COASTAL FISH AND WILDLIFE RATING FORM

Name of area: **Inbocht Bay and Duck Cove**
Designated: **November 15, 1987**
Revised: **August 15, 2012**
County: **Greene, Columbia**
Town(s): **Catskill, Germantown**
7.5' Quadrangles: **Cementon, NY**

Assessment Criteria	**Score**
Ecosystem Rarity (ER) -- the uniqueness of the plant and animal community in the area and the physical, structural and chemical features supporting this community.	
ER Assessment – Relatively large area of sheltered littoral zones and mudflats; rare in the Hudson Valley ecological region.	**25**
Species Vulnerability (SV) – the degree of vulnerability throughout its range in New York State of a species residing in the ecosystem or utilizing the ecosystem for its survival.	
SV Assessment – Bald eagle (T)	**25**
Human Use (HU) -- the conduct of significant, demonstrable commercial, recreational, or educational wildlife-related human use, either consumptive or non-consumptive, in the area or directly dependent upon the area.	
HU Assessment – Popular waterfowl hunting areas in the Hudson Valley.	**9**
Population Level (PL) – the concentration of a species in the area during its normal, recurring period of occurrence, regardless of the length of that period of occurrence.	
PL Assessment -- Large concentrations of migrant and wintering waterfowl in the Hudson Valley occur in this area.	**9**
Replaceability (R) – ability to replace the area, either on or off site, with an equivalent replacement for the same fish and wildlife and uses of those same fish and wildlife, for the same users of those fish and wildlife.	
R Assessment – Irreplaceable	**1.2**
Habitat Index (ER+SV+HU+PL)= 68	**Significance(HI x R) = 81.6**

LOCATION AND DESCRIPTION OF HABITAT

The Inbocht Bay and Duck Cove area is located approximately three miles south of the Village of Catskill, along the western shore of the Hudson River, in the Town of Catskill, Greene County (7.5' Quadrangle: Cementon, N.Y.). The fish and wildlife habitat encompasses approximately 800 acres, and is comprised of tidal mudflats, littoral zones and submerged and floating aquatic vegetation beds water celery (*Vallisneria americana*) and water chestnut (*Trapa natans*), respectively.

Inbocht Bay and Duck Cove contains rare plant species such as Long's bittercress (*Cardamine longii*) (T), Schweinitz's flatsedge (*Cyperus schweinitzii*) (R), Southern estuary beggar ticks (*Bidens bidentoides*) (R), heartleaf plantain (*Plantago cordata*) (T), golden club (*Orontium aquaticum*) (T), spongy arrowhead (*Sagittaria calycina* var. *spongiosa*) (T) and Southern dodder (*Cuscuta obtusiflora* var. *glandulosa*) (E). The upland island in the center of Inbocht Bay was created by deposition of dredge spoils.

The land area bordering Inbocht Bay and Duck Cove is relatively undeveloped, but includes several major industrial facilities. Habitat disturbances include water withdrawals, maintenance of causeways across Duck Cove, and invasive species, primarily water chestnut (*Trapa natans*).

FISH AND WILDLIFE VALUES

Inbocht Bay and Duck Cove include extensive areas of shallow tidal habitats that are somewhat protected from the main channel of the Hudson River. The littoral zones of Inbocht Bay and Duck Cove are productive nursery and feeding areas for many coastal migratory and resident freshwater fish species, including largemouth (*Micropterus salmoides*) and smallmouth (*Micropterus dolomieui*) bass. The submerged aquatic vegetation provides food for fish, invertebrates and waterfowl as well as refuge for fish and invertebrates.

Inbocht Bay and Duck Cove provide habitat for water snake (*Nerodia s. sipedon*), red-spotted newt (*Notophthalmus v. viridescens*), redback salamander (*Plethodon cinereus*), American toad (*Bufo americanas*), gray treefrog (*Hyla versicolor*), spring peeper (*Pseudoacris crucifer*), American bullfrog (*Rana catesbeiana*), green frog (*Rana clamitans*), wood frog (*Rana sylvatica*) and common snapping turtle (*Chelydra serpentina*).

