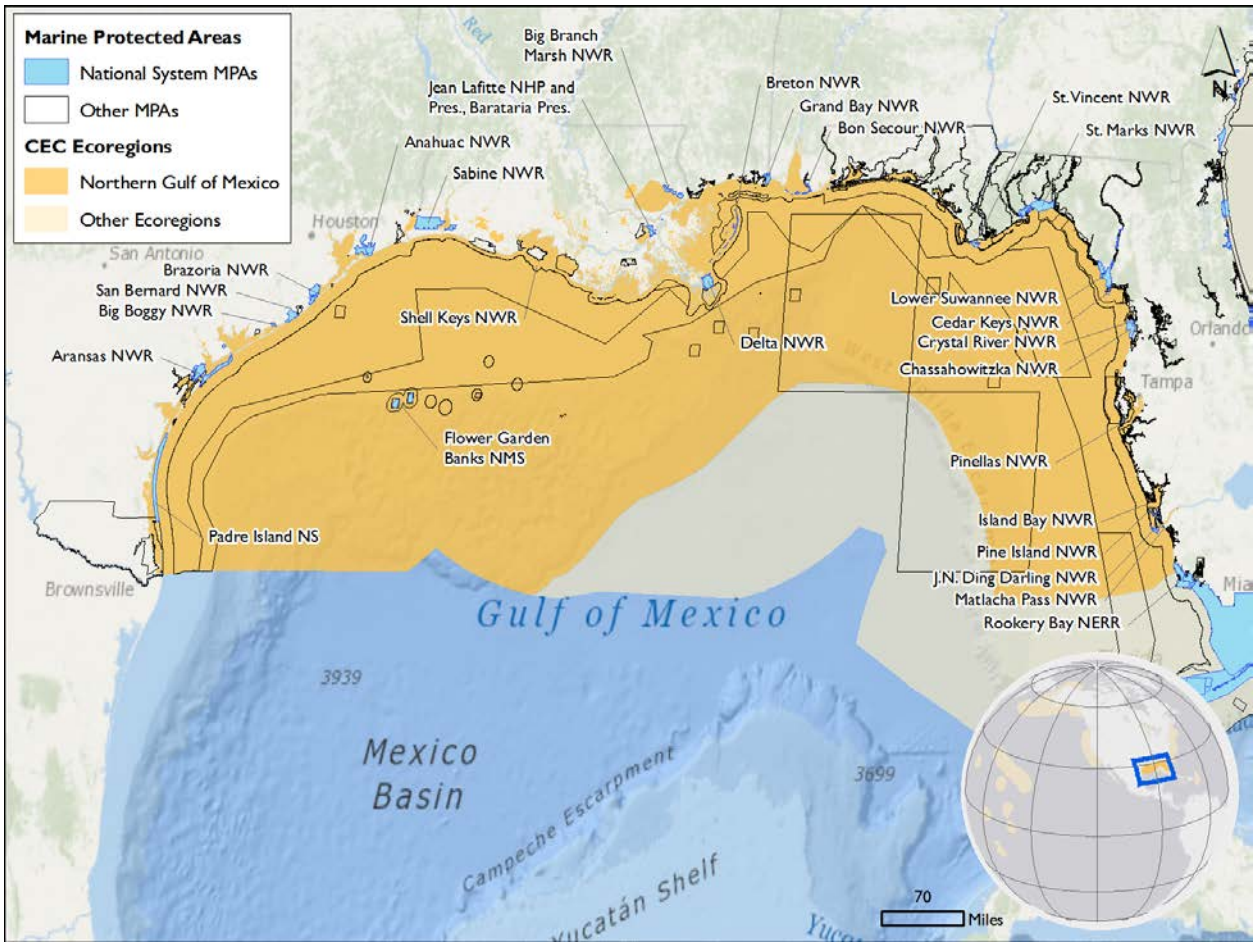
Northern Gulf of Mexico (Ecoregion 13)

Background

The Northern Gulf of Mexico ecoregion extends from the Mexican coast to Tampa, Florida. The Gulf of Mexico is a semi-enclosed sea with tropical currents entering from the Caribbean Sea through the Yucatan Channel. This Loop Current transports fish, larvae and juveniles throughout the region. The area supports significant biodiversity of marine resources in a region that is highly impacted by human activities. The Gulf is a major center for oil and gas development, including exploration, extraction, shipping, service, construction and refining operations. The ecoregion is also lined with major population centers such as Corpus Christi, Galveston, Houston, New Orleans, Mobile and Tampa that exert considerable stress on their watersheds. The ecoregion is characterized by a broad continental shelf and shallow water, although it also includes a significant amount of continental slope areas and a small amount of very deep ($3,000^{+}$m) waters.



