

**NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGIONAL OFFICE
HABITAT CONSERVATION DIVISION
STRATEGIC PLAN 2013 - 2016
Revised Jan 7, 2015/May 2, 2016**

1.0 Introduction

The mission of the National Marine Fisheries Service's (NMFS) Habitat Program is to:

“protect, restore, and promote stewardship of marine, estuarine and riverine habitat to support our nation’s fisheries for future generations”

By conserving coastal and marine habitats, the Habitat Program directly contributes to the goals of other NOAA Programs including protection and recovery of protected species, maintenance of sustainable fisheries, sustainable management of the nation’s coastal regions, and increased resiliency of coastal ecosystems and communities in a changing climate. Its vision is for healthy and self-sustaining coastal and marine habitats that support vital ecosystem functions, including abundant living marine resources, human uses, and resilient coastal communities.

Maintaining and improving the health and productivity of marine and diadromous resources is critical to our stewardship mission as well as maintaining and enhancing current and future opportunities for their sustainable use and the health and biodiversity of the ecosystems upon which they depend. Many factors, both ecological and anthropogenic, affect living aquatic resources and their habitats, and our habitat program relies upon scientific and management tools to have a meaningful influence on many of those factors. The primary tools for guiding our activities are a number of federal laws and regulatory authorities. These include: Magnuson-Stevens Fishery Conservation and Management Act (MSA); Fish and Wildlife Coordination Act (FWCA); Federal Power Act; Energy Policy Act; Deep Water Port Act; National Environmental Policy Act;

1.1 Habitat Conservation Division – Northeast Regional Office

The Northeast Region Habitat Conservation Division (HCD) implements its program consistent with the national mission and vision. Our geographic area of responsibility includes Maine to Virginia. We approach our resource management responsibilities through a diverse range of activities tailored to address the challenges and resource needs encountered in several sub-regions along the coast. Staff are sited advantageously both at the Regional Office and in the field to accommodate our various stewardship activities.

Our work relies upon cooperative interactions with numerous state and federal agencies and private organizations. We coordinate with these entities to promote effective stewardship by providing technical advice and conservation recommendations for activities they are funding,

authorizing, or proposing which have potential to adversely affect living aquatic resources and their habitat. In most instances, our role is advisory, but federal agencies are required to give great weight to our input pursuant to the previously mentioned statutory authorities, or as agreed under memoranda of agreement or similar cooperative documents. The primary federal agencies that we work with include: the US Army Corps of Engineers, the US Environmental Protection Agency, the US Coast Guard, the US Fish and Wildlife Service, the Bureau of Ocean Energy Management, the US Department of Energy, Federal Highway Administration, the Federal Emergency Management Agency and NOAA line offices. Carrying out this mission depends upon both HCD and individual staff building strong, effective partnerships with these agencies and other public and private sector constituents. We consider establishing and maintaining collaborative professional relationships an important dimension for how we approach: 1) achieving our ecological objectives, 2) building public support for our recommendations and technical advice; and 3) making sound resource management decisions.

Our regional approach to meeting these challenges generally proceeds through two major avenues: (1) we participate in managing fishing and non-fishing impacts to living aquatic resources and their habitats through the MSA and (2) we coordinate with state and federal agencies and private organizations on a variety of coastal development activities.

With respect to our MSA responsibilities we collaborate with the New England Fishery Management Council (NEFMC) and Mid-Atlantic Fishery Management Council (MAFMC) to:

- Identify and describe Essential Fish Habitat (EFH) for each managed species using the best available science;
- Incorporate EFH into fisheries management plans;
- Determine fishing impacts on habitat and the significance of those impacts; and
- Recommend measures to minimize impacts, such as restricting certain fishing gears in specific areas.

HCD conducts consultations on development projects proposed, funded, authorized, licensed or undertaken by federal agencies that may adversely affect designated EFH. Such requests for permits include: fill in wetlands and waterways; dredge and/or deposit dredge material in nearshore or ocean waters; build a wide variety of coastal structures; install new energy infrastructure; and build, modify or remove dams that impede fish passage. These EFH consultations allow HCD to assess the biological effects of human activities which are known to adversely affect the function and value of coastal aquatic habitats, and to provide recommendations for avoiding or minimizing impacts to the extent practicable. Consultations are not just limited to coastal development activities but also include planning actions undertaken by NMFS and other NOAA lines offices. HCD is heavily involved in the fisheries management process insuring that all fisheries management measures have no more than minimal adverse impact on EFH. In instances where fisheries management measures have more than minimal

impact, we work with the NEFMC and MAFMC to reduce those impacts, either through gear modifications or area management.

EFH consultations are complementary to our other natural resource protection efforts pursuant to the FWCA, the Atlantic Coastal Fisheries Cooperative Management Act, the Atlantic Coast Striped Bass Conservation Act, and related statutes which protect federally managed fishery resources as well as various living marine resources, including diadromous fishes, crustaceans, mollusks and state-managed fishes critical to the aquatic ecosystem. These statutory authorities and their implementing regulations collectively provide the necessary framework for us to conserve and protect the full suite of trust resources in the coastal zone in a manner that complements the fishery management component of NMFS' mission.

1.2 Challenges Facing HCD

In the past twenty years, HCD staff has noted changes in the nature and scope of activities in NOAA's northeast region. We continue to coordinate with federal and state agencies on installation of recreational and commercial structures, coastal erosion, telecommunication projects, dredging, aquaculture, habitat restoration projects, and similar proposals; however, regionally-important transportation and energy infrastructure projects have become prominent and currently dominate the project load in much of the region. These latter projects entail the replacement and expansion of large transportation infrastructure in our ports and highway system, as well as installation of both renewable and non-renewable energy generation, transmission and distribution facilities. In some portions of the northeast region, developers are siting new or replacement infrastructure in aquatic habitats instead of in the upland. They do so in part to avoid densely populated areas, but also because they think it is easier and faster for them to establish new corridors for linear projects in the water. This trend is expected to continue for the foreseeable future.

Increasing interest for siting projects and conducting activities in coastal waters introduces new challenges for HCD project managers who must master fishery resource or natural history subject matter and familiarize themselves with new construction types and related impacts (e.g., acoustics, electromagnetic impacts). Currently, interest in large-scale energy projects such as wind farms, non-conventional hydrokinetic power generation, expansion of natural gas and electric transmission lines, re-licensing of nuclear power plants, oil or natural gas transport tankers and pipelines, deepening major ports, and installing offshore terminal facilities present new and significant challenges for the HCD. Many of the renewable energy projects are proposing novel technologies for which we have very little environmental data regarding their potential impacts to NOAA trust resources. HCD staff is increasingly being asked to provide expertise to assist the Federal licensing or permitting agencies in the development of their review processes as well as environmental documents. Until these renewable energy projects are implemented and sufficient environmental impact data collected, HCD will be in a difficult

position of trying to insure the conservation of NOAA trust resources while not interfering in the development of these energy resources.

Growing interest in the development of coastal and ocean renewable energy projects and the regulatory processes associated with this development provides an excellent example for illustrating why HCD must create a strong and effective strategic plan for the future. These projects typically entail requests to install devices with limited engineering information and even less data regarding potential interactions with aquatic life and the associated habitat. As a young industry, the typical project proponent has limited resources to perform ecological monitoring or resource studies. In addition, the FERC pilot hydrokinetic licensing process provides a regulatory means for these proposals to advance to field deployment with little data. Much staff time and effort must be expended to address the emerging issues and to ensure habitat protection while the pilot deployments are underway.

In addition to the development of these new energy resources, the northeast has an abundance of hydropower dams which prevent diadromous species from accessing their historical range. For catadromous species, these obstructions may prevent stocks from entering critical nursery and juvenile habitat, and anadromous species likewise may be excluded from much of their suitable spawning grounds. Displacing diadromous fishes from these critical areas requires returning stocks to rely on reduced habitat or less productive habitat for recruiting successive generations. This pressure on regional fishery resources is a significant consideration in the northeast because most of our diadromous species are at record low population levels and some are currently being assessed for potential listing under the Endangered Species Act. Thus, as dams come up for license renewal, it is increasingly incumbent upon HCD to evaluate removal options for these obstructions or to provide fishway prescriptions or recommendations for creating safe and effective fish passage past the dam.

Similarly, maintaining and modernizing our ports and transportation infrastructure has become increasingly challenging as coastal communities become urbanized and global shipping trends toward deeper draft vessels that must be accommodated in and near working harbors, aviation centers, and ground transportation. While the types of generic impacts these projects entail are familiar, we are continually challenged with finding creative solutions for addressing large scale impacts, managing long-term licensing processes and post-permitting follow-up, and providing technical assistance to move projects forward in an environmentally appropriate manner. New trends toward “design-build” approaches to transportation infrastructure projects further complicate the review process and our ability to provide effective conservation recommendations because key decisions regarding project design are left to evolve after the NEPA process has been completed. This process requires continued contact and attention from HCD staff beyond the customary period of involvement.

These energy development and major transportation initiatives currently dominate available HCD staff resources and challenges our ability to realign our efforts to larger scale, proactive

approaches to habitat conservation. The challenges created by our growing work load are compounded by our diminishing staff presence. Prioritizing HCD involvement is now the most critical component of implementing an efficient and effective program that simultaneously preserves our collective knowledge base and continues to provide essential services to the public.

2.0 Strategic Planning Process

HCD has developed this strategic plan to align the activities across the region with common program-wide goals and objectives. HCD program-wide goals, objectives and actions for the region were developed based upon NMFS' mission and vision as well as information provided by HCD staff related to their assessment of regional habitat needs. We then divided the Northeast Region into subregions corresponding to various groupings of hydrologic or watershed units (see figure 1). The HCD program-wide goals provide a common theme for developing a series of regionally-consistent plans and associated goals, specific objectives and recommended actions to best address the priority issues in each sub-region. Each subregion action plan contains the program-wide HCD goals. Specific objectives and actions were developed that best address those goals. Accordingly, the strategic plan is sufficiently flexible to attend to the specific habitat needs of a given subregion using objectives and actions tailored to the local issues, while ensuring that activities taking place across the region are consistent with HCD's habitat conservation goals. Because the objectives and actions are based upon the specific habitat needs of the subregion they do not have to be the same for each subregion as long as they work towards achieving the HCD goals. However, actions most effectively supporting the overarching HCD goals will be given priority based upon an evaluation of regional and subregional needs.

To achieve effective habitat conservation goals with limited staff resources, this strategic plan will: (1) adjust the delegation of responsibilities from a state-specific orientation to a broader subregion approach; (2) foster team-building among staff assigned to each subregion; (3) improve the program's effectiveness by identifying the highest priority actions within a subregion and (4) focus HCD's resources on identified priorities and actions.

This strategic plan also supports actions identified under the NOAA Habitat Blueprint. The Habitat Blueprint is a new approach for NOAA to develop and implement habitat-based solutions for meeting its mission. The NOAA Habitat Blueprint provides a forward-looking framework for NOAA to think and act strategically across programs and with partner organizations to address the growing challenge of coastal and marine habitat loss and degradation. It is comprised of a three-prong approach: (1) Establishing habitat focus areas for long-term habitat science and conservation; (2) implementing a systematic and strategic approach to habitat science to inform effective decision-making; and (3) strengthen policy and legislation to enhance our ability to achieve meaningful habitat conservation. Goals and objectives within this strategic plan support each of these approaches through directed science,

stakeholder collaboration and outreach. HCD's approach to meeting these new objectives relies upon re-thinking human and aquatic resource uses in three broad sectors of coastal waters within our geographic area of responsibility. Under this plan, we will examine the patterns of human impact and natural resource uses in these sectors as a systematic means for identifying 1) the most important challenges in each zone, and 2) the objectives and actions that are most effective for achieving our overarching goals in each subregion. By rethinking our resource management issues on this scale, we will be in a better position to set broad division priorities for each subregion that address the most compelling needs while making more efficient use of our staff.

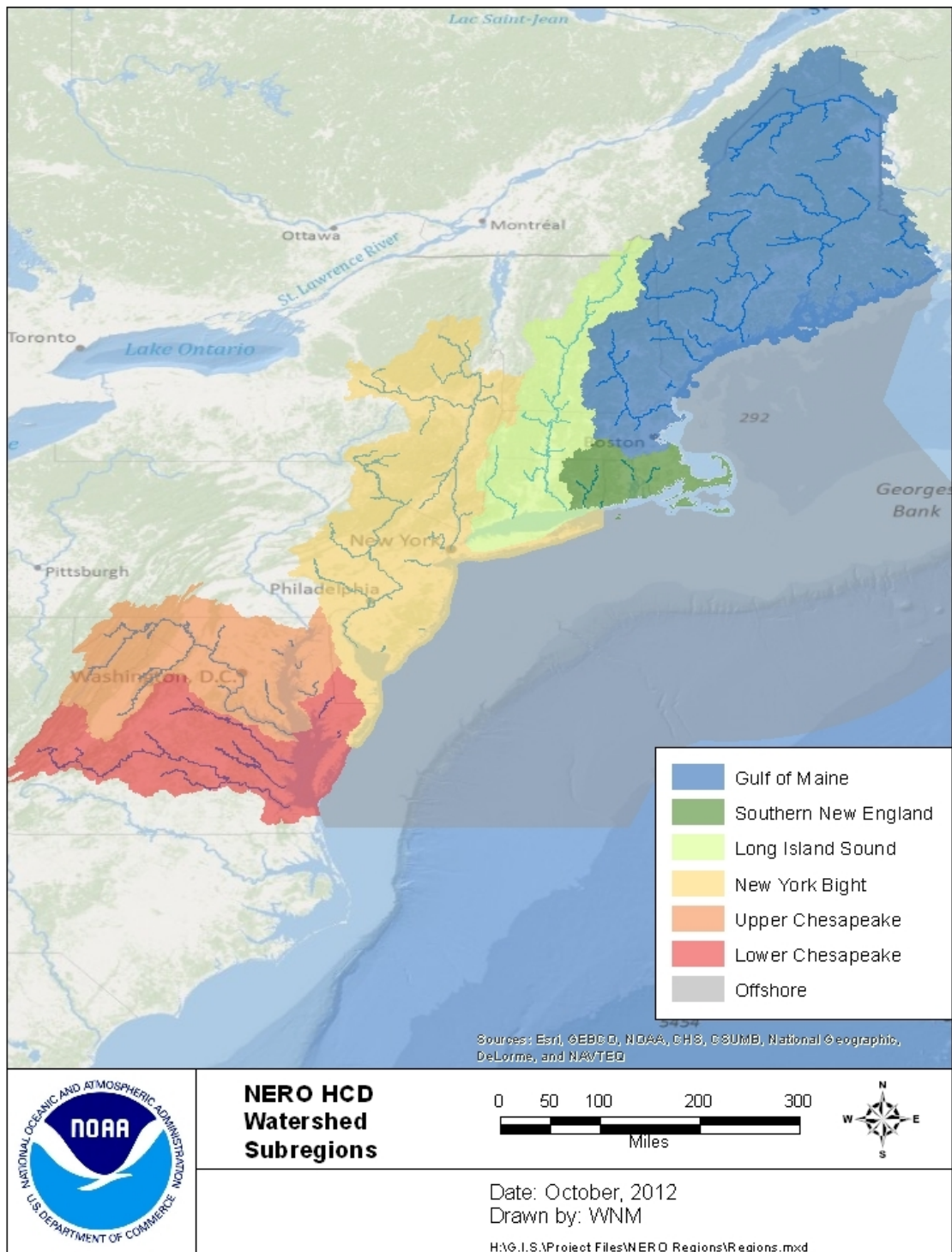


Figure 1. HCD subregions

2.1 HCD Priority Habitats

The following habitats were identified as priorities for the northeast region. Some or all habitats from this list are identified as priorities within each subregion. Additional priority habitats may be identified based on the needs of a specific subregion.

