

COASTAL FISH & WILDLIFE HABITAT RATING FORM

Name of Area: **Chippewa Bay Tern Colonies**

Designated: **August 15, 1993 (Jefferson Co.) May 15, 1994 (St. Lawrence Co.)**

County(ies): **Jefferson, St. Lawrence**

Town(s): **Alexandria; Hammond**

7½' Quadrangle(s): **Chippewa Bay, NY; Morristown, NY**

<u>Score</u>	<u>Criterion</u>
0	Ecosystem Rarity (ER) Three artificial rover navigation structures; not a rare ecosystem type. One small, undisturbed, rocky island; not a rare ecosystem type. One small shoal area; not a rare ecosystem type.
25	Species Vulnerability (SV) Common tern (T) nesting.
0	Human Use (HU) No significant fish or wildlife related human uses of the nesting sites.
9	Population Level (PL) Collectively, these sites support one of only three groups of breeding common tern sites in Jefferson and St. Lawrence Counties; unusual in the St. Lawrence Plains ecological region.
0.8	Replaceability (R) Techniques for replacement allow reasonable likelihood for success; potential replacement sites exist or could be created in the area.

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

= **27**

DESIGNATED HABITAT: CHIPPEWA BAY TERN COLONIES

HABITAT DESCRIPTION:

The Chippewa Bay Tern Colonies are located along the St. Lawrence Seaway navigation channel, extending from the Town of Alexandria in Jefferson County downriver to the Town of Hammond in St. Lawrence County (7.5' Quadrangles: Chippewa Bay, NY and Morristown, NY). The fish and wildlife habitat consists of one small rocky island, one small island shoal and spit area, and three artificial structures supporting navigation lights, located where shoals occur in close proximity to the Seaway channel. The specific sites include Navigation Light 180, located just west of Ironsides Island in the Town of Alexandria; Halfway Island Shoals, located approximately one-half mile west of the mouth of Crooked Creek and north of Halfway Island in the Town of Hammond; Light 165, just off Chippewa Point in the Town of Hammond; Light 156, located approximately one mile southwest of Oak Point in the Town of Hammond; and Whaleback Island, also one mile southwest of Oak Point and just east of Light 156, also in the Town of Hammond.

The artificial structures are roughly 25 foot square platforms, constructed of concrete, rock, steel and steel piping, with varying amounts of soil, gravel, and vegetation on the surface. The height of the platforms are approximately 8-10 feet above the water. These St. Lawrence River navigation lights are owned and maintained by the St. Lawrence Seaway Development Corporation, along with many other river structures not included in the habitat.

FISH AND WILDLIFE VALUES:

The Chippewa Bay Tern Colonies consist of three channel structures, one small undisturbed, uninhabited island, and the shoals to the north of Halfway Island that do not represent an unusual ecosystem type in the St. Lawrence Plains ecoregion. The navigation structures have become critical habitat for this regional breeding population of common terns (T), serving as major nesting sites for this species since at least the mid 1970's. There were an estimated 124-172 common tern nests among the three navigation lights and two islands in 1990 and 1991, respectively. Population levels vary from year to year, but Light 156 has consistently had relatively large nesting concentrations of terns, with nest counts of 108 nests in 1990 and 141 nests in 1991. Halfway Island Shoals had a nest count of 19 in 1991 and Whaleback Island had a nest count of 10 in 1990.

A critical feature of the navigation light structures in the Chippewa Bay Tern Colonies is their isolation from mammalian predators, fluctuating waterlevels, and human disturbance (with the exception of maintenance activities during the breeding season). The isolation that these navigation light sites provide supports the highest hatching success rates in the world for this species with 87% of eggs laid resulting in hatched chicks. Fledging success (in this case, fledging success is defined as the percentage of hatched young that survived to 10 days) for 1991 was also unparalleled with 64% survived on the navigation lights. Hatching and fledging success data for Halfway Shoals and Whaleback Island were unavailable, although islands and shoals in the St. Lawrence region typically have low hatch and fledge success rates in the range of 20% and 10% respectively. The proportion of common tern nesting on the artificial sites has steadily increased in the last ten years. Birds nesting on Whaleback Island and Halfway Island Shoals are subject to gull predation and competition for nesting sites, owl predation, ant predation (thief ants have been documented to kill chicks at other island sites for the first time in 1991), wave wash from storms and high winds, vegetational succession, and increased probability of recreational boat disturbance. There are no significant fish or wildlife related human uses of the Chippewa Bay Tern Colonies.

IMPACT ASSESSMENT:

A **habitat impairment test** must 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.

Bird species nesting in colonies on artificial structures and islands in the St. Lawrence River are highly vulnerable to disturbance from mid-April through July. Significant human activity (e.g., boat-landing or

navigation cell maintenance) on or immediately adjacent to these specific nesting sites, including Whaleback Island and Halfway Island Shoals could eliminate tern colonies, and should be minimized during this period. Annual or permanent signage to alert area boaters at these nesting sites, including the navigation cells as well as the island and shoals, should be provided to help protect the nesting common terns. Through cooperative agreements with the St. Lawrence Seaway Development Corporation, habitat management activities, such as manipulation of surface substrates, control of avian predation or competition, and establishment of additional nesting colonies in the vicinity, may be desirable or necessary in the future to ensure the survival of common tern populations in the St. Lawrence River. Other navigation structures in the river should be monitored or enhanced for use by common terns, as part of the continuing cooperation between scientists, state agencies, and the St. Lawrence Seaway Development Corporation to effectively manage these bird populations. Introduction or attraction of mammalian predators, including pet animals, would also be detrimental to the colonial bird populations at Whaleback Island and Halfway Island Shoals.