Agenda • November 2, 2017 • Greenland, NH

Meeting location is the Great Bay NERR, Great Bay Discovery Center, 89 Depot Road, Greenland NH
Directions & map: https://www.greatbay.org/visit/index.htm

9:15 AM	**Arrive & Networking**
9:30 AM	**Welcome & Introductions** *Kathleen Leyden ME, and Rick Bennett USFWS*
9:40 AM	**Updates** *Kathleen Leyden ME – State Chair* **NROC Updates** ▪ Executive Committee **Partner and Audience Updates** ▪ **Partner Updates**: NERACOOS, Gulf of Maine Council, Sea Grant Consortium ▪ **Updates:** New England Federal Partners, North Atlantic Landscape Conservation Cooperative ▪ **Audience updates and comments:** Meeting attendees provide updates **Announcements and Opportunities** ▪ Upcoming Workshops and Funding Opportunities ▪ Upcoming Northeast Regional Planning Body Meeting Nov 15-16
10:15AM	**Introduction to NOAA Fellows** *Betsy Nicholson, NOAA & Program Managers (MA, NH, CT)* ▪ *Sean Duffey, MA* Project: Protect critical ecosystem services by designing and applying a method to prioritize habitats at risk and inform robust policies and strategies that will increase the resilience of important resource areas. ▪ *Vidya Balasubramanyam, NH* Project: Inform the development of the New Hampshire Tidal Shoreline Management Plan by identifying sites suitable for living shorelines and developing a strategy to increase understanding of how these approaches can preserve important environmental services. ▪ *Emily Hall, CT* Project: Work with Connecticut's coastal management program, a statutory advisory committee, partners, and stakeholders to integrate and finalize a marine spatial planning document for Long Island Sound. ▪ *Jane Ballard, NH Digital Coast Fellow with NERRS* Project: Determine how to use ecosystem service values and tools to effectively communicate values of coastal wetlands in land use decision making, based on projects within the NERRS.
10:40AM	*Ocean and Coastal Ecosystem Health Committee* • Marsh Migration work Ivy Mlsna (EPA) and Steve Couture (NH) • Habitat Coastal and Ocean Mapping (HCOM) Becca Newhall (NOAA) and Claire Enterline (ME) *Hazards Committee* • MyCoast update Julia Knisel (MA)

11:00AM	*Ocean Planning Committee* • Sand Management: Next steps and NROC feedback Jeff Reidenauer (BOEM), Jeff Waldner (BOEM) and Grover Fugate (RI)
12:00PM	**Lunch:** For NROC members - a group lunch order will be arranged. Please confirm with adrianne.harrison@noaa.gov by 10/31 if you want to participate in the group lunch order. $10 per person for sandwich, drink and snacks – exact change please.
1:00PM	**NROC Living Shorelines Tasks & Actions – status report** *Adrianne Harrison, NOAA* Overview of Living Shorelines Subcommittee tasks with NROC as a designated lead, current status, and discussion of any key gaps or opportunities. Please reference the associated table in briefing packet.
1:15PM	**Living Shorelines State of the Practice Report** *Stephen Kirk, TNC & State Outreach Partners* Detailed presentation on the State of the Practice report and the progress partners have made on using information in other tasks, including workshops and outreach materials.
2:15PM	**Introduction to the NOAA Coastal Resilience Grant awarded to TNC: Increasing resilience and reducing risk through successful application of nature-based coastal infrastructure practices in New England.** *Stephen Kirk, TNC & Adrianne Harrison, NOAA* Overview of TNC award, tasks, and timeline. Opportunity for Q&A from NROC.
3:00 PM	**Closing Business/Adjourn** Timing and location for next meeting

NROC Updates

RPB Meeting Announcement

Please join us in New Hampshire to discuss ocean planning on **Wednesday, November 15** and **Thursday, November 16, 2017** at the next Regional Planning Body (RPB) meeting.

On the first day of the meeting, **November 15**, we will be holding a workshop at **the University of New Hampshire in Durham, NH, from 10:30 a.m. to 5:00 p.m.**, to review and obtain feedback on the latest draft data products related to commercial fishing, marine transportation, recreation, marine life, ecological importance, and other ocean planning topics. These draft data products have been in development for the last year and they represent significant updates to some of the most highly used information on the Northeast Ocean Data Portal (Portal). This workshop will help inform how the Portal is updated and potential next steps in 2018. Please register for this day here.

On **Thursday, November 16**, the Regional Planning Body meeting will continue at **the Exeter Town Hall, in Exeter, NH, from 9:00 a.m. to 4:30 p.m.** This day will include important updates from RPB members about plan implementation, and progress to date and priorities for 2018. Please register for this day here.

Also, we have had several inquiries about the recently postponed Ocean Health Index (OHI) workshop. We are working with the OHI team to provide opportunities to inform the OHI as it progresses. We expect to provide an update at the November meetings.

Please contact us or Nick Napoli (nnapoli@northeastoceancouncil.org) if you have any questions.

Committee Update – Executive Committee

Funding Status

NROC is currently operating on funding from three sources: the NOAA Regional Coastal Resilience Grant award to NERACOOS, Moore Foundation and in-kind Ocean Planning funds, and NOAA Coastal Resilience Grant.

NOAA RCRG Funds:

- Are active through April 2018
- Funds will be used to support Track 2 (Living Shorelines) activities, including development of state-of-the-practice report, conducting a regulatory barriers workshop, hosting a series of trainings, supporting states working with their communities on shoreline planning and assessment pilot projects, and NROC coordination.

Moore Foundation and in-kind Ocean Planning Funds:

- Active through December 2017
- Remaining will be used to support ocean planning staff and the Northeast Ocean Data Portal

NOAA CRG funds:

- Are active through September 2020
- Funds will be used to support NROC Coordinator position; TNC is PI with subawards to NROC partners

Committee Update – Ocean and Coastal Ecosystem Health

Joint NROC-NECAN Workshop

Monitoring Coastal Acidification: Why, What, How?

The Northeast Regional Ocean Council (NROC) and Northeast Coastal Acidification Network (NECAN) will host a workshop on December 1, 2017 in order to

1. identify what management and policy questions could be addressed by enhanced OCA monitoring;
2. discuss collaborative opportunities to integrate, enhance and expand OCA and nutrient monitoring throughout the region to address these questions; and
3. broaden the conversation about OCA and coastal resources to local resource managers who may be new to OCA, but are already dealing with other environmental issues that coincide with or worsen OCA.

