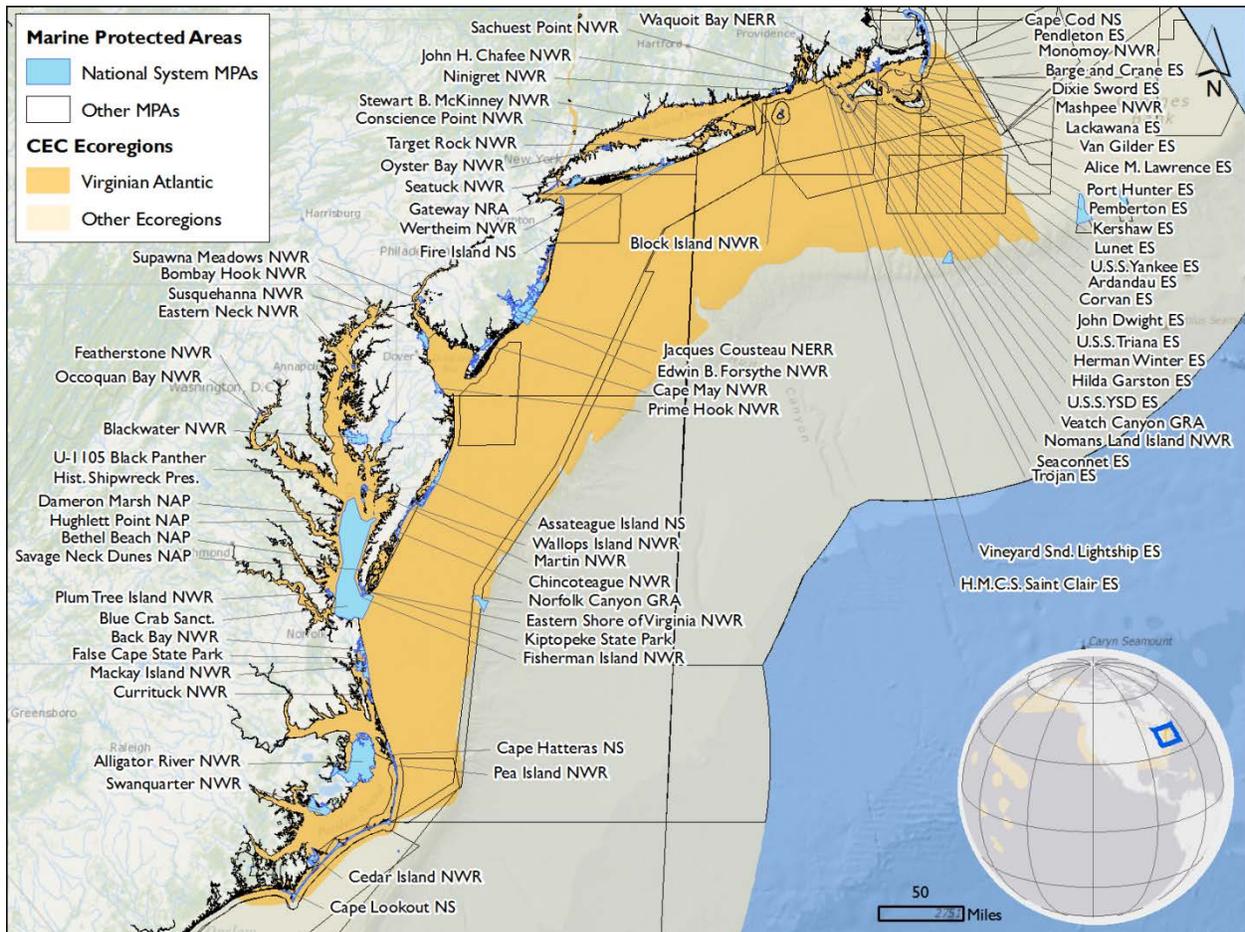


Virginian Atlantic (Ecoregion 8)

Background

The Virginian Atlantic Ecoregion extends from the south side of Cape Cod to Cape Hatteras in North Carolina. The waters of the ecoregion are a mix of cold and warm temperate; along with many rivers and streams, this mixing supports an abundance of marine life. Chesapeake Bay, the largest estuary in the United States, lies within the ecoregion. The Gulf Stream lies just offshore of Cape Hatteras and before it meanders eastward, modifies the climate in this area.



