
Ecological Report

Land owned by the Proprietors of Great Neck

Ipswich, Mass.

By Jim MacDougall

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North Ridge on Great Neck from Eagle Hill circa 1905

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Birds



Birds of Clark Pond

Clark Pond is a coastal brackish pond separated from the Parker River Estuary by a beach that is classified a Coastal Barrier Beach as defined by The Coastal Barrier Resources Act (Pub. L. 97-348). The entire property is nested within the Atlantic Coast Joint Venture Massachusetts Waterfowl Focus Area and the Massachusetts Important Waterbird Area. The pond is across the bay from the Parker River Wildlife Refuge. The remainder of the associated undeveloped upland is a wildlife corridor to the Ipswich River Estuary. The immediate portion of this saltmarsh is protected by the Essex County Greenbelt Assoc. and the Trustees of Reservations. The beach is a low energy beach with extensive sand flats out into the Bay, a small section of *Spartina alterniflora* marsh has established itself on the southern flats. The pond edge is vegetated by floating and emergent marsh plants; primarily Cat-tail and Phragmites.

Birds currently nesting around the pond are **King Rail**¹, Virginia Rail, Mallard, Canada Goose, Mute Swan, Red-winged Blackbird, Common Grackle, Song Sparrow, Swamp Sparrow, Yellow

¹ Pers. Com.: Wayne Castonguay, TTOR

Bird List

Warbler, Common Yellowthroat and **Marsh Wren**. The number of breeding Marsh wrens is very high². Today's list of breeding birds, does not reflect the full potential of these habitats.

Historical records of Margaret Wood for Clark Pond show us that the potential of this area will support such species as American Black Duck, Pied-billed Grebe, American Bittern, Least Bittern, Sora, Clapper Rail, Green-winged Teal and Blue-winged Teal as breeders.³ They are all documented by her to have successfully bred in and around the Pond up until 1974. Disappearance of these species is more likely due to the general population declines in Massachusetts than from factors more locally associated. That is not to say that Clark Pond hasn't changed. The increase in Phragmites along the banks of the pond and the occupation of the pond by Mute and Whooper Swans has degraded the pond's attractiveness to some bird species. The threat to this pond environ comes mostly from nutrient loading and the lack of exotic species control.

Birds of the Beach

The small beach at this property is privately owned and is only visited by members of the local beach association. The daily activity of people and dogs is constant enough to scare off any species that may have designs on nesting here with the exception of the Killdeer which does nest along the gravel access road in some years. The beach and sand flats are used during migration by Black-bellied Plover, Semipalmated Plover, Greater Yellowlegs, Lesser Yellowlegs, Semipalmated Sandpiper, Least Sandpiper, Dunlin, Sanderling, Short-billed Dowitcher, Ruddy Turnstone and **Red Knot**. Waterfowl using this resource are **American Black Duck**, Mallard, Gadwall, Pintail, Common Eider, Mute Swan, Canada Goose, and Brant.

The beach and flats are used by **Piping Plover**, **Common Terns** and **Least Terns** for staging along with Herring Gull, Bonaparte's Gull, Ring-billed Gull, Little Gull and Laughing Gull.

² Pers. Comm. Wayne Castonguay, TTOR

³ Margaret F. Wood, personal records

Bird List

Birds of the Upland

This list is compiled by Rick Heil⁴ from his personal observations over 25 years and represents those birds found only on that portion of the property west of Clark Pond Road and east of Jeffries Neck Road.

“This site, located in the coastal zone in Essex County, Massachusetts, is an important area for migratory birds, including neotropical migrants. The fact that it is insular, surrounded by salt marsh and water, and situated at the coast, conspire to cause a concentrating effect on migrants, making all of Great Neck a migration trap conducive to heavy usage by migratory birds. In inclement weather even very large fallouts may occur during both spring and fall. Suitable foraging and resting habitat at such sites are of critical importance to short and especially long distance (neotropical) migrants, where these birds may restore depleted fat reserves, allowing them to complete their energy demanding passage onward to their respective wintering grounds. Although the woodlands and thickets of this site do not hold the number of breeding species of larger, more vegetationally diverse interior sites, a number of species typical of Essex County coastal scrub and woodlands are resident and breeding.” RSH.