The workshop will include state water quality agencies, resource managers and coastal zone planners, local industries dependent on coastal resources, and regional scientists.

Results from the workshop will help NERACOOS and NROC develop and refine a coordinated monitoring strategy that can incorporate current observations as well as include emerging efforts to measure OCA parameters in order to best meet the needs of coastal managers.

Integrated Sentinel Monitoring Network
Members of the ISMN steering committee met on October 12th. The group reviewed existing membership in the network and are reviewing new membership. The SC would like to start meeting monthly in order to move ISMN priorities forward. Workshops in the pipeline include 1) monitoring efforts and methodologies; 2) monitoring assessments; 3) CAPE governance structure and implementation; and 4) data integration. The SC is interested in exploring overlapping interests and goals with ESIP, NeRPB, and DFO. NeRPB has invited ISMN to give a short update on its current status and projected next steps at the next NeRPB meeting on Nov 16th in Exter, NH.

Marsh Migration Workshop Follow-up
Emerging topics of interest to follow-up on:

1. Further exploration of thin layer deposition as a restoration technique. We need to develop criteria to help coastal managers decide if/when thin layer deposition is an option. There is also a need for guidance on the definition of "thin" and the appropriate thickness of sediment application across a restoration site. Guidance is also needed on the required spatial and temporal scale of data to properly design a TLD project. Monitoring protocols for these kinds of projects also need to be developed.
2. A workshop focused specifically on communicating with the public about issues of marsh transgression with a specific interest in learning best practices to communicate (with the public as well as other state and federal managers) about instances of tidal habitat restoration/conservation plans in conflict with infrastructure needs and possible solutions to these "conflict zones."
3. A white paper or report on different restoration techniques and lessons learned.
4. Guidance on how to translate model outputs into policy decisions. Continue to promote the use of the "Make Way for Marshes" guidance document on marsh migration model use.
5. Information on the use of drones to monitor shoreline change and restoration progress.
6. Guidance on techniques for ditch and runnel remediation.
7. Comprehensive digitized list of open marsh water management projects.

As there is already some energy and activity on uses of drones for shoreline monitoring in the region, the committee will coordinate with relevant partners and plan a workshop on the topic for spring 2018.

Committee Update – Habitat classification and Ocean Mapping (HCOM)
Mapping Needs and Plans
If you have not recently done so, please review and update your program's mapping needs and plans in SeaSketch. Please let us know if there are any new plans/needs being highlighted so we can speak to them during our committee update at the upcoming full NROC meeting on November 2nd. Also, we would love to hear any stories of how this site is helping to further conversations that your program is having internally or with partners (we know it is happening - but it is always great to be able to highlight success).

Workshop on Using CMECS in New England
Originally planned for this fall, this workshop has been moved to this winter/early spring - we will spend time discussing how CMECS is being used, and its products; and digging into best practices for the region. This will likely be a two-day event. Date/Location TBD

Committee Update – Ocean Planning
The Ocean Planning Committee was established to inform and recommend to the Council how best to approach regional issues and coordinate activities related to ocean planning in New England. This Committee's work is directly supporting the efforts of the Northeast Regional Planning Body, which has the responsibility of developing and implementing an ocean management plan for New England.

Elizabeth James-Perry of the Wampanoag Tribe of Gay Head (Aquinnah) has been named the next tribal co-lead for the Northeast Regional Planning Body (RPB).

The next RPB meeting will be held in New Hampshire on November 15-16, 2017.

- On November 15, there will be a workshop at **the University of New Hampshire in Durham, NH, from 10:30 a.m. to 5:00 p.m.** to obtain feedback on the validity and potential uses of the latest draft data

products and enhancements to the Northeast Ocean Data Portal, including new products related to commercial fishing, marine transportation, recreation, energy, marine life, and ecological importance.

- On November 16, the RPB meeting will continue at **the Exeter Town Hall, in Exeter, NH, from 9:00 a.m. to 4:30 p.m.,** to discuss implementation of the Northeast Ocean Plan to date and priorities for 2018.

Draft agendas and registration for each day have just been posted to the upcoming events section of the ocean planning website.

The Regional Planning Body has also posted a summary of our outreach over the last six months to obtain input on the draft methods and data products for the components of ecological importance. Thanks to all of you who have taken the time to review these products and to provide feedback. The comments we received have led directly to a series of enhancements to the draft data products and will inform our discussions about next steps at the November meetings.

A copy of the agenda and summary can be found at the end of this packet.
For questions, please contact Nick Napoli (nnapoli@northeastoceancouncil.org)

Northeast Regional Ocean Plan Restoration Subcommittee
USACE and EPA are working to initiate the Northeast Regional Ocean Plan Restoration Subcommittee efforts to fulfill the goals of the Northeast Ocean Plan (NOP). The NOP activities outlined for the Restoration Subcommittee are to maintain and update data by maintaining and updating the restoration theme and data and list of funding sources on the Data Portal; inform management decisions by using maps and funding sources identified in the Plan to identify regional restoration opportunities; and enhance agency coordination. A subcommittee meeting will take place before the Regional Planning Body meeting in November. We are in the process of scheduling a subcommittee meeting prior to the RPB meeting in November.

Regional Sand Management Subcommittee
The Sand Management Work Group has engaged in planning discussions over the past several months, and would like to use time at the 11/2 NROC meeting to:

1. frame sand management as a broader topic (BOEM),
2. provide federal and state updates on sand studies, projects and planned activities (BOEM, USACE, states), and
3. seek feedback from NROC members on 2 possible events to be sponsored by this work group over the coming 6 months, and prep associated with those events.

Leadership Update: The sand work group is current co-chaired by BOEM (Jeff Reidenauer and Jeff Waldner) and the State of RI (Grover Fugate/Jeff Willis) in the interim while MA CZM hires a new deputy.

Vision for Advancing Sand Management Discussion:

1. Internal Workshop:

The work group has determined the need for broader education and discussion among government players of sand management issues, resources, regulatory roles and challenges with use conflict and ocean user engagement with this complex topic.

As an initial step, the sand work group will organize an internal workshop for federal and state staff to further educate each other on federal and state roles and responsibilities, and to address the regulatory reality and challenges around sand management. Would also use this workshop to tie back to Northeast Ocean Plan, and discuss use conflicts in accessing sand areas, related maps, and best practices on early engagement across government and with ocean users.

