

COASTAL FISH & WILDLIFE HABITAT RATING FORM

Name of Area: **Brandy Brook**

Designated: **May 15, 1994**

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

Town(s): **Waddington**

7½' Quadrangle(s): **Murphy Island, NY; Waddington, NY**

<u>Score</u>	<u>Criterion</u>
9	Ecosystem Rarity (ER) A flooded tributary stream mouth, with a sizeable area of productive littoral zone; uncommon in St. Lawrence County.
25	Species Vulnerability (SV) Common tern (T) feeding area.
9	Human Use (HU) Popular recreational fishing area for a variety of warmwater fish species, important to residents of the Thousand Islands region.
9	Population Level (PL) This area is a major producer of panfish in the St. Lawrence Plains ecological region.
1.0	Replaceability (R) Uncertain of ability to replace.

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

= **52**

DESIGNATED HABITAT: BRANDY BROOK

HABITAT DESCRIPTION:

Brandy Brook is a tributary of the lower St. Lawrence River (Lake St. Lawrence), located in the Town of Waddington, St. Lawrence County (7.5' Quadrangles: Murphy Island, NY; and Waddington, NY-ONT). The fish and wildlife habitat extends inland approximately two miles, from the creek mouth to County Route 71. Brandy Brook is a sizeable warmwater stream, with a drainage area of approximately 30 square miles. However, most of the habitat area consists of the segment of stream that was flooded with the creation of Lake St. Lawrence, forming a freshwater "estuary". The flooded portion of the stream ends about midway between the railroad crossing and County Route 71. Upstream from this point to County Route 71 and beyond, Brandy Brook has several beaver dams. In some cases these beaver dams are eliminating fish spawning habitat. Brandy Brook is relatively shallow, and contains dense beds of submergent aquatic vegetation and a fringe of emergent marsh vegetation. Upland areas bordering Brandy Brook are rural in nature, including extensive undeveloped forestland on the east side, and low density residential development on the west. Habitat disturbances in the area are generally limited to the presence of road and railroad crossings, discharges of stormwater runoff, use of motorboats, and littering. Further upstream, above County Route 71 and outside the habitat boundary, some habitat disturbance has resulted from more beaver dams and agricultural activities, including grazing.

FISH AND WILDLIFE VALUES:

Brandy Brook comprises one of the largest areas of sheltered shallow water habitat along the St. Lawrence County shoreline. The presence of productive littoral zones, freshwater inflows, and undeveloped adjacent lands provide favorable habitat conditions for many fish and wildlife species.

Shoreline wetland areas around Brandy Brook provide habitat for a variety of wildlife species; probable or confirmed breeding birds include pied-billed grebe, American bittern, mallard, Canada goose, belted kingfisher, red-winged blackbird, and swamp sparrow. Brandy Brook also serves as a feeding area for waterfowl, raptors, and shorebirds, including common terns (T). Osprey (T) have also been observed feeding at Brandy Brook, but the extent of use by this species has not been documented. Other wildlife species inhabiting the area include raccoon, muskrat, various frogs, northern water snake, snapping turtle, and painted turtle.

Extensive beds of submergent and emergent aquatic vegetation in Brandy Brook serve as valuable fish spawning and nursery habitats, used by a wide variety of warmwater species. Brandy Brook is one of the most productive fish habitats on the St. Lawrence River. Species found in the area include walleye, white sucker, brown bullhead, northern pike, muskellunge, largemouth bass, black crappie, pumpkinseed, johnny darter, banded killfish, and spottail shiner. The area has been documented as a muskellunge nursery area. Spawning runs of many species extend upstream at least to County Route 71. Of special significance is the historic occurrence of a major spawning run of walleye in the creek. Recent expansion of the St. Lawrence River walleye population has led to the development of new spawning runs in some Canadian waters, and may lead to increased, or resumed, use of this site in the future. Brandy Brook is considered the most likely site for successful walleye spawning, and may have increased potential for walleye production through habitat restoration and maintenance activities, including the control of beaver dam blockage in the upper sections of Brandy Brook. The abundance and diversity of fish species in this area attracts substantial recreational fishing use. Anglers from throughout the Thousand Islands region utilize this area year-round.

IMPACT ASSESSMENT:

A **habitat impairment test** must be met for 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 Brandy Brook 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) may result in adverse impacts on fish and wildlife resources in the area. Spills of oil or other hazardous substances are a potentially serious threat to fish and wildlife in Brandy Brook, and every effort should be made to prevent such contamination. Elimination of wetland habitats, or significant human disturbance of the area, through dredging, filling, construction of roads, waste disposal, or motorboat access development, could reduce its value to fish and wildlife. Channel modification in free-flowing segments above the impoundment would result in a direct loss of valuable habitat area. However, habitat management activities, including water level management, may be designed to maintain or enhance populations of certain fish and wildlife species. Any significant disturbances of Brandy Brook 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 the creek, whether physical or chemical and including beaver dam blockage, could have significant effects on fish populations within the creek. Existing areas of natural vegetation bordering Brandy Brook should be maintained for their value as cover for wildlife, perching sites, and buffer zones. Efforts should be made to reduce upstream 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 Brandy Brook, but must be designed to minimize disturbance of sensitive fish and wildlife species that occur in the area.