

COASTAL FISH AND WILDLIFE RATING FORM

Name of area: **Wappinger Creek**
 Designated: **November 15, 1987**
 Revised: **August 15, 2012**
 County: **Dutchess**
 Town(s): **Poughkeepsie, Wappinger**
 7.5' Quadrangles: **Wappinger Falls, NY**

<u>Assessment Criteria</u>	<u>Score</u>
Ecosystem Rarity (ER) -- the uniqueness of the plant and animal community in the area and the physical, structural and chemical features supporting this community.	
ER Assessment - A major freshwater tributary of the lower Hudson River, containing a diversity of habitats. Geometric mean: $\sqrt{16} \times \sqrt{9}=12$	12
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.	
SV Assessment – Bald eagle (T) and osprey (SC). Additive Division: $25 + 16/2 = 33$	33
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.	
HU Assessment -- Recreational fishing attracts anglers from throughout Dutchess County.	4
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.	
PL Assessment -- Concentrations of coastal migratory and resident freshwater fish species in the area are unusual in Dutchess County; a large run of alewives has historically used this tributary. The tidal portion of the creek is a significant wintering site for adult largemouth and smallmouth bass- in the Hudson River estuary. Geometric Mean: $\sqrt{9} \times \sqrt{4} =6$	6
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.	
R Assessment – Irreplaceable	1.2
Habitat Index(ER+SV+HU+PL)= 55	Significance (HI x R)= 66

LOCATION AND DESCRIPTION OF HABITAT

Wappinger Creek is located on the east side of the Hudson River, on the boundary between the Towns of Poughkeepsie and Wappinger, Dutchess County (7.5' Quadrangle: Wappingers Falls, N.Y.). The fish and wildlife habitat is an approximate two-mile segment of this freshwater tributary, extending from its mouth on the Hudson River to the first dam upstream, located in the Village of Wappingers Falls.

Wappinger Creek is a relatively large, perennial, warmwater stream, with a drainage area of over 180 square miles, and an average annual discharge volume in excess of 250 cubic feet per second. The first quarter mile of stream below the dam flows through a steep, rocky rapids, situated in a wooded ravine. Below this, the creek is within the tidal range of the Hudson River and contains mudflats, sandbars, emergent marsh, rocky shore communities, and submerged aquatic vegetation beds dominated by water celery (*Vallisneria americana*). At least part of this segment has been dredged or channelized in the past to accommodate navigation to commercial and industrial developments along the creek in Wappingers Falls. Despite this disturbance, much of the land bordering Wappinger Creek remains in a relatively natural condition, dominated by steep wooded slopes. Freshwater inflows from Wappinger Creek are important for maintaining water quality in Hudson River fish and wildlife habitats.

Several threatened and rare plant species are known to occur in the tidal portion of Wappinger Creek including Southern estuary beggar ticks (*Bidens bidentoides*) (R) and spongy arrowhead (*Sagittaria calycina* var. *spongiosa*) (T).

Habitat disturbance in the area is generally limited to the presence of road and railroad crossings, discharges of stormwater runoff, low density residential development, small-scale dredging operations and upstream water uses. Past disturbances include dredging and the invasion of water chestnut (*Trapa natans*), which is still abundant at mouth and along shorelines of Wappinger Creek.

FISH AND WILDLIFE VALUES

The considerable length of stream channel accessible to migratory fishes, the diversity of habitats, and the lack of significant human disturbance in upper portions of the creek provide favorable habitat conditions for many fish and wildlife species in the Wappinger Creek habitat.

Wappinger Creek is an important spawning area for coastal migratory fishes, such as alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), American eel (*Anguilla rostrata*) Atlantic tomcod (*Microgadus tomcod*), and striped bass (*Morone saxatilis*). Generally, these species enter the stream between April and June; the adults leave the area shortly after spawning and within several weeks the eggs have hatched and larval fish begin moving downstream to nursery areas in the lower creek channel and the Hudson River. An exception is Atlantic tomcod that spawn in the area in December and January. A substantial warmwater fish community also occurs in Wappinger Creek throughout the year. Resident species include largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), pumpkinseed (*Lepomis gibbosus*), red-breasted sunfish (*Lepomis auritus*), white sucker (*Catostomus commersoni*), and brown bullhead (*Ameiurus nebulosus*). The tidal portion of the creek is a wintering site for adult largemouth and smallmouth bass. The submerged aquatic vegetation, mainly water celery (*Vallisneria americana*), provides food for fish, invertebrates and waterfowl as well as refuge for fish and invertebrates.