Some issues already identified by sand work group include regulatory permitting roles, sand resources, multiple uses of sand, onshore/offshore processes (need for better communication).

Who: Appropriate state and federal staff in New England

Goal: to clarify roles, responsibilities and processes of government agencies and to address regulatory challenges among agencies associated with sand management. Also discuss conflict uses in accessing sand, and early engagement across government to ensure good communication/coordination. The time will also be used to refine the focus of a follow on public workshop.

2. Public Workshop

The second step would be a public workshop that will serve as an opportunity to inform the public and interested groups of federal and state responsibilities with regard to sand management, to provide an update on sand resources and issues, and to engage several ocean user groups for their opinions/concerns/ideas. Coastal communities and fishermen could be two such ocean users to provide perspectives.

Who: Open to the public and to include integral organizations to sand issues, such as American Shore and Beach Preservation Association (and NE chapter), Coastal States Organization and others.

Goal: To inform the public of government roles, responsibilities and processes, and to hear ocean user perspectives on use conflict and other issues associated with sand management.

Funding: NOAA has made available $3K to support these upcoming workshops. Funds are being held by NERACOOS.

Feedback needed from NROC at this 11/2 meeting:

- ✓ Agreement on pursing both internal and public workshops over next 6+ months
- ✓ Additional ideas or reaction to scope, goals, attendance of those workshops
- ✓ Feedback on having staff prep for internal workshop by filling out matrix of regulatory issues they want to see addressed, similar to living shorelines regulatory barriers workshop prep. We acknowledge this takes time, but was very effective in creating a productive workshop.

Partner Update – NERACOOS

Integrated Nutrient Observatory Development

NERACOOS and its project partners continued the deployment and operation of automated nutrient sensors over the fall and winter. UMaine deployed 6 nitrate sensors at depths of 1, 20, 50, 100, 150, and 250 m on Buoy M (Jordan Basin). UConn deployed a new Western Long Island Sound Buoy that is carrying a nitrate, phosphate, ammonium, and CO2 sensor. NERACOOS is planning a nutrient observatory stakeholder workshop for the Long Island Sound region for the spring of 2017.

Northeast Coastal Acidification Network (NECAN)

NECAN continues their efforts throughout the region, working closely with government, stakeholders and industry. NECAN has also kicked off their second webinar series. To date three webinars have been hosted. Recordings of these webinars are now available on the NECAN website, found at http://necan.org/necan-webinar-series-recent-upcoming. If you're interested in learning more about NECAN's efforts or future presentations, please sign up for the NECAN mailing list here.

For more information about NERACOOS and any of these projects please contact Ru Morrison (ru.morrison@neracoos.org)

Partner Update – Gulf of Maine Council

Working Group and Council Meetings

A virtual Working Group meeting was held on October 18 2017. Meeting highlights included: 1) development of the next 5-year Action Plan (2018-2022); 2) development of the next 2-year work plans (2017-2019), 3) consideration of options for GOMA after April 30, 2018, and 4) discussion on the agenda for the next joint Council and Working Group meeting in December.

The next joint Council and Working Group Teleconference meeting is scheduled for December 4, 10:00 AM to 3:00 PM ET.

Action Plan

GOMC is currently developing a new 2018–2022 five-year Action Plan. This plan will include broad goals and a summary of accomplishments during the previous five-year action plan period. The 2018-2022 Action Plan goals will focus on: 1): Restored and Conserved Habitats;

2): Environmental and Human Health; and 3): Sustainable and Resilient Communities. During 2017 the GOMC will be working on development of its new 5-year Action Plan (2018-2022). The draft that will be shared with the Council and Working Group for comments before being presented for final approval to the Council.

Gulf of Maine Association
GOMA Executive Director Cindy Krum will be stepping down on April 30, 2018. GOMA Executive Committee Chair Don Hudson is leading an *ad hoc* committee to discuss various options of how the organization will proceed after April 30.

EcoSystem Indicator Partnership (ESIP)
As of September 2017, ESIP no longer has a contractor. ESIP chairs are exploring options and resources to maintain this program moving forward. A discussion will be held in December at the joint Council and Working Group meeting.

Climate Network
The Climate Network continues to distribute a Quarterly Gulf of Maine Region Climate Impacts and Outlook. The September 2017 *Gulf of Maine Region Quarterly Climate Impacts and Outlook* highlights major weather events, describes the drought's impact on agriculture, and presents temperature and precipitation fluctuations from normal. As part of the seasonal NOAA and Environment and Climate Change Canada both predict an increased chance of above-normal temperatures for September through November.

Webinars
As part of its roles serve as a platform for information exchange / networking, sharing and transfer of tools and resources, and cross-border collaboration, the GOMC has been discussing the possibility of holding informational webinars on topics of interest across all jurisdictions. The webinar will include informational presentations, opportunities to ask questions, and discussion about transferability of the methods and information to other jurisdictions in the Gulf of Maine. Gulf of Maine Council members will invite colleagues and other agencies to participate in this webinar. A list of topics has been discussed and a proposed first webinar will focus on New Hampshire's Tidal Crossing Assessment Protocol.

Update – New England Federal Partners
The New England Federal Partners (NEFP) met on September 14, 2017. Agencies attending included Department of Homeland Security (DHS), Department of Transportation (DOT) Volpe, Environmental Protection Agency (EPA), Federal Emergency Management Agency (FEMA), General Services Administration (GSA), National Oceanic and Atmospheric Association) NOAA, U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (USFWS), and U.S. Geological Survey (USGS).

- NEFP website was put on the Climate Resilience Toolkit https://toolkit.climate.gov/NEFP. We will be making updates
- NEFP will be collaborating on drought activities and coordinating on water data for river and stream forecasts
- Requests to members:
    - FEMA asked if agencies would be willing to review specific areas of State Hazard Mitigation Plans
    - DHS requested private sector contacts for an energy resilience project
    - National Integrated Drought Information System (NIDIS) asked for Agency activities on drought and on farm management practices
    - EPA asked for data sources for their indicators project
    - NOAA requested Agencies comment on the NCA 4 during the public comment period that starts Nov 3.

Partner Update - USACE
Northeast Coastal Restoration Authority
The Water Resources Reform and Development Act of 2014 (Section 4009) gave the Corps of Engineers the authority to conduct a study of aquatic ecosystem restoration projects from Maine to Virginia. The authorization provides an opportunity for state and federal agencies and NGOs in the region to cooperate on the development of a comprehensive plan to identify and prioritize aquatic ecosystem restoration projects. The Nature Conservancy has been instrumental in obtaining the authorization but was unable to provide a letter of support to add the plan to the Fiscal Year 2019 budget. We are beginning the budgeting process for FY 2020 and will investigate whether there is interest in moving forward with the study in FY2020.

