

COASTAL FISH & WILDLIFE HABITAT RATING FORM

Name of Area: **Grass River**

Designated: **May 15, 1994**

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

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

7½' Quadrangle(s): **Raquette River, NY; Massena, NY; Louisville, NY;
Chase Mills, NY; Waddington, NY; Morley, NY.**

<u>Score</u>	<u>Criterion</u>
25	Ecosystem Rarity (ER) One of only three major tributaries in the St. Lawrence Plains ecological region; in relatively undisturbed condition.
25	Species Vulnerability (SV) Lake Sturgeon (T) present and presumed to successfully spawn based on age of individuals observed.
4	Human Use (HU) Recreational fishery of county level significance.
9	Population Level (PL) Only documented population of muskellunge inhabiting a small river system in the St. Lawrence Plain ecosystem. Possibly a rare refugium for St. Lawrence River muskellunge following the construction of the St. Lawrence Power project.
1.2	Replaceability (R) Irreplaceable.

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

= **76**

DESIGNATED HABITAT: GRASS RIVER

HABITAT DESCRIPTION:

The Grass River is a large, medium gradient, warm to cool water river characterized by rapids, riffles and pools flowing over bedrock, cobble and gravel substrates. Average flow is 977 cfs, with spring floods averaging 7,730 cfs and minimum flows approaching 120 cfs. The drainage area encompasses approximately 640 square miles and includes a mix of low intensity uses including active agriculture, fallow fields, small villages, extensive woodlands, and the Village of Massena near its confluence with the St. Lawrence River. The river corridor is largely forested. The river has been dammed at one location in the Village of Massena with a low weir. The weir has an approximately three foot vertical rise which appears to be passable by fish, at least at some levels of flow. An impassable dam is located in the Village of Madrid, located approximately 26 miles upstream, defining the upstream limit of this habitat designation. The riparian habitat and coastal boundary is delineated along the water's edge above the Route 37 bridge below the Village of Massena.

FISH AND WILDLIFE VALUES:

The Grass River provides a medium gradient river habitat type which had been quite common in the St. Lawrence Plains ecological region prior to the construction of the Moses-Saunders Power Project and the subsequent flooding of the St. Lawrence River. This habitat type is significant in supporting cool and warmwater fish populations including muskellunge, smallmouth bass, northern pike, walleye, bullhead, yellow perch, and lake sturgeon (T). Observations of both adult and juvenile muskellunge indicate that the Grass River likely supports a spawning population of resident muskellunge and may serve as a spawning ground for fish residing in the St. Lawrence River. Similarly, lake sturgeon (T) juveniles have been observed in the Grass River below the Village of Madrid, indicating that successful spawning has occurred within this habitat. Although not documented, the Grass River may provide a refugium for St. Lawrence River muskellunge and Lake Sturgeon following construction of the St. Lawrence Power project. If significant spawning by St. Lawrence River fish populations is documented in the Grass River, then the ecological value rating associated with this habitat would increase since this habitat would be providing a functional remnant of riverine habitat that was previously found in lower St. Lawrence River. In addition to fish population values, this area provides habitat values to a variety of other wildlife including waterfowl for nesting and feeding, passerine bird for nesting and migration, and furbearers such as muskrat and beaver. A record for Blanding's turtle exists near Coles Creek; the headwaters of Coles Creek is separated from the Grass River by approximately 4000 feet. The area immediately north of the Grass River near Coles Creek includes a substantial wetland area of over 1000 acres which, in conjunction with the adjacent uplands, may provide suitable habitat for Blanding's turtle. No record of Blanding's turtle, however, exists within the delineated habitat boundary.

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, increase turbidity or sedimentation, reduce water levels, alter flows, or increase water level fluctuations in the Grass River could adversely affect the biological productivity of this unique St. Lawrence River tributary. Discharges of sewage or stormwater runoff containing sediments or chemical pollutants (including fertilizers, herbicides, or insecticides) may result in adverse impacts on fish and wildlife resources of the area. Elimination of associated wetland habitats, or substantial human encroachment into the area, as a result of dredging, filling, construction of roads, or motorboat access development, could severely reduce its value to fish and wildlife. Because of the year-round fish and wildlife use of the area, dredging activities at any time of year may affect certain species, and should not be permitted outside of existing channel areas at the confluence of the Grass and St. Lawrence Rivers. Increased public access to the Grass River could lead to habitat impairment during fish spawning and nursery periods (March - July for most resident species), and wildlife breeding seasons (April - July for most species).

Also of concern in this major tributary are the potential effects of upstream activities, including flow alterations, stream bed disturbances, and discharges of industrial effluents. Development or operation of hydroelectric facilities should optimize aquatic habitat values by reducing flood flows and maintaining minimum flows. Barriers to fish migration in the Grass River, whether physical or chemical, would have

significant effects on fish populations in the area; the construction of a fish ladder at the weirs in Massena may result in a beneficial effect on upstream fisheries resources by enhancing spawning by muskellunge and lake sturgeon. Existing areas of natural vegetation bordering Grass River should be maintained for their value as cover for wildlife, perching sites, and buffer zones from human disturbances.

Based on the potential of this area as a refugium for both muskellunge and lake sturgeon, research should be conducted to further define appropriate management practices for this River. Tributaries which have experienced loss of riparian forest should receive special attention to restore vegetation and reduce non-point pollutants and sources of sedimentation.