MPAs in the Virginian Atlantic

There are 333 MPAs in the Virginian Atlantic Ecoregion, by far the most MPAs in any region in the country. Of these, 76 (23%) are National System members, 126 (38%) are eligible but are not currently National System members and 131 (39%) are not eligible to become members (Figure 1).

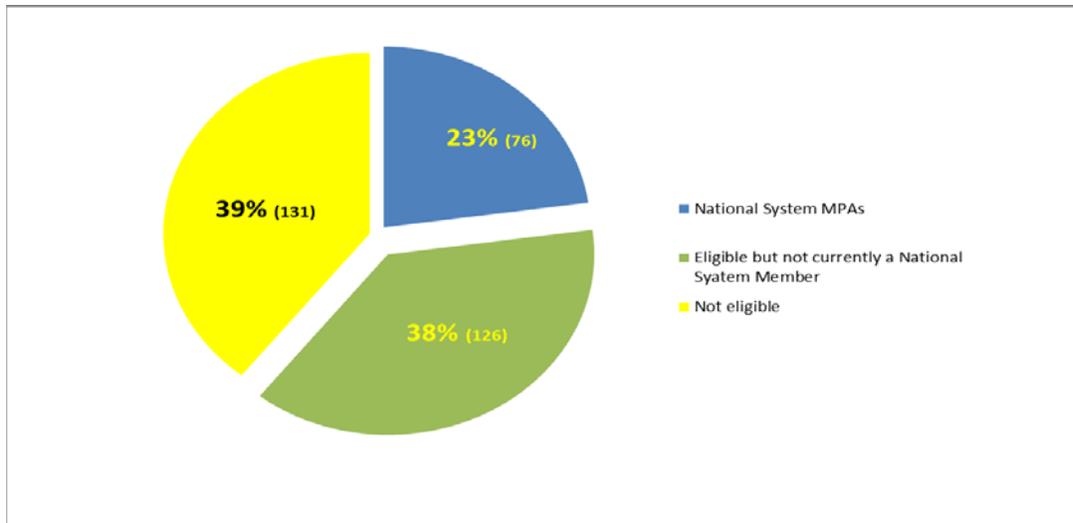


Figure 1: Percent of Marine Protected Areas (MPAs) within the Virginian Atlantic (Ecoregion 8) that are members of the National System of MPAs (n=333)

The MPAs in this ecoregion are very diverse. Among the 76 National System sites are national seashores, wildlife refuges, national estuarine research reserves and state parks. The ecoregion also includes MPAs established to protect cultural resources (e.g., shipwrecks) and those established to sustain fisheries (e.g., areas that restrict fishing gear to avoid harm to bottom habitat and associated species). The MPAs that are not members of the National System also include many federal and state fishery MPAs.