Disposal Area Monitoring System (DAMOS)
The Corps of Engineers' Disposal Area Monitoring System (DAMOS) Program has initiated an update to the sediment chemistry database at reference sites for the eight largest dredged material disposal sites in New

England waters. The database is used in the evaluation of material to be dredged to determine its suitability for placement at open water sites. In addition, efforts are underway to map sediment quality over portions of the disposal sites where material may reside that was placed prior to implementation of CWA and MPRSA testing requirements. This will allow for restoration of areas identified with poor sediment quality by targeted placement of suitable dredged material from future projects. Information about DAMOS studies is available on our website (http://www.nae.usace.army.mil/Missions/Disposal-Area-Monitoring-System-DAMOS/).

Partner Update – North Atlantic Landscape Conservation Cooperative

Scott Schwenk, Science Coordinator of the North Atlantic LCC, is currently serving as Acting Coordinator. Bart Wilson served as Coastal Resilience Coordinator through June before returning to his position at Prime Hook National Wildlife Refuge.

Tidal Marsh Resilience

- Resilient Coastal Sites: The Nature Conservancy has completed its evaluation of more than 10,000 coastal sites in the Northeast and Mid-Atlantic to determine their ability to provide a natural buffer to communities from increasing inundation by rising seas, as well as their capacity to sustain biodiversity. The report and analysis will be formally announced in November 2017 and are available on the Resilient Coastal Sites website.

- Tidal Restrictions and Salt Marsh Ditching: UMass Amherst has completed its assessment and mapping of two important influences on tidal marsh integrity: tidal restrictions and ditching of salt marshes. Results can be viewed as online maps in a gallery within the North Atlantic LCC Conservation Planning Atlas.

Beach and Barrier Island Resilience

- Beach and Tidal Habitat Inventories: Tracy Rice of Terwilliger Consulting has completed pre- and post-Hurricane Sandy inventories of Northeast and Mid-Atlantic beaches and tidal inlets. Assessments include degree of armoring (hard stabilization structures), sand fencing, and sediment placement. Results can be viewed as online maps in a gallery within the North Atlantic LCC Conservation Planning Atlas.

Aquatic Resilience and Connectivity

- The North Atlantic Aquatic Connectivity Collaborative continues to add road-stream crossing assessments to its database and to revise and complete assessment modules. Recently, a module to assess culvert condition has been completed. In July, The Nature Conservancy completed an enhanced, online Aquatic Barrier Prioritization Tool, which can be used to assess barriers to aquatic connectivity including dams and road-stream crossings. The protocol to assess the unique aquatic organism passage considerations for tidally influenced crossings is now being reviewed and tested. The protocol, which is being developed by UMass Amherst, is expected to be completed later in 2017.

Atlantic and Gulf Coast Resiliency Project

- Sea-level Rise Ecological Thresholds: Emily Powell and colleagues published their synthesis of thresholds to sea level rise and storm surge for 44 fish, wildlife, and plant species of conservation concern in the journal Ocean and Coastal Management (appearing in the November 2017 issue).

Living Shorelines Update

NROC Living Shorelines Tasks & Actions				
Action item	**Lead**	**Status**	**Description**	**Next Steps**
NOAA FY16 – Track 2, Task 2				
Identify, ground-truth and examine regulatory barriers and opportunities at federal and state levels to bring to the regional discussion.				
Convene at least two regional workshops to further define and clarify the regulatory issue/concern and initiate deliberations to identify and recommend approaches and solutions as well as efficiencies for permitting.	NROC (MA & RI), Living Shorelines Workgroup	1 of 2	Workshop 1:	• Develop regional definition for living shorelines • ADD Others from workshop notes
Evaluate effectiveness of workshop in addressing participants' needs.	NROC, EC		At NROC Spring Meeting in June 2017	Action items from NROC meeting
NOAA FY16 – Track 2, Task 3				
Use results of Task 1 to create fact sheets on suitable living shoreline practices for the region.				
Develop and implement a series of training program workshops for state and federal coastal managers, local community planners and resource managers, and consultants and project designers/engineers in the Northeast. 2-4 training program workshops will be held in each state.	NROC (NOAA & RI); State CZM partners		Workshop 1: All states hosted the NOAA OCM "Introduction to Coastal Green Infrastructure" training course in spring 2017. Workshop 2: Each state is developing additional workshops or training programs based on needs and interested gathered at workshop 1.	• Coordinate across CZM partners on agendas, materials, etc for follow up training workshops • Set up protocol for sharing information on follow up training workshops
Evaluate effectiveness of trainings in increasing understanding and access to living shoreline approaches; motivation to use in future				

Notes from the NROC 2017 Spring Meeting

NROC met June 29, 2017. During the meeting, NROC discussed impacts and next steps of a series of recent committee and subcommittee events. The following notes were transcribed from written notes taken during the meeting on roles of events, better practices, and lessons learned.

CMECS at GeoTools

Role:

- Making connections across agencies and other regions
- Communication among NROC partners
- Feeding NE application with CMECS team, provide guidance to future direction of CMECS
- Relate regional experience to other states
- COP - CMECS listserv for NE region useful
- Scope for future workshops for CMECS and SeaSketch

BPs:

- Facilitated discussion to include remote participants and participants in the room
- COP - CMECS listserv for NE region useful

Lessons:

- Full participation from region helpful – build out representation
- Evaluate who is the best conveyor for future workshops

NBI Regulatory Workshop

Role:

- Identifying local resources for making workshop happen
- Highlight need to problem solve around regulatory barriers to NBI in regi-on
- RCRG project – driver
- Convener
- Support regional solutions
- Planning team to organize workshop and capture follow up, actions, organize future discussions
- Capture decision process on paper
- Discuss SOP / share report with members
- Keep members informed of new developments and initiatives (i.e. ACOE NBI Handbook…)

BPs:

- RCRG project – driver: inform future proposals
- Broad representation from states and federal agencies – roles and challenges
- Solution oriented discussions; neutral convener
- Getting right people to meetings from NROC member agencies
- Candid discussion / neutral environment / elephants
- Homework! Agencies participated in prework for effective room discussion

Lessons:

- Let good discussions have more time, small group discussions effective'
- Focus of LS different in each stage
- Integrate states / agencies in discussion group
- Evaluate … follow up with one? Collect qualitative

Marsh Workshop

Role:

- LCC funding for food/travel
- NROC steering committee to plan workshop, develop agenda
- NROC convene experts on march topic
- Identify next related topic for 'marsh resilience' workshop (i.e. drone, TLD guidance…) (Drone project in RI; NOAA UAS drone project; MITSG mapping eelgrass) (TLD evaluation from FWS/Sandy)
- Look across region on topic

BPs:
- Diversity in participants and perspectives
- Evaluations

Lessons:
- Future include more of working focus during workshop
- Awareness of science / research in region, share out resources / work by topic
- Publication not well used – is NROC product developer?

