Atlantic States Marine Fisheries Commission

Habitat Committee

October 30, 2019
8:30 a.m. – 3:30 p.m.
New Castle, New Hampshire

Webinar: https://global.gotomeeting.com/join/542850605
Phone number: 1-888-585-9008, room number: 508-421-182

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1. Welcome and Introductions (*M. Topolski*) 8:30 a.m.

2. Committee Consent (*M. Topolski*) 8:40 a.m.
   - Approval of Agenda
   - Approval of Proceedings from Spring 2019

3. ACFHP Update (*L. Havel*) 8:45 a.m.

4. NHRA Habitat Data Discussion (*J. Coakley and M. Bachman*) 9:15 a.m.

5. Technology Break 10:15 a.m.

6. Status Updates (*L. Havel & R. Babb*) 10:30 a.m.
   - Habitat Management Series: Aquaculture/Survey
   - Habitat Management Series: Acoustics
   - Habitat Hotline

7. Fish Habitats of Concern Workshopping (*all*) 11:00 a.m.

8. Lunch (on your own) 11:45 a.m.

9. Fish Habitats of Concern Workshopping (continued) 1:15 p.m.

10. Species Assignments Check-in (*L. Havel*) 2:45 p.m.

11. Other Business (*M. Topolski*) 3:15 p.m.

12. Adjourn 3:30 p.m.

The meeting will be held at Wentworth by the Sea, 588 Wentworth Road, New Castle, NH; 603.422.7322

ASMFC Habitat Committee Meeting

May 21, 2019
Fernandina Beach Municipal Airport
700 Airport Rd.
Fernandina Beach, FL 32034

Members present: Marek Topolski (MD DNR), Kate Wilke (TNC), Lou Chiarella (NOAA GARFO), Jimmy Johnson (NC DEQ), Dawn McReynolds (NY DEC), Graham Sherwood (GMRI), Kent Smith (FL FWC), Eric Schneider (RI DEM), Mark Rousseau (MA DMF), Russ Babb (NJ DEP)

Members on phone: Michelle Bachman (NEFMC), Josh Carloni (NH F&G), Tony Watkinson (VMRC), Denise Sanger (SC DNR)

Guests: Marta Ribera (TNC), Julia Socrates (NY DEC)

Staff: Lisa Havel, Toni Kerns, Kristen Anstead (on phone)

- Member introductions
- Agenda unanimously approved
- Fall proceedings approved
- ACFHP update (Lisa Havel) *presentation available*
    - Background (regional stats, climate change, estuary characteristics, economics of fish habitat)
    - Strategic and action plan review
    - Awards (Melissa Laser award)
    - New website overview (about us, priority habitats, our work (including specific pages for ACFHP projects), and get involved)
    - ACFHP received about $200 a quarter out of Rep Your Waters donations to ACFHP
    - We need to create a high quality video that ACFHP can use at meetings, professional and trade shows to get the word out about the Partnership
    - Species Habitat Matrix online tool overview and quick demonstration
    - Hab in the MAB-mid-Atlantic Bight black seabass habitat research funded through Beyond the Pond (NFHP Foundation banking source) by the MAFMC and overseen by ACFHP – final report was received
    - SE Fish Habitat Conservation Mapping-spatially prioritize fish habitat protection and restoration focal sites – wrapping up the southeast and started work on the northeast
    - Summary of funded and endorsed projects: specific projects highlighted (Rachel Carson living shorelines in NC, Flagler Dragline ditch restoration in FL, Sheepscot Dam removal in ME, and Coecles Harbor conservation moorings in NY)
    - ACFHP-USFWS reporting time frame pushed to June 5th rather than January 1; upped operational funding minimum to $85K
    - Completed ACFHP business plan and rolling it out at this meeting; will fund high quality printing with Rep Your Waters funding

Action item: Lisa will ask Dr. Brad Stevens if he can present his black sea bass work to the Commissioners at our October meeting.