The Inbocht Bay and Duck Cove habitat area has extensive littoral zones and mudflats that provide vital feeding and resting habitat for some of the largest concentrations of waterfowl in the Hudson Valley during fall and spring migrations. High concentrations of waterfowl species such as American black duck (*Anas rubripes*), blue-winged teal (*Anas discors*), Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), gadwall (*Anas strepera*), green-winged teal (*Anas crecca*), hooded merganser (*Lophodytes cucullatus*), northern pintail (*Anas acuta*), and common merganser (*Mergus merganser*) during these seasonal migrations. Waterfowl are occasionally found overwintering in this area. This habitat also supports nesting bald eagles (*Haliaeetus leucocephalus*) (T).

The Inbocht Bay and Duck Cove area attracts a large number of waterfowl hunters from throughout the Hudson Valley region.

IMPACT ASSESSMENT

Any activity that would degrade water quality, increase turbidity, increase sedimentation, or alter flows, temperature, or water depths would result in significant impairment of the habitat. All species may be adversely affected by water pollution, such as chemical contamination (including food chain effects resulting from bioaccumulation), oil spills, excessive turbidity or sediment loading, nonpoint source

runoff, and waste disposal (including vessel wastes). Oil and other hazardous substance spills are an especially significant threat to this area.

Construction of shoreline structures, such as docks, piers, bulkheads, or revetments, in areas not previously altered by human development would result in the loss of productive areas which support the fish and wildlife resources of Inbocht Bay and Duck Cove. Construction of structures in areas previously altered may result in a direct loss of valuable habitat. Disruption of plant communities or benthos in the area, through dredging or filling, could have major impacts on habitat quality. No new navigation channels should be created in the area. Disruption of tidal flushing in the Inbocht Bay and Duck Cove area (e.g., through installation of harbor structures) could have major impacts on the littoral zones and mudflats, which make up this ecosystem. Elimination of marsh and intertidal areas, through loss of intertidal connection, ditching, excavation, or filling, would result in a direct loss of a valuable habitat. Habitat disturbances would be most detrimental during bird nesting, and fish spawning and nursery periods, which generally extend from March through August for most warm water species.

Vegetated upland buffer zones should be protected, and where possible restored to provide bank cover, stabilize soil, maintain or improve water quality and provide buffer areas from development.

Thermal discharges, depending on time of year, could have adverse effects on use of the area by migratory and resident species. Entrainment and impingement causes significant mortality to all life stages of fish, including endangered species.

The expansion of water chestnut (*Trapa natans*) and replacement of submerged aquatic vegetation may also result in changes in fish and invertebrate species composition in the areas occupied by this invasive plant. Activities that may result in expansion of water chestnut should be avoided. Effective control of invasive plant species, through a variety of means, may improve fish and wildlife species use of the area.

Unrestricted use of motorized vessels, including personal watercraft, in shallow waters can have adverse effects on the benthic community, and on fish and wildlife populations through resuspension of bottom sediments and through shoreline erosion which may reduce water clarity and increase sedimentation. Use of motorized vessels should be controlled (e.g., no wake zone, speed zones, zones of exclusion) in and adjacent to shallow waters and adjacent wetlands. Docks, piers, catwalks, or other structures may be detrimental to submerged aquatic vegetation beds through direct or indirect effects from shading, mooring chain and propeller scarring, and other associated human uses. In particular, the submerged aquatic vegetation beds are especially vulnerable to impacts that decrease light penetration into the water.

Where opportunities exist, appropriate restoration of intertidal and subtidal shallow habitats should be undertaken using the best available science and proper monitoring protocols. Restoration and enhancement efforts should be monitored, and the associated habitat effects should be reported and evaluated.

HABITAT IMPAIRMENT TEST

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:

1. destroy the habitat; or,

2. 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 includes but is 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).

KNOWLEDGABLE CONTACTS

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