*=likely breeding, PR=permanent resident/year round visitor, SR=summer resident/visitor, M=migrant (spring & fall) SM=spring migrant, FM=fall migrant, W=winter, r=rare, V=vagrant

Canada Goose:	PR
Mute Swan:	PR
Wood Duck:	M
Gadwall:	M, rW
American Wigeon	M
American Black Duck	PR
Mallard*	PR
Green-winged Teal	M
Hooded Merganser	M, rW
Ring-necked Pheasant	PR

⁴ Special report by Rick. S. Heil 9 Nov. 2004

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Double-crested Cormorant	SR, M
Great Blue Heron	SR, M, rW
Green Heron*	SR, M
Black-crowned Night-Heron	SR, M, rW
Yellow-crowned Night-Heron	SR, rM
Glossy Ibis	SR, M
Turkey Vulture	SR, M, rW
Osprey	SR, M
Northern Harrier	rSR, M, W
Sharp-shinned Hawk	M, W
Cooper's Hawk	PR
Red-tailed Hawk	PR
Rough-legged Hawk	W
American Kestrel	M, rW
Merlin	M, rW
Peregrine Falcon	M, rW
Greater Yellowlegs	M
Solitary Sandpiper	M
Spotted Sandpiper	SR, M
Wilson's Snipe	M, rW
American Woodcock*	SR, M, rW
Ring-billed Gull	PR
Herring Gull	PR
Great Black-backed Gull	PR
Rock Pigeon	PR
Mourning Dove*	PR
Great Horned Owl*	PR
Common Nighthawk	M
Chimney Swift	SR, M
Ruby-throated Hummingbird	M
Belted Kingfisher	PR
Yellow-bellied Sapsucker	M
Downy Woodpecker*	PR
Northern Flicker*	PR
Eastern Wood-Pewee	M
Willow Flycatcher*	SR, M
Least Flycatcher	M
Eastern Phoebe*	SR, M
Great Crested Flycatcher	M
Western Kingbird	rFM
Eastern Kingbird*	SR, M
Northern Shrike	W
Blue-headed Vireo	M

Bird List

Warbling Vireo	M
Philadelphia Vireo	rSM, FM
Red-eyed Vireo	M
Blue Jay*	PR
American Crow*	PR
Horned Lark	M, W
Purple Martin	SR, M
Tree Swallow*	SR, M
Northern Rough-winged Swallow*	SR, M
Bank Swallow	SR, M
Barn Swallow	SR, M
Black-capped Chickadee*	PR
Red-breasted Nuthatch	M, W
White-breasted Nuthatch*	PR
Brown Creeper	M, W
Carolina Wren*	PR
House Wren*	SR, M
Winter WrenM,	rW
Golden-crowned Kinglet	M, W
Ruby-crowned Kinglet	M, rW
Blue-gray Gnatcatcher	M
Veery	M
Swainson's Thrush	M
Hermit Thrush	M, W
Wood Thrush	M
American Robin*	PR
Gray Catbird*	SR, M, rW
Northern Mockingbird*	PR
Brown Thrasher*	SR, M, rW
European Starling*	PR
American Pipit	M
Cedar Waxwing*	PR
Blue-winged Warbler	M
Tennessee Warbler	M
Orange-crowned Warbler	FM, rW
Nashville Warbler	M
Lucy's Warbler	V
Northern Parula	M
Yellow Warbler*	SR, M
Chestnut-sided Warbler	M
Magnolia Warbler	M
Cape May Warbler	M
Black-throated Blue Warbler	M