- Artificial Committee Reef update (Mark Rousseau)
    - 15 ASMFC state reps were present at most recent meeting (March 2019)
    - Ocean brick technology in Israeli waters (presentation)

- AR survey data question for APAIS presented
- Oyster reefs in the context of ARs and whether we want to discuss them at this meeting
- Federal permitting issues and how they affect AR placement; regulatory and jurisdictional differences between the ASMFC and GSMFC (more gentleman's agreements that are then implemented at the state level for GSMFC-no habitat committee, but habitat handled by fisheries committees)
- 2004 Gulf States and Atlantic States guidelines for ARs; release date was supposed to be April, but not final as of yet
- AR monitoring protocols: high degree of variability between states, so no final general guidelines adopted-discussion that these general guidelines are needed to create conformity for regulatory reporting (Dawn)
- Discussion about what a monitoring "guidelines" document could/should be, and ASMFC needs; Commissioners have not specifically requested this
- HC could make a request to AR committee for "monitoring tiers" guideline document
- Update 1980s AR report to address individual states' programs (Step 1), then move toward monitoring guidelines

- American Eel Stock Assessment-Habitat (Kristen Anstead) *presentation available*
  - Benchmarks stock assessment in 2012-downward trends in abundance; depleted stock status, but no overfishing occurring; reviewed data and updated assessment in 2017
  - Data poor fishery- fishery dependent and independent
  - YOY, yellow eel-standardized using enviro variables
  - Habitat section of the assessment is a literature review
  - Desire to improve understanding of habitat needs and availability; develop GIS-type habitat model for American eel
  - Habitat spans open ocean to rivers, lakes, streams and ponds: extreme habitat generalists, but bottlenecks may exist
  - Key threats are fragmentation of habitats and populations
  - Use GIS outputs to generate new potential stock productivity estimates; heavily dependent on data availability
  - ASMFC currently compiling a list of all available datasets by state (particularly, GIS-referenced location data coupled with environmental data): maintaining contact with Canadian counterparts
  - Next benchmark stock assessment scheduled for 2022
  - Bring state reps with eel GIS data into the discussion and connect them with Kristen at ASMFC

Action item: Everyone – get in touch with Kristen (kanstead@asmfc.org) if you have eel GIS data that might be helpful.

Action item: Lisa will share the link to the New Zealand study from Kristen.

Action item: Lisa will share the Chesapeake Bay Habitat Action Team's data spreadsheet with Kristen.

- Analysis of historic fisheries data in the Mid-Atlantic (Marta Ribera) *presentation available*
  - Fish survey data in TNC data portals (e.g. winter flounder fall trawl surveys-10km grid-interpolated biomass estimates)
  - Stakeholder comments include: update data, have changes over time, standardize data spatially, etc.

- GIS product resolution has improved and allows more accurate comparisons between years
- Year-group biomass images show focal movement northward for many species (e.g. summer flounder)
- Currently working on Version 4

- Habitat Management Series: Acoustics (Lisa Havel)
  - Final draft to go out to HC for expert review soon
  - We need to be more specific about tying the document back to fish habitat.
  - We should include a sciaenid case study (sound could interfere with mating).
  - Lou said the GARFO reference is too old – he'll share newer documents.
  - We need a thorough literature search and summary.
  - This would get done quickly if we contract it out. Kent thinks he can get Grant Gilmore at FAU-HBOI to help out.

Action item: Lisa will share a clean version of the document with Kent to share with Grant Gilmore.

Action item: Lisa will share the list of acoustics papers with Kent and the acoustics subcommittee from Lou.

Action item: Kent will reach out to Grant Gilmore to see if we can update the acoustics effects document: ASMFC or FWC will fund re-write potentially.

- Aquaculture Survey and Source Document (Lisa Havel and Russ Babb)
  - Focused on habitat negative and positive effects
  - Smaller source document: cannot be a be the end-all for aquaculture
  - Coordinate review through state aquaculture reps (make it not so NJ centric-photos, etc.)
  - Russ Babb reviewed the new reduced focus document for the HC and coordinated consensus foundation for the source document
  - We need to expand on spatial planning to avoid impacts
    - We can sidebar a state where spatial planning is working
    - NC has a good tool for shellfish only
  - Links to reps or state aquaculture websites for further information
  - We need every state to look this over
  - We need to add a comment on looking to the future – net pens, etc.

Timeline:
Mid-June: Russ will compare this draft to the survey responses, and show what they covered and what they didn't.
Mid-June: Lisa will share the draft with the Habitat Committee and Aquaculture Committee, explaining the edits we're looking for and that we need photos.
August 15: edits due from Habitat and Aquaculture Committees.
Sept. 5: Lisa will incorporate the edits and send the new draft out the Habitat Committee.
October 5: 2nd round of edits due from Habitat Committee.
October 10th: add draft to briefing materials for Policy Board approval.

Action item: Lisa will share NC's shellfish tool.