RPB
Role:
- Staffing RPB, funding, and portal

BPs:
- Round robin on portal
- Includes tribes

Lessons:
- Once created folks like plan
- Hard to separate climate issues from reg
- Need to be more aware of other op. for tribal involvement
- Awareness of overlap with other committee work

GI Training Series
Role:
- Task without NROC grant
- Provide training by NOAA, CZM, NERR, and SE extension

BPs:
- Trainings in each State of Maine working as a region to figure out next steps
- Trainings not limited in participation to one state

Lessons:
- Regular check-ins on EC/newsletter

Sand Management
Role:
- Scoping interest

BPs:
- Find NROC niche
- Enabling NROC to lead workshop being developed, and direct workshop to be NROC focused

Lessons:
- Need to talk to larger audience
- Managing others interest in leading

Sand
- NROC Next Steps
    - Sand work group hosting fall workshop (NROC $ gives us leverage to drive it)
        - Reg permitting roles
        - Sand resources
        - Multi use of sand
    - Invite ASBPA
    - Onshore/offshore conversation passing eachother. NROC could be key in identifying real issues
        - Phase 1 could be internal for policy discussion, before public discussion

Resilience Regulatory Workshop
- Next steps:
    - DFN
    - Monitoring
    - Trade offs (habitat)
- NROC role:
    - work

- Use NROC as forum to advance dialogue on nature based practices (e.g. definition – regional principles)
- Look beyond NE on best practices / what works in reg. domain – NROC can pursue
- Monitoring, protocols, and metrics (ecosystem value)
- Implementation of projects next resilience grant
  - Guidance document
  - Projects on ground, others monitoring
  - Policy and implementation, recs and outreach on that
- Agency guidance on living shorelines – NROC role = neutral
  - Agency "filter" needs to be articulated
- USFWS metrics for living shorelines: 5-7 year effort = leverage
- State of the practice report: webex, fall meeting

Green Infrastructure Trainings

- NROC next steps:
  - 2nd round of trainings in fall informed by 1st round
  - Include state of the practice report
  - Regional training team (OCM, NERRs, States…)
  - Practitioner/engineer focus and field component
  - NROC opens trainings across states
  - Better communication about whats done, whats coming – no duplication, DFNs

Marsh

- NROC role / next steps:
  - Thin layer deposition
    - Criteria for use, DFN, guidance for monitoring effectiveness
    - DOI Sandy projects
  - Drones to monitor shoreline change
    - RI starting work to leverage, and NOAA, SG
    - Potential new topic for NROC
  - Participants share top info sources to stay informed
  - States invite colleagues to thin layer construction to learn
  - Make way for marshes report
    - Better marketing or not our role

HCOM CMECS

- Next steps:
  - Share protocols, applications
  - Fall workshop (CMECS and broader)
  - Build CMECS network?
    - No gaps in representation

RPB Meeting

- Use of data portal
  - NROC role: discover new uses, feedback
- Climate question – are we planning for dynamic changes
- Tribal representatives value participation NROC needs to be more inclusive in workshops, RPB-related committees
- NROC can reach tribes via EPA monthly calls
- NROC hosts emerging issues forums to tee up for RPB
- **unable to read**

Effectiveness Scales

- GI Training: spread
- RPB Meeting: low to medium impact
- Sand management telecons: medium to high impact

NORTHEAST OCEAN PLAN

Northeast Regional Planning Body
Day 1: Data Workshop

Wednesday, November 15, 2017, 10:30 to 5:00
Squamscott Room, Holloway Commons
University of New Hampshire
75 Main Street, Durham, NH

Meeting Objectives

- Engage stakeholders in review of and discussions about updated human use, marine life, and habitat data products, including revised draft products for each of the five Components of Ecological Importance
- Participants provide feedback on the representativeness of the information and how they envision ocean planning data are used—by themselves and by others—and how the Northeast Ocean Data Portal (Portal) could incorporate new features to continue to be an effective tool
- Obtain feedback on progress to date and on potential next steps to inform decisions at the Northeast Regional Planning Body (RPB) Meeting on November 16

Agenda

10:00am **Registration**

10:30 **Call to Order, Introductions and Agenda Review** *–Pat Field, Consensus Building Institute, Facilitator*

10:40 **Brief Overview and Context for This Workshop -** *Mel Coté, EPA, NE RPB Federal Co-lead*

10:45 **Northeast Ocean Data Portal: Major Recent Milestones and Key Data Updates –** *Nick Napoli, Staff*

- Summary of Portal updates and new features, including case studies, and activities planned for 2018
- Overview of RPB activities to update and obtain stakeholder input on specific data themes

11:00 **Review Draft Human Use Data –** *Nick Napoli*
Move to three break-out groups for in-depth discussion of the validity of the data and methods; how data can be used or shouldn't be used; and what other review needs to be completed for data products to be final; participants can choose 2 of the 3 to participate in, 45 minutes per session.