Bird List

Yellow-rumped Warbler	M, W
Black-throated Green Warbler	M
Blackburnian Warbler	M
Pine Warbler	M
Prairie Warbler	M
Palm Warbler	M, rW
Bay-breasted Warbler	M
Blackpoll Warbler	M
Black-and-white Warbler	M
American Redstart*	SR, M
Ovenbird	M
Northern Waterthrush	M
Mourning Warbler	M
Common Yellowthroat*	SR, M, rW
Wilson's Warbler	M
Canada Warbler	M
Yellow-breasted Chat	M, rW
Scarlet Tanager	M
Eastern Towhee*	SR, M, rW
American Tree Sparrow	M, W
Chipping Sparrow*	SR, M
Field Sparrow	M, rW
Savannah Sparrow	M, rW
Fox Sparrow	M, rW
Song Sparrow*	PR
Lincoln's Sparrow	M
Swamp Sparrow*	PR
White-throated Sparrow	M, W
White-crowned Sparrow	M
Dark-eyed Junco	M, W
Lapland Longspur	M, W
Snow Bunting	M, W
Northern Cardinal*	PR
Rose-breasted Grosbeak	M
Indigo Bunting	M
Dickcissel	rFM
Bobolink	M
Red-winged Blackbird*	SR, M, rW
Eastern Meadowlark	M, rW
Rusty Blackbird	M
Common Grackle*	SR, M, rW
Brown-headed Cowbird*	SR, M, rW
Orchard Oriole	M

Bird List

Baltimore Oriole*	SR, M
Purple Finch	M, W
House Finch*	PR
Common Redpoll	M, W
Pine Siskin	M, W
American Goldfinch*	PR
House Sparrow*	PR

US Fish and Wildlife List of Birds of Conservation Concern Region 5

U.S. Fish and Wildlife Service has attempted to assess and integrate all information and compile a list of Birds Of Conservation Concern for BCR 5. See the following web link:

<http://migratorybirds.fws.gov/reports/BCCo2/BCC2002.pdf>

Note: Federally and state-listed Threatened and Endangered Species are specifically *not* included on this list.

Peregrine Falcon
Black Rail
Wilson's Plover
American Oystercatcher
Upland Sandpiper
Whimbrel
Hudsonian Godwit
Marbled Godwit
Red Knot
Purple Sandpiper
Buff-breasted Sandpiper
Common Tern
Least Tern
Black Skimmer
Razorbill
Short-eared Owl
Whip-poor-will
Red-headed Woodpecker
Sedge Wren
Marsh Wren
Wood Thrush
Blue-winged Warbler
Golden-winged Warbler
Prairie Warbler
Cerulean Warbler
Worm-eating Warbler
Kentucky Warbler
Canada Warbler
Henslow's Sparrow
Saltmarsh Sharp-tailed Sparrow
Seaside Sparrow
Baltimore Oriole

Massachusetts Natural Heritage List of Rare Species in Ipswich

Last Updated on 3/1/2002

I included the entire list of state-listed rare species that have been officially recognized to have occurred in Ipswich at one time or another. I am not trying to imply that all of these species have or will exist on Great Neck. I believe the list shows that Natural Heritage needs to do more inventory work and/or species are disappearing at an alarming rate from loss of habitat and pressure from exotic plants and animals. Either way, it shows that Ipswich's coastal habitats are rich, geographically very uncommon making them very important for biodiversity conservation.

Here are a few caveats from Mass. Natural Heritage concerning their rare species lists.

“The ‘Last Seen’ field represents the most recent observation of a species in a town. An asterisk (*) indicates that the species was most recently observed within the past 25 years. However, many rare species are difficult to detect even though they are present, and Natural Heritage does not conduct methodical species surveys in each town on a consistent basis. Therefore, the fact that the ‘Last Seen’ for a species may be several years old should not lead to the interpretation that the species no longer occurs in a town.

Only those rare species records that are less than 25 years old are used in Natural Heritage project review associated with the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00) and the Massachusetts Endangered Species Act Regulations (321 CMR 10.00).”

Table is on the next page.