Action item: Russ will compare the current draft to survey key points, identify which elements it supports, then send it out to state reps to review through their aquaculture experts.

- Species Assignments (Lisa Havel)
    - Members recounted their species assignments and recent policy board meetings related to those species as they relate to habitat issues.
    - The HC determined that some ASMFC trust species could use 2 members assigned to them for habitat considerations. A list of these was generated, and member teams assigned.

Additional species assignments
Marek: horseshoe crabs
Wilson: American eel
Julia: weakfish and tautog
Graham: Atlantic herring once he's completed his contracted work
Could use another person on black sea bass, striped bass, and shad and river herring

Action item: Lisa will share the species assignments with the ISFMP coordinators.

Action item: Lisa will find out if John Gill retired.

- Habitat Hotline (Lisa Havel)
    - The Committee wants to do a shorter Habitat Hotline this year with a few feature articles on aquaculture, and state updates (focused on aquaculture).
    - New York will get an article on kelp together. *Lisa received on 8/29 (nutrient bioextraction initiative).*
    - Lou will try to see if he can get an offshore net pens article – *Kevin Madley agreed.*
    - Kate will get an article on aquaculture as habitat. *Received 9/16*
    - Kent will work on a general introduction article. *Received 9/16*
    - Lisa will contact Kate Taylor for a NOAA aquaculture science article. *She agreed.*
    - State updates will focus on aquaculture activities.
    - Lisa will ask (maybe Louis Daniel) for a blurb on the Commission's role in aquaculture activities. *She asked Pat for him and/or Louis to write a blurb – he will have one by Oct. 15.*
    - Kent will be the lead.

Timeline:
July 1 deadline to let Lisa know whether the articles outlined above are happening
September 1 deadline for all non-federal articles and updates
Oct. 15 deadline for federal updates (to match fiscal year)
Nov. 15 deadline for Lisa to get everything to Lisa Hartman for formatting
Dec. 15 release Habitat Hotline.

- Fish Habitats of Concern (ASMFC HAPC) (Lisa Havel)
- Document has been unchanged since 2018
- Subcommittee formed to address nine specific questions for each species to help define FHOCs
- HC reviewed example responses to develop full FHOCs
- Possibly do not include jointly managed species in this exercise so as not to conflict with HAPC designation at the federal level
- 'At each life stage' in the FHOC definition should be removed
- Reviewed Species-Habitat Matrix and identified highest valued habitat types (High/Very High designations) for ASMFC managed species as a starting point

- Prepare FHOCs for species that are federally managed, but without HAPCs in place and for those that are only ASMFC managed species

Action item: Lisa will create a spreadsheet with the H/VH scores for each species and share it with the Habitat Committee, along with the Atlantic croaker example. The Habitat Committee will provide edits, and we'll use this as a template for the other species.

Atlantic croaker

1. Atlantic croaker are **currently managed by the ASMFC under** Addendum II to Amendment I to the Interstate Fishery Management Plan for Atlantic Croaker.
2. **Date of Designation** (date of original FMP): October 1987
3. **Habitat Management Series Documents** Concerning Atlantic Croaker:
   - Atlantic Sciaenid Habitats: A Review of Utilization, Threats & Recommendations for Conservation Management and Research (March 2017)
   - Atlantic Croaker Habitat Fact Sheet (December 2015)
   - Atlantic Coastal Submerged Aquatic Vegetation: A Review of its Ecological Role, Anthropogenic Impacts State Regulation, and Value to Atlantic Coastal Fish Stocks (April 1997)
4. **Management Responsibility:** ASMFC/states.
5. **NEW:** Habitats with High or Very High Scores in the Species-Habitat Matrix[1]:

Subregion	Life Stage	Habitat Category	Habitat Type	Rank
Mid-Atlantic	Juvenile & YOY	Coastal Inert Substrates	Loose fine bottom (mud, silt, and sand)	Very High
Mid-Atlantic	Juvenile & YOY	Riverine	Moderate gradient large mainstem river finer substrate (mud, silt, and sand)	Very High
Mid-Atlantic	Juvenile & YOY	Tidal Vegetation	Saltwater & brackish marsh	High
Mid-Atlantic	Adult	Coastal Inert Substrates	Loose fine bottom (mud, silt, and sand)	High
South Atlantic	Egg & Larva	Coastal Inert Substrates	Loose fine bottom (mud, silt, and sand)	High
South Atlantic	Egg & Larva	Tidal Vegetation	Saltwater & brackish marsh	High
South Atlantic	Egg & Larva	Tidal Vegetation	Tidal freshwater marsh	High
South Atlantic	Juvenile & YOY	Coastal Inert Substrates	Loose fine bottom (mud, silt, and sand)	High
South Atlantic	Juvenile & YOY	Tidal Vegetation	Saltwater & brackish marsh	High
South Atlantic	Juvenile & YOY	Tidal Vegetation	Tidal freshwater marsh	High
South Atlantic	Adult	Coastal Inert Substrates	Loose fine bottom (mud, silt, and sand)	High

