

COASTAL FISH & WILDLIFE HABITAT RATING FORM

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Name of Area: **Fox Island - Grenadier Island Shoals**

Designated: **August 15, 1993**

County(ies): **Jefferson**

Town(s): **Cape Vincent, Lyme**

7½' Quadrangle(s): **Cape Vincent South, NY**

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**Score**      **Criterion**

- 12**      Ecosystem Rarity (ER)  
An extensive area of sheltered, shallow, open water, with beds of submergent aquatic vegetation; unusual on Lake Ontario, but somewhat common in Jefferson County.  
Geometric mean:  $(9 \times 16)^{1/2} = 12$
- 0**      Species Vulnerability (SV)  
No endangered, threatened or special concern species are known to reside in the area.
- 14**      Human Use (HU)  
An important recreational and commercial fishing area in eastern Lake Ontario, of regional significance.  
Additive division:  $9 + 9/2 = 14$ .
- 6**      Population Level (PL)  
One of the major concentration areas for migrant and wintering waterfowl in the eastern Ontario Plain ecological subzone. Geometric mean:  $(4 \times 9)^{1/2} = 6$ .
- 1.2**      Replaceability (R)  
Irreplaceable

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

= **38**

## **DESIGNATED HABITAT: FOX ISLAND - GRENADIER ISLAND SHOALS**

### **HABITAT DESCRIPTION:**

Fox Island - Grenadier Island Shoals is located in the northeastern corner of Lake Ontario, in the Towns of Cape Vincent and Lyme, Jefferson County (7.5' Quadrangle: Cape Vincent South, NY). The fish and wildlife habitat, also referred to as the "Hardscrabble", is an approximate 4,000 acre shallow water area, containing beds of submergent aquatic vegetation (e.g., wild celery, pondweeds), and patches of emergent wetland vegetation around the shoreline. Water depths in this area are generally less than 12 feet, but areas up to approximately 18 feet deep are included. Relatively large marsh areas (30-60 acres each) are located on Fox Island, and at the lower ends of Fox and Little Fox Creeks. The latter streams are the principal mainland tributaries draining into the area. Bottom substrates in Fox Island - Grenadier Island Shoals are predominantly rock and gravel, with silt and clay found in coves around the area. The shoals are sheltered from prevailing winds and severe wave action by Grenadier Island. Fox Island and Grenadier Island are essentially uninhabited and privately owned. The mainland side of the habitat is bordered by dense clusters of seasonal camps and permanent residences, active agricultural lands, abandoned fields, and woodlands.

### **FISH AND WILDLIFE VALUES:**

Fox Island - Grenadier Island Shoals is one of the most extensive shoal areas in Lake Ontario. Areas such as this are somewhat common within Jefferson County, but are very limited in extent elsewhere in the lake. The combination of productive aquatic beds, rock and gravel substrates, sheltered waters, and lack of human disturbance in this area provide highly favorable habitat conditions for many fish and wildlife species.

Fox Island - Grenadier Island Shoals is an important fish spawning and nursery area in Lake Ontario. These shoals are especially productive for resident warmwater species, including smallmouth bass, yellow perch, brown bullhead, and white perch. Fox Creek and Little Fox Creek are an integral part of the fisheries habitat in this area, attracting sizeable spawning runs of northern pike, brown bullhead, and white sucker. The entire shoal area is used by concentrations of all age classes of these species and is one of the most productive smallmouth bass spawning areas in the region. As a result of the abundant warmwater fisheries resources in this area, Fox Island - Grenadier Island Shoals supports substantial recreational use, attracting anglers from throughout the eastern Lake Ontario and St. Lawrence River coastal region. In addition, the "Hardscrabble" is one of only three areas in the region which support significant commercial fishing operations for yellow perch, white perch, and bullhead.

Fox Island - Grenadier Island Shoals is one of the major waterfowl concentration areas in eastern Lake Ontario. Extensive beds of submergent aquatic vegetation and concentrations of small fish in the area provide excellent food resources for a variety of migratory waterfowl species, especially diving ducks. Concentrations of waterfowl occur throughout the area during spring and fall migrations (March - April, and October - November, respectively), with several thousand birds observed there in some years. Scaup, common goldeneye, mergansers, American black duck, and mallard are most numerous in the area. Waterfowl also occur in Fox Island - Grenadier Island Shoals during winter, but the extent of this use is influenced by the extent of ice cover each year. Mid-winter aerial surveys of waterfowl abundance for the period 1986-1991 documented average concentrations of 2,667 (11,956 in peak year) birds in the area. Such population levels are unusual in the Eastern Ontario Plain ecological subzone.

### **IMPACT ASSESSMENT:**

A **habitat impairment test** must be applied to 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** 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 substantially degrade water quality at Fox Island - Grenadier Island Shoals could affect the biological productivity of this area. All species of fish and wildlife may be adversely affected by water pollution, such as oil spills, excessive turbidity or sedimentation, waste disposal, and discharges of sewage or stormwater runoff containing sediments or chemical pollutants (including fertilizers, herbicides, or insecticides). Spills of oil or other hazardous substances are an especially significant threat to waterfowl concentrations in this area. Disturbances of littoral areas or wetland vegetation through dredging, filling, bulkheading, or other shoreline construction activities could adversely affect fish and wildlife populations in the area. Any habitat disturbance would be especially detrimental during fish spawning and nursery

periods (April - July for most warmwater species). Barriers to fish migrations in Fox or Little Fox Creeks, whether physical or chemical, would reduce the contributions of these streams to fisheries resources throughout the area. Thermal discharges, depending on time of year, may have variable effects on use of the area by aquatic species and wintering waterfowl. Installation and operation of water intakes could have significant impacts on fish populations, through impingement of juveniles and adults, or entrainment of eggs and larval stages. Development of additional public access to Fox Island - Grenadier Island Shoals may be desirable to ensure that adequate opportunities for compatible human uses of the fish and wildlife resources are available. However, existing areas of natural vegetation bordering Fox Island - Grenadier Island Shoals should be maintained to provide cover for wildlife, soil stabilization, and buffer zones from human disturbances.