2.1.1 Tidal Marsh

Salt, brackish and tidal fresh water marshes are productive areas which provide nursery and forage habitat, filter pollutants, control runoff and provide nutrients to the aquatic system. Types of tidal wetland vegetation vary with the range of salt tolerance including tidally influenced riverine systems at lower mesohaline, oligohaline, and tidal fresh salinities. Common species adapted to specific salinities and degrees of inundation include the salt marsh vegetation *Spartina alterniflora*, *S. patens*, and *Distichlis spicata*; brackish marsh vegetation *Spartina cynosuroides*, *Hibiscus sp.* and *Typha angustifolia*; and tidal fresh vegetation includes *Pontederia cordata*, *Zizania aquatic* and *Sagittaria sp.*

Tidal brackish and fresh marshes play a critical role in fueling upper estuarine and riverine food webs, critical to spawning success and stock recruitment in migratory fish species (e.g., striped bass, shad, river herring), and estuarine fish that nursery in the estuary (e.g., sciaenids, drum family; bluefish). Detritus and nutrients, resulting from decomposition of marsh vegetation during the previous fall, support subsequent spring and early summer phytoplankton blooms, and high abundance of zooplankton (copepods, rotifers), and insect larvae (chironomids), which peak at the critical point of fish nursery requirements. Tidal brackish and fresh marshes sequester nutrients and sediments from freshwater runoff that improves estuarine water quality, and provide cover and forage ground for juvenile finfish. Threats to brackish and fresh marshes come from adverse changes to riverine hydrology and sediment scouring/accretion patterns stemming from deforestation and impervious surface development in the watershed.

Salt marsh is considered a special aquatic site, under the 404(b)(1) guidelines of the EPA's Clean Water Act. In the northeast, many salt marsh systems have been lost to dredge and fill activities for coastal development, overrun by invasive species, succumbed to increased erosion, subsidence, sudden marsh death, and other threats. Other areas have been altered through mosquito ditching, dike or berm construction or other hydrologic alterations, which fragments large marsh expanses and may make those areas more vulnerable to invasive species. It is important to recognize, however, that saltmarsh habitat complexes also include a variety of other grasses, sedges, flowers, and other vascular plants that provide values and functions for fish and wildlife.

2.1.2 Submerged Aquatic Vegetation

Submerged aquatic vegetation (SAV) consists of rooted, vascular flowering plants generally located in shallow nearshore areas, such as protected bays and coves where sufficient light levels

penetrate the water to support subaqueous rooted vascular plants. SAV beds are highly productive habitats, which provide nursery and forage areas for many species, and are considered a habitat area of particular concern (HAPC) for summer flounder. These beds also buffer wave energy, minimize erosion and filter nutrients. SAV beds are considered a special aquatic site, under the 404(b)(1) guidelines of the EPA's Clean Water Act, due to its important role in the marine ecosystem for nesting, spawning, nursery cover and forage areas for fish and wildlife. Eighteen species occur in the upper Chesapeake Bay. Functional values to fish (shelter, forage ground, nutrient sequestering) have been well documented for several species, including eelgrass (*Zostera marina*), widgeon grass (*Ruppia maritima*), redhead grass (*Potamogeton perfoliatus*), and wild celery (*Vallisneria americana*). SAV is a HAPC for juvenile and adult summer flounder, and documented nursery/forage ground for sandbar shark. Eelgrass habitat has been greatly diminished in the northeast region, and throughout its range. Eelgrass habitat has been lost to poor water quality, coastal development, habitat alteration, dredging, boating and fishing activities, and disease.

2.1.3 Coastal Riverine Habitat

Coastal rivers provide habitat for diadromous species migration, spawning, rearing and juvenile development. In their natural free flowing condition, coastal rivers provide a variety of habitat types to support diadromous species. For example, cobble habitats within rivers provide spawning substrate and refuge for larvae and juvenile salmon and sea lamprey. Blueback herring, American shad and striped bass require flowing riverine water for spawning and rearing habitat. Many of these rivers have varying degrees of fish passage, especially when moving into the more narrow stretches where road crossings and dams may be present. Sustainable runs of diadromous fish supports piscivores (e.g., bluefish, striped bass) who may 'chase' diadromous species up river or may feed on juveniles who appear in greater numbers. Diadromous fish migratory, spawning and nursery habitat within coastal rivers has been affected by water quality degradation, dams and road crossings, changes to riverine hydrology, sediment scouring/accretion from land use activities, and habitat alteration by development.

2.1.4 Mudflats and Shallow Water Habitat

Mudflats are located in low-energy depositional areas and are generally flat expanses exposed during low tides. Flats consist of varying size substrate, ranging from coarse (cobble, gravel and some sands) to very fine (typically mud, silt and very fine sand fractions) grained material. While they may be in wholly unvegetated areas, tidal flats also comprise a portion of emergent marsh complexes in marine, estuarine, and freshwater tidal areas. Vegetation from salt marsh and submerged aquatic vegetation as well as microalgae and planktonic organisms provide organic matter input and support benthic invertebrates and other prey which serve as forage for many fish species. Mudflats are considered special aquatic sites, under the 404(b)(1) guidelines of the EPA's Clean Water Act due to its important role in the marine ecosystem for foraging

species. The leading edge of the tidalflat-water interface provides a shallow water refuge for many forage and juvenile species.

Shallow water habitat (i.e., tidal waters less than 1 meter in depth, MLLW) provides similar functions for finfish as mudflats. Even in turbid estuaries shallow waters are within the photic zone, permitting sunlight penetration to the bottom for SAV and benthic algae production. Shallow waters of the upper Chesapeake Bay are preferred for spawning activities of migratory species such as shad and river herring. With absence of other available cover (e.g., SAV, oyster shell lumps, coarse woody debris), shallow water habitat provides adequate cover for juvenile fish by limiting access for larger mobile predators. Consequently, young-of-the-year fish use shallow shoreline waters as refuge for nursery and foraging activities. Habitat impacts are generally associated with dredge and fill activities. Other impacts include eutrophication, coastal development, boating related activities (e.g., “prop scars”) and aquaculture. Areas where mudflats currently exist may be less developed, since many developed areas may have been mudflats that were dredged or filled in the past.

2.1.5 Unvegetated Subtidal Habitat

Unvegetated mud, sand and cobble habitat are subtidal environments that occur over a gradient of energy zones and water depths. They may be relatively lacking in structure, or they may include features such as sand waves, trenches, rocky outcroppings, or even reefs. Regardless of their configuration, they consist of unconsolidated soft sediments which provide habitat for benthic infauna and even some fishes. Benthic microalgae and bacterial mats may be present on the surface of the sediments and serve as the base of the food chain. These areas provide spawning and juvenile development habitat for winter flounder and other demersal spawners.

Mud bottom consists of unconsolidated soft sediments that provide habitat for benthic infauna. Benthic microalgae are typically present on the surface of the sediments and serve as the base of the food chain. These areas provide spawning and juvenile development habitat for winter and nursery habitat for summer flounder. Sand bottom is preferred forage habitat for many estuarine finfish, including summer flounder, weakfish, and red drum. Sand bottom is also preferred by commercially important shellfish, such as hard clam (*Mercenaria mercenaria*), soft clam (*Mya arenaria*), and American oyster (*Crassostrea virginia*). Cobble substrate is important to species such as Atlantic cod and American lobster for various life stages from egg to adult. Habitat impacts are generally associated with dredging, boating activities (e.g., chain sweep), energy infrastructure (pipelines, cables), and aquaculture.

2.1.6 Shellfish Beds

Shellfish beds are dense aggregations of shellfish above or within the substrate, which provide structure, shelter and forage habitat for other species of fish. In our coastal embayments and offshore, a variety of bivalve mollusks such as mussels, oysters, scallops, and clams form aggregations in intertidal and/or subtidal areas. Shellfish may improve water quality by filtering

out fine particles in the water column and are key carbon- phosphorous- and nitrogen-fixers that help maintain local water quality.

2.1.7 Offshore Habitats

For purposes of this strategic plan, the offshore region extends from coastal waters to the outer continental shelf and slope between Maine and North Carolina. Offshore habitats extend from the normal range of shallow water habitats to the extent of the EEZ. Habitats associated with this region include cobble/gravel, structured habitat/boulders, sand and sand waves, deep water, low energy mud, kelp beds/macroalgae, pelagic habitat, submarine canyons, continental slope, and seamounts. Threats to these habitats include, commercial fisheries, offshore energy development such as wind, LNG, and MHK, pipelines and cables, intakes/discharge, ocean dumping, dredge disposal, transportation (shipping), oil and gas drilling, and excavation.

3.0 Implementation

Implementation of the strategic plan will guide HCD staff activities. This will allow HCD to focus on priority actions that yield the most habitat protection benefit for the investment of staff resources. Implementation of the strategic plan will also be reflected in the Performance Plans of HCD staff. In addition, the strategic plan will be used to prioritize new actions within the context of those in progress. This will ensure activities selected through the year will yield the most habitat protection benefit for the investment of staff resources. This will also provide HCD staff the basis for accepting or rejecting new actions.

The specific actions associated with the strategic plan will be reviewed annually to address any needed changes to the HCD and subregional actions. The strategic plan will be reviewed every three to five years to revise agency goals and objectives, if applicable, as well as address changes in program needs, project activities and staffing. The annual review will be conducted by staff during HCD's annual staff meeting.

4.0 HCD Mission and Goals

The following goals have been developed to be consistent with NMFS's mission and to support the vision and purpose of the Habitat Blueprint. These program-wide goals are common for all subregions of the strategic plan. Some goals are managed through regional office activity and may not be included within the subregions.

Goal 1: Coordinate HCD actions with other NMFS programs for maximum effectiveness.

Goal 2: Conserve priority habitats through existing regulatory authorities.

Goal 3: Promote stewardship of marine, estuarine, and riverine habitats through proactive, non-regulatory actions

Goal 4: Promote education and outreach to highlight the mission of the Habitat Conservation Division

Goal 5: Promote research which addresses regional habitat management needs

5.0 Strategic Plan – HCD Program Administration

This portion of the strategic plan includes the program-wide goals, objectives and actions related to the overall implementation of the habitat program in the Northeast Regional Office. The objectives and actions were developed using information generated from the sub-regional habitat assessments undertaken by HCD staff and represent consensus agreement by the Northeast Regional HCD staff. These program level objectives and actions support the priority actions within the subregions. However, not all objectives are necessarily addressed in every subregions.

Goal 1: Coordinate HCD actions with other NOAA programs for maximum effectiveness.

Objective 1A: Improve internal coordination across NOAA and NMFS offices including Protected Resources, Restoration Center, Science Center, Chesapeake Bay Office, Sustainable Fisheries and the Office of Habitat Conservation.

Action 1A1: Coordinate with Protected Resources to coordinate and integrate the project review/consultation processes. Development of watershed teams.

Action 1A2: Coordinate with Restoration Center to identify opportunities for cross-program prioritization activities. Develop guidance on acceptability of habitat conversion for restoration purposes. Coordination of RC funded activities, fish passage (living shorelines)

Action 1A3: Coordinate with Northeast Fisheries Science Center (NEFSC) to establish mechanisms for obtaining habitat research needed for management purposes.

Action 1A4: Coordinate with Chesapeake Bay Office to ensure that habitat protection priorities are integrated into the Bay Action Plan.

Action 1A5: Blueprint activities, NCBO, NOS

Action 1A6: Aquaculture – better coordination on projects – develop a coordination process -

Action 1A7: Coordination with other NOAA programs, sea grant, Sanctuary, NERRs

Goal 2: Conserve priority habitats through existing consultation authorities

Objective 2A: Protect, restore and enhance priority habitats in each subregion by conducting consultations under the Magnuson-Stevens Fisheries Conservation and Management Act, Fish and Wildlife Coordination Act, Federal Power Act, National Environmental Policy Act and other relevant mandates.

Action 2A1: Utilize full suite of consultation tools to undertake consultations in each sub-region based upon sub-regional habitat protection priorities.

Action 2A2: Work with FMCs to protect and conserve EFH

Objective 2B: Improve program efficiency in providing habitat advice through the development of programmatic agreements or other appropriate processes

Action 2B1: Support and promote mitigation banking and in-lieu-fee opportunities with the ACOE and participate on Interagency Review Teams.

