

COASTAL FISH AND WILDLIFE ASSESSMENT FORM

Name of area: **Esopus Meadows**
 Designated: **November 15, 1987**
 Revised: **August 15, 2012**
 County: **Ulster**
 Town(s): **Esopus**
 7.5' Quadrangles: **Kingston East, NY; Hyde Park, NY**

<u>Assessment Criteria</u>	<u>Score</u>
<p>Ecosystem Rarity (ER) -- the uniqueness of the plant and animal community in the area and the physical, structural and chemical features supporting this community.</p> <p>ER Assessment - Large area of vegetated shallow, freshwater, tidal flats; rare in New York State. Geometric mean: $\sqrt{25} \times \sqrt{64} = 40$</p>	<p>40</p>
<p>Species Vulnerability (SV) – the degree of vulnerability throughout its range in New York State of a species residing in the ecosystem or utilizing the ecosystem for its survival.</p> <p>SV Assessment – No endangered, threatened or special concern species have been found in the area.</p>	<p>0</p>
<p>Human Use (HU) -- the conduct of significant, demonstrable commercial, recreational, or educational wildlife-related human use, either consumptive or non-consumptive, in the area or directly dependent upon the area.</p> <p>HU Assessment -- One of the most popular waterfowl hunting and recreational fishing areas on the Hudson River; recreational striped bass fishery of regional significance.</p>	<p>9</p>
<p>Population Level (PL) – the concentration of a species in the area during its normal, recurring period of occurrence, regardless of the length of that period of occurrence.</p> <p>PL Assessment -- A major concentration area for various fish species and waterfowl in the mid-Hudson Valley. Geometric Mean: $\sqrt{4} \times \sqrt{9} = 6$</p>	<p>6</p>
<p>Replaceability (R) – ability to replace the area, either on or off site, with an equivalent replacement for the same fish and wildlife and uses of those same fish and wildlife, for the same users of those fish and wildlife.</p> <p>R Assessment – Irreplaceable</p>	<p>1.2</p>
<p>Habitat Index (ER+SV+HU+PL)= 55</p>	<p>Significance(HI x R)= 66</p>

LOCATION AND DESCRIPTION OF HABITAT

Esopus Meadows is located on the west side of the Hudson River, approximately four miles south of the City of Kingston, in the Town of Esopus, Ulster County (7.5' Quadrangles: Kingston East, N.Y.; and Hyde Park, N.Y.). The fish and wildlife habitat is an approximate 380-acre shoal of freshwater shallows (less than 10 feet deep at mean low water), and intertidal mudflats with extensive submerged aquatic vegetation beds, dominated by water celery (*Vallisneria americana*).

Esopus Meadows is located adjacent to a natural deepwater area in the Hudson River, so the area is not subject to disturbance from periodic maintenance dredging. The land area bordering Esopus Meadows on the west side is mostly wooded, with some low to medium density residential development. Disturbances in this area may include vehicular traffic, runoff, sedimentation, and invasive species including water chestnut (*Trapa natans*).

FISH AND WILDLIFE VALUES

Esopus Meadows is a relatively large, undisturbed area of shallows and freshwater tidal flats. The area represents one of the most southern occurrences of large vegetated freshwater shallows in the Hudson River, which is a critical habitat for many fish species. The shallow, subtidal beds provide spawning, nursery, and feeding habitats for coastal migratory species such as striped bass (*Morone saxatilis*), American shad (*Alosa sapidissima*), and white perch (*Morone americana*), and for a variety of resident freshwater species, such as largemouth bass (*Micropterus salmoides*), brown bullhead (*Ameiurus nebulosus*), yellow perch (*Perca flavescens*), American eel (*Anguilla rostrata*), carp and shiners (*Cyprinidae*). Concentrations of spawning migratory fishes generally occur in the area between mid-March and July, with substantial numbers of young-of-the-year fish remaining well into the fall (October-November). Populations of shortnose sturgeon (*Acipenser brevirostrum*) (E) winter in the adjacent deepwater channel. Atlantic sturgeon (*Acipenser oxyrinchus*) may also utilize the adjacent deepwater habitats. The submerged aquatic vegetation provides food and refuge for fish and invertebrates.

Significant concentrations of waterfowl also occur in the Esopus Meadows area. Dense growths of submerged vegetation provide valuable feeding areas for many species of ducks and are especially important during spring (March-April) and fall (mid-September - early December) migrations. Concentrations of diving ducks such as scaups (*Aythya marila*; *Aythya affinis*), common goldeneye (*Bucephala albeola*), and mergansers (*Mergus merganser*; *Mergus serrator*) are regularly found in this area. This open water area is also used by dabbling ducks including mallard (*Anas platyrhynchos*), American black duck (*Anas rubripes*), and blue-winged teal (*Anas discors*), especially during calm weather. Waterfowl may remain in the area throughout winter. Occasional observations of common loons (*Gavia immer*) (SC), grebes, gulls, and shorebirds have been reported.

Esopus Meadows comprise one of the most popular waterfowl hunting areas on the lower Hudson River. The abundant fisheries resources in the area provide excellent opportunities for recreational fishing, attracting fishermen from throughout the Hudson Valley. Access to the area is available by boat and from much of the river shoreline north of Esopus Meadows Point. In addition, Esopus Meadows is popular among many birdwatchers in the Hudson Valley due to the variety of birds present and the accessibility of the habitat.

