01 Shallow Water and Intertidal Habitats

Target Statement

By 2050, vital shallow water and intertidal habitats measure at least 12,000 acres, including 7,500 acres of tidal wetlands and 4,500 acres of native submerged aquatic vegetation. These habitats provide essential life-support for the native fish, birds and other wildlife of the estuary. By 2030, 10 conservation or restoration projects for such habitats are underway or complete.

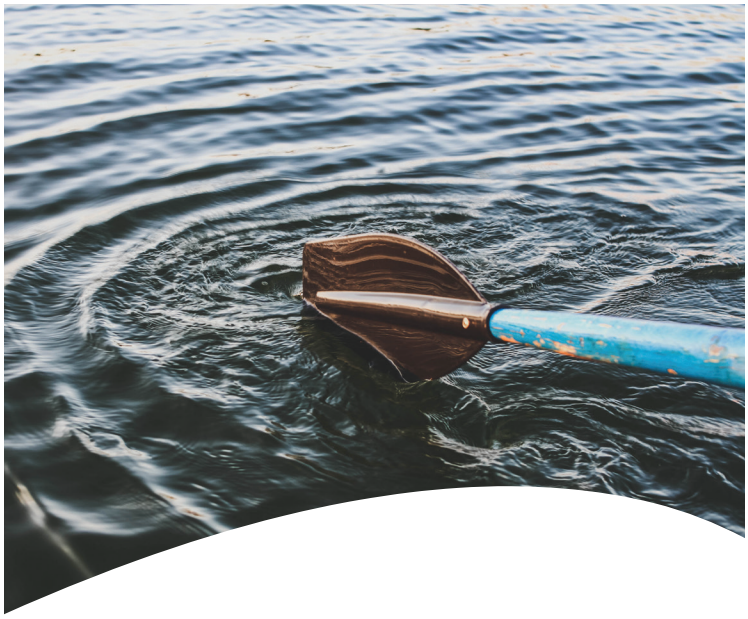
Summary

Shallow water habitats of the estuary are generally characterized as the area of the river that is always inundated between the low tide line and six feet deep (at low tide). For the purposes of this plan, we expand this characterization to also include the tidally influenced transition zone (intertidal zone) between Mean Low Low Water (MLLW) and Mean High High Water (MHHW). These areas include specific habitat types such as submerged aquatic vegetation (SAV), intertidal wetlands, and mud flats. Generally, these habitats are most common in the brackish to freshwater reaches north of Haverstraw, NY, due to the natural variations in the shape of the river, landscape and lower development activity in the lower estuary. These habitats, particularly the vegetated portions, provide critical nursery areas for small fishes, contribute significant dissolved oxygen to the entire estuarine system, and store sediments being delivered by both the main stem and tributaries.

In total, this habitat type covers approximately 12,000 acres which includes an estimated 6,750 acres of intertidal wetlands, 3,250 acres capable of hosting annually-variable submerged aquatic vegetation and 2,000 acres of the floating invasive water chestnut (*Trapa natans*). In general, these habitat types are well understood. Some of these habitat sites have been especially well studied such as Tivoli Bays and some areas associated with the native submerged aquatic water celery (*Vallisneria americana*). The results of habitat studies highlight critical linkages to resident and migratory fish, a wide variety of birds and a significant role in maintaining/improving water quality. These habitats are also considered naturally protective features capable of providing risk reduction to adjacent uplands, be it natural habitat or infrastructure, from storm surge and flooding impacts. Research has also identified significant challenges to their persistence from changes to water quality, existing and potential invasive species, sea level rise, and incompatible recreational use.

A principal management objective to ensure the continued presence and function of shallow water and intertidal habitats in the estuary is to ensure these features can migrate and occupy new locations as the sea level rises. The migration pathways will require protection, and, in many cases, additional action may be necessary to accommodate this shift to new areas. (See also Hudson River Shoreline and Riparian Areas for further target details.)

Another active management strategy to be evaluated for feasibility is artificial application of supplemental sediments or active augmentation. The first step, is to assess the viability of all major shallow water complexes for vertical accretion and migration to determine which are likely to likely to persist, shift or disappear with rising sea levels. Second, for those areas not expected to persist, methodologies to achieve accretion through active management should be explored, developed, tested and, if appropriate, accepted. Accretion assessments should continuein parallel with the development of effective and feasible active



management methodologies. These alternative strategies should commence by 2020 with a completion goal of 2030 and, if proven and accepted as a viable management action, active augmentation could be considered to become an on-going management technique through 2070 where appropriate and feasible.

Because of past wetland-filling activities, many shallow water and natural side-channel areas were lost. Successful restoration of these filled habitats would restore not only their function, but could be expected to support and encourage wetland migration. In short, side-channel restoration not only increases the mosaic of available in-river habitat coverage and availability, and if designed appropriately, may facilitate and potentially accelerate the process of wetland migration. One such restoration effort was completed in the estuary in 2017, and additional efforts in other appropriate areas are recommended.

Invasive species, both current and potential, remain a constant challenge to maintaining shallow water habitat form and function. Characterizing and mitigating the impacts of *Phragmities australis* on Hudson River tidal wetlands has been a primary focus of recent work resulting in the publication of a guide to better manage this invasive species. Potential future invaders also need to be addressed by identifying which species are most problematic and their most likely invasion routes, and then beginning to develop suitable prevention and management plans.