[1] A score of Very High means the habitat is an essential contributor; the given life history stage for this species cannot be completed without enough high quality occurrences of this habitat type. A score of High means the habitat is an important contributor to the success of this life history stage; can be occasionally substituted by use of one or more additional habitat types, but the majority of this life history stage takes place in this habitat type.

6. NEW: Table suggested by Kate:

Life Stage	Temperature	Salinity	DO	Depth	Substrate	Vegetation	Currents
Eggs							
Larvae							
YOY							
Juveniles							
Adults							

7. **Current Fish Habitats of Concern:** Amendment I (November 2005). Estuaries, which are especially vulnerable to anthropogenic changes, are designated as Habitat Areas of Particular Concern (HAPCs). Atlantic croaker larvae are particularly vulnerable to changes in estuarine conditions. Environmental conditions in spawning areas may affect growth and mortality of egg and larval croakers (Eby and Crowder 2002).

   From section 1.4.3 *Present Condition of Habitats and Habitat Areas of Particular Concern of Amendment I:*

   Estuarine areas may be functionally reduced in size or degraded by numerous activities, including but not limited to, development, dredging and filling, toxic chemical and nutrient enrichment discharges from point and non-point sources, habitat alteration (e.g., wetlands converted to agricultural use), failing septic systems, and alterations in seasonal runoff patterns (S.J. Vanderkooy, Gulf States Marine Fisheries Commission, personal communication). These events may reduce the quantity and quality of Atlantic croaker habitat. Scientists believe that Atlantic croaker are affected by these changes, but few specific studies have quantified the effects of habitat degradation on the fishery resource (S.J. Vanderkooy, Gulf States Marine Fisheries Commission, personal communication). Many coastal and estuarine areas have inadequate water quality because of various land use activities. The Chesapeake Bay is one example of an area that experiences eutrophication from agricultural runoff. Excess nutrients entering coastal waters may cause algal blooms that reduce dissolved oxygen, resulting in hypoxic or anoxic conditions, especially during the summer months (R. Lukacovic, Maryland Department of Natural Resources, personal communication). Large hypoxic areas have also been documented in Louisiana's coastal waters during the summer, because of nutrient loading into the Mississippi River from the Midwestern farm belt. These event can directly impact fisheries in the area (S.J. Vanderkooy, Gulf States Marine Fisheries Commission, personal communication).

   From Habitat Fact Sheet – Habitat Areas of Particular Concern:

   ASMFC Habitat Areas of Particular Concern (HAPC) for Atlantic croaker are estuaries, which serve as important nursery and spawning areas.

Marek added (not sure which document):

Optimal adult Atlantic croaker habitat is mud/silt substrate having high organic content (Torre et al. 2017); often this substrate is in close proximity to estuarine marsh and tidal creek systems. Optimal YOY and juvenile Atlantic croaker habitats are large deep to small shallow tidal creeks found within estuarine marshes (Miller & Able 2002, Turner & Johnson 1974). These tidal creeks also have mud/silt substrate with high detritus and organic content. Habitat selection by Atlantic croaker favors substrate with abundant benthic invertebrates (Nemerson & Able 2004). Atlantic croaker will opportunistically utilize structural habitat (Harding & Mann 2001) and submerged aquatic vegetation if present (Odum et al. 1984).

Harding, J. M. and R. Mann. 2001. Oyster reefs as fish habitat: Opportunistic use of restored reefs by transient fishes. Journal of Shellfish Research 20(3): 951-959

Miller, M. J. and K. W. Able. 2002. Movements and growth of tagged young-of-the-year Atlantic croaker (Micropogonias undulates L.) in restored and reference marsh creeks in Delaware Bay, USA. Journal of Experimental Marine Biology and Ecology 267: 15–33

Nemerson, D. M. and K. W. Able. 2004. Spatial patterns in diet and distribution of juveniles of four fish species in Delaware Bay marsh creeks: factors influencing fish abundance. Marine Ecology-Progress Series 276: 249-262

Odum, W. E., T. J. Smith, III, J. K. Hoover and C. C. McIvor. 1984. The ecology of tidal freshwater marshes ofthe United States East Coast: a community profile. U.S. Fish and Wildlife Service, Washington, D.C.FWS/OBS-83/17. 177 pp.