Action 2B2: Provide comprehensive programmatic responses to ACOE regarding reissuance of Nation-wide Permits, General Permits, and State Programmatic General Permits to insure appropriate protections to habitat.

Action 2B3: Review and revise existing EFH findings letters, general concurrences, and programmatic consultations to ensure appropriate habitat protections are in place.

Action 2B4: Develop new EFH findings letters, general concurrences, and programmatic consultations with Federal agencies (NRCS, FEMA, EPA, etc.) to ensure appropriate habitat protections are in place. Work with HQ on national approaches.

Goal 3: Promote stewardship of marine, estuarine, and riverine habitats through proactive, non-regulatory actions

Objective 3A: Collaborate with a variety of stakeholders to promote pro-active conservation of living aquatic resources and habitats

Action 3A1: Participate in Atlantic Coastal Fish Habitat Partnership, ASMFC Habitat Committee, Delaware River Fish and Wildlife Management Cooperative, regional DMMPs, watershed planning teams, and other partnerships to ensure that habitat conservation needs are fully represented.

Action 3A2: Develop policy/guidance on various habitat issues to promote conservation of fish habitats and other living aquatic resources.

(explore opportunities to partner with others to develop a policy on legacy contaminants – clean up levels –who does it? Related to habitat enhancement) moorings

Beneficial use of dredge material to deal with climate change issues? Thin layer disposal on wetlands (it is a priority – Karen)

Tide gates – operations/enforcement

Climate change policy for HCD –real action

Mid Atlantic shallow water habitat reort – get a team together – includes Michelle, Kristy and Melissa (Dave S as the coach)

Goal 4: Promote education and outreach to highlight the mission of the Habitat Conservation Division

Objective 4A: Increase understanding and visibility of HCD program for internal and external stakeholders and the public.

Action 4A1: Develop the communications capacity within HCD to allow for the wide-scale reporting of accomplishments to the public and build stakeholder support for the HCD program.

Action 4A2: Participate in Northeast Regional Office communication workgroup supporting the region’s communication plan and HCD communications strategy.

Action 4A3: Publish habitat conservation “web stories” monthly to highlight the importance of habitat and the role of HCD.

Action 4A4: Participate in community outreach activities and public events promoting HCD mission and conduct educational programs for teachers, students, and parents focusing on the importance of living marine resources.

Objective 4B: Provide technical/scientific habitat information to the public and stakeholders for their use

Action 4B1: Maintain HCD web site for ease of use and to showcase HCD activities. (put up prog consults eg NRCS)

Action 4B2: Update information contained on the HCD web site and work with Office of Habitat Conservation to provide accurate EFH maps to be included on the EFH Mapper tool. Maps will be GIS compatible were appropriate.

Action 4B3: EFH roadshow to agencies – Coast Guard, Corps, MEDOT, FHWA, DOE

Objective 4C: Provide HCD staff with the knowledge required to effectively engage in a wide range of habitat and natural resource activities considering the constant development of novel technologies

Action 4C1: HCD staff will develop training and professional development plans in consultation with their supervisors to insure that training and development needs can be satisfied.

Goal 5: Identify research, advocate for its implementation and use research which addresses regional habitat management needs

Objective 5A: Build collaborative relationships with Northeast Fisheries Science Center and other researchers/agencies (river forecasting center) in support of regional habitat management activities.

Action 5A1: Participate in National Habitat Assessment Workshops (NHAW) to foster national collaboration of habitat science supporting management.
Ongoing

Action 5A2: Conduct annual planning meetings with NEFSC to discuss HCD science priorities, NEFSC research objectives and areas of mutual interest. Specific focus is placed on annual internal proposals for Hydro Power and EFH funding.

Action 5A3: HCD will develop regional science/research priorities and present to Center – Work with Center to undertake research

Action 5A4: Initiate discussions Investigate Scio/economics issues regarding habitat conservation (OHC)

Action 5A3: Coordinate with NEFSC on the need to update and expand information on fish species and their habitats. Focus will be placed on importance of shallow water and riverine habitats.

Objective 5B: Promote research in support of refining EFH designations.

Action 5B1: Collaborate with NEFSC and council staff in developing methods for designating EFH for all federally-managed species in the region and conducting 5 year reviews and revisions of all EFH components of FMPs.

Action 5B2: Work with NEFSC and coastal states in the region to ensure that inshore fishery independent survey data are included in EFH maps. (EFH geodatabase)

Objective 5C: Build regional capacity and expertise in climate change science and management for priority areas.

Action 5C1: Identify and support training programs to build expertise in climate change relative to coastal resource impacts and to address climate change issues in the habitat consultation process. Collaborate with the appropriate offices within NOAA to promote climate change science.

6.0 Strategic Plan – Northeast Subregions

This portion of the strategic plan includes the goals, objectives and actions related to implementing the habitat program within specific subregions. The goals are consistent with the broader Division goals for the region. The objectives and actions were developed utilizing information generated from sub-regional habitat assessments undertaken by HCD staff and represent professional judgment of HCD field staff. Objectives identified within a subregion reflect long-term interests of the division. However, individual activities will be addressed based on capacity and resources for a given fiscal year. Activity for each action depends on staff available, project activity and modifications to annual program priorities. Further, some actions may be carried out in a regional manner, not specific to individual subregions or watersheds.

6.1 Gulf of Maine

6.1.1 Geographic Description

For the purposes of this assessment, the Gulf of Maine subregion extends from the St. Croix River in Maine to Cape Cod Canal in Sandwich, MA. All rivers flowing to the Gulf of Maine are included in this subregion. These rivers support a number of species, including diadromous and federally manage species. Included in this subregion are Gulf of Maine DPS rivers for Atlantic salmon, the DPS for shortnose sturgeon and Atlantic sturgeon.

6.1.2 Priority Habitats and Associated Species in Gulf of Maine

- a. *Tidal marsh* - mummichogs, silversides, sticklebacks, winter flounder, striped bass, alewife, blueback herring, American shad, American eel, forage species, blue mussels, *Spartina* spp. *Rupia*.
- b. *SAV* – (Predominantly eel grass, *Zostera marina*), winter flounder, striped bass, Atlantic cod, scallops, scup, bluefish, lobster, invertebrates/forage species (crabs, mussels, silversides).
- c. *Coastal riverine habitat* - alewife, blueback herring, American shad, American eel, Atlantic salmon
- d. *Mudflat and shallow water habitat* - winter flounder and other managed species, shellfish, marine worms, forage species
- e. *Unvegetated subtidal habitat* – winter flounder, shellfish, marine worms, forage species

6.1.3 Potential Threats to Habitat in Gulf of Maine

- a. *Tidal marsh* - road crossings, fill, altered hydrology and drainage, coastal development, light alteration, nutrient inputs, sea level rise, invasive species
- b. *SAV* – nutrient input, coastal development, light alteration
- c. *Coastal riverine habitat* – dams and hydropower, road crossings, impoundments, climate change (rising temperatures), nutrient input, urban development
- d. *Mudflat and shallow water habitat* – dredging, fill, boating activities, water access structures, coastal development.
- e. *Unvegetated subtidal habitat* – dredging, fill, utilities, and coastal development.

6.1.4 Habitat Goals and Objectives for the Gulf of Maine

Goal 1: Coordinate HCD actions with other NMFS programs for maximum effectiveness.

Objective 1A: Proactively promote and facilitate ecological restoration of priority habitats in coordination with Restoration Center.

Action 1A1: Collaborate with Habitat Restoration to identify priority tidal marsh habitat restoration projects and facilitate the permit review process.

Action 1A2: Collaborate with Habitat Restoration to identify priority SAV restoration projects and facilitate the permit review process.

Action 1A3: Collaborate with Habitat Restoration to identify priority barrier removal and hydrology restoration projects for the benefit of diadromous species and facilitate the permit review process.

Objective 1B: Develop processes for improving the efficiency of HCD and PRD’s consultation process with federal action agencies.

Action 1B1: Coordinate with PRD to develop communication and process protocols for integrating the EFH, FWCA and ESA consultation processes with federal action agencies on projects affecting shortnose sturgeon, Atlantic sturgeon, and Atlantic salmon.

Action 1B2: Coordinate with PRD staff to develop communication and process protocols for integrating the Federal Power Act and ESA review process with the FERC on hydropower and MHK projects affecting Atlantic salmon, shortnose sturgeon and Atlantic sturgeon.

Goal 2: Conserve priority habitats through existing regulatory authorities

Objective 2A: Protect and restore sensitive coastal and estuarine habitats, with emphasis on tidal marsh, SAV, mudflats, shallow water and unvegetated subtidal habitat, and the associated species.

- Action 2A1: Consult with federal action agencies on permit activities (Section 10/404, NEPA, MSA) involving coastal development, dredging and energy projects affecting special aquatic sites (tidal marsh, SAV, mudflats, pools and riffles). Provide conservation recommendations to avoid, minimize and mitigate impacts on the habitat and associated species (e.g., winter flounder).
- Action 2A2: Coordinate with ACOE and other action agencies regarding implementation of HCD conservation recommendations by their permittees. Additional focus will be on compliance with monitoring plans, post construction surveys, and mitigation plans.
- Action 2A3: Provide technical assistance to regional staff developing new programmatic consultation agreements with other federal agencies.
- Action 2A5: Support mitigation and restoration of special aquatic sites through advisory roles in In-lieu-fee (ILF) mitigation, mitigation banking, and other mitigation processes.
- Objective 2B: Protect, enhance and restore natural hydrologic processes to ensure access to riverine spawning and nursery habitat for diadromous species.
 - Action 2B1: Collaborate with the State DOT's and the regional ACOE offices to develop and/or reinforce conservation measures to improve and protect fish passage at stream crossings.
 - Action 2B2: Engage in hydropower licensing actions on target projects affecting diadromous species.
- Objective 2C: Provide guidance and assistance to NERO on issues pertaining to climate change impacts on priority habitats and species.
 - Action 2C1: Review and stay current with information pertaining to climate change impacts on priority habitats (coastal rivers, tide marsh, SAV, etc) and associated species, and implications for management actions and conservation recommendations; disseminate information to other staff and federal action agencies.
- Goal 3: Promote stewardship of marine, estuarine, and riverine habitats through proactive, non-regulatory actions**
- Objective 3A: Collaborate with stakeholder groups and international partners to proactively address habitat issues of concern.
 - Action 3A1: Participate on the Regional Dredging Team (Sudbury Group) to collaboratively work with other agencies on New England wide dredging issues.
 - Action 3A2: Participate at an advisory level in the ASMFC and watershed-based groups focused on diadromous species restoration.

Action 3A3: Provide technical and in-kind assistance to state/university SAV mapping and restoration projects whenever possible (e.g., diving assistance, advisory roles in ILF, supporting restoration projects, etc.).

Action 3A4: Coordinate with MA DMF regarding the monitoring of conservation mooring study sites to facilitate the transfer of the technology New England-wide to protect and restore eel grass habitat.

Goal 4: Promote education and outreach to highlight the mission of the Habitat Conservation Division

Objective 4A: Educate the public and regulatory communities about essential fish habitat, the federal power act and other activities of the Habitat Conservation Division.

Action 4A1: Participate in workshops, conferences and educational activities to promote the importance of protecting aquatic habitat and the activities of the Habitat Conservation Division. Potential venues include American Fisheries Society annual meeting, Energy Ocean conference, ASMFC subcommittee meetings, internal seminars, the annual EPA eelgrass workshop, etc.

Action 4A2: Conduct outreach with action agencies to ensure understanding of EFH designations and the MSA consultation process.

Goal 5: Promote research which addresses regional habitat management needs

Objective 5A: Promote research in support of diadromous species restoration.

Action 5A1: Develop the contacts needed to engage in current or future research efforts pertaining to diadromous species (e.g. Diadromous Fish Restoration Research Network; NOAA Science Center, NMFS/SER staff, university staff, etc.).

Objective 5B: Build regional expertise in climate change science.

Action 5B1: Collaborate with the appropriate agencies within NOAA to promote climate change science and the implications for coastal development review processes.

Table 1. Physical Threats to Habitat Caused by Activities for the Gulf of Maine

| Threat / Habitat | Tidal marsh | SAV | Coastal Rivers | Mud flats | Unvegetated Subtidal | Shellfish beds | Primary Activities Causing Threats |
|-----------------------------|-------------|-----|----------------|-----------|----------------------|----------------|---|
| Obstruction to fish passage | | | * | | | | Dams, flood control devices, culverts, hydrokinetic devices, etc. |
| Water quality degradation | | | | | | | |
| Alteration of habitat | * | * | * | * | * | | culverts, bank stabilization, fill, dredge , beach nourishment, coastal/shoreline development |
| Habitat Conversion | * | | | * | * | | Intertidal fill/expansion of uplands, shoreline stabilization |
| Habitat Loss | * | * | * | * | * | | Development, fill, dredging, dams, culverts |
| Sedimentation | | | | | | | |
| Contamination | | | | | | | |
| Invasive spp | * | * | | | | | poor drainage, freshwater runoff, eutrophication, climate change, etc. |
| Climate change | * | * | * | | | | Increased temperatures, lower flows, marsh migration, armoring, sea level rise |
| Entrainment and impingement | | | * | | | | hydropower |
| Altered temps | | | * | | | | impoundments |
| Noise | | | * | | * | | Pile driving |
| Altered hydrology | * | | * | | | | Dredging, fill, wave fence, breakwaters, culverts, urban development, regulated river flow |
| Light alterations | * | * | | | | | Docks, piers, floats |
| Salinity alterations | * | | | | | | Fill, culverts, dikes, freshwater runoff |

6.2 Southern New England

6.2.1 Geographic Description

The Southern New England subregion is located from the Little Narragansett Bay and Pawcatuck River at the Connecticut and Rhode Island border, to include Rhode Island, Cape Cod and the Islands, and north to the Cape Cod Canal in Sandwich, MA. This area includes Narragansett Bay and Buzzards Bay, which provide productive habitat areas such as significant eelgrass beds and salt marshes. Several salt ponds are located along the southern coast of Rhode Island and Cape Cod, and provide habitats unique to this region. This subregion includes the Narragansett Bay HEP, Stellwagen Marine Sanctuary and Cape Cod National Seashore.

