

COASTAL FISH & WILDLIFE HABITAT RATING FORM

Name of Area: **Oswego River**

Designated: **October 15, 1987**

County: **Oswego**

Town(s): **Oswego**

7½' Quadrangle(s): **Oswego West, NY**

<u>Score</u>	<u>Criterion</u>
20	Ecosystem Rarity (ER) One of only 4 river tributaries of New York's Great Lakes, but rarity reduced by extensive human disturbances. Geometric mean: $(16 \times 25)^{\frac{1}{2}}$
25	Species Vulnerability (SV) Lake sturgeon (T) spawning area.
9	Human Use (HU) One of the most popular waterfowl hunting and salmonid fishing areas on Lake Ontario.
6	Population Level (PL) One of the major concentration areas for wintering waterfowl and salmonids in eastern Lake Ontario. Geometric mean: $(4 \times 9)^{\frac{1}{2}}$
1.2	Replaceability (R) Irreplaceable

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

= **72**

DESIGNATED HABITAT: OSWEGO RIVER

LOCATION AND DESCRIPTION OF HABITAT:

The Oswego River is located in the City of Oswego, in Oswego County (7.5' Quad-range: Oswego West, N.Y.). The fish and wildlife habitat includes the one and one-half mile segment of river below Varick Dam, and an approximate 450 acre area of Lake Ontario at the river mouth, encompassing all of Oswego Harbor. The Oswego River has a drainage area of over 5,000 square miles, and an average annual discharge of approximately 6,700 cubic feet per second. Varick Dam serves as a control structure for Navigation Lock No. 7 of the Oswego Canal and for generation of hydroelectric power. The first half-mile of river below the dam is relatively shallow, with a rock and rubble bottom, and small wooded islands. Farther down-stream, the channel is wider, deeper, and extensively bulkheaded in conjunction with high density urban waterfront development. Breakwalls have been constructed at the mouth of the Oswego River, creating a major sheltered harbor. This harbor has been heavily developed for industrial, commercial, and recreational uses. Several oil-fired power plants are located in the vicinity, and discharge heated wastewater into Lake Ontario just outside of the western harbor breakwall.

FISH AND WILDLIFE VALUES:

The Oswego River is a major tributary of Lake Ontario, second only to the Niagara River in average discharge. Historically, the river may have provided some of the most important fish and wildlife habitats in the Great Lakes Plain ecological region. However, its value has been reduced by extensive human disturbance, including the construction of dams which act as barriers to spawning migrations of many fish species. Despite these alterations, the Oswego River area continues to support significant fish and wildlife resources. In 1982, lake sturgeon (T) were discovered in the river immediately below Varick Dam, during low flow conditions. This is the only Lake Ontario tributary where lake sturgeon have been found in recent years, suggesting that it may be an important spawning location for this species. The Oswego River and harbor area provides habitat for a variety of warmwater fish species, including alewife, gizzard shad, brown bullhead, white perch, yellow perch, smallmouth bass, largemouth bass, walleye, pumpkinseed, and black crappie. The river is the primary spawning and nursery area for walleye in Oswego County's coastal area, supporting both resident and Lake Ontario based populations. Large concentrations of coho and chinook salmon and brown trout migrate from Lake Ontario into the river to spawn each fall (September - November, primarily), although reproduction is unsuccessful in most instances. In addition, steelhead (lake-run rainbow trout) migrate into the Oswego River during the fall and spring (late February - April). The salmonid populations in the river are the result of an ongoing effort by the NYSDEC to establish a major salmonid fishery in the Great Lakes through stocking. In both 1984 and 1985, approximately 15,000 steelhead, 250,000 chinook salmon, and 38,000 brown trout were released in Oswego Harbor; 1985 stockings also included 15,000 coho salmon. This area is one of the major salmonid concentration points in Lake Ontario. The river provides a valuable salmonid fishery, especially for residents of central New York, but also attracts some anglers from throughout the northeastern U.S. This recreational fishing pressure is heavily concentrated during the fall spawning period. Recreational fishing for warmwater species in the Oswego River, including ice fishing in the harbor, is also of importance to local residents. Most fishing activity in the area is from boats, since suitable shoreline access is limited by commercial and industrial development.

Wildlife populations in the Oswego River area are generally limited by the lack of undisturbed natural habitats. Of greatest significance is the occurrence of large concentrations of wintering waterfowl (November - March, primarily) around Oswego harbor. Mid-winter aerial surveys of waterfowl abundance for the period 1976-1984 indicate average concentrations of approximately 1,200 birds in the area between Oswego Harbor and Salmon River each year (3,228 in peak year), including approximately 800 scaup (2,659 in peak year), 200 common goldeneye (495 in peak year), and 150 mergansers (430 in peak year), along with lesser numbers of black duck, mallard, oldsquaw, canvasback, and bufflehead. Open waters in the vicinity

of Oswego Harbor are a primary concentration area for these wintering waterfowl populations, which are among the largest on Lake Ontario. Waterfowl use of the area is influenced in part by the extent of ice cover on the lake each year; part of the attraction to Oswego Harbor is the warming effect of power plant discharges and concentrations of forage fish in the area. Access to the Harbor for waterfowl hunting is available from the harbor breakwalls; this is one of the most popular late season waterfowl hunting areas around eastern Lake Ontario. Local concentrations of other wildlife, including black-crowned night herons, nesting waterfowl, gulls, furbearers, amphibians, and reptiles, may occur in the area, but these are not known to be significant.

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** that must be met 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 substantially degrades water quality or reduces flows in the Oswego River would affect the biological productivity of this area. Important species of fish and wildlife would be adversely affected by water pollution, such as chemical contamination (including food chain effects), oil spills, excessive turbidity or sedimentation, and waste disposal. Continued efforts should be made to improve water quality in the river, which is dependent upon controlling discharges from combined sewer overflows, industrial point sources, ships, and nonpoint sources throughout the watershed. Spills of oil or other hazardous substances are an especially significant threat to waterfowl concentrations in the Oswego River area. Fluctuating water levels and diversion of flows resulting from hydroelectric power generation at Varick Dam represent significant potential impacts on the habitat, and may already be adversely affecting warmwater fish spawning in the river. A primary need is to provide adequate spillage over the dam to permit lake sturgeon survival, and possibly, successful reproduction. Because of the year-round fish and wildlife use of the area, maintenance dredging activities at any time of year would affect certain species; such activities should be minimized, and when unavoidable, be completed in as short a time period as possible. River dredging should be scheduled in late fall or winter to minimize impacts on most aquatic organisms. On the other hand, off-channel harbor dredging may have the least effect on fish and wildlife during mid-to late summer. Any contaminated dredge spoils should be deposited in upland containment areas. Thermal discharges, depending on time of year, will have variable effects on use of the area by aquatic species and wintering waterfowl. Effects of the recent relocation of discharges from Niagara Mohawk's Oswego Station (which previously discharged into the harbor) have not been documented, but may include enhanced dispersion of heated effluent, reducing the likelihood that excessive concentrations of fish and wildlife will be attracted to the Oswego River area. Installation and operation of water intakes could have a significant impact on fish populations through impingement of juveniles and adults, or entrainment of eggs and larval stages. Public access to this area should be maintained or enhanced to ensure that adequate opportunities for compatible human uses of the fish and wildlife resources are available.