Torre, M. P., D. M. Lifavi, W. P. Kaestner, T. E. Targett. 2017. No evidence of site fidelity in Atlantic croakers or spot in the shore zone of lower Delaware Bay. Transactions of American Fisheries Society 146: 1093-1100

Turner, W. R. and G. N. Johnson. 1974. Standing crops of aquatic organisms in tidal streams of the lower Cooper River system, South Carolina. The Cooper River environmental study. pp. 13-20

The other information about salinity, temp, and DO range are not included because they are so broad as to not be FHOC. They are detailed in the Scienid habitat document the HC wrote and can be lifted from there. Here is the text I wrote but without any citations.

Adult Atlantic croaker are commonly found in a broad range of salinity (6 20 ppt), temperature (5-35.5 ˚C), and can tolerate hypoxic dissolved oxygen conditions as low as 2.0 mg/L. Juvenile Atlantic croaker can tolerate a wide range of salinity (0.5-18 ppt), temperature (0.4-18 ˚C), and hypoxic dissolved oxygen conditions.

8. **Scientific accuracy based on currently available information**.

It appears to be accurate although “estuaries” seems to be a somewhat general and vague habitat description.

9. **Need for clarifying edits.**
   Maybe clarify the type of estuaries and go into details about riverine and lagoonal/sound type estuaries. Both are fairly different from each other. For example, the Neuse River is different from Pamlico Sound but both provide estuarine type habitats to croaker.
10. **Consistency of ASMFC FMP habitat sections with other ASMFC publications**.
    Yes
11. **Recommended changes.**
    List or description of known bottleneck habitat locations (e.g. documented spawning habitat sites, important foraging habitat (e.g. Grey’s Reef for Atlantic sturgeon), restricted migration corridors (Peck’s Lake for Spanish mackerel Jensen Beach, FL), etc).

Tautog

1. Tautog are **currently managed by the ASMFC under** Amendment I to the Interstate Fishery Management Plan for Tautog.
2. **Date of designation** (date of original FMP): March 1996
3. **Habitat Management Series Documents** Concerning Tautog:

- Atlantic Coastal Submerged Aquatic Vegetation: A Review of its Ecological Role, Anthropogenic Impacts, State Regulation, and Value to Atlantic Coastal Fish Stocks
- The Importance of Habitat Created by Molluscan Shellfish to Managed Species along the Atlantic Coast of the United States
- Beach Nourishment: A Review of the Biological and Physical Impacts

4. **Management Responsibility**: ASMFC/states
5. **NEW:** Habitats with High or Very High Scores in the Species-Habitat Matrix[1]:

Subregion	Life Stage	Habitat Category	Habitat Type	Rank
North Atlantic	Juvenile & YOY	Macroalgae	*Fucus, Laminaria*, *Ulva lactuca* mat	High
North Atlantic	Juvenile & YOY	Other Sessile Fauna	Live rock (inert hard bottom with hydroids, bryozoans, tube worms, sponges, etc.)	High
North Atlantic	Juvenile & YOY	Submerged Aquatic Vegetation	Mesohaline & polyhaline species	High
North Atlantic	Juvenile & YOY	Submerged Aquatic Vegetation	Tidal fresh & oligohaline species	High
North Atlantic	Adult	Other Sessile Fauna	Live rock (inert hard bottom with hydroids, bryozoans, tube worms, sponges, etc.)	High
North Atlantic	Adult	Other Sessile Fauna	Patch reef, soft corals, or anemones amidst soft sediment	High
Mid-Atlantic	Juvenile & YOY	Macroalgae	*Fucus, Laminaria*, *Ulva lactuca* mat	High
Mid-Atlantic	Juvenile & YOY	Other Sessile Fauna	Live rock (inert hard bottom with hydroids, bryozoans, tube worms, sponges, etc.)	High
Mid-Atlantic	Juvenile & YOY	Submerged Aquatic Vegetation	Mesohaline & polyhaline species	High
Mid-Atlantic	Juvenile & YOY	Submerged Aquatic Vegetation	Tidal fresh & oligohaline species	High

[1] A score of Very High means the habitat is an essential contributor; the given life history stage for this species cannot be completed without enough high quality occurrences of this habitat type. A score of High means the habitat is an important contributor to the success of this life history stage; can be occasionally substituted by use of one or more additional habitat types, but the majority of this life history stage takes place in this habitat type.