6.2.2 Priority Habitats and Associated Species in Southern New England

- a. *Tidal marsh* – summer flounder, winter flounder, scup, striped bass, bluefish, forage species and shellfish.
- b. *SAV* – (Predominantly eel grass, *Zostera marina*) summer flounder, winter flounder, scup striped bass, Atlantic cod, scallops, bluefish, lobster, invertebrates/forage species (crabs, mussels, minnows).
- c. *Coastal riverine habitat* – alewife, blueback herring, American shad, American eel
- d. *Unvegetated subtidal habitat* - winter flounder, shellfish, forage species
- e. *Coastal salt ponds*– winter flounder, shellfish, forage species, anadromous species, SAV

6.2.3 Potential Threats to Habitat in Southern New England

- a. *Tidal marsh* – Coastal development, fill, dredging, shoreline stabilization, contamination, invasive species, nutrient inputs, sea level rise, and alterations of hydrology, light and salinity
- b. *SAV* – Coastal development, nutrient inputs, dredging, fill, boating, docks and alterations of light, sedimentation, water quality degradation, habitat conversion
- c. *Coastal riverine habitat* – dams, hydropower, road crossings and bridges, alteration of hydrology, water quality, invasive species, climate change (increased water temperatures, lower flows, etc)
- d. *Unvegetated riverine habitats* – Dredging, fill, excavating shallow nearshore areas including mudflats and coastal salt ponds; boating in shallow areas, increased sedimentation, and blasting
- e. *Coastal salt ponds*– run-off, septics, altered hydrology, increased temperatures (climate change), dredging, coastal development.

6.2.4 Habitat Goals and Objectives for Southern New England

Goal 1: Coordinate HCD actions with other NMFS programs for maximum effectiveness.

Objective 1A: Ensure an efficient consultation process with federal action agencies by coordinating with PRD, SFD, and NEFSC, as needed.

Action 1A1: Coordinate with PRD (and SFD as needed) on a regular basis to ensure all NERO concerns are appropriately addressed during environmental review processes (NEPA/EFH consultation). Strive to incorporate program responses under one comprehensive letter (one-stop shopping).

Action 1A2: Coordinate with PRD staff to develop communication and process protocols for integrating the Federal Power Act and ESA review process with the FERC on hydropower and MHK projects affecting Atlantic salmon, shortnose sturgeon and Atlantic sturgeon.

Action 1A3: Coordinate with NEFSC staff when necessary regarding winter flounder research, monitoring protocols, and data to ensure a more effective consultation.

Objective 1B: Proactively promote and facilitate ecological restoration of priority habitats in coordination with Restoration Center.

Action 1B1: Collaborate with Habitat Restoration to identify priority salt marsh and SAV habitat restoration projects and facilitate the permit review process.

Action 1B2: Collaborate with Habitat Restoration to identify priority barrier removal and hydrology restoration projects for the benefit of diadromous species and facilitate the permit review process.

Goal 2: Conserve priority habitats through existing regulatory authorities

Objective 2A: Protect and restore sensitive coastal and estuarine habitat, with emphasis on tidal marsh, SAV, diadromous fish, coastal salt ponds and winter flounder habitat.

Action 2A1: Consult with federal action agencies on permit activities (Section 10/404, NEPA, MSA) involving coastal development, dredging and energy projects affecting special aquatic sites. Provide conservation recommendations to avoid, minimize and mitigate impacts on the habitat and associated species (e.g., winter flounder).

Action 2A2: Support efforts to restore, mitigate, map and field verify special aquatic sites by providing technical assistance.

Action 2A3: Ensure the ACOE and other action agencies are implementing recommendations for protecting special aquatic sites (salt marsh, eelgrass, and mudflats) through periodic evaluation of issued permits. This

includes the verifying the implementation of survey, monitoring and mitigation guidance.

Objective 2B: Protect, enhance and restore natural hydrologic processes to ensure access to riverine spawning and nursery habitat for diadromous species.

Action 2B1: Encourage the removal of barriers to fish passage and other hydrologic barriers through anadromous fish partnership/restoration groups.

Action 2B2: Consult with federal action agencies on permit activities (Section 10/404, NEPA, MSA) involving stream crossings within coastal riverine habitat supporting diadromous fish. Provide conservation recommendations to avoid, minimize and mitigate impacts.

Action 2B3: Provide technical assistance to state and federal permitting agencies to facilitate review of projects restoring natural hydrologic processes (e.g., culvert improvements).

Action 2B4: Engage in hydropower licensing actions on target projects affecting diadromous species.

Objective 2C: Provide guidance and assistance to NERO on issues pertaining to climate change impacts on priority habitats and species.

Action 2C1: Review and stay current with information pertaining to climate change impacts on priority habitats (coastal rivers, tide marsh, SAV, etc) and associated species, and implications for management actions and conservation recommendations; disseminate information to other staff and federal action agencies.

Goal 3: Promote stewardship of marine, estuarine, and riverine habitats through proactive, non-regulatory actions

Objective 3A: Collaborate with stakeholder groups to proactively address habitat issues of concern.

Action 3A1: Participate at an advisory level in watershed-based groups focused on habitat protection, fisheries resources, and/or diadromous species restoration.

Action 3A2: Provide technical and in-kind assistance SAV mapping and restoration projects whenever possible (e.g., technical assistance, advisory roles in ILF, supporting restoration projects, etc.).

Action 3A3: Collaborate with Restoration Center on EPA's new initiative to form a Southern New England (SNE) Working Group to promote regional restoration and habitat protection for SNE.

Goal 4: Promote education and outreach to highlight the mission of the Habitat Conservation Division

Objective 4A: Educate the public and regulatory communities about essential fish habitat, the federal power act and other activities of the Habitat Conservation Division.

Action 4A1: Participate in workshops, conferences and educational activities to promote the importance of protecting aquatic habitat and the activities of the Habitat Conservation Division.

Action 4A2: Conduct outreach with action agencies to ensure understanding of EFH designations and the MSA consultation process.

Goal 5: Promote research which addresses regional habitat management needs

Objective 5A: Promote research in support of protecting winter flounder spawning and rearing habitat, supporting fish passage, and understanding impacts of energy projects on habitat.

Action 5A1: Provide technical assistance to regional working groups (i.e. NART) that help promote research in support of habitat protection.

Action 5A2: Coordinate with NEFSC staff when necessary regarding winter flounder research, monitoring protocols, and data to ensure a more effective consultation.

Table 2. Physical Threats to Habitat Caused by Activities for the Southern New England Watershed Region

| Threat / Habitat | Tidal Marsh | SAV | Coastal Riverine | Mud flats | Unvegetated Subtidal | Shellfish beds | Coastal Ponds | Primary Activities Causing Threats |
|-----------------------------|-------------|-----|------------------|-----------|----------------------|----------------|---------------|---|
| Obstruction to fish passage | | | * | | | | | Culverts, dams, roadway crossings, stream diversions |
| Water quality degradation | | * | | | * | | * | Runoff, failing septics, increased temps, reduced flushing |
| Alteration of habitat | | | * | | * | | | Dredging, fill, excavation, stabilization, dams, marsh ditching |
| Habitat Conversion | | * | | * | * | | | Dredging, fill, hydrology changes, culverts, restoration |
| Habitat Loss | * | * | | | | | | Dredging, fill, excavation |
| Sedimentation | | * | | | * | | | Dredging, excavation, erosion, fill, boating, dam release |
| Contamination | | | | | | * | | Runoff, outfalls, development, failing septics, poor flushing, oil spills, dredging, manufacturing, dam release |
| Invasive spp | * | | | | | | * | Excavation, no invasive controls, marsh management, altered salinities |
| Climate | * | | * | | | | | Increased temperatures, lower flows, marsh migration, armoring, sea level rise |
| Entrainment and impingement | | | * | | * | | | Water intake structures, dams |
| Altered temps | | | * | | | | | Climate change, discharge of water |
| Noise | | | * | | | | | Pile driving, ferries, coastal development, boating traffic, underwater blasting |
| Altered hydrology | | | * | | | | * | Culverts, road crossings, dams, diversions, fill, wave fence, breakwater |
| Light alterations | * | * | | | | | | Docks, piers, turbidity |
| Salinity alterations | * | * | | | | | * | Culverts, tide gates, road crossings, poor flushing |

6.3 Long Island Sound

6.3.1 Geographic Description

Long Island Sound (LIS) is a large (1,320 square mile) estuary of the Atlantic Ocean, located between Connecticut and New York's Long Island. The watershed drains approximately 16,820 square miles and there are approximately 583 miles of coastline due to the many inlets and embayments present. The average depth within LIS is 63 feet and the maximum depth is 320 feet at the entrance near Fishers Island. LIS is a productive estuary with over 120 species of finfish found in the waters, over 50 of which are known to spawn there. The Sound provides services such as transportation of people and goods, recreational and commercial shellfishing and finfishing, and other recreational activities. Common fish species within LIS include scup, butterfish, winter flounder, summer flounder, menhaden, Atlantic silverside, black seabass, tautog, little skate, bluefish, American lobster and horseshoe crabs; common shellfish include eastern oyster, blue mussel, scallop and hard clam. Shortnose sturgeon are also present. The major rivers that flow into LIS include the Housatonic, the Connecticut and the Thames.

6.3.2 Priority Habitats and Associated Species in Long Island Sound

- a. *Tidal marsh* - Within LIS, salt marsh wetlands are present along the coastline in protected areas and at the mouths or within the estuarine portions of the many of the coastal rivers that feed into LIS. On the north shore of Long Island, salt marsh habitat is less frequent, where the coastline is comprised of glacial moraine or rock; however, there are some coves and bays as well as few small creeks with fringing marsh. Extensive areas of salt marsh may be found within tidal creek systems where there is salt water intrusion and less development. Specific areas include: Village Creek at the Mouth at Norwalk Harbor, Mill Creek/Sherwood Millpond in Westport, Sasco Creek in Southport, Pine Creek in Fairfield, Lewis Gut in Stratford, mouth of Housatonic River, Guilford Harbor and the East/Neck River system, Clinton Harbor at the Hammonasset River, Oyster River/Indian Town Harbor at Old Saybrook, Pattagansett River in East Lyme, Barn Island/Little Narragansett Bay in Stonington, Eastchester Bay in the Bronx, Pelham Bay, Crab Meadow salt marsh in Northport, NY, Nissegogue River, West Meadow Creek, Mt Sinai Harbor, Wading River Creek and Mattatuck Inlet. Species of interest: winter flounder, scup, bluefish; invertebrates/forage species- crabs, and mussels.
- b. *SAV* - The most common species of SAV in LIS is eelgrass. It occurs mostly east of Clinton, Connecticut and is not common in Long Island (except within the Peconic estuary, portions of Fishers Island, and in portions of the south shore bays). Stonington and Fishers Island Sound contain larger expanses of SAV within LIS, where the water quality is better, due to increased tidal exchange. Freshwater species of SAV (widgeon grass, *Ruppia maritima*) are common in coves and other protected areas within the

Connecticut River and other clean rivers. Species of interest: summer flounder, winter flounder, scallop.

- c. *Coastal riverine habitat* - The largest rivers (Connecticut and its tributaries, Thames, Housatonic), as well as smaller rivers mentioned above (Quinnipiac, Mill, Hammonasset, Niantic, Norwalk, Saugatuck) support anadromous fish. Species of interest: American shad, alewife, blueback herring, Atlantic salmon, American eel, striped bass, white perch, sea-run brown trout.
- d. *Mudflats and shallow water habitat* - In LIS, mudflats are generally located in protected embayments, coves and tidal creeks; however, they are more common in inner LIS where there is a greater tidal range. There are several coves in inner LIS which may completely drain at periods of low tides such as: Scott Cove in Darien, Holly Pond in Stamford, Ash Creek in Fairfield and Greenwich Cove. Mudflats are typically found directly waterward of salt marsh wetlands. Species of interest: winter flounder, horseshoe crabs, shellfish, marine worms and other benthic infauna – worms and other invertebrates.
- e. *Unvegetated subtidal* - Muddy or silty subtidal habitat is found in subtidal embayments such as Greenwich Harbor, Niantic Bay and New Haven Harbor and in some of the deeper basins of LIS. In more hydrologically dynamic areas, the sediment fractions tend to be coarser. This is true both in some of the rivers and also generally so for much of coastal Long Island. Species of interest: windowpane flounder, winter flounder, invertebrates, Atlantic and shortnose sturgeon, in some areas shellfish and scup; summer flounder, striped bass, lobster, and other state managed species.
- f. *Shellfish beds*- Shellfish beds are dense aggregations of shellfish above and within the substrate, which provide structure, shelter and forage habitat for a wide variety of fishes and invertebrates. In LIS, mussels, clams, oysters and bay scallops form such aggregations. All but bay scallops among these may occur intertidally. Shellfish aquaculture is also very common in portions of LIS and Long Island's coastal bays. The north shore is not conducive to bivalve culture in large part due to the dynamic benthic substrate. Commercial beds of surf clams and ocean quahog remain in the Atlantic Ocean at Long Island's south shore, including within the 3 nautical mile area included in this subregion. These natural and cultivated shellfish beds tend to be located in relatively shallow to modest depth water. Commercial operations generally are situated in areas that are sufficiently deep to discourage poaching, but there are numerous areas where locals may harvest clams and other shellfish in very shallow or intertidal areas. In Connecticut, the robust shellfish culture activities probably dwarf the acres holding natural beds. Coastal and estuarine areas generally provide suitable shellfish habitat; however, natural beds are much less common. Species of interest: winter flounder, mussels, oyster, bay scallop.

