

COASTAL FISH & WILDLIFE HABITAT RATING FORM

Name of Area: **Big Sister Creek**

Designated: **October 15, 1987**

County: **Erie**

Town(s): **Evans**

7½' Quadrangle(s): **Angola, NY**

<u>Score</u>	<u>Criterion</u>
9	Ecosystem Rarity (ER) Relatively large, undisturbed, low gradient stream; one of the major tributaries of Lake Erie in Erie County.
0	Species Vulnerability (SV) No endangered, threatened or special concern species reside in the area.
4	Human Use (HU) Recreational fishery for salmonids and warmwater species attracts a significant number of Erie County residents.
4	Population Level (PL) One of about 4 tributary streams in Erie County where concentrations of salmonids and smallmouth bass occur during spawning periods.
1.2	Replaceability (R) Irreplaceable.

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

= **20**

DESIGNATED HABITAT: BIG SISTER CREEK

LOCATION AND DESCRIPTION OF HABITAT:

Big Sister Creek is located approximately one mile northwest of the Village of Angola, in the Town of Evans, Erie County (7.5' Quadrangle: Angola, N.Y.). The fish and wildlife habitat is an approximate two mile segment of the creek, extending from N.Y.S. Route 5 to the mouth. This portion of Big Sister Creek is a relatively wide, low gradient, warmwater stream, with the lower half-mile forming an estuary of Lake Erie. The creek has a drainage area of approximately 50 square miles, and is bordered by undeveloped woodland, agricultural land, mowed lawn areas, and low density residential development. Habitat disturbance is generally limited to the presence of bridges, litter, and discharges of stormwater and treated sewage effluent. Below Lake Shore Road (County Route 98), Big Sister Creek flows through Bennett Beach County Park, which provides access to the area for fishing and swimming (at the lake). Before the creek empties into Lake Erie, it flows northward along a sandy barrier peninsula, which reaches elevations of approximately 20-30 feet above the lake.

FISH AND WILDLIFE VALUES:

Big Sister Creek is one of the major Erie County tributaries of Lake Erie, and much of the channel (above County Route 98) remains in a relatively undisturbed condition. Stream ecosystems such as this, which provide valuable habitat for lake-dwelling fish populations, are unusual in the County. While not included as part of the habitat, it should be noted that the sand dunes bordering the mouth of the creek are the only such formations on the Lake Erie shoreline of New York, and are being evaluated by the National Park Service for possible inclusion in the national Coastal Barrier Resources System. Big Sister Creek is especially significant because concentrations of several salmonid species enter the stream during their respective spawning seasons (although reproduction is unsuccessful in most instances). Steelhead (rainbow trout) enter the creek between late February and April, and runs of coho and chinook salmon and brown trout occur from late August through December (September-November primarily). These fish populations are the result of an ongoing effort by the NYSDEC to establish a major salmonid fishery in the Great Lakes through stocking, although there have been no releases directly into Big Sister Creek. In addition to these salmonids, the creek supports a productive warmwater fishery, including smallmouth bass (which spawn here), channel catfish, rock bass, white bass, carp, and possibly freshwater drum and northern pike. Local concentrations of wildlife, including waterfowl, gulls, common terns (T), bank swallows, and raccoons, may sometimes occur in the area, but use of the area by these species is not known to be significant.

As a result of the abundant fisheries resources in Big Sister Creek, a significant number of Erie County anglers are attracted to the area. During salmonid runs, recreational fishing pressure extends well up to N.Y.S. Route 5. In general, however, the creek is most heavily fished from the banks within Bennett Beach Park, which provides good public access.

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 degrades water quality, increases temperature or turbidity, or reduces flows in Big Sister Creek would adversely affect the fisheries resources of this area. Salmonid populations are vulnerable to disturbances only during their seasonal migrations into the creek. Warmwater fish species, which are generally year-round residents of the area, are most sensitive during spawning and incubation periods, which

extend from March through July. Barriers to fish migration, whether physical or chemical, would have a significant impact on the fish populations in Big Sister Creek. Clearing of riparian vegetation, or other stream bank disturbances, could reduce habitat quality. Discharges of stormwater runoff containing sediments or chemical pollutants will also result in adverse impacts on Big Sister Creek. Public access to this area should be maintained or enhanced to ensure that adequate opportunities for human use of the fisheries resources are available.