

COASTAL FISH & WILDLIFE HABITAT RATING FORM

Name of Area: **Moodna Creek**

Designated: **November 15, 1987**

County: **Orange**

Town(s): **Cornwall, New Windsor**

7½' Quadrangle(s): **Cornwall, NY**

Score **Criterion**

- 16** Ecosystem Rarity (ER)
One of the major freshwater tributaries of the lower Hudson River that is accessible to anadromous fishes; includes the largest tidal marsh in Orange County.
- 53** Species Vulnerability (SV)
Summer and winter use of the area by bald eagle (E); concentrations of osprey (T) during migration; least bittern (SC) nesting. Additive division: $36 + 25/2 + 16/4 = 53$.
- 4** Human Use (HU)
Recreational fishing opportunities attract many Orange County anglers to the area.
- 4** Population Level (PL)
Concentrations of various wetland wildlife species and anadromous fishes are unusual in Orange County.
- 1.2** Replaceability (R)
Irreplaceable.

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

= **92**

DESIGNATED HABITAT: MOODNA CREEK

HABITAT DESCRIPTION:

Moodna Creek is located on the west side of the Hudson River, just north of the Village of Cornwall, in the Towns of New Windsor and Cornwall, Orange County (7.5' Quadrangle: Cornwall, N.Y.). The fish and wildlife habitat is an approximate three and one-half mile segment of this freshwater tributary, extending from its mouth on the Hudson River to a dam which is located just upstream from the N.Y.S. Route 32 bridge at Orrs Mill. Moodna Creek is a relatively large, medium gradient, perennial, warmwater stream, with a rocky substrate, and a relatively undeveloped, forested, floodplain. However, the lower mile of the creek is within the tidal range of the Hudson River, and is relatively deep, with a silt and clay substrate. Below N.Y.S. Route 9W, Moodna Creek widens into an approximate 75 acre embayment, containing extensive areas of emergent marsh, subtidal aquatic beds, and wooded islands. Also included in the habitat is a portion of the existing woodland adjacent and to the north of the mouth of Moodna Creek and a broad, shallow (less than 6 feet deep below mean low water), alluvial flat off the mouth of Moodna Creek.

Habitat disturbances in the tidal portion of Moodna Creek include road and railroad crossings, discharges from two sewage treatment plants, adjacent light residential development, and some filling of wetlands.

FISH AND WILDLIFE VALUES:

Moodna Creek is the largest freshwater stream in Orange County's coastal area, and is one of about five major tributaries emptying into the lower portion of the Hudson River estuary. The considerable length of stream channel accessible to migratory fishes, and the extensive wetland area at the mouth of the creek, provide favorable habitat conditions for a variety of fish and wildlife species. The marsh at the mouth of Moodna Creek is also significant for rare plants and rare natural communities including brackish intertidal mudflats and and brackish tidal marsh.

Moodna Creek is an important spawning area for anadromous fishes, such as alewife, blueback herring, smelt, white perch, tomcod, and striped bass. Generally, these species enter the stream between April and June; the adults leave the area shortly after spawning, and within several weeks, the eggs have hatched, and larval fish begin moving downstream to nursery areas in the Hudson River. The extensive flats at the creek mouth provide spawning and nursery habitat for these species. A substantial warmwater fish community also occurs in the lower portion of Moodna Creek throughout the year. Resident species include largemouth bass, bluegill, pumpkinseed, and brown bullhead. As the salt front moves up the Hudson, bluefish, anchovy, weakfish, silversides, hogchoker, and blue claw crab may enter the area to feed. However, freshwater inflows from this major tributary play a significant role in maintaining water quality (e.g., salinity) in the Hudson River estuary. The abundant fisheries resources of Moodna Creek provide significant opportunities for recreational fishing. Although no developed public access facilities exist, the area is popular among Orange County anglers, especially during the summer months. Fishing pressure is concentrated in the marshy bay area of the creek, and near road crossings.

In addition to its importance as a fisheries resource, Moodna Creek provides valuable habitats for many wildlife species. The bay and flats area at the mouth of Moodna Creek comprise a diverse and productive tidal freshwater wetland, the largest such area in Orange County. Probable or confirmed breeding bird species in the area include green-backed heron, least bittern (SC), Canada goose, mallard, black duck, wood duck, Virginia rail, spotted sandpiper, belted kingfisher, fish crow, marsh wren, common yellowthroat, hooded warbler, red-winged blackbird, downy woodpecker, yellow-shafted flicker, eastern kingbird, and swamp sparrow. Sedge wrens (SC) have been reported nesting at Moodna Creek, but no evidence of breeding was documented between 1980 and 1984.

Locally significant concentrations of herons, waterfowl, and shorebirds, occur in the area, especially during spring and fall migrations. Moodna Creek is reported to be a major crossing point for raptors migrating through the Hudson Valley, along the northern slope of the Hudson Highlands. Although complete data on these bird populations are not available, concentrations of osprey (T) have been documented at Moodna Creek during spring migration. Ospreys congregate at the confluence of the Moodna and the Hudson feeding on spawning fish and perching and roosting in the tall trees along the shoreline.

Since 1980, several bald eagles (E) both adult and immature have been observed in the summer and winter at the mouth of Moodna Creek and on adjacent Sloop Hill. This is one of the few areas in the Hudson where eagles have been consistently observed in the summer.

Other wildlife species inhabiting the area include white-tailed deer, raccoon, muskrat, green frog, snapping turtle, and northern water snake.

The diversity and abundance of wildlife species in Moodna Creek are unusual in Orange County. Opportunities for hunting, trapping, and informal nature study, probably attract a small number of local residents to wetland areas on the creek. However, the area is relatively inaccessible and privately owned, limiting human use of these resources.

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 would substantially degrade water quality, increase turbidity or sedimentation, reduce flows, alter tidal fluctuations, or increase water temperatures in Moodna Creek would result in significant impairment of the habitat. Discharges of sewage or stormwater runoff containing sediments or chemical pollutants (including fertilizers, herbicides or insecticides) may result in significant adverse impacts on fish or wildlife populations. Strict control of treatment plant discharges is necessary to prevent degradation of Moodna Creek by nutrient loading and increased biological oxygen demand (BOD), especially during heavy runoff periods in spring and summer.

Of additional concern in this major tributary are the potential effects of upstream disturbances, including water withdrawals, impoundments, stream bed disturbances, and effluent discharges. Development of hydroelectric facilities or municipal water supplies should only be allowed with run-of-river operations and appropriate minimum flow restrictions, respectively. Barriers to fish migration, whether physical or chemical, would have a significant impact on fish populations in the creek as well as in the Hudson River. Habitat disturbances would be most detrimental during fish spawning and incubation periods, which generally extend from April through July for most warmwater species.

Elimination of wetlands or significant human encroachment into the area, through dredging or filling, would result in a direct loss of valuable fish and wildlife habitats. Existing woodlands bordering Moodna Creek should be maintained to provide bank cover, soil stabilization, nesting and perching sites, and buffer areas. However, development of limited public access to the area may be desirable to ensure that adequate opportunities for compatible human uses of the fish and wildlife resources are available.