Bird List

State Listed Species of Ipswich

Common Name	Species	Group	Status	Last seen	As...
Jefferson Salamander	Ambystoma	Amphibian	SC	1921	
Blue-Spotted Salamander	Ambystoma laterale	Amphibian	SC	2000	*
Four-Toed Salamander	Hemidactylium	Amphibian	SC	1971	
Eastern Spadefoot	Scaphiopus	Amphibian	T	1985	*
Spotted Turtle	Clemmys guttata	Reptile	SC	1996	*
American Bittern	Botaurus	Bird	E	1974	
Piping Plover	Charadrius melodus	Bird	T	1996	*
Northern Harrier	Circus cyaneus	Bird	T	1904	
Common Moorhen	Gallinula chloropus	Bird	SC	1983	*
Least Bittern	Ixobrychus exilis	Bird	E	1990	*
Pied-Billed Grebe	Podilymbus podiceps	Bird	E	1982	*
Vesper Sparrow	Poocetes gramineus	Bird	T	1975	
King Rail	Rallus elegans	Bird	T	1982	*
Least Tern	Sterna antillarum	Bird	SC	1998	*
Roseate Tern	Sterna dougallii	Bird	E		
Common Tern	Sterna hirundo	Bird	SC	1998	*
Barn Owl	Tyto alba	Bird	SC	1955	
New England Siltsnail	Cincinnatia winkleyi	Snail	SC	1990	*
Triangle Floater	Alasmidonta	Mussel	SC	2000	*
Mystic Valley Amphipod	Crangonyx aberrans	Crustacean	SC	1989	*
Coppery Emerald	Somatochlora	Dragonfly/Damsel	E	1973	
Purple Tiger Beetle	Cicindela purpurea	Beetle	SC	1914	
Seabeach Needlegrass	Aristida tuberculosa	Vascular Plant	T	1999	*
River Bulrush	Bolboschoenus	Vascular Plant	SC	1916	
Hairy Wild Rye	Elymus villosus	Vascular Plant	E		
Slender Cottongrass	Eriophorum gracile	Vascular Plant	T		
Andrews' Bottle Gentian	Gentiana andrewsii	Vascular Plant	E	1958	
New England Blazing Star	Liatris borealis	Vascular Plant	SC	1880	
Adder's-Tongue Fern	Ophioglossum	Vascular Plant	T	1898	
Violet Wood-Sorrel	Oxalis violacea	Vascular Plant	E	18--	
Pale Green Orchis	Platanthera flava	Vascular Plant	T	1875	
Small Bur-Reed	Sparganium natans	Vascular Plant	E	1957	
American Sea-Blite	Suaeda	Vascular Plant	SC	1982	*
Sessile Water-Speedwell	Veronica catenata	Vascular Plant	E		

Geology



Federally generated surficial geology references

The geology of Great Neck has been studied for over 100 years starting with John Sears, 1905⁵ and including Edward A. Sammel 1963⁶ and Donald C. Fuller & Everette L. Francis, 1983.⁷ There are 3 land forms on Great Neck that are represented. These are the drumlin, the basin and a barrier beach. The barrier beach protects a coastal freshwater⁸ pond (Clark Pond).