6.3.3 Potential Threats to Habitats in Long Island Sound

Many of the threats presented to habitats in greater LIS originate from development activities, through reduced water quality and loss of habitat. EPA and other groups are implementing programs to reduce nitrogen input to LIS which originates from upland sources and also with contamination from boating waste discharges. These activities aim to improve water quality and reduce hypoxic episodes in LIS. There is a pronounced gradient of nutrient enrichment in LIS, with conditions being relatively poor in western LIS (not as well flushed, less water inputs, and those from fairly heavily urbanized watersheds). The reduced water quality issues are greatest in the summer and early fall months after the thermocline is established and reduces gas exchange from the air and upper water column to the bottom. This creates vast areas of hypoxia which can extend well east of New Haven or Branford, CT. In some areas, oxygen tensions can actually become anoxic. Both hypoxia and anoxia periodically result in fish and other organism kills. Menhaden and other fishes may die by the thousands in a few short hours, usually over night when photosynthesis is reduced.

- a. *Tidal Marsh*- Principal threats include: alteration/conversion of habitat, habitat loss, invasive species, altered hydrology, light alterations, salinity alterations, sudden marsh death, subsidence, increased erosion. Also, burial due to hurricanes or severe storms. Much of the historic tidal wetland vegetation in LIS has been lost due to development. There are many groups in the greater LIS subregion that are performing wetland restoration and preservation of larger wetland systems, but the cumulative impacts of smaller coastal projects also can be significant. Preservation of larger marsh expanses identified above is a priority, but should not occur to the exclusion of protecting smaller areas.
- b. *SAV* - Principal threats include: water quality degradation, eutrophication, alteration or conversion of habitat, sedimentation, light attenuation. SAV is highly sensitive to changes in water quality, with light being one of the major growth limiting factors. There also is a hypothesis that excess nutrients cause the grass to grow fast and weak, and make it more susceptible to being fragmented. Greatest threats from development activity include direct impacts such as removal by dredge plants, indirect impacts such as sedimentation and burial, shading from overwater structures and even prop scarring or other boating disturbance. State and the Corps review coastal development activities that impact SAV, but do not always incorporate protective enough measures. CT DEEP gives more protection of a landowner's rights to water access than protection of SAV resources in some cases. The EPA reviews many of these projects in conjunction with the Corps joint processing procedure, but their future involvement may be limited due to staff resources and other larger projects. NMFS' review of projects in SAV is a priority, to ensure adequate avoidance, protection and mitigation.

- c. *Coastal riverine habitat* - Principal threats include: obstruction to fish passage, climate/altered temperatures, noise. The state resource agencies review development projects which could impact anadromous fish. They recommend TOY restrictions, sequencing and fish passage techniques. These recommendations are generally accepted through the state water quality certificate process.
- d. *Mudflats and shallow water habitat*- Principal threats include: alteration/conversion of habitat (dredge, fill, erosion). The states and the ACOE review development projects which could impact this resource, but dredging adjacent to mudflats could impact these areas by causing areas to slump or subside when adequate buffers are not maintained, erosion from personal water craft and other vessels, and changes in local erosion and accretion rates. The ACOE generally recognizes that development should be minimized in mudflats, but docks and piers, and associated boating impacts still threaten it.
- e. *Unvegetated Subtidal* - Principal threats include: alteration/conversion of habitat, sedimentation. These habitats are largely affected through dredging of ports, marinas and harbors.
- f. *Shellfish beds*- Principal threats include: habitat loss, contamination. Natural shellfish beds in LIS have been decreasing due to coastal development as well. Several areas employ the planting of shellfish to enhance water quality through filtering. There are also numerous shellfish aquaculture facilities throughout LIS. The CT Bureau of Aquaculture reviews much of the coastal development projects in CT and provides recommendations to protect shellfish during the CT DEEP permitting process. Shellfish are fairly well protected in this process, however the DEEP has authority on whether to accept BOA's comments. There are many local level groups that are working to restore natural populations of shellfish throughout LIS.

6.3.4 Habitat Goals for Long Island Sound Subregion

Goal 1: Coordinate HCD actions with other NMFS programs for maximum effectiveness.

Objective 1A: Proactively promote and facilitate ecological restoration of priority habitats in coordination with Restoration Center.

Action 1A1: Collaborate with Restoration Center to identify priority salt marsh habitat restoration projects and facilitate the permit review process. Priority will be given to small scale restoration efforts targeting invasive species control.

Action 1A2: Collaborate with Habitat Restoration to identify priority SAV restoration projects and facilitate the permit review process. This includes determining potential restoration areas where lack of seed source prevents natural colonization.

Goal 2: Conserve priority habitats through existing regulatory authorities.

Objective 2A: Protect, enhance and restore tidal marsh habitat.

Action 2A1: Development of ILF or similar to mitigate minor tidal marsh impacts.

Objective 2B: Protect, enhance and restore SAV habitat.

Action 2B1: Consult with federal action agencies on permit activities (Section 10/404, NEPA, MSA) involving dredging and fill projects affecting SAV focusing on the area from the Town of Clinton and eastward. Provide conservation recommendations to avoid, minimize and mitigate impacts.

Action 2B2: Encourage and facilitate development of a long-term solution or programmatic agreement to protect SAV habitat. This may include the development of a white paper on protective measures for use by the ACOE and state agencies.

Action 2B3: Ensure the ACOE and other action agencies are implementing survey guidance and programmatic recommendations for protecting SAV through periodic evaluation of issued permits. This includes verifying the implementation of surveys, monitoring and mitigation plans.

Objective 2C: Protect, enhance and restore natural hydrologic processes to ensure access to riverine spawning and nursery habitat for diadromous species.

Action 2C1: Engage in the hydropower licensing review process for the first two mainstem dams in the subregion. Consider involvement on significant tributary projects.

Action 2C2: Provide technical assistance for dam repair and removal projects to ensure fish passage is incorporated in the planning.

Action 2C3: Provide technical assistance in the review process for road crossing replacement and maintenance to ensure natural hydrologic processes are restored or maintained.

Objective 2D: Identify and protect mudflats, shallow water habitat and unvegetated subtidal habitat with a focus on early life stages of winter flounder.

Action 2D1: Consult with federal action agencies on permit activities (Section 10/404, NEPA, MSA) involving dredging and fill projects affecting unvegetated subtidal habitats, focusing on subtidal embayments and winter flounder spawning habitat. Provide conservation recommendations to avoid, minimize and mitigate impacts.

Action 2D2: Incorporate dredging time of year restrictions through programmatic consultations or General Permit modifications.

Objective 2E: Provide guidance and assistance to NERO on issues pertaining to climate change impacts on priority habitats and species.

Action 2E1: Review and stay current with information pertaining to climate change impacts on priority habitats (coastal rivers, tide marsh, SAV, etc) and associated species, and implications for management actions and conservation recommendations; disseminate information to other staff and federal action agencies.

Goal 3: Promote stewardship of marine, estuarine, and riverine habitats through proactive, non-regulatory actions

Objective 3A Support proactive watershed groups and agencies (e.g., CRASC, CT River Working Group, TNC, ASMFC, etc) working to protect diadromous species and their habitat.

Action 3A1: Provide technical assistance to Connecticut River Atlantic Salmon Commission, the Connecticut River Work Group, and others to protect diadromous species habitats.

Objective 3B: Support proactive watershed groups working to protect and restore marine and estuarine habitats.

Action 3B1: Participate in Long Island Sound Study Habitat Restoration Work Group.

Goal 4: Promote education and outreach to highlight the mission of the Habitat Conservation Division

Objective 4A: Educate the public and regulatory communities about essential fish habitat, the federal power act and other activities of the Habitat Conservation Division.

Action 4A1: Participate in workshops, conferences and educational activities to promote the importance of protecting aquatic habitat and the activities of the Habitat Conservation Division.

Goal 5: Promote research which addresses regional habitat management needs

Objective 5A: Promote research in support of protecting winter flounder spawning and rearing habitat, supporting fish passage, and understanding impacts of energy projects on habitat.

Action 5A1: Provide technical assistance to regional working groups (i.e. NART) that help promote research in support of habitat protection.

Action 5A2: Coordinate with NEFSC staff when necessary regarding winter flounder research, monitoring protocols, and data to ensure a more effective consultation.

Table 3. Physical Threats to Habitat Caused by Activities in Long Island Sound

| Threat / Habitat | Tidal marsh | SAV | Coastal Riverine | Mud flats | Unvegetated Subtidal | Shellfish beds | Primary Activities Causing Threats |
|---|-------------|-----|------------------|-----------|----------------------|----------------|--|
| Obstruction to fish passage | | | * | | | | Dams/other flood controls, culverts, road crossings, berms |
| Water quality degradation | | * | | | | * | Runoff, septic, flood control structures, poor tidal flushing |
| Alteration/conv ersion of habitat | * | * | | * | * | | Dredging, mosquito ditching, coastline development, dredge spoil disposal, fill, riprap |
| Habitat Loss | * | | | | | * | Intertidal fill/upland creation, shoreline stabilization, pile driving |
| Sedimentation | | * | | | * | | Dredging, excavation, disposal, beach nourishment |
| Contamination | | | | | | * | Oil spills, dredging contaminated sediments, past manufacturing, dam release, dumping, sewer overflows, outfalls |
| Invasive species | * | | | | | | Marsh management, excavation, polluted systems, introduction of predators (phragmites, crabs, tunicates, fish species) |
| Climate | | | * | | | | Sea level rise, temperature increase, marsh migration, seawall construction, armoring |
| Entrainment and impingement | | | | | | | |
| Altered temps | | | * | | | | Climate change, intake structures, poor flushing/tidal exchange, vegetation removal |
| Noise | | | * | | | | Transportation, blasting, pile driving, marina operation |
| Altered hydrology | * | | | | | | Dredging, wave fence, fill, breakwaters/jetty, culverts |
| Light alterations | * | * | | | | | Docks/piers, marina, boardwalk |
| Salinity alterations | * | | | | | | Poor flushing, dams, culverts, tide gates |

6.4 New York Bight Subregion

6.4.1 Geographic Description

The NY Bight subregion extends from Peconic Bay and the south shore of Long Island, inland to the upper reaches of the Hudson River in New York, and south to the Delaware/Maryland state line at Fenwick Island. This subregion is an ecological transition zone that supports a wide variety of NOAA resources including more than 35 federally managed fish and shellfish species. There are two major river systems in this subregion – the Hudson River and the Delaware River. These waterways support diadromous species including American shad, hickory shad, striped bass, alewife, blueback herring, Atlantic sturgeon, shortnose sturgeon and American eel.

Waterways within this subregion includes Upper and Lower Bays, the Kill van Kull, Arthur Kill, Newark Bay, the Hackensack and Passaic Rivers, Raritan and Sandy Hook Bays, Raritan River, Shrewsbury and Navesink Rivers, the Manasquan River, the coastal bays of New Jersey and Delaware such as Barnegat Bay, Little Egg Harbor Bay, Great Bay, Great Egg Harbor Bay, Absecon Bay, Rehoboth Bay, Little Assawoman Bay and Assawoman Bay. Also included are the tributaries to the coastal bays such as the Metedeconk River, Toms River, Mullica River, Bass River, Great Egg Harbor River and Indian River, as well as Delaware Bay, Delaware River to its headwaters and its tributaries including the Cohansey River, Maurice River, Salem River, Christina River, Mispillion River, Schuylkill River and the Lehigh River.

Included in this subregion is the New York Bight Apex which contains the Hudson-Raritan Estuary study area, broadly defined as an area within 25 miles of the Statue of Liberty. The Hudson-Raritan Estuary (HRE) is also known as the New York/New Jersey Harbor Estuary. The HRE was included as in the National Estuary Program in 1988. The U.S. Army Corps of Engineers, the Port Authority of New York and New Jersey, the New York –New Jersey Harbor Estuary Program, NOAA and dozens of Federal, State, Local agencies, academia, non-profits and others developed a draft Comprehensive Restoration Plan for the estuary. The document was published in 2009. The Peconic Estuary is situated between the north and south forks of Long Island. The watershed begins at the headwaters of the Peconic River, spans the several bays from Flanders to Gardiners, and ends in Block Island Sound between Plum Island and Montauk Point.

Four other National Estuary Programs have also been designated within this watershed including the Barnegat Bay, Delaware Bay, and Delaware Inland Bays, Peconic Bay. These programs are all in the implementation stages of their comprehensive conservation and management plans.

The challenges in this subregion are due to the wide variety of habitats and species present, the range of urbanization and development in the coastal areas. Major port facilities exist in the Hudson-Newark Bay portion of this subregion and along the Delaware River at Philadelphia, Camden and Wilmington. This subregion includes the highly urbanized areas of New York City and Northern New Jersey and Camden and Philadelphia, Long Island numerous coastal and

lagoon developments along the New Jersey coast and to a lesser extent, the Delaware coast. Large expanses of salt marshes exist in southern coastal New Jersey, the Delaware Bayshore and coastal Delaware. Water quality impairments, contamination and habitat loss and alteration through dredging and filling are all significant threats in this subregion.

6.4.2 Priority Habitats and Associated Species in the New York Bight Subregion

- a. *Tidal marsh* – Provides habitat for a wide variety of resources including summer flounder, striped bass, bluefish, spot, and forage species. Salt marshes also provide many other ecological services including water storage, nutrient cycling and primary production, sediment retention, water filtration or purification, and groundwater recharge and atmospheric equilibrium.
- b. *Submerged Aquatic Vegetation* – Both freshwater and estuarine SAV exist in this subregion. SAV beds provide nursery area for larval and juvenile fish including alewife, banded killifish and white perch in the freshwater areas of the subregion. In the estuaries, SAV, including eelgrass and widgeon grass is an HAPC for summer flounder. It also provides refuge habitat for many species including scup, bluefish, winter flounder, blue crab and forage fishes.
- c. *Coastal riverine habitat* – River and stream throughout the region support migration, spawning and nursery habitat for anadromous alewife, blueback herring, striped bass, American shad, hickory shad, shortnose sturgeon and Atlantic sturgeon. Catadromous American eels enter the region as elvers and migrate upstream to their juvenile and adult freshwater habitats.
- d. *Mudflat and shallow water habitat* - Unvegetated shallow water habitats (four meters below mean low water or less) are essential for winter flounder spawning. Also of concern are windowpane, summer flounder, horseshoe crabs, juvenile fishes, invertebrates, shellfish and forage species.
- e. *Unvegetated subtidal* – In Delaware and Great Bay, unconsolidated subtidal habitats are HAPCs for sandbar shark and serve as pupping grounds for this species. Also of concern are windowpane, summer flounder, juvenile fishes, invertebrates, shellfish and forage species.
- f. *Shellfish beds* – Oysters, hard clams, soft clams and mussels occur in the coastal bays and rivers of this region. In addition to their commercial and recreational shellfish are ecologically valuable. They serve as a food source for a variety of organisms including winter flounder, provide structural habitat and refuge to small fishes, and provide water quality improvement services. Offshore commercially valuable surf clams and ocean quahogs can be found.