From Cape Cod to Cape Hatteras, sandy beaches along the northeast coast are numerous (e.g., present in 41% of the ecoregion's MPAs) and sand dunes are reported as present in 20%. Barrier islands like Fire Island, Assateague and North Carolina's Outer Banks are present in 19% of the ecoregion's MPAs. Many rivers and streams flow into large estuaries within the ecoregion such as Chesapeake Bay, Delaware Bay and Long Island Sound. These rivers (including the Hudson, Roanoke, Pamlico and Neuse) supply freshwater and sediment to the coast that supports wetlands and mudflats (in 57% of the ecoregion's MPAs) and seagrass beds (in 11%). The mixing of cold and warmer temperate water masses and significant freshwater input passing through extensive tidal salt marshes and estuaries support highly productive fisheries. Anadromous and estuarine/coastal fish such as sturgeon, shad, herring and striped bass migrate offshore from coastal rivers and streams during part of their life cycle, reported in approximately 19% and 27%, respectively, of the ecoregion's MPAs (Figure 3). Various types of marine fishes are found throughout many of the ecoregion's MPAs, including coastal pelagic fish in 28% and commercially important groundfish (21%). Spring migration of highly migratory species (reported in 10% of the ecoregion's MPAs) like Bluefin and bigeye tuna move northward from Florida along the margin of the ecoregion's continental slope. Expeditions have discovered stony corals and octocorals in deeper water along the continental shelf and associated fish species are reported in 2% of the ecoregion's MPAs. The ecoregion also supports significant populations of migrating marine mammals, including cetaceans (found in 22% of the ecoregion's MPAs) such as the North Atlantic Right and fin whales. As this ecoregion stretches from warm

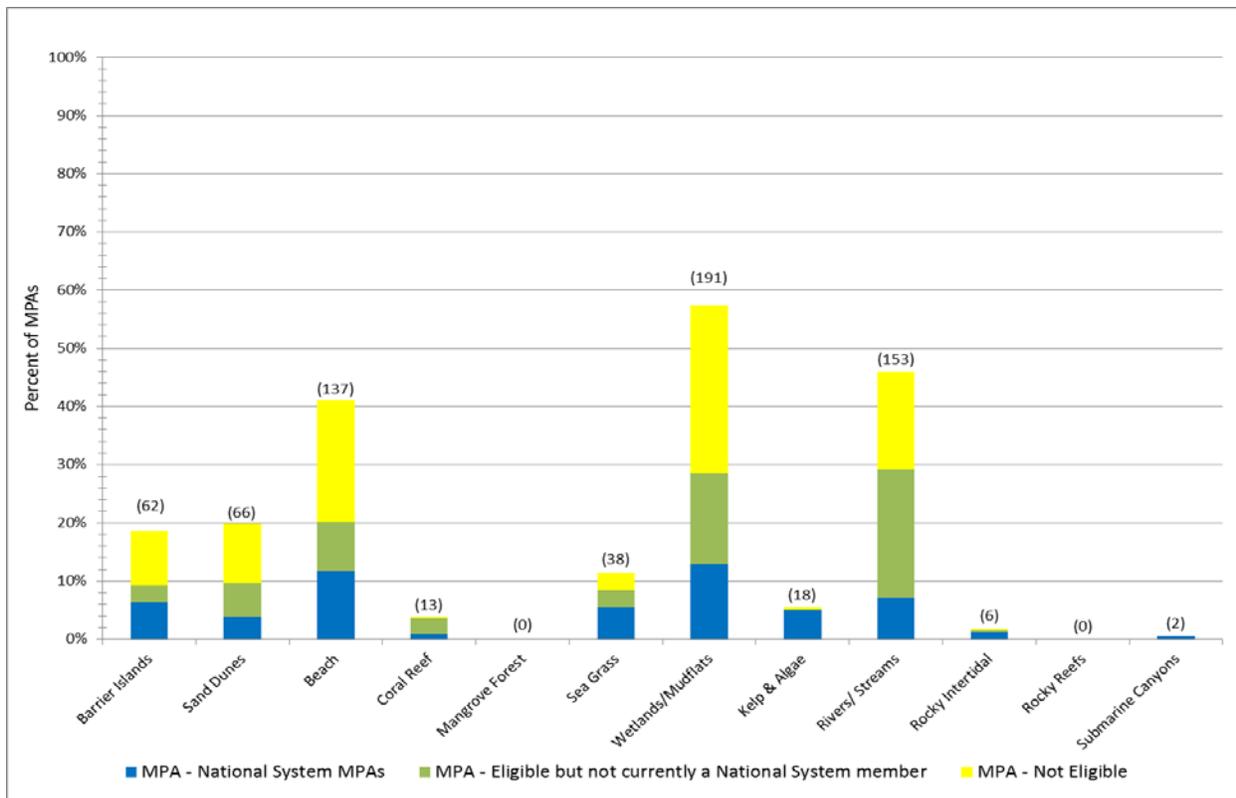


Figure 2. Percent of MPAs that contain certain habitat groups in the Virginian Atlantic (Ecoregion 8)