MPAs in the Northern Gulf of Mexico

Of the 273 MPAs in the Northern Gulf of Mexico Ecoregion, 27 (10%) are National System members, 125 (46%) are eligible but are not currently National System members and 121 (44%) are not eligible (Figure 1). Most of the National System MPAs in the ecoregion are national

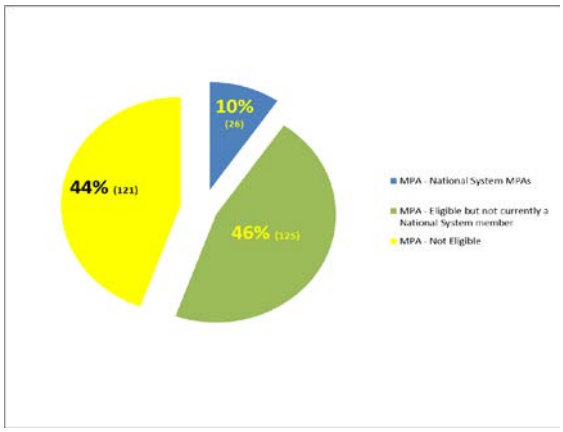


Figure 1. Percent of Marine Protected Areas (MPAs) within Northern Gulf of Mexico (Ecoregion 13) that are members of the National System of MPAs (n=273)

wildlife refuges managed by the U.S. Fish and Wildlife Service. Others include a national marine sanctuary (Flower Garden Banks), a national estuarine research reserve (Rookery Bay), and a national historical park and preserve. The 125 MPAs that are not members of the national system include state parks, special wildlife areas where restrictions protect target fish and wildlife (e.g., Florida manatee) and fishing closure MPAs managed by the NOAA Fisheries Service and restrict fishing gear that can harm bottom habitat or select species. These sustainable production MPAs are primarily focused on alleviating impacts of bottom trawling and other fishing gear on the benthic and epibenthic fauna of these submarine canyon ecosystems. West and East Florida Garden Banks and Stetson Bank are designated by NOAA Fisheries Service as Habitat Areas of Particular Concern (HAPC). HAPCs are considered high priority areas for conservation, management, or research because they are rare, sensitive, stressed by development, or important to ecosystem function, and include coral reefs (reported in 14% of the ecoregion's MPAs) and carbonate limestone substrate (Figure 2). Ecologically important biogenic habitats are found throughout the ecoregion, including seagrass (found in 56% of the ecoregion's MPAs), wetlands and mudflats (67%), benthic algae (50%) and kelp/algae (9%).

Wetlands and mudflats are part of the vast complex of tidal marshes found throughout the ecoregion's shores, containing some 60% of the tidal marshes of the United States and fed by 37 major rivers and streams (e.g., found in 28% of the ecoregion's MPAs). Non-biogenic habitat such as rocky reefs and rocky intertidal are not found in this ecoregion, as the majority of the substrate is sediment and muddy clay-silt deposited by the ecoregion's rivers and wetlands.

The ecoregion's highly productive fisheries are supported by freshwater input mixing with warm Loop Current passing through its many coastal marshes and seagrass beds (Figure 3). Anadromous fish (e.g., reported in 17% of the ecoregion's MPAs), estuarine fish (61%) and coastal pelagic fish (43%) migrate offshore from the coast's rivers and streams during part of their life cycle. Various types of marine fishes have been recorded in this area, including highly migratory species (20%) such as Atlantic Bluefin tuna. The ecoregion also supports marine mammals, including cetaceans (33%) such as whales and dolphins, sirenids (49%) such as the Florida manatee and various species of sea turtles (50%) such as Kemp's ridley, green and loggerhead.

