

COASTAL FISH AND WILDLIFE ASSESSMENT FORM

Name of area: **Esopus Estuary**
 Designated: **November 15, 1987**
 Revised: **August 15, 2012**
 County: **Ulster; Dutchess**
 Town(s): **Saugerties, Red Hook**
 7.5' Quadrangles: **Saugerties, NY**

<u>Assessment Criteria</u>	<u>Score</u>
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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>ER Assessment –Important freshwater tributary of the Hudson River; vegetated shallows and flats including a diversity of natural estuarine communities; unusual in the ecological subzone</p>	16
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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>SV Assessment – Shortnose sturgeon (E), least bittern (T), osprey (SC), American bittern (SC) Additive Division: $36 + 25/2 + 16/4 + 16/8 = 54.5$</p>	54.5
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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>HU Assessment – Popular recreational fishing areas; attracts visitors from throughout the Hudson Valley and beyond.</p>	9
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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>PL Assessment – Concentrations of estuarine and freshwater fish species in this area are unusual in the Hudson Valley. The tidal creek portion of the habitat is a wintering site for adult largemouth and smallmouth bass-.</p>	16
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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>R Assessment – Irreplaceable</p>	1.2
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Habitat Index (ER+SV+HU+PL)= 95.5	Significance(HI x R)= 114.6
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LOCATION AND DESCRIPTION OF HABITAT

Esopus Estuary is located east of the Village of Saugerties in the Town of Saugerties, Ulster County and in the Town of Red Hook, Dutchess County (7.5' Quadrangle: Saugerties, N.Y.). The Esopus Estuary is an approximate 970-acre area that includes: the lower portion of Esopus Creek (up to the head of tide), freshwater tidal wetlands, submerged aquatic vegetation beds, tidal swamp forest, mudflats, shallows and littoral zone areas, and a deepwater section of the Hudson River.

The submerged aquatic vegetation beds are dominated by water celery (*Vallisneria americana*). Intertidal habitat within the Esopus Estuary area also supports listed plant species, spongy arrowhead (*Sagittaria calycina* var. *spongiosa*) (T) and heartleaf plantain (*Plantago cordata*) (T).

Habitat disturbances include encroachment due to development which includes residences, marinas, and industries.

FISH AND WILDLIFE VALUES

The Esopus Creek, from its mouth to the first impassable barrier (1.3 miles) and shallow littoral areas in Hudson River, serves as a spawning ground, nursery area, and feeding area for many coastal migratory and resident freshwater fish species including striped bass (*Morone saxatilis*), white perch (*Morone americana*), American shad (*Alosa sapidissima*), alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), rainbow smelt (*Osmerus mordax*), largemouth (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*) and American eel (*Anguilla rostrata*). The adjoining deepwater area of the Hudson serves as post-spawning and wintering habitat for shortnose sturgeon (*Acipenser brevirostrum*) (E). Both Atlantic (*Acipenser oxyrinchus*) (C-Fed) and shortnose sturgeon (*Acipenser brevirostrum*) (E) are found in the waters north and south of the Esopus Creek mouth. The tidal portion of Esopus Creek is a wintering site for largemouth (*Micropterus salmoides*) and smallmouth bass (*Micropterus dolomieu*). The submerged aquatic vegetation beds are mainly water celery (*Vallisneria americana*) provides food for waterfowl, fishes and invertebrates as well as refuge for fish and invertebrates. Common map turtles (*Graptemys geographica*) are also found along the banks of this habitat.

Tidal marshes and shallows in the estuary also provide resting and feeding areas for migrating waterfowl, including American black duck (*Anas rubripes*) and mallard (*Anas platyrhynchos*). Open water areas at the mouths of major tributary streams are important feeding areas for osprey during migration. Osprey (*Pandion haliaetus*) (SC) congregate at the mouth of the Esopus Creek during spring migration (mid-April through May) where the shallows offer prime foraging conditions. American bittern (*Botaurus lentiginosus*) (SC), and least bittern (*Ixobrychus exilis*) (T), use the marsh habitat for nesting. Bald eagle (*Haliaeetus leucocephalus*) (T) and northern harrier (*Circus cyaneus*) (T) have been observed in the habitat area, however additional information on the importance of the ecosystem to these species is needed prior to inclusion in the Species Vulnerability ranking.

The Esopus Estuary provides habitat for spring peeper (*Pseudacris crucifer*), green frog (*Rana clamitans*), gray treefrog (*Hyla versicolor*), and woodfrog (*Rana sylvatica*). Muskrat (*Ondatra zibethicus*), beaver (*Castor canadensis*), and bats also utilize this habitat area.

Esopus Creek is a popular year-round fishing destination. Several bass (smallmouth and largemouth) fishing tournaments are held here each summer with participation from residents throughout the Hudson Valley. There is also an important striped bass recreational fishery. In addition to providing fishing opportunities, the Esopus Estuary also offers significant waterfowl hunting opportunities for residents throughout the southern half of the Hudson Valley region. This area is also frequently used by kayakers and canoeists. Birdwatchers also often visit this area.

IMPACT ASSESSMENT

Any activity that would degrade water quality, increase turbidity, increase sedimentation, or alter flows, temperature, or water depths would result in significant impairment of the habitat. Discharges of sewage or stormwater runoff containing sediments or chemical pollutants (including fertilizers, herbicides and/or insecticides) may result in adverse impacts on the habitat area. Of particular concern are the potential effects of upstream disturbances, including water withdrawals, impoundments, reservoir operations, stream bed disturbances and effluent discharges. 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, nonpoint source runoff, and waste disposal (including vessel wastes).

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 Estuary. Construction of structures in areas previously altered may result in a direct loss of valuable habitat. Any physical alteration, including elimination of wetlands or significant human encroachment into the area, through dredging or filling, would result in a direct loss of valuable fish and wildlife habitat. Impediments to movement and migration of aquatic species, whether physical or chemical (e.g., dams, dikes, channelization, bulkheading, or sedimentation) should be prohibited. Habitat disturbances would be most detrimental during fish spawning and incubation periods, which generally extend from April through August for most species.

Development of hydroelectric facilities or municipal water supplies should only be allowed with run-of-river operations and appropriate minimum flow restrictions, respectively. Operational reservoir releases should not adversely affect water quality nor excessively increase turbidity in order to avoid significant impairment to the habitat. Reservoir operations should be consistent with habitat protection.

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.

Where opportunities exist, appropriate restoration of intertidal and subtidal shallow habitats should be undertaken using the best available science and proper monitoring protocols. Restoration and enhancement efforts should be monitored, and the associated habitat effects should be reported and evaluated.

Maintenance of appropriate public access to the area may be desirable to allow compatible human uses of the fish and wildlife resources. Human use of the area 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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