02 Hudson River Shorelines and Riparian Areas

Target Statement

By 2050, 700 acres of riparian areas are protected to accommodate future wetland expansion caused by sea level rise, and 20 miles of hardened Hudson River shorelines north of the Gov. Mario M. Cuomo Bridge are softened or otherwise restored to improve habitat values. The shorelines and riparian areas provide vital habitats as well as important resources along migration routes for birds and other wildlife. They improve climate resiliency and provide scenic and recreational opportunities for the public. By 2030, one major hard shoreline habitat restoration project has been completed, additional habitat protection opportunities have been prioritized, and 400 acres of riparian area suitable for wetland migration have been protected.

Summary

Riparian areas are located immediately inland and contiguous to shallow water and intertidal habitats, including tidal wetlands. Floodplains are a specific type of riparian area which are subject to inundation under flood conditions and, for regulatory purposes, are typically delineated by return frequencies (e.g., 100-year or 500-year floodplains). For the purposes of this report, riparian areas, including floodplains, of the Hudson River estuary are the same as the study area detailed under the Assessment of Current Conditions.

These critical areas host near-river processes that directly influence riverine habitat conditions, and represent transition zones and connections between aquatic and upland habitats. Shorelines are the most immediate and intense points of interaction between the water in the river and adjacent terrestrial habitats and features.

The character and inland extent of riparian areas are highly variable throughout the estuary for a variety of reasons including topography and land use. These diverse places provide habitat for a wide variety of plants, animals and birds; contribute to significant natural processes such as nutrient cycling, flood water storage, carbon sequestration and sediment trapping; and host recreational access to the river. The lowest lying riparian areas, including floodplains, are expected to be transformed by the rising sea levels over time, and have the potential to host significant inland intertidal wetland migration as referenced in Shallow Water and Intertidal Habitats. It has been estimated that about 40% (+/- 100 miles) of 100-year floodplain is undeveloped (~9,000 acres) in the Hudson River estuary. Floodplain areas (including the undeveloped areas) are more common in the northern most reaches of the estuary due to natural variations in the shape of the river and surrounding landscape. Approximately 44% of the estuary's shoreline is engineered (e.g., vertical sheet piling, rip-rap revetments along railroad tracks and causeways), while the remainder is a combination of soft (e.g., sand or sediment) and hard (e.g., rock or boulder) natural substrate that may or may not coexist. Activities in riparian areas such as resource extraction (e.g., rock and gravel mining), development (e.g., roads and buildings), construction of water and sediment control structures (e.g., dikes and ditches), and implementation of shoreline hardening tactics all reduce the ability to store floodwaters. This reduction in storage capacity likely exacerbates impacts to transportation, community infrastructure and private property during periods of flooding.

Over time, rising sea levels are expected to dramatically change the current location and nature of floodplains. Some areas of the existing floodplains are expected to become occupied by migrating intertidal wetlands, some will become permanently inundated by shallow water, and still other areas could become open water habitat due to the nature of the valley walls. To support intertidal wetland migration to new areas, we recommend the protection, and, if necessary, habitat restoration, of 400 acres of floodplain and necessary adjacent uplands by 2030 and an additional 300 acres by 2050.

To ensure that the ecological functions of Hudson River riparian areas are sustained for as long as possible, three primary objectives have been identified. First, at least 700 acres of riparian area providing tidal wetland migration pathways are protected through fee acquisition, easement or title transfer by 2050. Second, 20 miles of currently hardened Hudson River shoreline are identified and "softened" using sustainable, nature-based techniques. Third, Hudson River riparian areas are further evaluated for their migration potential, protected, and where needed, restored to promote their full range of ecological functions relative to their landscape context. Target setting and prioritization for these activities should be based on a complete inventory and evaluation of the estuary's riparian areas.