Birds are classified as waterfowl, estuarine or seabirds, signifying where their principal feeding areas occur, and are reported in many of the ecoregion's 272 MPAs (Figure 4). Waterfowl from

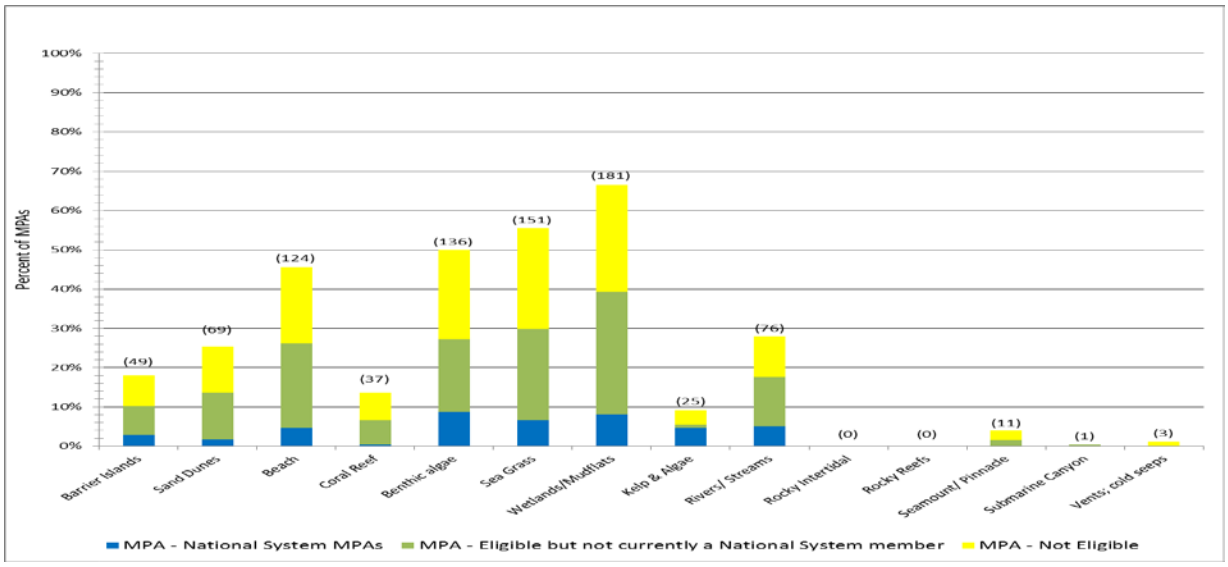


Figure 2. Percent of MPAs that contain certain habitat groups in the Northern Gulf of Mexico (Ecoregion 13)

