

## COASTAL FISH & WILDLIFE HABITAT RATING FORM

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Name of Area: **Dunkirk Harbor**

Designated: **October 15, 1987**

County: **Chautauqua**

Town(s): **Dunkirk**

7½' Quadrangle(s): **Dunkirk, NY; North of Dunkirk, NY**

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<u>Score</u>	<u>Criterion</u>
<b>16</b>	Ecosystem Rarity (ER) Large, shallow, sheltered bay, with extensive aquatic beds; rare on Lake Erie.
<b>0</b>	Species Vulnerability (SV) No endangered, threatened or special concern species are known to reside in the area.
<b>9</b>	Human Use (HU) One of the most popular birdwatching areas in western New York; also a high quality recreational fishery, attracting visitors from throughout the Lake Erie coastal region.
<b>9</b>	Population Level (PL) Concentrations of many fish and wildlife species in the area are unusual in the Great Lakes Plain ecological region.
<b>1.2</b>	Replaceability (R) Irreplaceable.

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

= **41.0**

## **DESIGNATED HABITAT: DUNKIRK HARBOR**

### **LOCATION AND DESCRIPTION:**

Dunkirk Harbor is located on the shoreline of Lake Erie, approximately midway between Buffalo and the New York - Pennsylvania State line, in the City of Dunkirk, Chautauqua County (7.5' Quadrangles: Dunkirk, N.Y.; and North Dunkirk, N.Y.). The fish and wildlife habitat is an approximately 375 acre, shallow, open embayment of Lake Erie. Much of this area is sheltered from prevailing winds and wave action by Point Gratiot and various man-made harbor structures, enhancing sediment deposition and growth of submerged aquatic macrophytes. More exposed locations in the harbor have rock shale and gravel substrates, and lesser amounts of rooted vegetation. The southern end of Dunkirk Harbor has been subjected to considerable human disturbance, including dredging, filling, bulkheading, and construction of small craft harbor facilities. In addition, a major coal-fired power plant located on the harbor discharges heated wastewater near Point Gratiot, maintaining an open water area throughout the winter. Except for possible effects of subtle thermal or chemical influences, the northern end of Dunkirk Harbor remains in a relatively undisturbed condition.

### **FISH AND WILDLIFE VALUES:**

Dunkirk Harbor is the only large, natural embayment in New York's portion of Lake Erie, South of Buffalo. It is one of the few places in the lake that provides substantial protection from wave action for fish, wildlife, and aquatic vegetation. Consequently, this area supports a highly productive and diverse littoral community, and is an important habitat for many fish and wildlife species.

Extensive beds of aquatic macrophytes in Dunkirk Harbor provide the most significant spawning habitat in Lake Erie (New York) for various warmwater fish species, especially esocids (e.g., northern pike and muskellunge). The harbor is also a prime spawning area for smallmouth bass. Concentrations of many other fish species use the harbor as a spawning and/or nursery area (generally from March through July), including gizzard shad, rainbow smelt, carp, emerald shiner, brown bullhead, white bass, and walleye. During winter, the warmwater discharge keeps the harbor ice-free and relatively warm, attracting large concentrations of fish to the area. In addition to most of the warmwater species noted above, large numbers of salmonids, including rainbow trout, brown trout, coho salmon, and occasionally chinook salmon, move into the area between September and March. As a result of the abundant fish populations in the area, Dunkirk Harbor provides high quality recreational fishing opportunities throughout the year. Anglers from throughout western New York are attracted to the area for the late fall through spring salmonid fishery, and the diverse warmwater fisheries during the summer months. A New York State record white bass (3 lbs. 3 oz.) was taken from Dunkirk Harbor in 1982. The City of Dunkirk provides public access to Dunkirk Harbor through a waterfront park, boat launching ramp, city pier and small boat marina on the southeastern shoreline of Dunkirk Harbor.

In addition to fisheries use of the area, Dunkirk Harbor is an important resting and feeding area for migratory birds. Concentrations of many species of waterfowl, loons, grebes, gulls, and other waterbirds occur in the area during spring and fall migrations (March - April and September - November, primarily). The Harbor is also heavily used by these birds during winter; mid-winter aerial surveys for the ten year period 1976-1985 indicate average concentrations of approximately 250 birds in the area between Cattaraugus Creek and Barcelona Harbor each year (587 in peak year), including mergansers, scaup, common goldeneye, mallard, black duck, canvasback, and Canada goose. Dunkirk Harbor is the primary concentration area for these wintering waterfowl populations, due to the attraction of the warmwater discharge and concentrations of forage fish in the area. Large numbers of great black-backed, ring-billed, and herring gulls are also attracted to the harbor throughout the year. The abundance and diversity of birds in Dunkirk Harbor, and the availability of good public access and vantage points, has made this one of the most popular birdwatching

areas in western New York. The sighting of many rarities at this location, including red-throated loon, eared grebe, Harlequin duck, and red phalarope, is a special attraction of Dunkirk Harbor.

### **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 in Dunkirk Harbor would affect the biological productivity of this area. All 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. Discharges of sewage or stormwater runoff containing sediments of chemical pollutants (including nutrient loads) will adversely impact on fish or wildlife populations. Spills of oil or other hazardous substances are an especially significant threat to waterfowl concentrations in Dunkirk Harbor. Installation of breakwalls or jetties in exposed areas will result in the loss of walleye spawning habitat in rocky shoal areas, in favor of sheltered, vegetated waters used by other warmwater fish species. Temporary habitat disturbances would be most detrimental during fish spawning and nursery periods (April - July for most species in the area). Harbor dredging should be scheduled in late summer or fall to minimize potential impacts on fish and wildlife, and dredged spoils should be deposited in upland containment areas or approved open lake disposal sites. Thermal discharges, depending on the time of year, may have variable effects on use of the area by aquatic species and wintering waterfowl. In general, the existing thermal discharge enhances the value of the harbor habitat, but designation of this area is not dependent on this man-made aspect. To avoid impacts on fish concentrations the thermal discharge should be maintained at a constant level, if possible, especially in the winter to avoid thermal shock to acclimated fish. Installation and operation of additional 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 of this area should be maintained or enhanced to ensure that adequate opportunities for compatible human uses of the fish and wildlife resources are available.