6.4.3 Potential Threats to Habitat in New York Bight Subregion

- a. *Tidal marshes* - Dredge and fill, erosion, hydrologic alterations, climate change (sea level rise, warming temperatures, etc)

- b. *SAV* – Dredge and fill, water quality impairments, sedimentation, climate change (water temperature increases, hydrologic impairments, light alterations, physical destruction from boats and personal watercraft).
- c. *Coastal riverine habitat* – Dams, water intakes, point and non-point source pollution, dredging, altered water temperatures, hydrokinetic projects, pile driving, and blasting.
- d. *Mudflat and shallow water habitat* - Dredging, filling erosion, water temperature increases (climate change), contamination
- e. *Unvegetated subtidal* - Dredging, filling erosion, water temperature increases, contamination
- f. *Shellfish beds* – Dredge and fill, sedimentation, water quality impairments, climate change (sea level rise, warming temperatures, etc)

6.4.4 Habitat Goals for the New York Bight Subregion

Goal 1: Coordinate HCD actions with other NMFS programs for maximum effectiveness.

- Objective 1A Proactively promote and facilitate ecological restoration of priority habitats in coordination with Habitat Restoration
 - Action 1A1 Collaborate with Habitat Restoration in the development of ecosystem restoration projects in New York, New Jersey, Delaware and Pennsylvania, providing technical assistance on project submittals and in the grant review process for projects affecting priority habitats.
 - Action 1A2: Collaborate with Habitat Restoration to identify priority barrier removal and hydrology restoration projects for the benefit of diadromous species and facilitate the permit review process.
- Objective 1B Engage PRD to streamline the federal permit review process between NMFS and federal action agencies.
 - Action 1B1: Coordinate with PRD staff to streamline the ESA review process with federal action agencies on projects affecting Atlantic sturgeon including potentially modifying the existing “blanket no effect” letters for ESA species to include Atlantic sturgeon

Goal 2: Conserve priority habitats through existing regulatory authorities.

- Objective 2A: Protect, conserve and restore tidal marsh habitats.
 - Action 2A1: Consult with federal, state and local action agencies on permit activities (Section 10/404, FWCA, NEPA, MSA) involving coastal development, dredging and energy projects affecting tidal marsh habitat. Provide conservation recommendations to avoid, minimize and mitigate impacts.

- Action 2A2: Provide technical assistance to Interagency Review Teams under federal mitigation rules to ensure mitigation banks and in-lieu fee programs provide suitable mitigation for impacts to tidal marsh and estuarine habitats.
- Action 2A3: Support and facilitate the development of a state-wide ILF program to mitigate for minor tidal marsh impacts in areas where no mitigation banks are available.
- Action 2A4: Collaborate with State and Federal agencies to develop living shoreline protocols.
- Objective 2B: Protect, enhance existing SAV habitat and restore SAV to historical habitats.
 - Action 2B1: Consult with federal action agencies on permit activities (Section 10/404, NEPA, MSA) involving coastal development that may affect SAV habitat. Provide conservation recommendations to ensure impacts to SAV are avoided, minimized and/or mitigated.
 - Action 2B2: Reevaluate existing NJ SAV survey guidelines. Provide technical assistance for updating the guidelines, as needed, to address new technologies and to account for linear impacts.
- Objective 2C: Protect, enhance and restore shellfish habitats.
 - Action 2C1: Consult with federal action agencies on permit activities (Section 10/404, FWCA, NEPA, MSA) involving coastal development that may affect shellfish habitat. Provide conservation recommendations to avoid, minimize and mitigate impacts.
 - Action 2C2: Provide technical assistance to the State of NJ to revise existing shellfish survey guidelines to incorporate new technologies and improve effectiveness.
 - Action 2C3: Provide technical assistance to the NJ Department of Environmental Protection in developing shellfish enhancement projects to be funded by the State's Shellfish Mitigation Fund.
 - Action 2C4: Provide technical assistance to the State of DE to develop/revise shellfish survey guidelines to incorporate new technologies and improve effectiveness.
- Objective 2D: Protect, enhance and restore natural hydrologic processes to ensure access to riverine spawning and nursery habitat for diadromous species.
 - Action 2D1: Consult with federal action agencies on permit activities (Section 10/404, FWCA, NEPA, MSA) involving coastal development that may affect migratory corridors for diadromous species. Provide conservation recommendations to avoid, minimize and mitigate impacts.

- Action 2D2: Participate on the Delaware Basin Fish and Wildlife Management Cooperative’s Fisheries Technical Committee to help facilitate the finalization the Delaware Basin seasonal work restriction guidance document for the protection of diadromous species.
- Action 2D3: Develop Division expertise in fish passage design, implementation and monitoring.
- Action 2D4: Evaluate means to increase involvement in regulatory reviews of intake and discharge permits (NPDES or the like) for power and industrial facilities to reduce the impingement and entrainment of early life stages of anadromous fish.
- Objective 2E: Protect unvegetated subtidal, mudflat and shallow water habitats, with particular focus on winter flounder and horseshoe crab spawning habitat, and summer flounder nursery habitat.
 - Action 2E1: Consult with federal action agencies on select permit activities (Section 10/404, NEPA, MSA) affecting shallow water habitat known to support winter and summer flounder development. Provide conservation recommendations to avoid, minimize and mitigate impacts.
 - Action 2E1: Consult with federal action agencies on select permit activities (Section 10/404, NEPA, MSA) affecting intertidal and shallow water habitat known to support horseshoe crab spawning and juvenile development. Provide conservation recommendations to avoid, minimize and mitigate impacts.
- Objective 2F: Provide guidance and assistance to NERO on issues pertaining to climate change impacts on priority habitats and species.
 - Action 2F1: Review and stay current with information pertaining to climate change and associated implications for conserving and preserving ecosystem functions in the face of sea-level rise; disseminate information to other staff and federal action agencies.

Goal 3: Promote stewardship of marine, estuarine, and riverine habitats through proactive, non-regulatory actions

- Objective 3A Facilitate proactive protection efforts for priority habitats by collaborating with NGO’s focused on habitat issues. .
 - Action 3A1: Provide technical assistance to regional workgroups (e.g., NEPs, State) to prioritize salt marsh and wetland restoration activities.
 - Action 3A2: Identify priority shellfish restoration opportunitie through collaborate with NJDEP and others.

Objective 3B: Facilitate proactive fish passage protection and improvement efforts by collaborating with State agencies, NGO's and other organizations focused on diadromous species issues.

Action 3B1: Collaborate with and State agencies to identify priority fish passage projects for diadromous species.

Action 3B2: Continue participation on the Delaware Basin Fish and Wildlife Management Cooperative's Fisheries Technical Committee to facilitate the conservation, management and restoration of diadromous species and their habitats.

Action 3B3: Collaborate with State and Federal agencies to identify priority projects for protecting eroding salt marshes in association with living shorelines efforts.

Action 3B5: Collaborate with State and Federal resource agencies, as well as local NGO's to develop SAV mitigation guidance and success criteria for this subregion.

Action 3B9: Collaborate with State and Federal agencies to develop living shoreline protocols and identify priority projects to protect eroding coastal marshes as well as mudflats and shallow water habitat.

Goal 4: Promote education and outreach to highlight the mission of the Habitat Conservation

Objective 4A: Educate the public and regulatory communities about essential fish habitat, the federal power act and other activities of the Habitat Conservation Division.

Action 4A1: Participate in workshops, conferences and educational activities to promote the importance of protecting aquatic habitat and the activities of the Habitat Conservation Division.

Action 4A2: Conduct outreach with action agencies to ensure understanding of EFH designations and the MSA consultation process.

Goal 5: Promote research which addresses regional habitat management needs

Objective 5A: Identify shallow water winter flounder spawning and rearing habitat.

Action 5A1: Collaborate with NEFSC and ACOE to review existing data on winter flounder habitat use and identify data gaps and research needs.

Objective 5B: Map existing SAV in the Delaware River

Action5B1: Support efforts to undertake a comprehensive survey of Delaware River to identify areas of existing SAV.

Objective 5C: Promote research opportunities with the Science Centers and other research venues that evaluate and support development of mitigation ratios.

Action 5C1: Develop and promote the science-based rationale for SAV mitigation ratios and develop appropriate success criteria and performance measures.

Table 4. Physical Threats to Habitat Caused by Activities for the NY Bight Subregion.

| | Tidal marsh | SAV | Coastal riverine | Mudflat | Unvegetated subtidal | Shellfish beds | Primary Activities Causing Threats |
|-----------------------------|-------------|-----|------------------|---------|----------------------|----------------|---|
| Obstruction to fish passage | | | * | | | | Dams, water control structures, hydrokinetic projects, dredging, point and non-point source pollution, pile driving, blasting |
| Water quality degradation | | * | | | | * | Development/impervious cover, fill, point and non-point source pollution, hydrologic alterations |
| Alteration of habitat | | | * | * | | | Dredging, shoreline stabilization, coastal development, hydrologic alterations, dams, contamination |
| Habitat Conversion | * | * | | * | * | | Dredging shoreline stabilization, erosion, |
| Habitat Loss | * | * | | * | * | * | Filling, dredging |
| Sedimentation | | * | | | | * | Development, erosion, dredging |
| Contamination | | | | | * | * | Point/non-point source pollution, CERCLA/RCRA sites, landfill leachate, boating related contaminants, petroleum product spills, |
| Invasive spp | * | | | | | | Filling, impairments to tidal flow, temperature increases, eutrophication |
| Climate | * | * | | * | | * | Average water temp increases, sea level rise |
| Entrainment/impingement | | | * | | | | Power and industrial intakes, dredging, hydro projects |
| Altered temps | | | | | | | Point source discharges |
| Noise | | | * | | | | Pile driving, dredging, blasting, blockage to anadromous passage |
| Altered hydrology | * | * | | | | | Dredging channels, filling, breakwaters, culverts, water control structures |
| Light alterations | * | * | | | | | Docks, floats, dredging, eutrophication |
| Salinity alterations | * | * | | | | * | Discharges, intakes, water control structures, poor flushing, deepened channels. |

6.5 Upper Chesapeake Bay

6.5.1 Geographic Description

State of Pennsylvania limited to the lower Susquehanna River mainstem to Marietta, District of Columbia. All Maryland Eastern Shore counties: Cecil, Kent, Queen Anne's Caroline, Talbot, Dorchester, Wicomico, Somerset, Worcester; Maryland Western Shore rivers/streams to the Piedmont or natural fall lines (e.g., Potomac River: to Great Falls; Patuxent River: to Savage Falls; Patapsco River to South Branch and North Branch fork); Maryland Western Shore counties limited to: Harford, Baltimore, Anne Arundel, Calvert, Howard (Patapsco River mainstem only), Montgomery, Prince Georges, Charles, St. Mary's; Maryland coastal bays, and jurisdictional waters in the Atlantic to 3 miles offshore from MHW. State of Virginia along the Potomac River limited to all federal installations covered by the Baltimore District Corps regulatory review

6.5.2 Priority Habitats and Associated Species

- a. *Tidal marsh* – Vegetation such as *Spartina cynosuroides* (big cordgrass), *Hibiscus* (marsh mallow), and *Typha angustifolia* (narrow leaf cattail), *Nuphar lutea* (spatterdock), *Peltandra virginica* (arrow-arum), *Pontederia cordata* (pickerel weed), wild rice (*Zizania aquatica*), sweet flat (*Acorus calamus*), smart weed (*Polygonum*), arrowhead (*Sagittaria*), rice cutgrass (*Leeria oryzoides*), and tearthumb (*Polygonum sagittatum*). Migratory fish species such as striped bass, shad, river herring; estuarine fish including sciaenids, drum family; bluefish summer flounder; as well as forage species (e.g., phytoplankton, zooplankton and insect larvae).
- b. *SAV* – Eighteen species of SAV occur in the Upper Chesapeake Bay, including eelgrass (*Zostera marina*), widgeon grass (*Ruppia maritima*), redhead grass (*Potamogeton perfoliatus*), and wild celery (*Vallisneria americana*); fish species of interest include summer flounder, sandbar shark, forage species
- c. *Coastal riverine habitat* - American shad, hickory shad, alewife, blueback herring, striped bass, white perch, yellow perch, American eel
- d. *Mudflat and shallow water habitat* – American shad, hickory shad, river herring, striped bass, white perch, yellow perch, American eel, weakfish, spot, Atlantic croaker, red drum, blue crab, Atlantic menhaden, and SAV.
- e. *Unvegetated subtidal habitat* – summer flounder, shellfish, forage species, sandbar shark
- f. *Shellfish beds* – American oyster, hard clams, soft clams.
- g. *Forested riparian wetland and flood plain* – Diadromous species of the Upper Chesapeake Bay.

6.5.3 Potential Threats to Habitat in the Upper Chesapeake Bay

- a. *Tidal marsh* – Water quality degradation, deforestation in drainage basins; agriculture changes to hydrology, development; erosion, subsidence; sea-level rise; invasive species.
- b. *SAV* – Eutrophication, deforestation in drainage basins; agriculture, shoreline stabilization; dredge/disposal, climate change; climate change, development.
- c. *Coastal riverine habitat* – Road and utility line crossings; small dams; eutrophication, deforestation in drainage basins; development; agriculture; sediment accretions; shoreline stabilization; dredge/disposal; sea-level rise, land subsidence, salinity intrusion in groundwater.
- d. *Mudflat and shallow water habitat* – Eutrophication, deforestation in drainage basins; agriculture, shoreline stabilization; dredge/disposal, climate change; power plant intakes, climate change, development.
- e. *Unvegetated subtidal habitat* – Eutrophication, deforestation in drainage basins; agriculture; dredge/disposal, climate change.
- f. *Shellfish* – disease and parasites, deforestation, sediment accretion; exotic species, genetically modified species.
- g. *Forested riparian wetland and flood plain* – clearing, fill, development, agriculture.

