

COASTAL FISH & WILDLIFE HABITAT RATING FORM

Name of Area: **Grindstone Island Wetlands**

Designated: **August 15, 1993**

County(ies): **Jefferson**

Town(s): **Clayton**

7½' Quadrangle(s): **Gananoque, ONT-NY; Thousand Island Park, NY;
St. Lawrence, NY.**

Score **Criterion**

- 25** Ecosystem Rarity (ER)
One of the largest, shallow, riverine bay and wetland ecosystems on the St. Lawrence River;
subject to minimal disturbance; rare in New York State.
- 25** Species Vulnerability (SV)
Nothorn harrier (T) nesting.
- 4** Human Use (HU)
Recreational fishing for pike, bullhead, and bass attracts substantial use by Jefferson County
residents.
- 16** Population Level (PL)
Major muskellunge spawning and nursery areas in the St. Lawrence River, of statewide
significance.
- 1.2** Replaceability (R)
Irreplaceable
-

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

= **84**

DESIGNATED HABITAT: GRINDSTONE ISLAND BAYS

HABITAT DESCRIPTION:

Grindstone Island is the second largest island in New York's portion of the upper St. Lawrence River, located approximately three miles northwest of the Village of Clayton, in the Town of Clayton, Jefferson County (7.5' Quadrangles: Ganonoque, ONT-NY; Saint Lawrence, NY; and Thousand Island Park, NY). The fish and wildlife habitat consists of four large coastal wetland and bay areas on the island. These are: Flynn Bay (approximately 270 acres), which includes adjacent Lindley Bay, located at the southern end of Grindstone Island; McCrae Bay (325 acres), which includes adjacent New Bay, located in the northwestern part of the island; Delaney Bay (200 acres), located in the northeastern part of the island; and the littoral shoreline which extends from Canoe Point south to Point Angiers (200 acres), located along the eastern part of the island. Flynn Bay is a wide-mouth bay facing the main channel of the St. Lawrence River. It has the smallest emergent wetland of the four bays, but features an extensive littoral zone. Flynn Bay is exposed to considerable current and wave action, so submergent vegetation is sparse. McCrae Bay and Delaney Bay are dominated by extensive emergent marshes that extend inland up to two miles. Both of these bays are bisected into upper and lower wetland portions, by a small road crossing over McCrae Bay, and by a natural island in Delaney Bay Marsh. The marshes extending from Canoe Point south to Point Angiers consist of extensive littoral zones and shoreline marshes and coves, including Whitehouse Marsh and Plumtree Marsh.

Despite differences in vegetative cover, the Grindstone Island Wetlands share a number of ecological characteristics. Water depths in all four areas generally do not exceed six feet, and are continuous with those of the St. Lawrence River. Drainage areas of the wetlands are small, and little flow is discernible during the summer. Surrounding upland areas are essentially undeveloped, including active agricultural lands, abandoned fields, and woodlots. Habitat disturbances in Grindstone Island Bays are generally limited to occasional livestock grazing, use of motorboats in the bays, and the presence of rural road crossings. All of Grindstone Island Bays are privately owned, except for the marshes adjacent to Canoe Point and Picnic Point State Park.

FISH AND WILDLIFE VALUES:

Grindstone Island Wetlands encompass some of the largest, undeveloped, bays and wetlands in the St. Lawrence River. These areas comprise an extensive riverine natural area complex that is rare in the Great Lakes Plain ecological region of New York. The relatively large size, ecological diversity, and lack of human disturbance of Grindstone Island Bays are important factors contributing to the fish and wildlife values of this area.