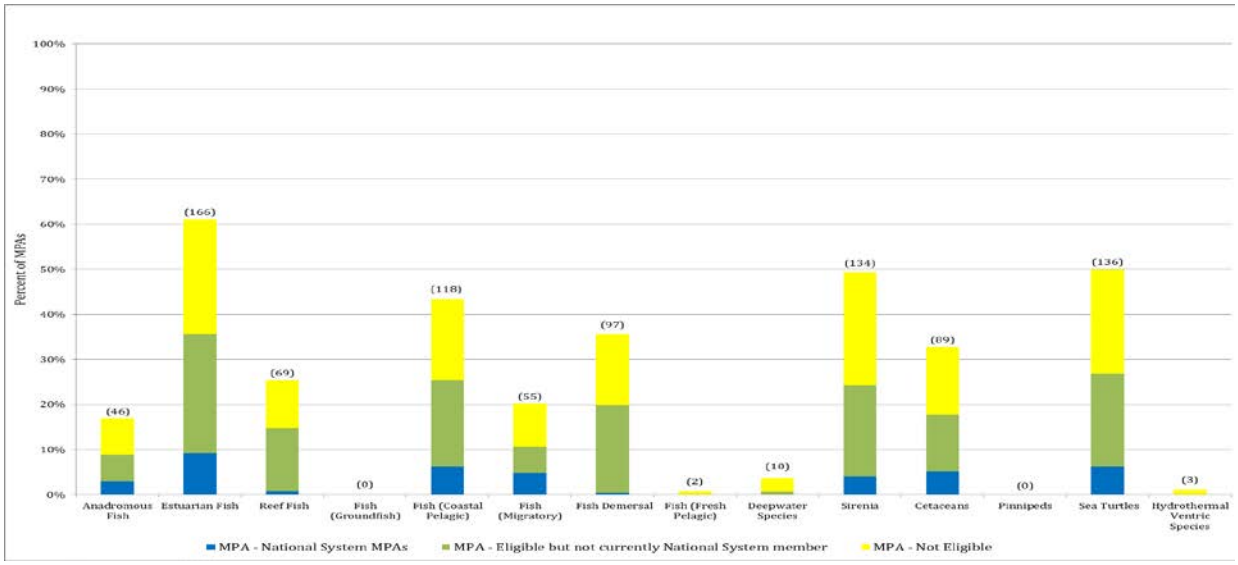


Figure 3. Percent of MPAs that contain certain fish and marine mammal groups in the Northern Gulf of Mexico (Ecoregion 13)

coastal ponds, rivers and streams are reported in 68% of the ecoregion's MPAs. Estuarine seabirds are reported in 79% of MPAs and seabirds are reported in 76%. Birds not classified in any of these feeding guilds are reported in 79% of the ecoregion's MPAs.

Freshwater flowing into wetlands and mudflats provide nutrients and sediment and account for a highly productive benthos (Figure 5). Subtidal invertebrates such as pink and brown shrimp, blue crab and oyster reefs abound and are reported in 61% of the ecoregion's MPAs. The abundance of nutrients and phytoplankton blooms also support extensive subtidal benthic algae (50%), important food and refuge for many estuarine-dependent species. Rocky reefs are uncommon in this ecoregion and are not found in its MPAs.

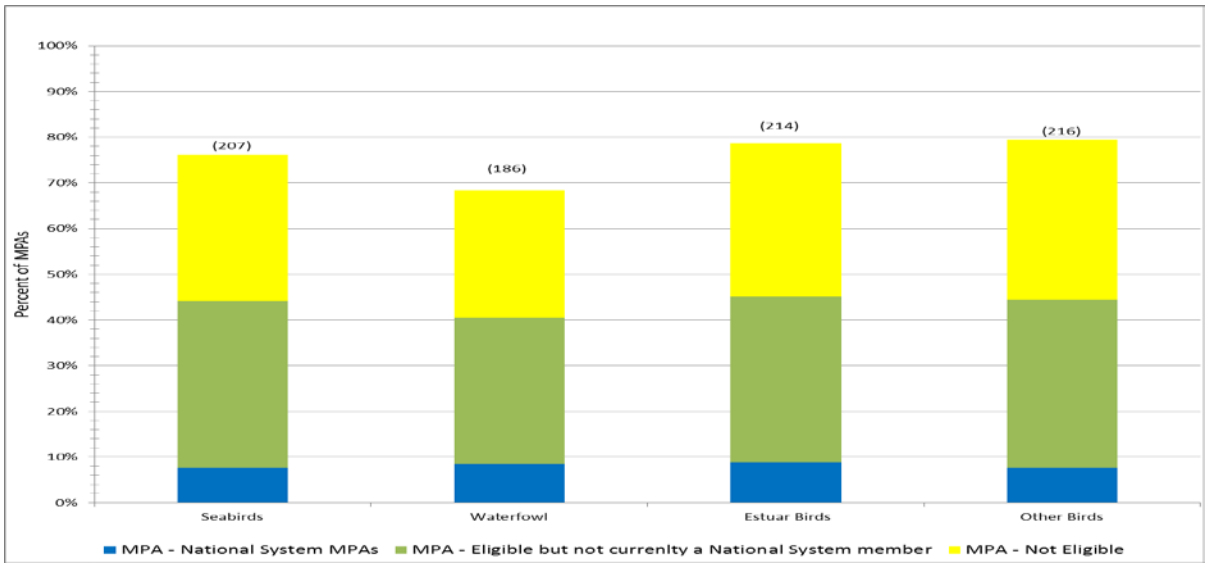


Figure 4. Percent of MPAs that contain marine birds and reptiles in the Northern Gulf of Mexico (Ecoregion 13)

