

COASTAL FISH & WILDLIFE HABITAT RATING FORM

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Name of Area: **Lake St. Lawrence Tern Colonies**

Designated: **May 15, 1994**

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

Town(s): **Waddington, Louisville, Massena**

7½' Quadrangle(s): **Murphy Island, NY-ONT; Louisville, NY-ONT;  
Massena, NY-ONT**

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| <u>Score</u> | <u>Criterion</u>  |
|--------------|---|
| <b>0</b>     | Ecosystem Rarity (ER)<br>Seven artificial river navigation structures; not a rare ecosystem type. One small, undisturbed, rocky island; not a rare ecosystem type.                                |
| <b>25</b>    | Species Vulnerability (SV)<br>Common tern (T) nesting.  |
| <b>0</b>     | Human Use (HU)<br>No significant fish or wildlife related human uses of the nesting sites.  |
| <b>9</b>     | Population Level (PL)<br>Collectively, these sites support approximately two-thirds of the common tern population in the St. Lawrence River; unusual in the St. Lawrence Plain ecological region. |
| <b>0.8</b>   | Replaceability (R)<br>Techniques for replacement allow reasonable likelihood for success; potential replacement sites exist or could be created in the area.                                      |

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

= **27**

## **DESIGNATED HABITAT: LAKE ST. LAWRENCE TERN COLONIES**

### **HABITAT DESCRIPTION:**

The Lake St. Lawrence Tern Colonies are located along the St. Lawrence Seaway navigation channel, extending from the Town of Waddington downriver to the Town of Massena, in the Towns of Waddington, Louisville, and Massena in the County of St. Lawrence (7.5' Quadrangles: Murphy Island, NY-ONT; Louisville, NY-ONT; and Massena, NY-ONT). The fish and wildlife habitat consists of seven artificial structures supporting navigation lights, located where shoals occur in close proximity to the Seaway channel; and one small rocky island. The specific structures include Navigation Light 91, located near the northeastern tip of Ogden Island in the Town of Waddington; Lights 79 and 75 on Gooseneck Shoals, located one and one-half miles north and northwest of Coles Creek in the Town of Louisville; Light 73, on Chrysler Island Shoal, one-half mile west of Bradford Island in the Town of Louisville; Old Light 58, located on Cat Island Shoal, approximately one mile northeast of Wilson Hill Island in the Town of Louisville; Light 57 and a second light just east of 57, located south of the western end of Croil Island in the Town of Louisville. The island site is a small unnamed island located among the northeastern Long Sault Islands, due west from the Long Sault Dam in the Town of Massena.

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 Lake St. Lawrence Tern Colonies consist of a small number of man-made channel structures and one small island that does not represent an unusual ecosystem type. 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. The navigation lights have become especially important in the eastern sector of the St. Lawrence River. Between 1990 and 1991, there were an estimated 270-370 common tern nests among the seven navigation lights annually, accounting for approximately 60% of the St. Lawrence River populations in those years. Population levels vary from year to year, but lights 79,75,73, and 58 have consistently had relatively large nesting concentrations of terns, with nest counts ranging from 63 nests at light 79 to 146 nests at light 58 in 1991. Northeast Long Sault Island had nest counts of 27 and 29 in 1990 and 1991, respectively.

A critical feature of the Lake St. Lawrence Tern Colonies that use navigation light structures is their isolation from mammalian predators, fluctuating waterlevels, and human disturbance; although maintenance activities during the breeding season at these navigation light sites could result in adverse impacts. As a result of this isolation, the hatching success at these artificial structures was 87% in 1991, among the highest hatching success rates for this species in the world. Conversely, the hatching success on the unnamed island was 29% in 1991. Fledging success (in this case, fledging success is defined as the percentage of hatched young that survived to 10 days) for 1991 averaged an amazing 64% on the navigation lights, while fledging success for the unnamed island was only 7% in 1991. The remarkable hatching and fledging success at these sites increases their importance as nesting habitat. These sites may account for significant recruitment of individuals to the population of this threatened species. The proportion of common tern nesting on the artificial sites versus natural island sites has steadily increased in the last ten years. Birds nesting on the natural island are subject to predation and competition for nesting sites by gulls, owl predation, ant predation (thief ants were reported to have killed at least 20 of 27 hatched chicks on the island 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 Lake St. Lawrence Tern Colonies.

#### 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.

Bird species nesting in colonies on man-made 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, fishing or maintenance) on or immediately adjacent to occupied sites, including the island site could eliminate tern colonies, and should be minimized during this period. Annual or permanent posting of these structures and the island should be provided to help protect the nesting bird species. 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, control of ant predation, 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 nesting bird population at the island site.