Grindstone Island Wetlands provide valuable habitats for a variety of fish and wildlife species. Although there have been few documented studies of the area, Grindstone Island Bays are known to be very productive nesting areas for waterfowl and other marsh birds, including green heron, American bittern, mallard, gadwall, northern harrier (T), Virginia rail, sora, common gallinule, spotted sandpiper, belted kingfisher, marsh wren, common yellowthroat, red-winged blackbird, and swamp sparrow. Other species which regularly feed in these areas during the breeding season include black-crowned night heron, great blue heron, and common tern (T), but the extent of use by these species is not well documented. Concentrations of waterfowl (especially dabbling ducks) also use the bays for feeding and resting during spring and fall migrations (March - April and September - November, primarily); at least several hundred ducks have been observed in the area in some years. Other wildlife species occurring in Grindstone Island Bays include muskrat, mudpuppy (reported from Flynn Bay), many common species of frogs and turtles, and northern water snake. The relatively close proximity of the four wetland areas to one another probably allows some species to move between areas to meet their daily or seasonal habitat requirements.

Grindstone Island Wetlands serve as a major reproductive habitat for fish populations in the upper St. Lawrence River. The bays and wetlands are productive fish spawning and nursery areas, supporting sizeable populations of many warmwater species, such as northern pike, brown bullhead, largemouth bass, and various minnows and shiners. In addition to the wetland fish spawning and nursery values, the littoral shoals are significant muskellunge reproduction. Studies of these wetland bay complexes in the mid-1980's indicated that these areas serve as significant spawning and nursery grounds for muskellunge. These bays, along with the St. Lawrence River Shoreline Bays, comprise the majority of all documented muskellunge spawning areas in the St. Lawrence River. Some spawning and feeding by smallmouth bass may occur in these areas, but this is usually concentrated at the outer edges of the bays.

The abundance and diversity of fish and wildlife in Grindstone Island Wetlands provide potential opportunities for various human uses of the area. Local residents use the wetlands to a considerable extent for waterfowl hunting, trapping, and fishing. Consistent evidence of annual muskellunge spawning and nursery uses indicates that this area supports contributes to the area's muskellunge population. The adult muskellunge population is the basis of a sports fishery which attracts anglers from throughout the Thousand Islands major recreational region of New York State. Recreational fisheries for pike, bullhead, and bass in the major bays on Grindstone Island attract additional anglers from throughout Jefferson County.

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 structures, 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, increase turbidity or sedimentation, reduce water levels, alter flows, or increase water level fluctuations in Grindstone Island Wetlands could adversely affect a variety of fish and wildlife species. Discharges of sewage or stormwater runoff containing sediments or chemical pollutants (including fertilizers, herbicides, or insecticides) into these areas may result in adverse impacts on fish and wildlife resources. Spills of oil or other hazardous substances are a potentially serious threat to fish and wildlife in Grindstone Island Wetlands and every effort should be made to prevent such contamination. Elimination of wetland habitats (including submergent vegetation), or significant human disturbance of the area, through dredging, filling, construction of roads, waste disposal, or motorboat access development, could severely reduce the value of Grindstone Island Wetlands to fish and wildlife. Activities that would subdivide these large, undisturbed areas into smaller fragments should be restricted. Channelization would reduce stream channel diversity, and result in a direct loss of valuable habitat area. However, habitat management activities, including water level management or expansion of productive littoral areas, may be designed to maintain or enhance populations of certain fish or wildlife species.

Any significant disturbance of Grindstone Island Wetlands would be especially detrimental during fish spawning and nursery periods (March - July for most warmwater species) and wildlife breeding seasons (April - July for most species). Barriers to fish migration in major stream channels, whether physical or chemical, could have significant impacts on fish populations within the marshes, bays, and the upper St. Lawrence River. Adequate drainage of wetland areas located above road crossings should be provided through the installation and maintenance of bridges or culverts, if necessary. Existing areas of natural vegetation bordering these wetlands should be maintained for their value as cover for wildlife, perching sites, and buffer zones. Efforts should be made to reduce stream disturbance by agricultural activities, especially grazing, through fencing and restoration of riparian vegetation. Development of additional public access may be desirable to increase compatible human uses of the wetlands, but must be designed to minimize disturbance of sensitive fish and wildlife species that occur in the area.