The shorelines of this area provide habitat for water snake (*Nerodia s sipedon*), red-spotted newt (*Notophthalmus v. viridescens*), redback salamander (*Plethodon cinereus*), American toad (*Bufo*

americanas), gray treefrog (*Hyla versicolor*), spring peeper (*Pseudacris crucifer*), bullfrog (*Rana catesbeiana*), green frog (*Rana clamitans*) and wood frog (*Rana sylvatica*).

Wappinger Creek provides productive feeding habitats for various wildlife species. Wading birds, shorebirds, songbirds, and many waterfowl are year long residents. Concentrations of osprey (*Pandion haliaetus*)(SC) have been observed at the mouth of Wappinger Creek during spring migration (mid-April through May). Mink and muskrat are found in the area at almost any time of year. Open water areas at the mouths of tributary streams are important feeding areas for osprey during migration.

The abundant fisheries resources of the Wappinger Creek provide significant opportunities for recreational fishing by Dutchess County residents especially for black bass.

IMPACT ASSESSMENT

Any activity that would substantially degrade water quality, increase turbidity or sedimentation, alter flows, temperature or water depths in Wappinger Creek 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, nonpoint source runoff, and waste disposal. Discharges or runoff of sewage effluent, pesticides, or other hazardous materials into the river could be detrimental to the habitat area. Eutrophication caused by runoff from fertilizers, septic tanks, roads, and lawns is of considerable concern; as such over-enrichment of waters may contribute to the establishment of invasive, non-native plants and concurrent displacement of the native flora.

Substantial alteration of the stream channel, such as impoundment or creation of barriers to fish passage should be prohibited. Any physical alteration of the habitat, through dredging and filling, would result in a direct loss of valuable habitat area. Impediments to movement and migration of aquatic species, whether physical or chemical (e.g., dams, dikes, channelization, bulkheading and filling), would have significant impacts on fish populations in the creek as well as in the Hudson River and should be prohibited. Plans to reduce or eliminate the impacts of existing hydrological modifications should be developed, including improvements to fish passage, and/or the removal of obstructions or barriers. 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.

Construction of shoreline structures, such as docks, piers, bulkheads, or revetments, in areas not previously altered by human activity could result in the loss of productive areas which support the fish and wildlife resources of Wappinger Creek. Construction of structures in areas previously altered may result in a direct loss of valuable habitat. Elimination or disturbance of wetlands, littoral zones, or mudflats associated with Wappinger Creek, through the loss of tidal connection, excavation or filling would result in the direct disturbance of valuable habitat.

Elimination or disturbance of existing areas of natural vegetation bordering Wappinger Creek (e.g., wetland and forested habitats) would adversely affect the habitat. Such areas should be protected, maintained, and where possible restored in order to provide bank cover, soil stabilization, perching sites, and buffer areas as well as maintain or improve water quality.

The presence of invasive plant species and the expansion of its range may result in changes in native plant, vertebrate and invertebrate species composition and abundance. Effective control of invasive plant species, through a variety of means, may improve fish and wildlife species use of the area. 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.

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.

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.

Development of appropriate public access to the creek may be desirable to ensure that adequate opportunities for compatible human uses of the fish and wildlife resources are available. Land disturbances within the adjacent Reese Park may significantly affect the populations of many fish and wildlife that are enjoyed by visitors to the area. It is recommended that rare plant species occurring in the creek be protected from adverse effects of human activities.

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, 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

Natural Resources Bureau
NYS Department of State
99 Washington Ave, Suite 1010
Albany, NY 12231
Phone: (518) 474.6000

Hudson River National Estuarine Research Reserve
Norrie Point Environmental Center
PO Box 315
Staatsburg, NY 12580
Phone: (845) 889.4745

Hudson River Fisheries Unit
NYS Department of Environmental Conservation
21 South Putt Corners Road
New Paltz, NY 12561
Phone: (845) 256.3071

The Hudson River Estuary Program
NYSDEC Region 3
21 S Putt Corners Rd
New Paltz, NY 12561
Phone: (845) 256.3016

New York Natural Heritage Program
625 Broadway, 5th Floor
Albany, NY 12233-4757
Phone: (518) 402.8935