- Commercial fishing: *George LaPointe, fisheries consultant*
  - *Draft Vessel Monitoring System (VMS) data products*
  - *Draft Communities at Sea data products*
  - *Options for characterizing the lobster fishery*

- Marine transportation: *Daniel Martin, NOAA*
  - *Draft updates to data products related to navigation (e.g. pilot boarding areas, anchorage areas, areas to avoid)*
  - *Draft commercial vessel traffic data products from the Automatic Identification System (AIS)*

- Brief updates and discussion of other human use data: Aquaculture, Recreation, and Energy: *Jenn Greene, Portal consultant*
  - *Aquaculture updates*
  - *Draft Energy and Infrastructure updates*
  - *Brief overview of recreation theme updates and options for updating the footprint of different recreational activities*

12:30 **Lunch (provided)**
Potential lunch presentation - TBD

1:30 **Reactions to Human Use Data** – *Pat Field*
Participants provide brief reactions to the information shared during the breakout sessions, including recommendations for work in 2018

1:45 **Updating Marine Life, Habitat, and Components of Ecological Importance Data Products –** *Emily Shumchenia, Staff*

- Overview of RPB activities to update draft data products for marine life and habitat
- Summary of the review process, feedback received, key remaining questions, and longer-term priorities for the draft products and methods supporting components of ecological importance
- Initial visualization and presentation concepts that allow multiple data applications and a discussion about potential uses

2:15 **Biodiversity and Abundance (Components 2 & 3) –** *Jesse Cleary, Duke University*

- Key takeaways, remaining questions, and longer-term data development priorities for biodiversity and abundance data
- Exploration of visualization/presentation options
- Key questions presented for group discussion
- *Questions and discussion*

3:15 **Break**

3:30 **Habitat drivers, Productivity, Vulnerability, Rarity (Components 1, 4, & 5) –** *Emily Shumchenia*

- Key takeaways, remaining questions, and longer-term data development priorities for habitat drivers, productivity, vulnerability, and rarity data
- Exploration of visualization/presentation options
- Key questions presented for group discussion
- *Questions and discussion*

4:45 **Summary and next steps**

5:00 **Adjourn**

NORTHEAST OCEAN PLAN

Northeast Regional Planning Body
Day 2: Fall 2017 RPB Meeting

Thursday, November 16, 2017, 9:00-4:30
Exeter Town Hall, Exeter, NH

Meeting Objectives

- Review and obtain feedback on progress with implementation nearly one year after the Northeast Ocean Plan (Plan) was certified
- Decide on next steps with key Northeast Ocean Data Portal (Portal) updates and Regional Planning Body subcommittee and work group activities
- Learn about and explore tribal priorities

Agenda

8:30am **Registration**

9:00 **Welcome to New Hampshire**

9:15 **Introductions and Agenda Review -** *Mel Coté, EPA, Northeast Regional Planning Body (RPB) Federal Co-lead*

9:30 **Implementation and Use of the Northeast Ocean Plan –** *Ted Diers, NH, RPB State Co-lead*
RPB discussion about the use and implementation of the Northeast Ocean Plan by RPB entities

10:30 **Public Comment**
Public comment on the status of plan implementation or about interesting public uses of the Plan and the Portal

10:45 **Break**

11:00 **Northeast Ocean Data Portal Updates (carry over from 11/15) –** *Nick Napoli and Emily Shumchenia, staff*

- Presentation and discussion about next steps to update, obtain feedback, and use human activity data on the Portal
- Presentation and discussion about next steps with the development and use of data for the Components of Ecological Importance

11:30 **Public Comment and RPB Decision about Next Steps with Northeast Ocean Data Portal Updates**

12:00 **Lunch (on your own)**

1:00 **Tribal Priorities** – *Elizabeth James-Perry, RPB Tribal Co-lead*

1:30 **Subcommittee/Work Group Updates and Next Steps**
Updates and discussion about RPB Subcommittee activities and plans for 2018

- Restoration Subcommittee - *Larry Oliver, USACE, and Ivy Mlsna, EPA*
- Sand Management Subcommittee – *BOEM*

2:30 **Public Comment**
Public comment on tribal priorities, Restoration Subcommittee, and Sand Management Subcommittee activities

2:45 **Break**

3:00 **Monitoring and Evaluation**
Updates and discussion about Monitoring and Evaluation activities and next steps

- Plan Implementation
  - Use of Best Practices in decision-making – *USACE and NOAA/NMFS*
  - Progress Report - *Ted Diers and Mel Coté*
- Ecosystem Health
  - 2018 Ocean Health Index (OHI) Work Plan - *Emily Shumchenia* (on behalf of the OHI Team)
  - Integrated Sentinel Monitoring Network (ISMN) – *ISMN Steering Committee Member (to be determined)*

4:00 **Public Comment**
Public comment on Monitoring and Evaluation. Also, RPB Co-leads solicit ideas on the format and frequency of future meetings.

4:30 **Adjourn**

NORTHEAST OCEAN PLAN

Summary of the review process, feedback received, and remaining questions for draft data products and methods relevant to the components of ecological importance (from the Important Ecological Areas Framework in the Northeast Ocean Plan)

October 2017

This document describes the review process for draft data products and methods compiled for each of the components of ecological importance[1]. The narrative of the review process describes the number of individuals and which sectors/groups provided feedback, and it describes by what methods that feedback was obtained. In the subsequent section, the feedback received is generally summarized. Then, key questions remaining after the review of each component are broadly outlined. Finally, additional detail on the feedback and remaining questions for each component is provided.

Review process

Between July 2016 and February 2017, the Northeast Regional Planning Body (RPB), Marine-life Data and Analysis Team (MDAT), and ocean planning staff assembled available (published, peer-reviewed) datasets and methods relevant to each of five components of ecological importance (productivity, biodiversity, abundance, vulnerability, rarity). More than 100 individual datasets were assembled, many of which are already included on the Northeast Ocean Data Portal, but each of which needed to be reviewed for their appropriateness in this context.

In February 2017, the RPB initiated review of the draft data and methods with regional scientists and staff from RPB entities. Between February and May, ocean planning staff held webinars and calls, facilitated data access and review via SeaSketch (a web-based mapping application)[2], and collected and documented feedback that was provided during these sessions. Over 110 individuals were provided access to the data via SeaSketch and approximately 30 individuals provided feedback during webinars and calls during this time.

In May 2017, component data and methods available on SeaSketch were made accessible to interested members of the public, with the purpose of providing the opportunity to as many individuals as possible to understand the draft data and to provide input on methods and potential uses of the data. Also in May 2017, the Mid-Atlantic RPB provided access to SeaSketch for its entities' staff and ocean planning stakeholders. Between May and September 2017, over 130 additional users from both regions were added to SeaSketch, around 50 of whom were

[1] See Northeast Ocean Plan, pp. 53-55 and 196-199; and subsequent documents at: http://neoceanplanning.org/library/

[2] SeaSketch (www.seasketch.org) is a mapping tool that enables discussion and collaboration on spatial datasets and maps by multiple users. It was used for this review process as a tool to allow controlled access to draft datasets, and does not replace the public datasets and information on the Northeast Ocean Data Portal.

members of academia, industry, and non-governmental organizations. During this time, ocean planning staff coordinated and held in-person meetings, webinars, and phone calls, and facilitated access to SeaSketch to discuss the draft data, potential methods, and key questions. Over 80 individuals engaged in discussions with ocean planning staff one-on-one or as part of a group. In addition, as of September 2017, 16 individuals also provided detailed input on the draft data and methods relevant to one or more components via a SeaSketch data evaluation tool.