6.5.4 Habitat Goals for the Upper Chesapeake Bay

Goal 1: Coordinate HCD actions with other NMFS programs for maximum effectiveness.

- Objective 1A: Coordinate HCD actions with other NMFS programs for maximum effectiveness (i.e., Protected Resources Division, Restoration Center, Chesapeake Bay Program Office)
- Action 1A1: Collaborate with Restoration Center to identify priority barrier removal and hydrology restoration projects for the benefit of diadromous species and facilitate permit review process.
- Action 1A2: Collaborate with RC in the establishment of living shoreline guidance and prioritization of wetland restoration sites in Chesapeake Bay
- Action 1A3: Collaborate with Protected Resources Division to identify projects in pre-application and permit phases of regulatory review that threaten protected resources (e.g., shortnose sturgeon, Atlantic sturgeon, sea turtles).
- Action 1A4: Collaborate with Habitat Restoration Center to identify priority sites and designs for tidal marsh habitat restoration projects, and facilitate the permit review process.

- Action 1A5: Collaborate with Chesapeake Bay Program office on habitat conservation issues, including SAV conservation, and shellfish (filter-feeding bivalve) restoration.
- Action 1A6: Coordinate with NOAA Chesapeake Bay Office in the development and implementation of annual action plans related to the Bay EO.
- Action1A7: Coordinate with Restoration Center to co-lead wetlands working group for the Choptank River Habitat Focus Area.

Goal 2: Conserve priority habitats through existing regulatory authorities.

Objective 2A: Improve water quality within the upper Chesapeake Bay to the benefit of all priority habitats.

Action 2A1: Review of coastal development projects (Section 10/404 review, NEPA review, Special Project review) with potential for sediment/nutrient input. Provide appropriate conservation recommendations to avoid, minimize or mitigate impacts.

Action 2A2: Review select coastal development projects (Section 10/404 review, NEPA review, Special Project review) with potential for stormwater and surface water runoff to coastal habitat. Provide appropriate conservation recommendations to avoid, minimize or mitigate impacts.

Action 2A3: Engage in activities associated with the abatement of sediments within the Conowingo Dam pool/reservoir.

Objective 2B: Conserve/preserve tidal marsh and tributary inland retreat corridors in the face of sea-level rise

Action 2B1: Review of coastal development projects (Section 10/404 review, NEPA review, Special Project review) potentially affecting tidal marsh or SAV habitats. Provide appropriate conservation recommendations to avoid, minimize or mitigate impacts.

Objective 2C: Preserve and enhance migratory corridors for migrating diadromous fish within coastal rivers.

Action 2C1: Review of transportation and development projects (Section 10/404 review, NEPA review, Special Project review) with potential for impacts on fish passage, and instream habitat (e.g. gravel/cobble substrate, course woody debris, etc). Provide appropriate conservation recommendations to maintain or restore fish passage and avoid, minimize or mitigate impacts on instream habitat.

Objective 2D: Identify and protect unvegetated subtidal habitat supporting early life stages of summer flounder (e.g., nursery and forage habitat).

Action 2D1: Review of coastal development projects (Section 10/404 review, NEPA review, Special Project review) potentially affecting summer flounder nursery habitat. Provide appropriate conservation recommendations to avoid, minimize or mitigate impacts.

Objective 2E: Prevent and control establishment and spread of invasive flora and fauna.

Action 2E1: Review of private water access structures and utility crossings (Section 10/404 review, NEPA review, Special Project review) with potential to impact tidal marsh habitat. Provide conservation recommendations to minimize impacts and prevent the spread of invasive species (e.g., *Phragmites*) as a result of construction activities.

Action 2E2: Collaborate with State and Federal agencies to develop guidelines for preventing the spread of invasive flora and fauna.

Objective 2F: Enhance knowledge of information pertaining to climate change impacts on priority habitats and species.

Action 2F1: Review and stay current with information pertaining to climate change impacts on priority habitats (coastal rivers, tide marsh, SAV, etc) and associated species, and implications for management actions and conservation recommendations; disseminate information to other staff and federal action agencies.

Goal 3: Promote stewardship of marine, estuarine, and riverine habitats through proactive, non-regulatory actions

Objective 3A: Collaborate with stakeholder groups focused on preserving and enhancing migratory corridors for migrating diadromous fish.

Action 3A1: Provide technical assistance to interagency teams focused on protecting and conserving riparian woodlands and wetlands contiguous to diadromous species spawning and rearing habitat.

Objective 3B: Collaborate with stakeholder groups focused on improving water quality within the upper Chesapeake Bay to the benefit of tidal marsh and SAV habitats.

Action 3B1: Participate in interagency workgroup forums for reducing sediment and nutrient loads to tidal waters.

Action 3B2: Provide technical assistance in forum (Baltimore Corps Regulatory Branch, Federal Highways, FERC, Federal Transit Administration) that act to preserve/conserv native forested watersheds in tributary drainage basins to Chesapeake Bay.

Action 3B3: Provide technical assistance in forum that act to identify improved methods for treating stormwater/surface water runoff prior to reaching coastal habitats.

Action 3B4: Provide technical assistance to interagency teams focused on restoring filter-feeding bivalve mollusk species (commercial & non-commercial) to tidal waters of the Chesapeake Bay.

Action 3B5: Participate in MARCO initiatives related to marine habitat and offshore wind priorities.

Goal 4: Promote education and outreach to highlight the mission of the Habitat Conservation Division

Objective 4A: Educate the public and regulatory communities about essential fish habitat, the federal power act and other activities of the Habitat Conservation Division.

Action 4A1: Participate in workshops, conferences and educational activities to promote the importance of protecting aquatic habitat and the activities of the Habitat Conservation Division.

Goal 5: Promote research which addresses regional habitat management needs.

Objective 5A: Promote research in support of protecting priority habitats of the upper Chesapeake Bay

Action 5A1: Provide technical assistance to regional working groups that help promote research in support of habitat protection.

Table 6. Physical Threats to Habitat Caused by Activities for Upper Chesapeake Bay

| Habitat/Threat | Tidal marsh | SA V | Coastal riverine | Mud flats | Unvegetated subtidal | Shellfish beds | Primary Activities Causing Threats |
|-----------------------------|-------------|------|------------------|-----------|----------------------|----------------|---|
| Obstruction to fish passage | | | * | | | | Road/utility line crossings (non-compliance with permit conditions) |
| Water quality degradation | * | * | * | | * | * | Eutrophication, deforestation in drainage basins; Agriculture |
| Alteration of habitat | * | * | * | * | | | Shoreline stabilization; Dredge/disposal |
| Habitat Conversion | * | * | * | | | | Shoreline stabilization; Dredge/disposal |
| Habitat Loss | * | * | * | | * | | Deforestation in drainage basin; Dredge/disposal |
| Sedimentation | * | * | * | * | | * | Deforestation in drainage basin, Agriculture |
| Contamination | | | | | | | |
| Invasive spp | * | | | | | | Private walkway, road crossings (spreading of invasives by construction activities) |
| Climate | * | * | | * | | | Average water temperature increase, sea level rise |
| Entrainment and impingement | | | | | * | | Power plant intakes |
| Altered temps | | | | * | | | |
| Noise | | | | | | | |
| Altered hydrology | | | * | | | | Deforestation in drainage basin |
| Light alterations | | | | | | | |
| Salinity alterations | * | | * | | | | Sea-level rise, land subsidence, salinity intrusion in groundwater |

6.6 Lower Chesapeake Bay Subregion

6.6.1 Geographic Description

The Chesapeake Bay watershed is defined by a 64,000 square mile drainage area comprised of 5 states including portions of Pennsylvania, Maryland, West Virginia, Delaware, and Virginia along with the District of Columbia. Virginia's southern portion of the Chesapeake Bay receives fresh water input from five major tributaries including the Potomac, Rappahannock, York, James and Elizabeth River systems. While agriculture and low density residential land use define the majority of the upper watershed in Virginia, the lower portions of these tidal tributaries are for the most part intensely developed, including high-density residential, commercial and industrial land uses. The offshore component of this subregion extends offshore to the edge of the continental slope.

Sedimentation and nutrient inputs are the greatest challenges to improving the poor water quality of the Chesapeake Bay, and the restoration of underwater grasses and filter-feeding bivalves such as clams and oysters. It is estimated that approximately 8.5 million metric tons of sediment enter the Chesapeake Bay annually, with 61% of the load coming from terrestrial sources (CBP, 2006; USGS, 2003). Sixteen species of submerged aquatic vegetation (SAV) can be found in the Chesapeake Bay and its tidal tributaries (CBP, 2009b) though due to physical limitations, primarily salinity tolerance, only two species, eelgrass (*Zostera marina*) and widgeon grass (*Ruppia maritima*), are found in the saline portions of the southern Chesapeake Bay. SAV is a habitat area of particular concern (HAPC) for several important federally managed species (summer flounder, red drum) and is a major focus of restoration efforts in Virginia).

6.6.2 Priority Habitats and Associated Species

- a. *Tidal marshes* - Summer flounder, bluefish
- b. *SAV* - Summer flounder, red drum, bluefish
- c. *Coastal riverine habitat* - Atlantic sturgeon, Striped bass, American shad, hickory shad, alewife, blue back herring
- d. *Mudflat and shallow water habitat* – Sandbar sharks, summer flounder, shellfish

6.6.3 Potential Threats to Habitat in the Lower Chesapeake Bay

- a. *Tidal marshes* – dredge and fill, erosion, climate change (sea level rise, warming temperatures, etc)
- b. *SAV* – Dredging, fill, agricultural run-off, poultry farms, septic and residential run-off, development activities, sedimentation/erosion, algal blooms
- c. *Coastal riverine habitat* - Dredging, fill, agricultural run-off, development activities, invasive species, water intake structures

d. *Mudflat and shallow water habitat* – dredging, fill

6.6.4 Habitat Goals for Lower Chesapeake Bay watershed:

Goal 1: Coordinate HCD actions with other NMFS programs for maximum effectiveness.

Objective 1A: Proactively promote and facilitate ecological restoration of priority habitats in coordination with Habitat Restoration.

Action 1A1: Collaborate with Restoration Center in the development of ecosystem restoration projects in Virginia, providing technical assistance on project submittals and in the grant review process for projects affecting Virginia's tidal tributaries, Chesapeake Bay mainstem and Eastern Shore seaside coastal bay ecosystems.

Action 1A2: Collaborate with Restoration Center in the establishment of living shoreline guidance and prioritization of wetland restoration sites in Chesapeake Bay.

Objective 1B: Engage PRD to streamline the federal permit review process between NMFS and federal action agencies.

Action 1B1: Coordinate with PRD staff to streamline the ESA review process with federal action agencies (NAO ACOE) on projects affecting Atlantic sturgeon.

Action 1B3: Collaborate with USFWS Gloucester Virginia Field Office and NERO PRD to incorporate NMFS T&E spp. shape files into FWS' IPaC web-based project review tool.

Goal 2: Conserve priority habitats through existing regulatory authorities.

Objective 2A: Prevent loss of submerged aquatic vegetation (*Zostera maritima*).

Action 2A1: Consult with federal action agencies (NAO ACOE) on permit activities with potential to impact SAV. Provide conservation recommendations to avoid, minimize or mitigate impacts.

Action 2A2: Participate in aquaculture project review process with NAO ACOE and VIMS. Provide technical assistance and conservation recommendations avoid impacts on SAV from commercial aquaculture operations.

Objective 2B: Protect migration, spawning and foraging habitats of diadromous species.

Action 2B1. Consult with the NAO Corps Operations Branch and Regulatory Branch's on dredging projects with the potential to affect anadromous species. Provide conservation recommendations to avoid, minimize and mitigate unavoidable impacts.

- Action 2B2: Facilitate informal and formal ESA Section 7 consultation for NOAA's T&E spp. between federal action agencies, including NAO Corps, and PRD staff as necessary to realize program efficiencies and elevate the profile of the NMFS in Virginia. Initiate collaboration between NAO Corps and PRD to incorporate NMFS T&E spp. shape files into Corps' ORM database and project manager review tool.
- Objective 2C: Develop out-of-kind compensation strategies in addition to oyster reefs for unavoidable impacts to shallow water habitat and EFH utilizing in-lieu fee funds.
- Action 2C1: Participate in the Elizabeth River Project, Living River Restoration Trust and provide technical assistance for decisions regarding wetland and sediment remediation projects in the Elizabeth River watershed through the expenditure of in-lieu fee funds.
- Action 2C2: Participate in Virginia Aquatic Resources Trust Fund and provide technical assistance for decisions to preserve, enhance and create wetland and aquatic resources through the expenditure of in-lieu fee funds.
- Action 2C3: Convene local workgroup with NAO ACOE, VMRC, VIMS, DEQ to discuss existing regulatory requirements for avoiding, minimizing and mitigating impacts to special aquatic sites and shallow water habitat, and evaluate opportunities for out-of-kind mitigation for impacts these habitats.
- Objective 2D: Facilitate development of a Regional Permit and General Permit (NAO ACOE and VMRC) for living shoreline projects.
- Action 2D1: Participate in Virginia CZM quarterly meetings to provide Habitat Restoration funding opportunity information for Living Shoreline projects and update participating agencies and their constituents regarding such restoration activities.
- Action 2D2: Develop a Regional and General Permit for living shoreline projects to expedite the regulatory review process by participation in NAO ACOE and VMRC Living Shorelines workgroup. These Regional and General Permits should incorporate siting criteria and existing resource assessments into the project application and review process, and have a goal of minimizing armored shorelines.
- Objective 2E: Enhance knowledge of current information pertaining to climate change impacts on priority habitats and species.
- Action 2E1: Review and stay current with information pertaining to climate change impacts on diadromous species and implications for management actions and conservation recommendations; disseminate information to other staff and federal action agencies.