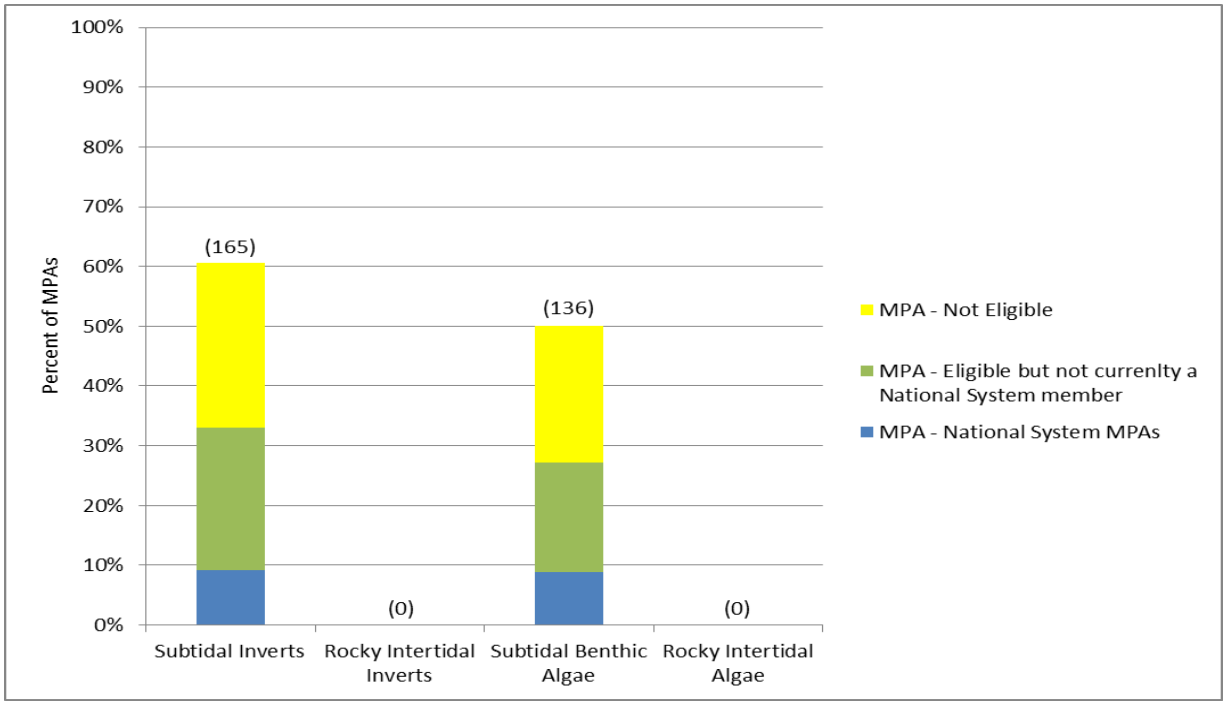


Figure 5. Percent of MPAs that contain Invertebrates and Algae in the Northern Gulf of Mexico (Ecoregion 13)

Ecologically important areas that support where species breed, nest, spawn and rest are found mangroves (26%), coastal marshes and shellfish beds (35%) act as nursery grounds (31%), fish spawning areas (21%), nesting sites for both birds (70%) and turtles (24%) and resting places for migrating (61%) estuarine-dependent bird species. The NOAA Fisheries Service has jurisdiction over throughout the ecoregion. As seen in Figure 6, the many wetlands, 102 threatened and endangered species listed under the Endangered Species Act (ESA), many of which (such as