Mid-Atlantic	Adult	Other Sessile Fauna	Live rock (inert hard bottom with hydroids, bryozoans, tube worms, sponges, etc.)	High
Mid-Atlantic	Adult	Other Sessile Fauna	Patch reef, soft corals, or anemones amidst soft sediment	High
South Atlantic	Juvenile & YOY	Other Sessile Fauna	Live rock (inert hard bottom with hydroids, bryozoans, tube worms, sponges, etc.)	High
South Atlantic	Adult	Other Sessile Fauna	Live rock (inert hard bottom with hydroids, bryozoans, tube worms, sponges, etc.)	High

6. NEW: Table suggested by Kate:
   Kate tried to see if I could fill out this table in a way that would be prescriptive enough to basically act as a set of instructions to a GIS person to map extent of habitat. But it seems that tautog are pretty adaptable to temperatures and specific salinity/DO were not available. So a map would be of all structured habitat in estuaries and shelf waters (I'm not sure that is informative to FHOCs). See three bullets under #11 below.

Life Stage	Temperature	Salinity	DO	Depth	Substrate	Vegetation	Currents	Notes
Eggs/Larvae	~15-20°C			Surfaces; larvae my swim deeper at night	n/a	n/a	Accumulate in fronts	Found in shelf waters GB to NC and nearshore and estuarine waters
YOY	YOY and Juveniles remain inshore over winter; hide or covered w/sand in holes in water <5°C				All types of complex structure			
Juveniles	Abundance was correlated with surface water temp (Dorf and Powel 1997)	Abundance did not vary with sediment type or salinity within Narragansette Bay (Dorf and Powel 1997)			All types of complex structure	Prefer vegetation over unvegetated bottoms		Nearshore and estuaries; main habitat and distribution factor (for indv <25cm) is the availability of cover, even vertical relief could be used.
Adults (>25cm)	Torpor-like state at low temps. (migrate offshore/deep when water <11 °C) temps <20°C may be too hot.			North of Cape Cod < 60ft South of Cape Cod <120ft	All types of complex, structure – vegetation, rocks, oyster beds, natural or artificial structure; fish are very local, that is, coupled tightly w/structure.			Summer in bays and estuaries; some overwinter offshore in deeper areas, but some remain in bay even in 5-8°C (Lucy and Arendt. 1999). Mouth of estuaries/inlets/art reefs important south of Long Island where there are fewer rocky outcrops.

								Found inshore (<10 m deep) and offshore (25-75m deep) in winter.
Spawning								Bays and estuaries; although spawning adults have also been documented offshore

7. **Current Fish Habitats of Concern**: None are identified by ASMFC; SAV, oyster reef, offshore hard bottom structure, substrate for growth of blue mussel

From p5-6 NOAA technical memo NMFS-NE-118 1999 - https://www.nefsc.noaa.gov/publications/tm/tm118/tm118.pdf)

This is an excellent resource that reviews the relevant literature, however need to see if there are significant findings in more recent years (since it turns out 1999 was 20yrs ago!). I can do more of this searching but wasn't able to by the deadline.