In total, over 240 individuals were provided access to the draft data and methods. 111 individuals provided feedback verbally though in-person meetings, phone calls, and webinars. 16 individuals went on to also provide detailed feedback on one or more components through the SeaSketch data evaluation tool.

Feedback received

Overall, feedback was generally positive about the usefulness of the assembled datasets and the published methods that were chosen to develop them. Many individuals also noted key data gaps for each component that represent important considerations when using the data or when identifying regional science and research priorities.

An important consideration throughout the data development and review process has been related to how many data layers are appropriate for illustrating each component. In general, individuals requested more detail (i.e., more data layers) per component. For example, individuals were interested in seeing monthly and seasonal map products and animations versus annual averages, and many individuals discussed the greater potential value of ecological group-level products (e.g., “demersal fish”) versus taxa-level products (e.g., “all fish species”) in order to show patterns that are useful for making decisions. The feedback received throughout the review process, however, is much more complex. For example, for some components, the feedback may lead to an overall reduction in the number of data layers due to selecting one method over another, or due to the recognition that some methods may require more time and research in order to be useful. It should also be noted that some individuals preferred a smaller set of averaged, summarized, or synthesized map products per component, and that some individuals preferred that he RPB discontinue the exercise altogether due to concerns about data gaps, the robustness of methods, and potentially unclear uses of the final data products.

There was also support for advancing a strategy to present and visualize these data via the Northeast Ocean Data Portal. There was broad recognition that some datasets and concepts require additional explanation and documentation to inform how datasets can be used. Many individuals also suggested that additional attention on presentation would enhance the usability of the datasets and advance an understanding of important ecological patterns. Presentation options were discussed, including new tools with the ability to overlay information or to visualize temporal variability within a single view (e.g., animations).

Key remaining questions

Following the review and discussion of data layers and methods under each component, some broader, thematic questions, as well as some technical questions, remained. The questions below relate to the representation of each component as a whole, and indicate important topics to be discussed at the November workshop. Additional scientific and technical questions are captured in the "Detailed feedback" section below.

Component 1: Which/how many temporal windows are important to include for productivity metrics (e.g., long-term averages, annual averages, seasonal averages, monthly averages?)

Component 2: Which, if any, diversity metrics (species richness, Gini-Simpson index, Shannon index) are redundant, and how could they be used?

Component 3: Which of the three abundance metrics (total abundance/biomass, core abundance/biomass area richness, ranked relative abundance) best represent abundance patterns? Do any of these metrics adequately address the dynamic nature of abundance and also areas of long-term aggregation?

Component 4: Should the RPB continue building data products for specific stressors while also developing products that represent inherent vulnerability?

Component 5: How can the RPB better spatially characterize rare species and habitats? What other sources of non-spatial information could be used to fill data gaps for rare species and habitats?

Relevant to all components: How can these data layers be made accessible for a diversity of potential uses and applications? What additional Portal tools could be developed to facilitate data access and understanding?

Detailed feedback on each component

The detailed feedback received for each component has been synthesized by ocean planning staff and is summarized below. This feedback reflects the results of the SeaSketch data evaluation tool, but even more so, the many conversations and discussions held on this topic via webinar, phone, and in-person since February 2017. The table below provides context for material that was reviewed ("What was reviewed?"), describes discussion topics for each type of data, and lists key remaining questions and potential next steps as context for discussion at upcoming meetings. For additional information about the datasets that were reviewed, see the full IEA Data Guide.

Where possible, ocean planning staff and the technical team estimated when specific feedback can be addressed and potentially incorporated into the next phase of product development: by the end of 2017; in the near-term (1-2 years), or longer-term science and research priorities (2+ years).

Component 1: Productivity + habitat and oceanographic drivers

Data layers to support Component 1 are predominately derived from NOAA Northeast Fisheries Science Center (NEFSC) products and research. Due to issues with data availability, the technical team reproduced some data layers for this component (and included them in SeaSketch) using NEFSC methodologies but with different source data. However, in the future, any publicly available data products under this component should be representative of NEFSC's final and publicly available, peer-reviewed, data products.

What was reviewed?	Feedback received	Key remaining questions	Potential next steps
Regional scale primary productivity, using NEFSC methods	Good; NEFSC data are authoritative. "Bloom start day" is somewhat different in that it could capture temporal change or phenological patterns.	What and how many temporal windows are most useful (monthly, seasonal, annual)?	Coordinate with NEFSC (near-term)
Fine-scale primary productivity, using different methods	Promising; needs to be peer-reviewed and published.		
Regional scale secondary productivity (NEFSC)	Good; NEFSC are authoritative. Continuous coverage maps of zooplankton biovolume are preferred.	What and how many temporal windows are most useful (monthly, seasonal, annual)?	Coordinate with NEFSC (near-term)
Habitat and oceanographic drivers Spatially static: canyons and seamounts; Temporally dynamic: sea surface temperature fronts, eddy probabilities	Relevant to more than one component. Should be separate and used as context for other component data.	For static features: what's missing? For dynamic features: what temporal windows are most useful?	Add surface and bottom current data (by end of 2017). Develop animations and/or dynamic data products (near-term)

Component 2: Biodiversity

Component 2 relies on data products produced by the Marine-life Data and Analysis Team (MDAT). Accordingly, this component is limited to representations of biodiversity of sampled/observed cetacean, avian, and fish species and therefore has significant data gaps (e.g. highly migratory finfish, benthic fauna).