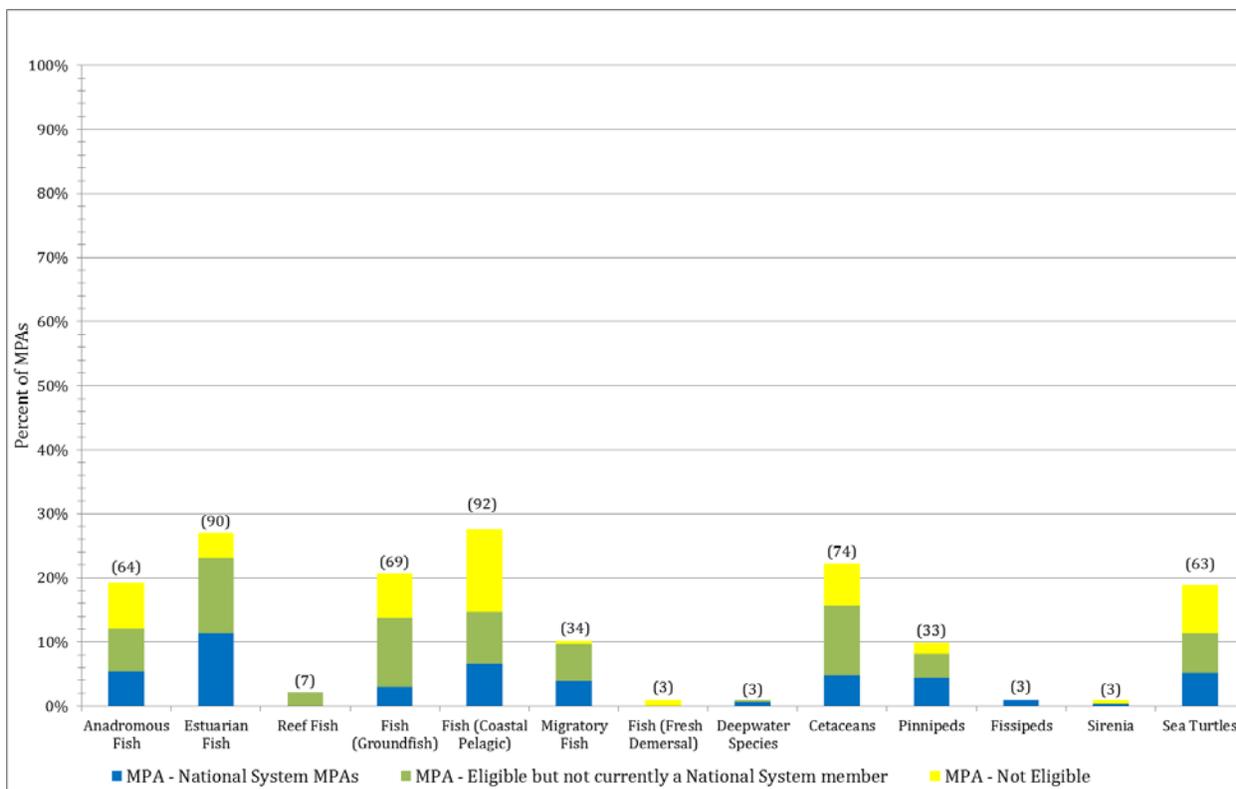


Figure 3. Percent of MPAs that contain certain fish and mammal groups in the Virginian Atlantic (Ecoregion 8)

temperate waters in the south into Canada, a full range of temperate marine mammals are present, including sirenids (1%), pinnipeds (10%), and fissipeds (1%), important predator as well as prey species.

