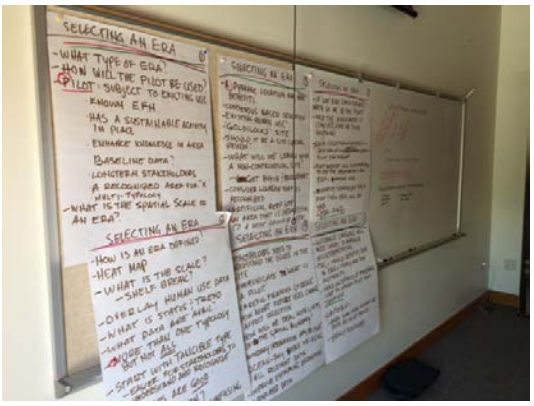
- Interest in a map of temperature trends across the region was noted.

Understanding and Explaining ERA's (facilitated session)

The session on *Understanding and Explaining ERA's* asked participants to respond to a series of questions on flip charts posted throughout the workshop venue. Questions included:

(1) How would you describe what an ERA is?
Participants referenced elements of the five components (productivity, biodiversity, abundance, vulnerability, rarity), the concept of persistence, existing authorities (such as EFH), consideration for human uses, and uncertainty about how ERAs would be used by agencies.

- Places that are important persistently over time
- Dynamic habitat important to biodiversity and productivity of a species
- Areas of the ocean identified as important areas of high biodiversity, shown through the mapping of many data layers
- A somewhat vague term that indicates an area is temporarily more important than others to the maintenance of biodiversity and/or abundance of species
- ERA = EFH; An ERA is not a MPA
- A defined geographic area that is of high ecological/biological significance (e.g. high numbers of marine species/important biological species) relative to other areas (at a certain defined threshold), that is either persistent, seasonal, or ephemeral in time. These defined areas can be used as a tool to inform conservation and management, and regional ocean planning.
- An ERA, as envisaged by the RPB, is a biologically important area for which the human uses (cultural and economic) are identified and the regulatory structure is laid out for all users to understand.



- An area of special ecological significance that may support complex, unique and/or ephemeral communities
- Areas within the ocean that serve important functional roles
- Area of ocean that disproportionally supports diversity and abundance
- Area that attempts to put a boundary on areas that we've anecdotally "known" to be areas of incredible ecological productivity and diversity
- Area critically essential for ecosystem function
- An ocean space within which the most important ecological resources exist for the longest duration
- Are special because of a high number of features that come together
- Special ocean places that are critical to the long-term health of our region's fish, marine mammals and other marine life.
- Unclear on how ERAs differ from data layers on Portal that agencies should be using as they see fit to inform decision making- good ecological data benefits decision making
- Unclear if a single ERA component is mapped on the Portal, if an agency is obligated to use it if not a full ERA itself

(2) How could describing the ecosystem features and applicable government authorities for a specific area help agencies and ocean stakeholders make better decisions?

Participants generally agreed that ERA data products would help authorities make better decisions by providing additional information about the ecosystem and human uses.

- Serves as an "alert" to get more information before siting decisions are made
- Advises existing management entities with existing authorities
- Illustrates the benefits of ocean planning
- Enhances the completeness of important decision making information
- Clarifies lines of authority and coordination and streamlines siting decisions or project reviews
- Helps agencies understand who's doing what, when, where (use and impacts to resources)
- Prevents conflict and allows for better communication among management, users and conservation interests; helps direct stakeholder input
- Helps to identify stakeholders who will be affected by decisions and who should be consulted early in the decision process
- Helps with designated areas (e.g. for wind or marine sanctuaries)
- Informs National Environmental Policy Act (NEPA) analyses and project permitting; helps narrow down questions to ask developers
- Identifies geographic and sectoral areas of opportunity for protection of ERAs (e.g. mitigation measures)
- Assists with prioritization of conservation and management measures

- Be brief and clearly articulate what management measures should be taken into account within the ERA
- The ERA data layers help summarize and make sense of the thousands of ocean system data strands. These layers can give us a sense of relative importance and provide a shared starting point for discussions with stakeholders about development projects and what steps can be taken to help ensure the ocean system continues to function as it should.
- The combined information of biological importance, economic and cultural value and regulatory structure will make the government take all the issues into account in making decisions.

