

COASTAL FISH AND WILDLIFE RATING FORM

Name of area: **Manitou Marsh**
 Designated: **August 15, 2012**
 County: **Putnam, Westchester**
 Town(s): **Philipstown, Cortlandt**
 7.5' Quadrangles: **Peekskill, 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 – Contains low salinity tidal marsh, intertidal and emergent vegetation; submerged aquatic vegetation beds are also present.	16
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 – No endangered, threatened or special concern species have been found in the area.	0
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 – This habitat is used by bird watchers and hikers and for occasional research	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 – Habitat contains a significant concentration of resident fish and supports coastal migratory fish species including blueback herring and alewife	9
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) = 29	Significance (HI x R)= 34.8

LOCATION AND DESCRIPTION OF HABITAT

Manitou Marsh is an approximately 75-acre enclosed freshwater to low salinity tidal marsh located on the eastern shore of the Hudson River in the Town of Manitou in Putnam County (7.5' Quadrangles: Peekskill N.Y.). This marsh is almost completely hydrologically isolated from the Hudson River by a railroad causeway and natural ledge. Two culverts allow water interchange with the Hudson River. Manitou Station Road bisects the wetland into northern and southern sections, although water flows through a small culvert. The marsh is bordered by upland forest to the east and railway causeway to the west.

This habitat is dominated by narrow-leaf cattail (*Typha angustifolia*) with arrow arum (*Peltandra virginica*) inhabiting banks of creeks and low elevation zones. The invasive species common reed (*Phragmites australis*) is the dominant plant in the northern portion of the site and is expanding into the southern portion of the marsh. Purple loosestrife (*Lythrum salicaria*) is distributed throughout the habitat. Beds of submerged aquatic vegetation, dominated by water celery (*Vallisneria americana*) are also found here.

Manitou Marsh is part of Manitou Point Preserve, which is owned by Scenic Hudson and managed by the Scenic Hudson Land Trust. Disturbances to this habitat include activities related to a small residential community, activities along the railroad causeway, and expansion of invasive species.

FISH AND WILDLIFE VALUES

Manitou Marsh provides important nursery habitat for resident freshwater, migratory and estuarine/marine species. Resident freshwater fish include carp (*Cyprinus carpio*), black-nose dace (*Rhinichthys atratulus*), yellow perch (*Perca flavescens*), redbreast sunfish (*Lepomis auritus*), golden shiner (*Notemigonus crysoleucas*), inland silverside (*Menidia beryllina*), pumpkinseed (*Lepomis gibbosus*), brown bullhead (*Ameiurus nebulosus*), bluegill (*Lepomis macrochirus*), Eastern silvery minnow (*Hybognathus regius*), largemouth bass (*Micropterus salmoides*). Migratory fish species include alewife (*Alosa pseudoharengus*), striped bass (*Morone saxatilis*), American eel (*Anguilla rostrata*), and blueback herring (*Alosa aestivalis*). Other estuarine resident species include: Northern pipefish (*Syngnathus fucus*), naked goby (*Gobiosoma boscii*), four-spine stickleback (*Apeltes quadracus*), mummichog (*Fundulus heteroclitus*), tessellated darter (*Etheostoma olmstedii*), spottail shiner (*Notropis hudsonius*), banded killifish (*Fundulus diaphanous*), white perch (*Morone americana*), Atlantic silverside (*Menidia menidia*), Atlantic needlefish (*Strongylura marina*), Atlantic blue crab (*Callinectes sapidus*) and grass shrimp. Red-jointed fiddler crab (*Uca minax*) have also been observed in the habitat area. The submerged aquatic vegetation, dominated by water celery (*Vallisneria americana*) provides food for fish, invertebrates and waterfowl as well as shelter for fish and invertebrates.

Manitou Marsh supports a variety of waterfowl, wading birds and song birds including wood duck (*Aix sponsa*), mallard (*Anas platyrhynchos*), Virginia rail (*Rallus limicola*), great blue heron (*Ardea herodias*), belted kingfisher (*Ceryle alcyon*), marsh wren (*Cistothorus palustris*). Spotted turtle (*Clemmys guttata*) (SC), and wood turtle (*Clemmys insculpta*) (SC) have been observed in the area, however, additional information on the importance of the ecosystem to the species is needed prior to inclusion in the Species Vulnerability ranking. The area also provides habitat for spring peeper (*Pseudoacris crucifer*), black racer (*Coluber constrictor*), snapping turtle (*Chelydra serpentina*), painted turtle (*Chrysemys picta*), Northern water snake (*Nerodia s. sipedon*) and green frog (*Rana clamitans*). Needham's skimmer (*Libellula needhami*) have also been observed in the area.

IMPACT ASSESSMENT

Any activities that would degrade water quality, increase turbidity, increase sedimentation, or alter flows, temperature, or water depths in the Manitou Marsh would adversely affect the biological productivity of

this area. 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.

Any physical alteration of the habitat, through dredging, filling, or bulkheading, would result in a direct loss of valuable habitat area. However, habitat management activities, including expansion of productive littoral areas, may be designed to maintain or enhance populations of certain fish or wildlife species. 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.

Activities that would subdivide this largely undeveloped area into smaller fragments should not be allowed. Elimination or disturbance of wetland or shallow areas would result in a direct loss of valuable habitat. Vegetated upland buffer zones (e.g., wetlands and forested areas) should be protected, and where possible restored to provide bank cover, stabilize soil, maintain or improve water quality and provide buffer areas from development.

Alteration to existing railroad causeways and bridges could affect the hydrology and extent of shoreline habitat areas. Any construction related to these structures should utilize the best available science and technology to reduce and avoid negative impacts to the habitat area.

The presence of invasive species and the expansion of their range within the habitat may result in changes in native plant, vertebrate and invertebrate species composition and abundance. In particular, expansion of common reed (*Phragmites australis*) has been correlated with reductions in populations of several marsh-breeding birds and declines in avian biodiversity. Effective control of invasive plant species, through a variety of means, may improve fish and wildlife species use of the area. Control methods, including biological controls and regulated use of herbicides must only be implemented, if other methods of control have been explored, and then only under permit with strict adherence to all precautionary measures to avoid impacts to non-target species. The primary goals of such efforts must be recovery and maintenance of habitat for native fish and wildlife species.

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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