Action 2E2: Review and stay current with information pertaining to climate change and associated implications for conserving and preserving SAV; disseminate information to other staff and federal action agencies.

Goal 3: Promote stewardship of marine, estuarine, and riverine habitats through proactive, non-regulatory actions

Objective 3A: Prevent loss of submerged aquatic vegetation (*Zostera maritima*).

Action 3A1: Collaborate with and provide technical assistance to VIMS SAV survey program to improve features of web-based, interactive SAV mapper (e.g., multi-year composite overlays).

Objective 3B: Protect migration, spawning and foraging habitats of anadromous species.

Action 3B1: Participate in ACOE's James River Partnership and provide technical assistance for the protection of diadromous species migratory and spawning habitat.

Objective 3C: Proactively promote and facilitate ecological restoration of priority habitats.

Action 3C1: Collaborate with NCBO in the development of ecosystem restoration projects in Virginia, providing technical assistance on project submittals and in the grant review process for projects affecting Virginia's tidal tributaries, Chesapeake Bay mainstem and Eastern Shore seaside coastal bay ecosystems.

Action 3C2: Provide technical assistance to workgroups promoting/undertaking proactive ecosystem restoration (e.g., Elizabeth River sediment remediation workgroup, Elizabeth River Project, Lynnhaven River NOW, NCBO fish passage workgroup, NAO ACOE/VMRC living shorelines workgroup, Virginia Atlantic Sturgeon research workgroup).

Goal 4: Promote education and outreach to highlight the mission of the Habitat Conservation Division

Objective 4A: Educate the public and regulatory communities about essential fish habitat and the activities of the Habitat Conservation Division.

Action 4A1: Participate in workshops and presentations to federal action agencies to promote the EFH consultation process for the protection of designated habitat in the Lower Chesapeake.

Action 4A2: Participate in workshops, conferences and educational activities to promote the importance of protecting aquatic habitat and the activities of the Habitat Conservation Division.

Objective 4B: Help educate the public and regulatory communities about the need for protecting Atlantic sturgeon and other NOAA T&E spp. in Virginia.

Action 4B1. Conduct outreach education within the local community and facilitate ESA consultation process for T&E spp. and other NOAA trust resources in Virginia through workshops and presentations to federal action agencies.

Goal 5: Promote research which addresses regional habitat management needs

Objective 5A: Promote research opportunities that evaluate the technical and policy issues associated with mitigation and its implementation.

Action 5A1. Develop science-based rationale for increasing mitigation ratio for special aquatic sites including mudflats from existing 1/2:1 with NAO Corps Regulatory Branch.

Action 5A2. Promote a technical evaluation of the use of species-specific ratios in compensatory mitigation plans for unavoidable impacts to SAV (i.e. *Zostera* vs. *Ruppia*).

Action 5A3. Continue participation in Virginia ATS research partnership. Provide technical assistance as applicable and help facilitate information and data sharing with PRD.

Table 7. Physical Threats to Habitat Caused by Activities for Lower Chesapeake Bay

| Threat / Habitat | Tidal wetlands | SAV | Coastal riverine | Mudflat and shallow water habitat | Shellfish | Primary Activities Causing Threats |
|---|----------------|-----|------------------|-----------------------------------|-----------|---|
| Obstruction to fish passage | | | * | | | VDOT road crossings and culverts, reservoir impoundments, historic mill dams (few) |
| Water quality degradation, eutrophication | * | * | | | * | Agricultural runoff, Intensive poultry operations, septic systems, residential runoff |
| Habitat alteration/conversion and loss | * | * | * | * | * | dredge /fill |
| sedimentation | | * | * | | | agriculture, development activities |
| contamination | | | | | | agriculture, development, septic systems, toxic spills |
| invasive spp. | | | * | | | |
| climate change | * | | * | | | Increased temperatures, lower flows, armoring, sea level rise |
| entrainment/impingement | | | * | | | Water intake structures |
| altered temps | | | | | | climate change deforestation, riparian buffer removal |
| altered hydrology | * | | | | | |
| light alterations | | * | | | | sedimentation, toxic algal blooms (nutrification) |
| salinity alterations | | | | | | sea-level rise |
| shoreline erosion/alteration | * | * | | | * | Highly erodible soils, shoreline development |

6.7 Offshore and Continental Shelf Region

6.7.1 Geographic Description

The offshore region includes the waters and substrates of the Gulf of Maine, Georges Bank, and the Mid-Atlantic Bight. Generally speaking, it extends from the three mile limit of state waters to the limit of the EEZ between Maine and Virginia. It includes a variety of benthic and pelagic marine habitats and supports a number of important recreational and commercial fisheries.

Potential threats to offshore marine habitats are posed by fishing, and by non-fishing activities that have little or no impact on coastal watersheds, such as oil and gas drilling, wind turbine installations, and at-sea liquefied natural gas terminals.

6.7.2 Priority Offshore Habitats and Associated Species

- a. *Cobble/Gravel* –Atlantic cod, lobsters, little skate, pollock, and tomcod, Atlantic halibut, Atlantic herring eggs, barndoor skate, black sea bass, clearnose skate, monkfish, haddock, little skate, redfish, silver hake, smooth skate, spiny dogfish, summer flounder, thorny skate, winter flounder, winter skate, ocean quahogs
- b. *Structured habitat/Boulders*- Atlantic cod, American lobster, black sea bass, monkfish, ocean pout, Atlantic wolffish eggs and adults, redfish, pollock, scup, silver hake, summer flounder
- c. *Sand/Sand Waves* – Atlantic cod, windowpane flounder, winter flounder, American plaice, Atlantic halibut, Atlantic surfclam, barndoor skate, clearnose skate, monkfish, little skate, haddock, ocean quahog, red hake, rosette skate, scup, sea scallop, silver hake, summer flounder, thorny skate, white hake, winter skate, witch flounder, yellowtail flounder, sand lance
- d. *Kelp Beds/Macroalgae*- Atlantic cod, pollock, red hake, white hake, winter flounder, silver hake, summer flounder, lobsters, black sea bass
- e. *Deepwater/Low Energy Mud*- American plaice, barndoor skate, little skate, pollock, red hake, redfish, scup, silver hake, thorny skate, white hake, winter flounder, winter skate, witch flounder, monkfish
- f. *Water Column/Pelagic*- Atlantic herring, Atlantic mackerel, Atlantic salmon, bluefish, butterfish, longfin squid, shortfin squid, eggs and larvae of many species.
- g. *Submarine canyons* –white hake, offshore hake, three skate species, halibut, redfish, witch flounder, monkfish, tilefish, *Illex* squid, and lobsters.
- h. *Continental slope* – generally the same species as in the canyons plus a number of other deep-water species that are not currently managed or harvested, including corals
- i. *Seamounts* –red crabs plus a number of other deep-water species that are not currently managed or harvested, including corals

6.7.3 Potential Threats to Offshore Habitats

- a. *Cobble/Gravel* –Offshore energy development (i.e. wind, oil and gas, LNG), cable development, dredge disposal, sand/gravel mining, commercial fishing, transportation (shipping)
- b. *Structured habitat/Boulders*- Offshore energy development (i.e. wind, oil and gas, LNG), cable development, commercial fishing, transportation (shipping)
- c. *Sand Waves* – Offshore energy development (i.e. wind, oil and gas, LNG), cable development, dredge disposal, aquaculture, sand/gravel mining, commercial fishing, transportation (shipping)
- d. *Kelp Beds/Macroalgae*- Offshore energy development (i.e. wind, oil and gas, LNG), cable development, commercial fishing, transportation (shipping)
- e. *Deepwater/Low Energy Mud*- Offshore energy development (i.e. wind, oil and gas, LNG), cable development, dredge disposal, transportation (shipping)
- f. *Water Column/Pelagic*- Offshore energy development (i.e. wind, oil and gas, LNG), particularly Marine hydrokinetic development, dredge disposal, transportation (shipping), aquaculture
- g. *Submarine canyons* – Commercial fishing, oil and gas drilling, and cable-laying, transportation (shipping)
- h. *Continental slope*- Commercial fishing, oil and gas drilling, and cable-laying, transportation (shipping)
- i. *Seamounts*- transportation (shipping)

6.7.4 Habitat Goals and Objectives for the Offshore Sub-region

Goal 1: Coordinate HCD actions with other NMFS programs for maximum effectiveness.

Objective 1A: Collaborate with NOAA programs to improve management and encourage research of deep-sea corals.

Action 1A1: Seek guidance, as necessary, from NOAA Deep-Sea Coral Research and Technology Program, to ensure that management measures are consistent with NOAA Deep-Sea Coral Strategic Plan and keep DSCRTP informed of progress

Action 1A2: In collaboration with the NEFSC and the councils, develop and implement a strategic plan for deep-sea coral conservation that is consistent with goals of NMFS Habitat Blueprint.

Objective 1B: Improve the processes for sharing data and developing internal comments to facilitate responsible siting plans for offshore development.

- Action 1B1: Collaborate with NEFSC to get NMFS data to appropriate agencies and organizations (i.e. BOEM) to facilitate responsible siting for offshore development.
- Action 1B2: Coordinate with PRD and SFD on HCD actions related to offshore development. Incorporate PRD and SFD comments into HCD letters to ensure one NERO response. Coordinate with HQ/PPI as required.
- Objective 1C: Maintain the online EFH mapping tool to ensure accurate information is available to the public.
 - Action 1C1: Provide up-dated EFH information to NERO web master and to NMFS Office of Habitat Protection for incorporation into the EFH mapping tool.

Goal 2: Conserve priority habitats through existing regulatory authorities.

- Objective 2A: Protect priority offshore habitats from development impacts
 - Action 2A1: Consult with federal action agencies on permit activities (Section 10/404, NEPA, MSA) involving offshore development, dredging and energy projects affecting offshore habitats.
 - Action 2A2: Consult with FERC on licensing process for offshore MHK projects.
 - Action 2A3: Consult with BOEM on offshore wind development projects
- Objective 2B: Work with the fisheries management councils to protect offshore and continental shelf habitat
 - Action 2B1: Consult with MAFMC and NEFMC and with other NERO staff regarding potential adverse impacts of proposed fishery management actions on EFH.
 - Action 2B2: Provide technical and policy advice to regional fishery management councils to promote conservation of deep-sea corals and their habitats using discretionary authority of MSA.
 - Action 2B3: Coordinate with NEFSC and Fishery management councils in the identification and description of EFH and HAPC's
 - Action 2B4: Coordinate with the fishery management councils in the development of the EFH provisions of FMPs
- Objective 2C: Coordinate with Fishery Management Councils to incorporate habitat information in fishery management plan amendments.
 - Action 2C1: Promote the significance of habitat to the NEFMC and MAFMC through appropriate subcommittees

Goal 3: Promote stewardship of marine, estuarine, and riverine habitats through proactive, non-regulatory actions

- Objective 3A. Collaborate with stakeholders to develop responsible siting of offshore development for the protection of vulnerable habitats.
- Action 3A1: Actively participate in BOEM state task forces for renewable energy development. Provide information upfront and early about NMFS mandates, resources, concerns, and information needs.
- Action 3A2: Participate in state offshore planning processes and BOEM activities to encourage responsible siting of offshore development for the protection of vulnerable habitats.
- Action 3A3: Provide technical assistance for state offshore planning efforts and regional ocean governance groups (i.e. MARCO, NROC) related to coastal and marine spatial planning and habitat protection.
- Action 3A4: Collaborate with the fishery management councils, NEFSC in the development of a deep sea coral conservation plan as part of the NOAA Habitat Blueprint. Provide coral conservation plan to BOEM and FERC to assist them in the environmental analysis of offshore energy project.

Goal 4: Promote education and outreach to highlight the mission of the Habitat Conservation

- Objective 4A. Educate the public and regulatory communities about essential fish habitat and other activities of the Habitat Conservation Division.
- Action 4A1: Conduct outreach with action agencies to ensure understanding of EFH designations and the MSA consultation process.
- Action 4A2: Provide information at meetings and conferences on offshore fisheries resources and concerns related to offshore development. Identify potential means to avoid and minimize impacts to habitat resources.

Goal 5: Promote research which addresses regional habitat management needs

- Objective 5A: Promote research in support of developing offshore energy siting and development management plans.
- Action 5A1: Coordinate with NEFSC to promote information needs for reviewing offshore renewable energy siting and development (i.e. spatial display of NMFS data, review of monitoring proposals)
- Objective 5B: Promote research that improves our understanding of essential fish habitats and its link to fish productivity
- Action 5B1: Collaborate with NEFSC on habitat characterization studies along the Del MarVa peninsula. Develop HAPC proposal for black sea bass as a result of these characterization studies.

Table 8. Physical Threats to Habitat Caused by Activities in the Offshore and Continental Shelf Region

| Threats | Cobble/ gravel | Boulders | Sand | Macroalgae | Mud | Water column | Canyons | Slope | Seamounts | Primary activities causing threats |
|--|-------------------|----------|------|------------|-----|-----------------|---------|-------|-----------|--|
| Reduced habitat complexity and resource productivity | * | * | | | | | * | * | | Commercial fishing, esp bottom trawling and dredging |
| Substrate disturbance, turbidity, noise | * | | * | | * | * | | | | Wind farms |
| Contamination from leaks, wellhead blowouts, use of drilling muds, substrate disturbance | | | | | * | * | | | | Oil and gas drilling |
| Substrate disturbance, temperature change, contamination from spills | * | | * | | * | | | | | LNG terminals |
| Strikes from mid-water turbines, substrate disturbance, noise | | | | | | * | | | | Hydrokinetics |
| Contamination from oil spills | * | | | | * | * | | | | Shipping |
| Substrate disturbance | * | | * | | * | | | | | laying/burial |
| Contamination of sediments & water column, burial of sediments and organisms | | | | | * | * | | | | seafloor disposal |
| Removal of substrate, hypoxia | * | | * | | | | | | | fish farming |
| Nutrient loading | | | | | | * | | | | fish farming |