(3) What concerns do you have regarding development of maps showing ERAs?
Participants described concerns related to adequately capturing temporal variability, lack of emphasis on or consideration of human uses, the need for guidance for understanding methods and interpreting ERA data products, uncertainty about how ERAs would be used by agencies, and long-term maintenance of the data and the Portal.

- Too static, especially when visualizing the ambulatory ERA (e.g. climate change is creating movements)
- Need the ability to visually express spatial temporal patterns and 3-D use
- Being able to visually express spatial-temporal patterns in species/type data
- Transitory and temporal nature of an ERA
- Not enough emphasis on human use and management (need to clarify where these come into the process); should the pilot be a human use study of an ERA instead
- Need guidance on how to use the data we have to make management decisions (i.e., fact sheet)
- Long-term updates and maintenance for data layers on Portal
- Needs to be on-going work to continue input of data and funding to maintain Portal; maps need to evolve
- Perceived potential constraints on Department of Defense missions or fishing
- How will these inform FMPs and other federal activities and regulations
- Maps will be used to restrict historical productive fishing areas
- Any boundaries drawn in the ocean which could be used to exclude users
- Regulatory agencies will use the maps in ways that preclude or make access more difficult
- ERA development needs additional clarity on how these will be used, if they will not be closed areas that needs to be communicated better to other groups; groups need to see how these could benefit specific industries like fishing
- Lack of clarity on how maps will be used; misinterpretations of data
- That methods (data sources, approach) are clearly described
- Including maps of measures of uncertainty is crucial

- Maps need to be placed on the data portal so that everyone can access them. They should be updated as new information is available
- Parsing of data
- Lack of clear guidance on the data underlying the map, which could lead to misinterpretation
- Suggest include summary statistics in Portal
- Legends and caveats (e.g. limitations of data) need to be clearly displayed on map
- Incomplete fishing data driving theoretical conclusions
- Concerned that the term "ERA" as used by the RPB is misleading. The commitment rather was to study an area to understand its biological properties and the human uses and the regulatory structure.
- People will think that these are the only areas important or that everything is equally important
- Overly simplistic consideration of impacts- lack of appreciation of connectivity and boundary/buffer effects

(4) Beyond data synthesis products and factual reports, are there other communication approaches that could make ERA information useful to government agencies and ocean stakeholders?

Participants emphasized the need for more public involvement in the ERA data development and review process, for additional visualization tools, and for trainings or outreach sessions to improve public understanding.

- Poll stakeholders using a value survey to weigh in addition to factual evidence
- Create clear bullets on how data should and should not be used
- Animations and GIFs
- Trainings and workshops
- Outreach videos and apps
- Broader access to SeaSketch data layers and survey
- Need the MAFMC to articulate how ERA datasets and efforts relate to and/or supplement EFH and fisheries management work. How will these help the FMC be more effective in its interaction with different federal agencies? Does ERA build on EFH/FMC work and, if so, how? Consider joint RPB/FMC document to answer those questions.
- Beyond data synthesis, explaining the benefits to agencies and groups
- Mechanism to query information for specific portion of the Mid-Atlantic ocean only
- Translation and direct communication with stakeholders in the field- take it to them
- Have and align workshops and meetings with the MAFMC meetings and when other stakeholder groups are already meeting
- Layer showing what human uses may occur in an ERA

- Trainings should be a requirement for all agencies and organizations with an ocean interest
- Forum/workshop with RPB members and scientific experts
- Verification and validation of model results needs to go beyond peer review and be part of communications
- Concern that results will not be able to be communicated appropriately

Breakout Groups: Input on ERA Data Development

Breakout groups were asked to provide input on ERA Data Development. Feedback included:

- Does an ERA need to have at least one or all five of the components to be called an ERA?
- Where do human uses fit into the process?
- The four types of ERAs (fixed, clustered, ambulatory and ephemeral) are a good addition to the framework.
- More explanation of underlying core data
- Broader public participation in SeaSketch
- Assembly process- how data informs ERA components
- Recognizing update process for most of data that go into these things; how the future will be supported
- Improvements to fishing data and data sets from non-scientific surveys
- Better communication around efforts including models
- Does Pilot happen in parallel to MDAT work or after MDAT work is complete?
- Pilot report should be useful. Engage stakeholders in writing of the report vs vetting it at workshops after the fact.
- Added value of SeaSketch is that it is a staging site/evaluation tool/collects feedback
- Need for enhanced accessibility: public access to SeaSketch, clearer explanations of metadata for non-technical audience (sources, disclaimers, consistent metadata, data version control and contact information for data providers; documentation of gaps and uncertainty)
- Need to capture historic knowledge and other data (e.g. telemetry and observation data) to not only validate results, but also inform models and be stand alone data layers in themselves
- Consider climatology for data time breaks
- Clarity on peer review process and data updates
- Is the Portal a hub of data to help plan for issues, or is it designating ERAs that are used for planning?
- Need to improve communications about intent of ERAs- data meant to supplement, not be an “end all be all”

- Where is the social science and economic data, and how do you depict social values spatially? When and how will the HUDS analysis be included? What about tribal/cultural data?
- What is the long-term plan for data maintenance and Portals, including the updating of MDAT layers?
- How will layer time periods affect typologies? What data are applicable to different typologies?
- Why are estuaries included in some layers but not others?
- Do we need an "expiration date" on certain data layers?

Breakout Groups: Possible Criteria for Selecting a Pilot ERA

Breakout groups were asked to provide input on the possible criteria for selecting a pilot ERA. Suggestions prompting discussion included: relative completeness of available data; quality of data; human uses in the area; whether the area is actively managed by multiple entities; changing ocean conditions; emerging trends.

- Need to map all five ERA components for the whole Mid-Atlantic region and then select a pilot area- show all possible ERAs first
- Desire to have 2-5 pilots rather than one
- Two pilots- 1) regional application of ERA component, 2) area of conflicts between human uses or uses and resources
- Randomly selected
- Where biological and human uses overlap
- Try the most complex typology (e.g. dynamic) first
- Covers multiple typologies (more than one but not all)
- Select area that is small, but not too small to lose ecological process
- Area that considers interests of at least two federal RPB entities and one state in an geographic area where those agencies would likely be making a management decision
- Completeness of data for as many of the five ERA components as possible
- Considers potential future socioeconomic contribution of the area
- Areas of high human use; has at least one sustainable activity occurring
- Area of interest to multiple stakeholders to promote inclusive process
- Area which can be easily monitored
- Timing- select pilot now or wait for MDAT products to be completed?
- For additional transparency, the forthcoming pilot report should have outline of what it will/not include (e.g. is it a management plan?)
- How can input from the Northeast RPB's Ecosystem Based Management Work Group input be applied to the Mid-Atlantic?
- Interest in visualizing data at higher resolution than 10 km grids
- Need effective feedback loop to inform pilot ERA template

Plenary: Brainstorm Opportunities for Soliciting Input

Participants gathered in plenary session to brainstorm other opportunities for soliciting input on the ERA process. Suggestions ranged from the creation of FAQs and informational documents, and additional workshops, webinars and in-person meetings at key points throughout the ERA process. Summary points include:

- Develop FAQs to provide consistent definitions and answers to questions for use in outreach
- Create infographic communication or story maps around data process and products – do these first before additional outreach
- Note that ERAs are not the entire process in discussing data applications and analyses in ocean planning- one part of many layers and products
- Align in-person meetings of ERA Work Group with Mid-Atlantic Fishery Management Council meetings to take advantage of overlapping stakeholders; collaboration with MAFMC Essential Fish Habitat (EFH) process to improve fisheries data
- Webinar demos and record and post demos to website; online tutorial and survey to accommodate people who want to provide input at various times of day or who cannot participate in meetings
- Fact sheet targeted for each sector that drives them to tutorial and place to send comments
- Mini-workshops on ERA process in individual agencies in each state; report-back to larger regional workshop
- Providing more information about how agencies intend to use ERAs prior to stakeholder workshops so that stakeholders can prepare in advance accordingly
- Also need to ask if ERAs move forward and benefit RPB goals? Do the costs of the ERA process outweigh benefits?
- Workshop identifying conflicting uses and ways to minimize conflicts
- Commercial and recreational fishing industry specific workshop to vet MDAT data
- Higher transparency to show how stakeholder engagement resulted in modified data products and how that input was actually used
- Follow-up workshops on more specific topics from today's agenda
- NRCC (Northeast Regional Coordinating Committee)- NOAA Fisheries, NE and Mid-A FMC- should be engaged on ERAs to ensure science is incorporated
- PR campaign to all stakeholders in each state in a coastal area; improve public process

- Public timeline of specific opportunities for stakeholder engagement tied to decisions throughout process
- Broadening stakeholder input and sectors – go to them
- Face to face meetings with recreational fisheries interests and letters to recreational fishing publications
- Webinar to explain results of SeaSketch survey and to solicit stakeholder feedback on those results
- Create another SeaSketch survey for all public to participate in, done at a "SeaSketch 101" level
- Reaching out to other sources of data to validate and ground-truth- observing data; telemetry data- as way to engage public as well
- Capture stories about using data now- challenges and benefits
- Outreach to all agencies
- Create virtual mapping survey

Closing Remarks (Laura McKay)

Laura McKay thanked presenters and participants for their time and interest in the topic and noted that the ERA Work Group will be considering input received at the workshop as implementation of this action progresses. Future public engagement opportunities will be posted on the RPB website.

ERA Workshop Participants

Last	First	Affiliation
Almeida	Katie	TownDock
Atangan	Joe	Navy
Barco	Sue	VA Aquarium and Science Center
Boatman	Mary	BOEM
Bowman	Sarah	Navy
Brady	Bonnie	Long Island Commercial Fishermen's Association
Brennan	Tali	NRDC
Camhi	Merri	Wildlife Conservation Society
Chase	Ali	NRDC
Chu	Kevin	NOAA, U.S. Department of Commerce
Chytalo	Karen	Department of Environmental Conservation, New York
Cleary	Jesse	Duke
Coakley	Jessica	MAFMC Staff - Ecosystem & Ocean Planning Committee
Cole	Kim	Delaware
Cooksey	Sarah	The Nature Conservancy - Delaware
Croft	Lisa	NOAA

Curtice	Corrie	Duke
Deem	Jeff	Member of MAFMC (VA)
DiDomenico	Greg	Garden State Seafood
Firestone	Jeremy	Univ. of DE
Gove	Matt	Surfrider Foundation
Greenfield	Brent	Ocean Policy Coalition
Halpin	Pat	Duke
Hassell	Kevin	New Jersey
Henderson	Helen	American Littoral Society
Hernandez	Kimberly	Maryland
Hice-Dunton	Lyndie	E&E
Janeski	Todd	Virginia Commonwealth University
Jones	Michael	U.S. Navy, Department of Defense
Kershaw	Francine	NRDC
Kusa	Rebecca	Wildlife Conservation Society
LoBue	Buddy	EPA
MacDonald	Tony	Monmouth University
McKay	Laura	Virginia
Merwin	Anne	Ocean Conservancy
Michels	Stewart	Mid-Atlantic Fishery Management Council
Minkiewicz	Drew	Kelley Drye
Morrison	Kate	Mid-Atlantic Regional Council on the Ocean
Odell	Jay	TNC
Poti	Matt	NOAA
Reiss	Mark	EPA
Schultz	Gwynne	Department of Natural Resources, Maryland
Semple	Elizabeth	New Jersey
Simpson	Doug	USCG
St. Laurent	Kari	DENREC
Trice	Amy	Ocean Conservancy
Wallace	David	Wallace and Associates
Winship	Arliss	NOAA
Winter Whelan	Sarah	American Littoral Society