Birds are classified as waterfowl, estuarine or seabirds, signifying where their principal feeding areas occur, and are found in 56%, 59%, and 44%, respectively, of the ecoregion's MPAs. (Figure 4). The ecoregion's abundant rivers and streams, bays and sounds and their coastal habitats support abundant waterfowl and estuarine bird populations. Birds not classified in any of these feeding guilds are found in 60% of the ecoregion's MPAs.

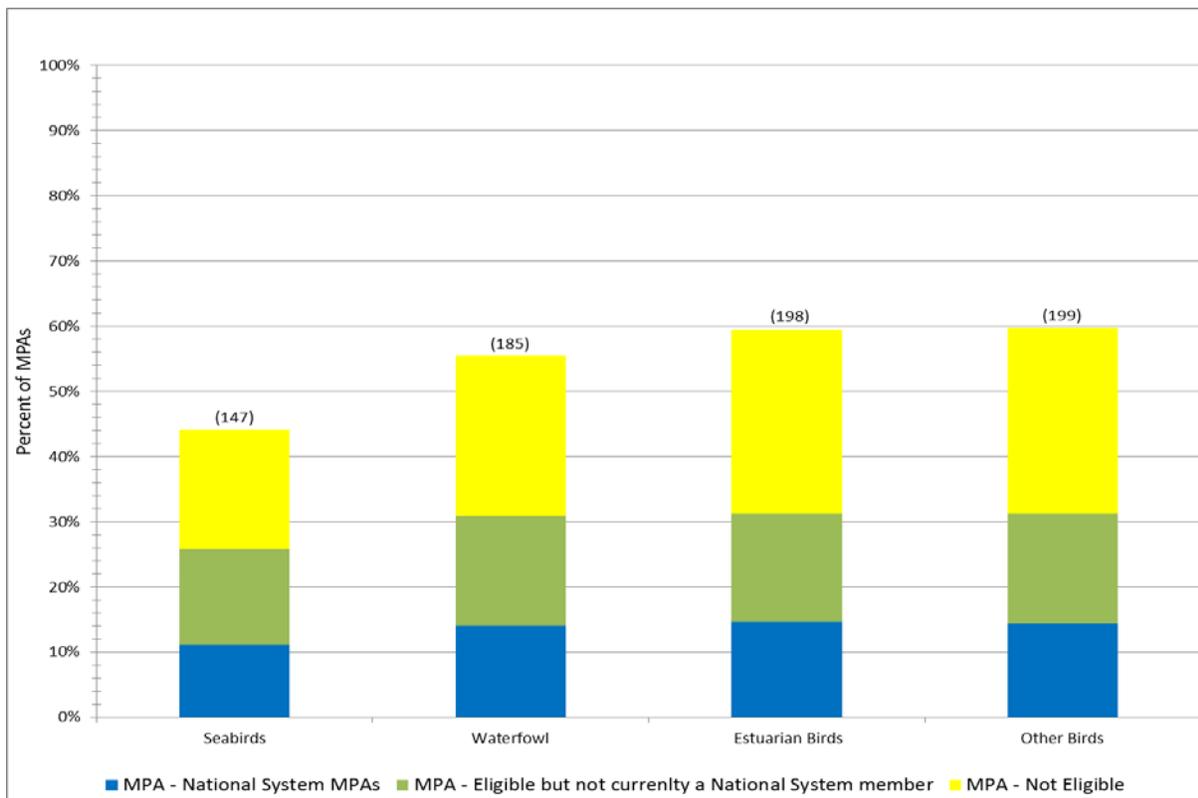


Figure 4. Percent of MPAs that contain marine birds and reptiles in the Virginian Atlantic (Ecoregion 8)