Habitat Needs

Tautog are specifically associated with complexly structured habitats in all post-larval stages of their life. As juveniles, these habitats include submerged vegetation, shellfish beds, and three-dimensional objects or structures with appropriately-sized crevices and holes for shelter. (See the "Differential Distribution" section in this chapter). As the fish grow, larger complex structures are needed for shelter, and hard substrates are usually required to support the epibenthic or encrusting invertebrates upon which the fish generally feed. (See the "Feeding and Diet" chapter). South of Long Island, beyond where rocks and boulders were deposited during previous glacial periods, there are few natural rock outcroppings in coastal marine waters to provide the "reef" habitat that tautog require, although shellfish beds in euryhaline parts of estuaries serve as habitat (Arve 1960). In this area, the man-made "reef" habitat created by coastal jetties, groins, pilings, accidental shipwrecks, and intentional deposition of solid material as artificial reefs is undoubtedly important to the distribution of the species. The availability of new macroalgal growth as cover in the late spring to early summer period can be critical to settlement and survival of post-larvae (Dorf 1994; Dorf and Powell 1997). This is especially true for areas that do not support extensive eelgrass beds or complexly structured habitats. Although macroalgae is normally degraded or swept into dense beds later in the season, a healthy, newgrowth, spring-summer macroalgal community can be important to the initial survival of juvenile tautog (Dorf 1994; Dorf and Powell 1997). Sogard and Able (1992) reported that juvenile tautog in New Jersey appeared to prefer habitat where sea lettuce (Ulva) was present. Ulva can have negative effects on certain taxa or species, and the preference or tolerance of Ulva by tautog can give it an advantage with competitors or predators (Dorf 1994). In contrast to studies that report the importance of vegetation, Dixon Page 6 (1994) reported that YOY tautog preferred small boulders as habitat over cobbles, vegetation, and other structure-based habitat options in an aquarium study.

Issues and Concerns (from Beach Nourishment doc)

Tautog occur near areas immediately associated with human activity (shallow estuarine areas, rocky and artificial reefs, and submerged stormwater and sewage outfall pipes, etc.) which has resulted in past and current changes in habitat availability and quality. Development of nearshore areas through such activities as dredging of material for channel maintenance, marina construction, and other shoreline development resulting in pollutant discharges will impact tautog populations at all life history stages. Loss or destruction of vegetated bottom areas eliminates juvenile nursery areas. Increased turbidity and siltation due to dredging activities may inhibit feeding in larvae, degrade submerged aquatic vegetation beds used as nursery habitat, as well as damage adult spawning areas. Contaminants, disturbed in the

dredging process, and brought into the water column could affect egg, larval and juvenile survival directly, or indirectly, through their food sources

From Amendment 1 to FMP

Response plans for accidental toxic spills in coastal waters should focus on tautog as well as shellfish resources, because tautog are localized and depend on specific habitats and associated food sources that are susceptible to chemical contamination. Point source contamination and hypoxia near nursery grounds can be improved by minimizing sewage discharges and increasing wastewater treatment levels. Non-point source toxic contamination of groundwater and nearshore coastal habitats can be reduced by redirecting storm water runoff into catch basins. Habitat enhancement requires the creation or expansion of essential habitat where little or none presently exists. Creation of artificial reef habitats (see Section 1.5.4.1) and breakwaters could mitigate habitat losses. Both intentional reef construction and accidental creation through shipwrecks may be expanding tautog habitat in open, sandy coastal areas where tautog would not normally be found.

4.10.3 Avoidance of Incompatible Activities

Each state should establish windows of compatibility for activities known, to adversely affect tautog habitat, including projects involving water withdrawal, entrainment of eggs and larvae in cooling water systems and mortality from thermal effects, dredging, bulk-heading and channel construction. As a preventative measure, buffer zones could be established around important nursery areas.

8. **Scientific accuracy based on currently available information**: Not accurate since none are identified as Fish Habitats of Concern.
9. **Need for clarifying edits**: high
10. **Consistency of ASMFC FMP habitat sections with other ASMFC publications**: FMP has more detail but it is dated.
11. **Recommended changes**:

- Based on the literature, all post-larval stages of tautog use bays and estuaries in both summer and winter and are specifically associated with complex structure. (is this EFH? Or FHOC?)
- Eggs and larvae are found in shelf waters from Georges Bank to NC and in nearshore and estuarine waters. (pretty ubiquitous, so I'm not sure how this informs FHOC)
- SAV or new macroalgal growth (where extensive beds of SAV are not present) as cover in the late spring to early summer period can be critical to settlement and survival of post-larvae.

YOY: FHOC Attached macroalgae, polyhaline estuaries

In the southern MAB (NJ-VA), attached macroalgae is an extremely important habitat for YOY. (In DE, we do not see YOY in our abundant unattached, drifting macroalgal mats.) In habitat preference experiments, YOY preferred Ulva over other red macroalgae, hard structure, and eelgrass (Wong and Targett, in prep). Ulva attached to hard structure was the most-preferred habitat of all experiments. In the field, Wong and Targett found YOY on shallow, estuarine hard structure with and without attached macrolagae, suggesting that artificial reefs may provide value as nursery habitat in the southern MAB if placed in shallow, polyhaline, estuarine waters, and almost certainly if these structure support attached Ulva.

References:

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