What was reviewed?	Feedback received	Key remaining questions	Potential next steps
Taxonomic metrics of diversity for cetaceans, birds, and fish	Data are limited to observed cetaceans, birds, fish; there are significant data gaps. The three metrics are good; want to know more about similarities and differences among Species Richness, Shannon Index, Gini-Simpson Index.	Are any of the metrics redundant? How could they be used?	Compare results of the 3 metrics, and explain scenarios for when one might be used vs. another (near-term)
Experimental layer representing functional diversity – richness of avian foraging guilds	Functional diversity refers to the variety of biological processes, functions or characteristics of a particular ecosystem. This is an important category of biodiversity but there are limitations that affect data interpretation and potential use, e.g., layer does not represent the relative abundance of birds exhibiting their particular feeding behavior (it represents all observations of the species that tend to feed in a particular way, including non-feeding behavior).	How can functional diversity be mapped?	Develop data products for (one or all three) biodiversity metrics for cetacean, bird, and fish ecological groups as one way to characterize biodiversity patterns across different functional groups (by end of 2017) Develop approaches to map functional diversity (long-term)

Component 3: Abundance

Like the Biodiversity component, Component 3 relies primarily on MDAT data products. There is one additional data product representing areas of above average abundance of benthic megafaunal species produced by the University of Massachusetts Dartmouth School of Marine Science and Technology.

What was reviewed?	Feedback received	Key remaining questions	Potential next steps
Three abundance metrics for cetaceans, birds, fish	Good; want to know more about similarities and differences among Total Abundance/Biomass, Core Abundance/Biomass Area Richness, Ranked Relative Abundance. A strength of the experimental Ranked Relative Abundance (RRA) products is the monthly (cetacean) or seasonal (avian) layers. Annual averages tend to smooth spatial/temporal patterns in abundance. Abundance products with the highest temporal resolution possible are useful for decision-making. Abundance patterns are dynamic – try animating layers to show how abundance patterns change throughout the year. Consider the value of the Northeast/Mid-A scale core abundance area richness maps, and/or provide additional guidance for their use.	Are any of the abundance metrics redundant? Do any of these metrics adequately address the dynamic nature of abundance and also areas of long-term aggregation? What's the best way to display/visualize temporal variability in abundance?	Tool(s) to compare Total Abundance/Biomass, Core Abundance/Biomass Area Richness, Ranked Relative Abundance (near-term) Tool(s) such as time-sliders or animations to visualize dynamic patterns in one or all abundance metrics (near-term)
Life history products (areas of spawning, breeding, feeding, migratory routes)	Good; but some are not related to high abundance (e.g., sometimes migratory routes = dispersed); all layers are repeated in Component 4	Do all of these layers relate to areas of high abundance?	Consider how these products do or do not fit in Component 3 (near-term)

Component 4: Vulnerability

There was general support for the approach of assembling data relevant to both specific stressors and to inherent sensitivity/fragility. However, a limitation within the stressor-by-stressor category is that it would be difficult to compile a comprehensive and representative set of data products. A limitation within the inherent sensitivity category is that many of the layers are limited to species of regulatory concern, and to compile a suite of data products using life history traits to assess inherent sensitivity of a broader list of species would be a large long-term project.

What was reviewed?	Feedback received	Key remaining questions	Potential next steps
Stressor-based sensitivity data products, including: Offshore energy infrastructure (birds) Sound (cetaceans) Pelagic and benthic fishing gear (habitat)	There are so many ways to be vulnerable that it is hard to pick out locations of high overall vulnerability. Difficult to be comprehensive and representative; need to include climate change (e.g., temperature, sea level, acidification), marine debris, entanglement as stressors.	Should the RPB continue building data products for ***specific stressors*** and for representing ***inherent*** vulnerability? What other stressors are important to include?	Add fish climate vulnerability groups based on NEFSC work (Hare et al. 2016) (by end of 2017). Track literature and add vulnerability groups for climate change (cetaceans), marine debris, and entanglement when available (near-term, long-term)
Inherent sensitivity (i.e., life history products for species of regulatory concern) data products	Good; however, would be a long-term project to expand the life history concept to all species. Biologically Important Areas (BIAs)[3] could fit here.	What methods and data sources can be used to map sensitivity based on life history characteristics?	Add Mid-Atlantic eelgrass, wetlands, shellfish data (by end of 2017, near-term) Develop approaches to map sensitivity/vulnerability based on species' life history characteristics (long-term)

[3] The Biologically Important Areas (BIAs) component of the NOAA CetMap effort supplements the quantitative information on cetacean density, distribution, and occurrence by: 1) identifying areas where cetacean species or populations are known to concentrate for specific behaviors, or be range-limited, but for which there is not sufficient data for their importance to be reflected in the quantitative mapping effort; and 2) providing additional context within which to examine potential interactions between cetaceans and human activities. http://cetsound.noaa.gov/important

Component 5: Rarity

This component is likely to always have significant data gaps. Spatial data products are dependent on robust observations and therefore rare species and habitats are underrepresented in these products. Despite of and due to the lack of quantitative distribution data for many rare species and habitats, agencies have developed and use spatial data products such as species ranges, critical habitats, biologically important areas that are relevant to rare species and habitats. By the end of 2017, these existing data products can be added to this component.

What was reviewed?	Feedback received	Key remaining questions	Potential next steps
Regionally rare (state-listed species and regional conservation concern) Globally rare (ESA-listed)	There will always be data gaps; quantitative data is limited. Rare species that are not formally protected by states or federal authorities, or are not listed as of conservation concern, are not represented. Spatially rare habitats are missing. Agencies already use data to address these gaps such as species ranges[4], critical habitats[5], and Biologically Important Areas[6]. Does not currently address the underlying reason that a species or habitat is rare – e.g., does the species/habitat have naturally low occurrence, or is its occurrence presently low due to historic and current stressors/disturbances? This type of information is important for decision-making. There is an important coastal connection to several rare fish species (Atlantic sturgeon, river herring, Atlantic salmon) and many bird species (see Northeast state-listed species).	How can the RPB better spatially characterize rare species and habitats? What other sources of non-spatial information could be used to fill data gaps for rare species and habitats?	Add species ranges, critical habitats, Biologically Important Areas (by end of 2017). Add data table of Mid-Atlantic state-listed species (by end of 2017). Include data and information at the individual species-level for species that are endangered or rare, including cetaceans, birds, corals, and sea turtles (by end of 2017). Mathematically calculate spatially rare habitats (long-term). Consider developing a more complete articulation of "rarity" (near-term).

[4]The range of a species is defined as the general geographical area within which that species can be found, including those areas used throughout all or part of the species' life cycle. See Atlantic sturgeon example: https://www.greateratlantic.fisheries.noaa.gov/protected/section7/guidance/maps/atlanticsturgeon.pdf.pdf

[5]Critical habitat is defined as specific areas: within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to conservation, and those features may require special management considerations or protection; and outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation. http://www.nmfs.noaa.gov/pr/species/criticalhabitat.htm

[6]See footnote on previous page; http://cetsound.noaa.gov/important