

Key Site 81: Delaware Bay, Delaware and New Jersey

Location: 38°53'23"N, 75°0'21"W

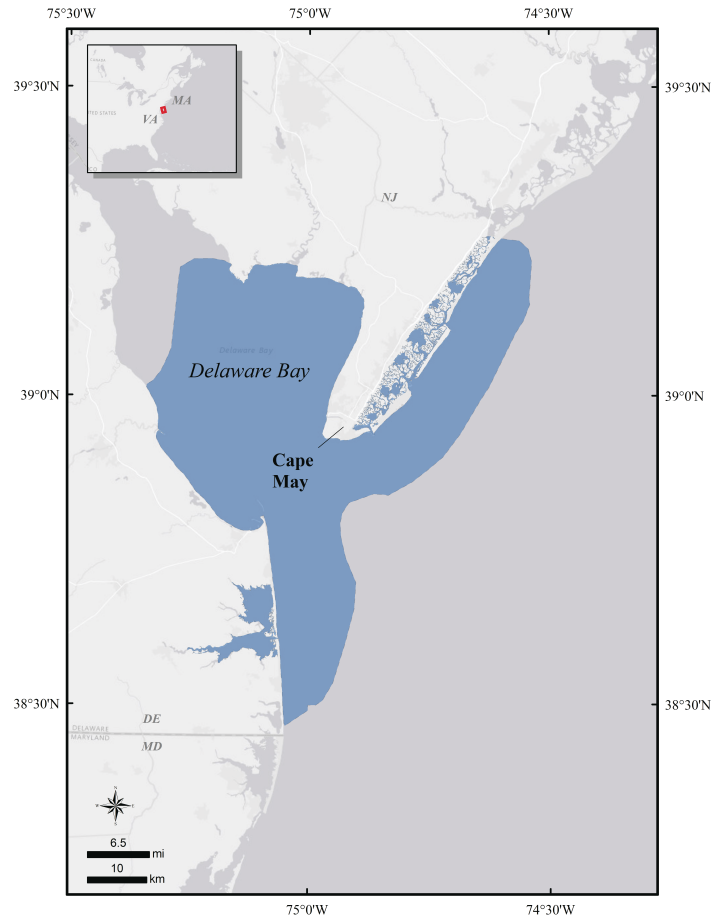
Size: 2550 km²

Description: Delaware Bay is the estuary outlet of the Delaware River. It lies between the states of New Jersey and Delaware. The coastal marshes and shoreline provide diverse habitats for migratory birds. The benthic habitats are also highly diverse in their physical characteristics. Shallow submerged mudflats, rippled sand flats, rocky hard-bottom habitats, silty and sandy shoals, shellfish beds, and tubeworm reefs are all present in Delaware Bay (Kreeger et al. 2010). Much of the coastline is undeveloped, with only a few small towns along the coast. Depths range from as shallow as 0.6 m near the shore to over 30 m near the mouth of the bay where it spills into the Atlantic Ocean.

Precision and Correction of Abundance

Estimates Presented: Abundance estimates are based on data from the Atlantic Coast Wintering Sea Duck Survey (see Silverman et al. 2012 for methods; also see Methods section in this atlas) and related surveys (Mid-Winter Survey [MWS; Eggeman and Johnson 1989] or Atlantic Marine Assessment Program for Protected Species [AMAPPS 2015]). Abundance estimates presented for this key habitat site have not been adjusted to account for incomplete detecting or other biases. Abundance estimates should, therefore, be treated as minimum estimates.

Biological Value: Delaware Bay has a rich benthic community. There are over 75 species of mollusks (e.g., clams, scallops, snails, etc.) and more than 106 species of arthropods (e.g., crabs, shrimp, etc.) and many other annelids and echinoderms (Delaware Department of Natural Resources and Environmental Control 2015) that constitute important foods for sea ducks. Blue mussel beds provide valuable nearshore habitat, attracting thousands of Greater and Lesser Scaup, Surf Scoter (*Melanitta perspicillata*), Black Scoter (*M. americana*), and Long-tailed Duck (*Clangula hyemalis*). During some years in February, large concentrations of dwarf surf clams near the mouth of the Delaware Bay attract thousands of scoters. Silverman et al. (2012; see Methods section in this atlas) found Black Scoter and Surf Scoter present in high densities with an



estimated minimum of 28,000 scoters (*Melanitta* spp.). Significant numbers of scoters are present off Cape May during migration. The lagoon areas of the Atlantic Coast of New Jersey and Delaware (i.e., the small, shallow bays landward of the barrier islands) harbor tens of thousands of Bufflehead (*Bucephala albeola*) and Red-breasted Merganser (*Mergus serrator*) but very few scoters and Long-tailed Ducks (T. Nichols, New Jersey Department of Environmental Protection, pers. comm.). Scoters and Long-tailed Ducks only occur in significant numbers east, or seaward, of the barrier islands.

Sensitivities: Delaware Bay is a major shipping channel in the eastern United States. Therefore, heavy commercial traffic can disturb wildlife habitat and increase the chance of oil spills (NOAA 2021). Bivalve species in the Delaware Bay are particularly sensitive to climate change. Warming sea-surface temperatures are causing outbreaks of epizootics in oysters and can decimate entire reefs (Cook et al. 1998). Overharvest of oysters and other mussels has also occurred in the past and can cause collapses of

the bivalve communities on which sea ducks rely. Shipping also poses a high risk of invasive species. The spread of the Asian shore crab has already been documented (Epifanio et al. 2013). These non-natives can drastically change the benthic community and outcompete other native species such as the fiddler crab.

Potential Conflicts: The Delaware estuary is one of the nation's largest petrochemical centers, and the potential for oil spills is an ever-present threat. Direct threats from the energy production industries are associated with cooling water intakes and discharges (Delaware Department of Natural Resources and Environmental Control 2015). There is an active lease area for offshore wind turbines located offshore of the mouth of Delaware Bay and this key site, with additional planning areas under consideration (BOEM 2021). Offshore sand mining occurs in the Delaware Bay and Atlantic Ocean and can have long-term effects on benthic habitats. An increase in the volume and relative size of ship traffic is expected in the Delaware Bay as navigation channels continue to be deepened.

Status: Several of the rivers and streams that flow into Delaware Bay have protected salt marsh bordering the bay. These marshes serve as breeding grounds for many aquatic species. Additionally, the Delaware Bay shore has been protected by the Delaware Coastal Zone Act for the past 40 years, and more than half of the bay-shore acreage remains undeveloped. At the mouth of Delaware Bay, the Carl N. Shuster, Jr. Horseshoe Crab sanctuary was established in 2001. The area is meant to protect the spawning population of horseshoe crab. Inland on the western shore of the bay are Bombay Hook and Prime Hook National Wildlife Refuges. On the eastern shore are Egg Island and Heislerville Wildlife Management areas. The Delaware Bay shore is also protected by numerous state wildlife areas, including, from north to south, Augustine Wildlife Area, Cedar Swamp Wildlife Area, Woodland Beach Wildlife Area, Little Creek Wildlife Area, Ted Harvey Conservation Area, Milford Neck Wildlife Area, Prime Hook Wildlife Area, and also Cape Henlopen State Park.

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