IMPACT ASSESSMENT

Any activity that would substantially degrade water quality, increase turbidity or sedimentation, alter flows, temperature or water depths in Esopus Meadows would result in significant impairment of the habitat. All species may be affected by water pollution, such as chemical contamination (including food

chain effects resulting from bioaccumulation), oil spills, excessive turbidity or sediment loading, non-point source runoff, and waste disposal. Continued efforts should be made to improve water quality in the Hudson River, which is primarily dependent upon controlling discharges from combined sewer overflows, industrial point sources, and ships. Oil and other hazardous substance spills are an especially significant threat to this area, because the biological activity of tidal flats is concentrated at the soil surface, much of which may be directly exposed to these pollutants.

Any physical alteration of the habitat, through dredging, filling, or bulkheading, would result in a direct loss of valuable habitat area. Construction of shoreline structures, such as docks, piers, bulkheads, or revetments, in areas not previously altered by human activity would result in the loss of productive areas which support the fish and wildlife resources of Esopus Meadows. Construction of structures in areas previously altered may result in a direct loss of valuable habitat. No new navigation channels should be cut through the area. Any dredging activities needed to maintain the existing navigation channel adjacent to the habitat should be scheduled between September 1 through October 15 to minimize potential impacts on most aquatic organisms and migratory birds. Habitat disturbances would be most detrimental during bird nesting, and fish spawning and nursery periods, which generally extend from April through August for most warm water species.

Thermal discharges, depending on time of year, could have adverse effects on use of the area by migratory and resident species. Entrainment and impingement causes significant mortality to all life stages of fish, including endangered species.

Existing vegetative areas bordering Esopus Meadows should be protected, maintained and where possible restored to provide bank cover, stabilize soil, maintain or improve water quality and provide buffer areas from development.

Unrestricted use of motorized vessels, including personal watercraft, in shallow waters can have adverse effects on the benthic community, and on fish and wildlife populations through resuspension of bottom sediments and through shoreline erosion which may reduce water clarity and increase sedimentation. Use of motorized vessels should be controlled (e.g., no wake zone, speed zones, zones of exclusion) in and adjacent to shallow waters and adjacent wetlands. Docks, piers, catwalks, or other structures may be detrimental to submerged aquatic vegetation beds through direct or indirect effects from shading, mooring chain and propeller scarring, and other associated human uses. In particular, the submerged aquatic vegetation beds are especially vulnerable to impacts that decrease light penetration into the water.

The expansion of water chestnut (*Trapa natans*) and replacement of submerged aquatic vegetation may also result in changes in fish and invertebrate species composition in the areas occupied by this invasive plant. Activities that may result in expansion of water chestnut should be avoided.

Development of additional public access to the area may be desirable to ensure that adequate opportunities for compatible human uses of the fisheries resources are available, and should be conducted in a manner to avoid impacts.

HABITAT IMPAIRMENT TEST

A **habitat impairment test** must be met for any activity that is subject to consistency review under Federal and State laws, or under applicable local laws contained in an approved local waterfront revitalization program. If the proposed action is subject to consistency review, then the habitat protection

policy applies, whether the proposed action is to occur within or outside the designated area.

The specific **habitat impairment test** that must be met is as follows.

In order to protect and preserve a significant habitat, land and water uses or development shall not be undertaken if such actions would:

1. destroy the habitat; or,
2. significantly impair the viability of a habitat.

Habitat destruction is defined as the loss of fish or wildlife use through direct physical alteration, disturbance, or pollution of a designated area or through the indirect effects of these actions on a designated area. Habitat destruction may be indicated by changes in vegetation, substrate, or hydrology, or increases in runoff, erosion, sedimentation, or pollutants.

Significant impairment is defined as reduction in vital resources (e.g., food, shelter, living space) or change in environmental conditions (e.g., temperature, substrate, and salinity) beyond the tolerance range of an organism. Indicators of a significantly impaired habitat focus on ecological alterations and may include but are not limited to reduced carrying capacity, changes in community structure (food chain relationships, species diversity), reduced productivity and/or increased incidence of disease and mortality.

The *tolerance range* of an organism is not defined as the physiological range of conditions beyond which a species will not survive at all, but as the ecological range of conditions that supports the species population or has the potential to support a restored population, where practical. Either the loss of individuals through an increase in emigration or an increase in death rate indicates that the tolerance range of an organism has been exceeded. An abrupt increase in death rate may occur as an environmental factor falls beyond a tolerance limit (a range has both upper and lower limits). Many environmental factors, however, do not have a sharply defined tolerance limit, but produce increasing emigration or death rates with increasing departure from conditions that are optimal for the species.

The range of parameters which should be considered in applying the habitat impairment test includes but is not limited to the following:

1. physical parameters such as living space, circulation, flushing rates, tidal amplitude, turbidity, water temperature, depth (including loss of littoral zone), morphology, substrate type, vegetation, structure, erosion and sedimentation rates;
2. biological parameters such as community structure, food chain relationships, species diversity, predator/prey relationships, population size, mortality rates, reproductive rates, meristic features, behavioral patterns and migratory patterns; and,
3. chemical parameters such as dissolved oxygen, carbon dioxide, acidity, dissolved solids, nutrients, organics, salinity, and pollutants (heavy metals, toxics and hazardous materials).

KNOWLEDGABLE CONTACTS

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