

COASTAL FISH & WILDLIFE HABITAT RATING FORM

Name of Area: **Sawmill Creek Marshes**

Designated: **September 15, 1992**

County: **Richmond**

Town(s): **New York City (Staten Island)**

7½' Quadrangle(s): **Arthur Kill, NY-NJ**

Score **Criterion**

- 0** Ecosystem Rarity (ER)
Largely tidal salt marsh with some brackish areas at the head of tidal influence. Freshwater marsh associated with smaller areas with restricted tidal flow. Degraded by human disturbance; not a rare ecosystem type.
- 37** Species Vulnerability (SV)
Northern harrier (T) overwintering and probable nesting. Short-eared owl (SC) overwintering. Southern leopard frog (SC) confirmed in the area. Additive division: $25 + 16/2 + 16/4 = 37$
- 0** Human Use (HU)
No significant fish or wildlife related human uses of the area.
- 16.5** Population Level (PL)
Concentrations of southern leopard frog are unusual in New York, but are relatively common in the south-eastern regions of the state. Geometric mean: $(9 \times 16)^{1/2} = 12$. An important feeding area for 3 major heronries in the region.
Additive division: $12 + 9/2 = 16.5$
- 1.2** Replaceability (R)
Irreplaceable.

SIGNIFICANCE VALUE = [(ER + SV + HU + PL) X R]

= **64**

DESIGNATED HABITAT: SAWMILL CREEK MARSHES

HABITAT DESCRIPTION:

Sawmill Creek Marshes, including Chelsea Marsh and Merrell's Marsh are located east of Pralls Island, in northwestern Staten Island, Richmond County (7.5' Quadrangle: Arthur Kill, NY-NJ). The fish and wildlife habitat is an approximate 150-acre freshwater to tidal marsh on Sawmill and Merrell's Creeks. The smaller portion of this wetland that is situated between the Staten Island Rapid Transit railroad and Broomfield Road is called Chelsea Marsh in this narrative. The natural hydrology of this wetland area has been altered by these crossings, so that it now encompasses the gradient from freshwater runoff to brackish, tidal waters. The entire marsh complex has been subjected to various human disturbances, including filling for land development, refuse disposal, and water pollution. The area is under both private and public ownership.

FISH AND WILDLIFE VALUES:

Sawmill Creek Marshes area is like many wetland areas on Staten Island that have been greatly reduced in size and quality as a result of human activities. However, in 1984, a population of southern leopard frog (SC) was discovered in Chelsea Marsh. This species occurs only as far north as southeastern New York, and Chelsea Marsh is one of the few known locations for it in the state. Southern leopard frogs generally breed in all types of shallow freshwater habitats, and are known to enter slightly brackish marshes along coasts.

The entire area also provides habitat for foraging adult and juvenile herons, egrets, and ibises. The intertidal marsh areas between Merrell's Creek and Sawmill Creek are particularly rich sources of marine invertebrates and are heavily used by immature black-crowned and yellow-crowned night herons. Probable or confirmed breeding bird species in the area include: Virginia rail, gadwall, mallard, wood duck, marsh wren, black duck, Canada goose, common moorhen, song sparrow, yellow-billed cuckoo, eastern kingbird, brown thrasher, and yellow warbler. In 1990, the least bittern (SC) was first observed as a breeding species in the marsh (continued documented use by this species would add to the Species Vulnerability criterion). This area provides winter habitat for short-eared owls (SC) and northern harrier (T). The extent to which other wildlife species, such as muskrat, use this area has not been documented. There are no significant fish or wildlife related human uses of the area.

IMPACT ASSESSMENT:

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:

- destroy the habitat; or,
- 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 include but are 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).

Although not comprehensive, examples of generic activities and impacts which could destroy or significantly impair the habitat are listed below to assist in applying the habitat impairment test to a proposed activity.

Any activity that would degrade water quality, or alter tidal and salinity patterns in Sawmill Creek Marshes may affect fish and wildlife using the area. Wildlife species would be most sensitive during the breeding season, which generally extends from March through August. Surrounding land use may be the most important factor affecting the fish and wildlife resources of this area. Encroachment of human disturbance, including industrial, commercial, or residential development could result in a direct loss of habitat for the southern leopard frog and colonial waterbirds. Discharges of stormwater runoff or effluent containing chemical pollutants (including oils, herbicides, or insecticides) into Sawmill Creek Marshes could eliminate the southern leopard frog population from the area. Any substantial disturbance of existing plant communities within or adjacent to Sawmill Creek Marshes would also affect wildlife populations in the area, including colonial waterbirds nesting at nearby island rookeries. However, habitat management activities, including water level management, may be designed to maintain or enhance the value of this area to wildlife. Collection of amphibians from this wetland could have a significant impact on survival of the southern leopard frog population.