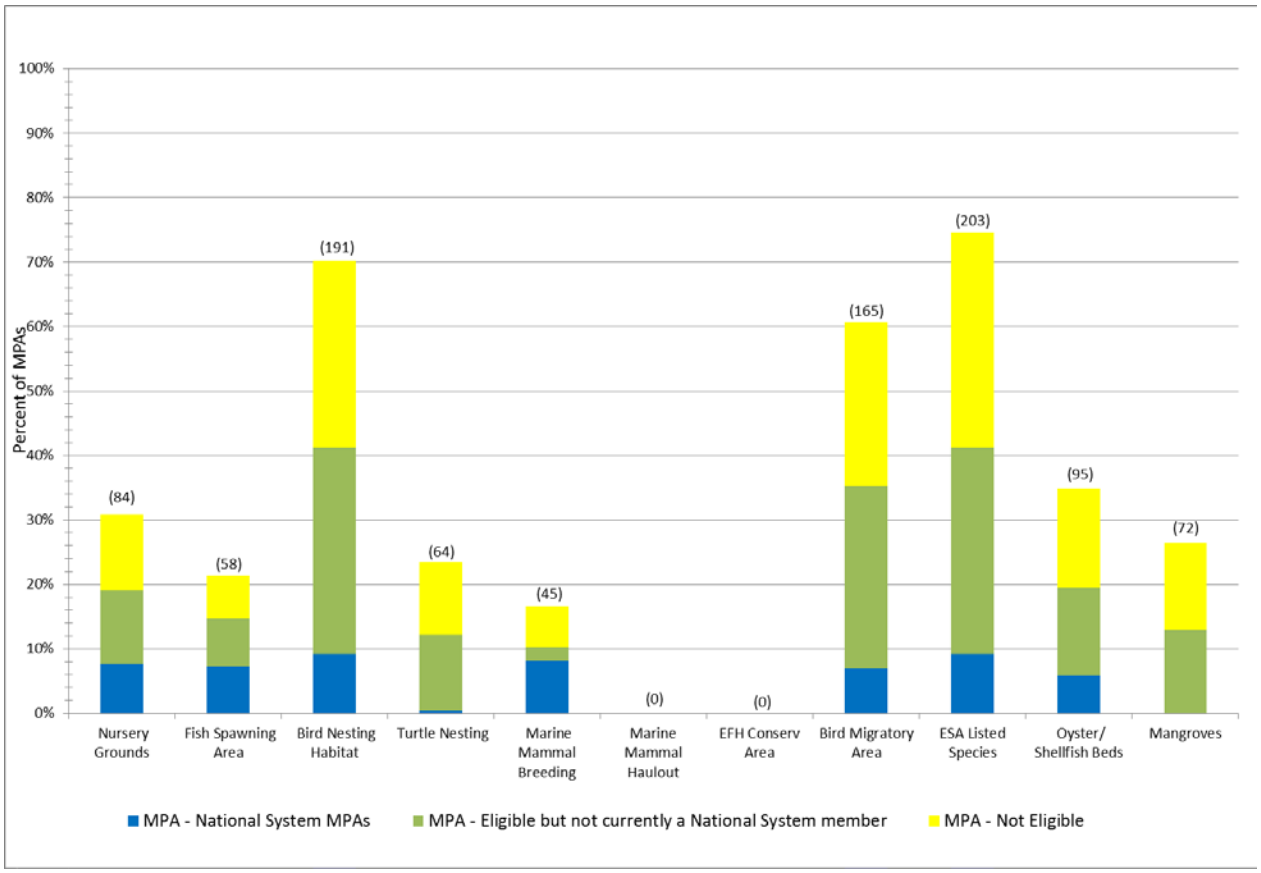


Figure 6. Percent of MPAs with ecologically important areas in the Northern Gulf of Mexico (Ecoregion 13)

whales, dolphins, sirenids and various species of sea turtles) are found in this ecoregion and in 75% of the ecoregion's MPAs.

Conclusions

The 15 MPAs in this ecoregion contain the major habitat and species groups and ecologically important areas found in the ecoregion as a whole. In some cases, 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 in designing effective MPA networks. Only one submarine canyon is listed as present in one MPA in the ecoregion, lacking this CBD replication criterion.

Suggested Reading

Gulf of Mexico Large Marine Ecosystem. 2014. Integrated Assessment and Management of the Gulf of Mexico Large Marine Ecosystem Project. http://gomlme.iwlearn.org/en