Freshwater inflow and highly productive habitat such as salt marshes, mudflats and seagrass support a highly productive benthos. Some of the intertidal invertebrates {reported in 58% of the ecoregion's MPAs) that are recreationally and commercially sought after include the blue crab, horseshoe crab, American lobster, and oyster (Figure 5). Nutrients from coastal rivers and warm temperatures support subtidal benthic algae, reported in 17% of the MPAs. In the northern areas of the ecoregion, rocky intertidal invertebrates (3%) and rocky intertidal algae (1%) also lend support to the productive benthos.

Ecologically important areas that support where species breed, nest, spawn and rest can be found in many of the ecoregion's MPAs (Figure 6). The presence of significant riverine input,

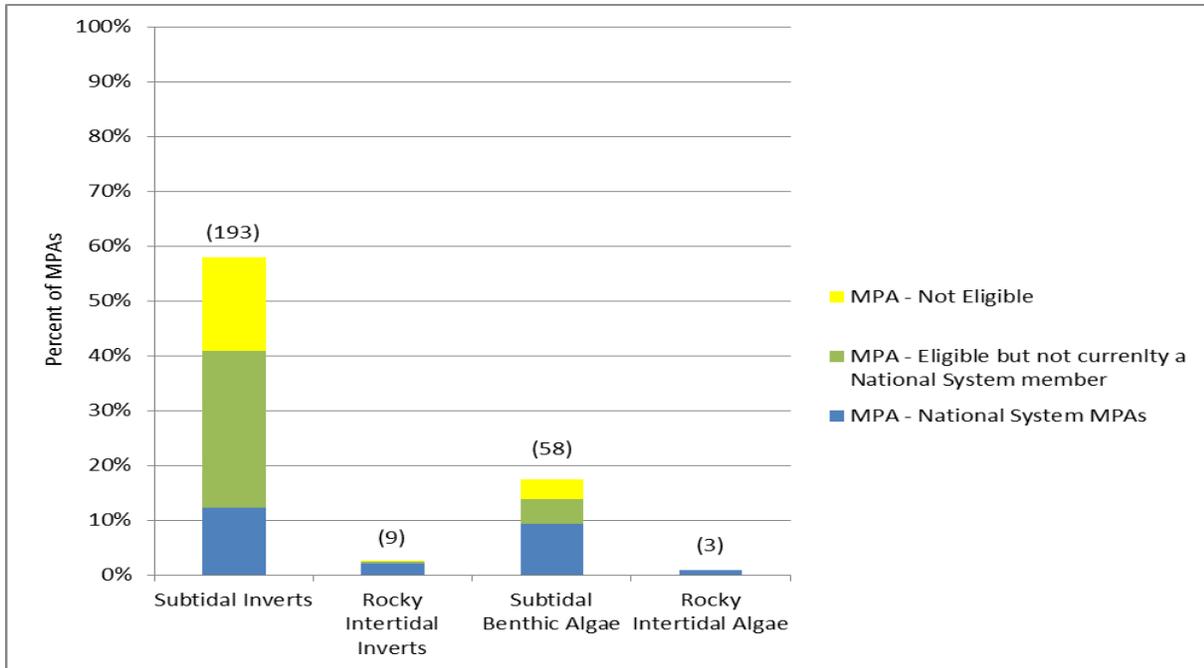


Figure 5. Percent of MPAs that contain Invertebrates and Algae in Virginian Atlantic (Ecoregion 8)

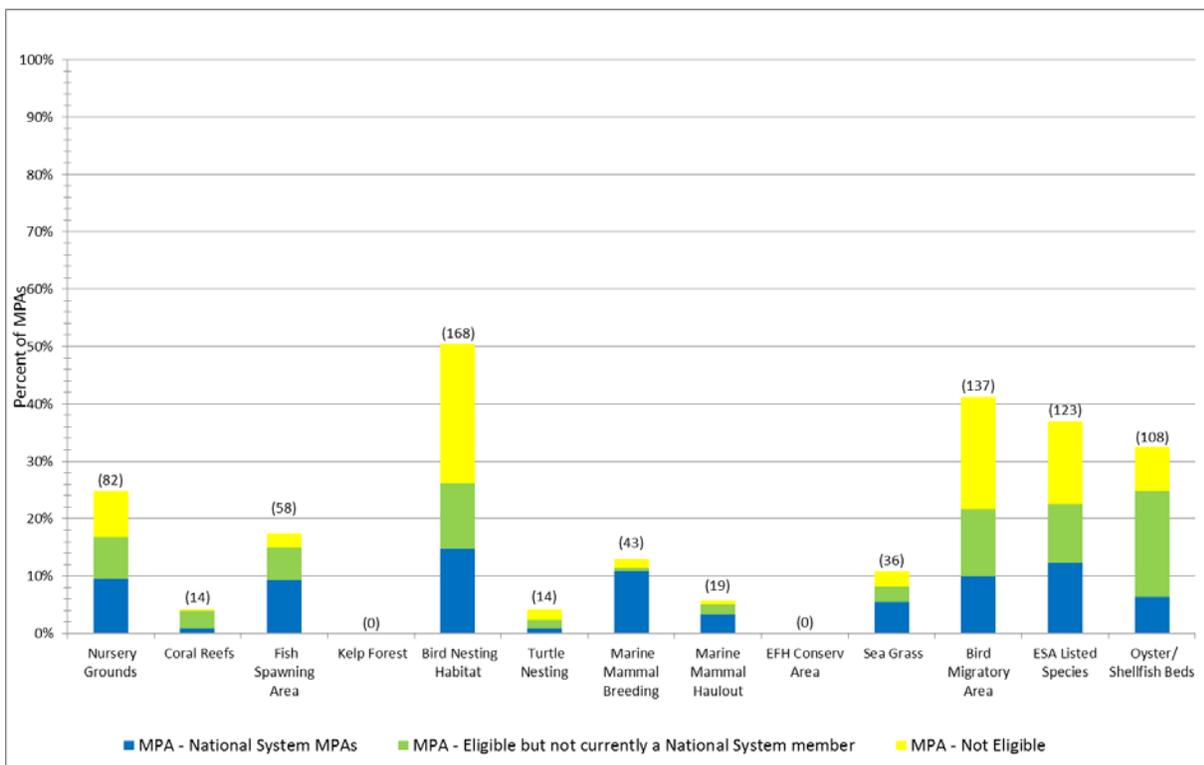


Figure 6. Percent of MPAs that contain certain biological use groups in the Virginian Atlantic (Ecoregion 8)

salt marshes, estuaries, mudflats and seagrass all contribute support to nursery grounds (28%), fish spawning areas (17%) and oyster/shellfish beds (32%). These habitats also contribute to nesting (50%) and migrating (41%) coastal bird communities. Deeper waters

near the edge of the continental shelf contain coral reefs (4%) and marine mammal breeding occurs in 13% of the MPAs. The NOAA Fisheries Service has jurisdiction over 102 threatened and endangered species listed under the Endangered Species Act (ESA), many of which (such as whales, dolphins and sea turtles) are found in this ecoregion and in 37% of the ecoregion's MPAs.

Conclusions

The 333 MPAs in this ecoregion contain the major habitat and species groups and ecologically important areas found in the ecoregion as a whole. These resources are also found in more than one MPA, resulting in some replication of ecological features (species, habitats and ecological processes) -- one of the criteria identified by the Convention on Biological Diversity (CBD) in designing effective MPA networks.

Suggested Reading

North Carolina Department of the Environment and Natural Resources. Habitat Protection. <http://portal.ncdenr.org/web/mf/n.c.-marine-habitat>