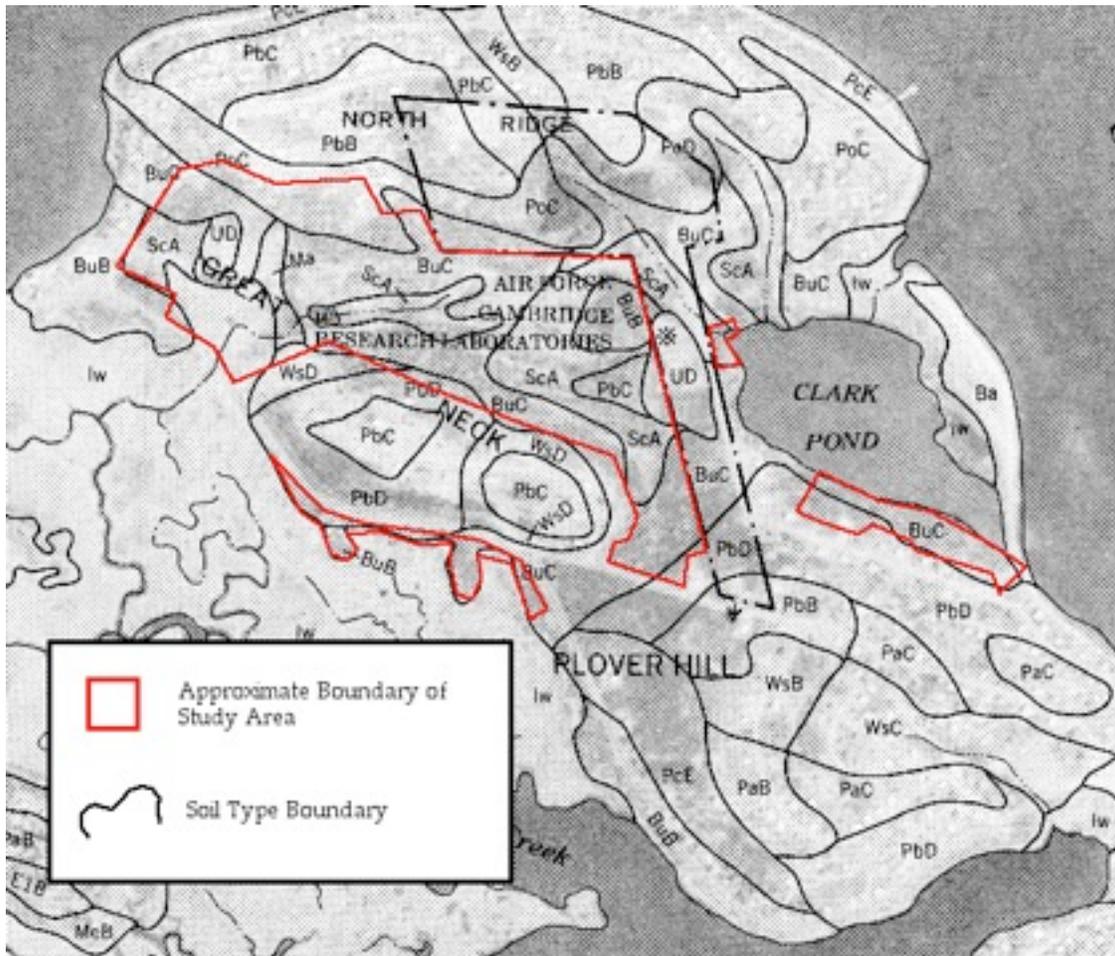
⁵ John Sears, “Geology of Essex County”, 1905

⁶ Edward A. Sammel’s “Surficial Geology of the Ipswich Quadrangle”, 1963

⁷ Donald C. Fuller & Everette L. Francis, Soil Survey of Essex County, Southern Part., 1983

⁸ Pers.Comm. Wayne Castonguay, TTOR

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Soil Survey of Essex County

Soil Name	Soil Symbol	Description
Paxton	PbB, PbC	very stony fine sandy loam, 3 to 15% slope
Poquonock	PoC	very stony loamy sand, 8 to 15% slope
Boxford	BuB, BuC	silt loam, 3 to 15% slope
Scitico	ScA	silt loam, 0 to 5% slope
Woodbridge	WsD	very stony fine sandy loam, 15 to 25% slope
Beach	Ba	sand, gravel and cobbles
Ipswich	Iw	mucky peat
Maybid	Ma	silt loam

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Detailed soil descriptions from SCS.

“Paxton very stony fine sandy loam, 3 to 15 percent slopes. This soil is deep, moderately sloping, and well drained. It is in irregularly shaped areas mainly on the sides of hills. The areas range from 5 to 80 acres. Slopes are smooth and convex and are 100 to 1,000 feet long. The surface has stones and boulders 1 to 3 feet in diameter that are 30 to 100 feet apart.

Typically, the surface layer is very dark brown fine sandy loam about 7 inches thick. The subsoil is fine sandy loam about 14 inches thick. The upper 7 inches is dark yellowish brown, and the lower 7 inches is olive brown. The substratum is very firm and brittle, olive brown fine sandy loam to a depth of 60 inches or more.

The permeability of this Paxton soil is moderate in the subsoil and slow or very slow in the substratum. Available water capacity is moderate. In unlimed areas this soil is very strongly acid to slightly acid. A seasonal high water table is perched above the substratum for brief periods in winter and early spring.

Most areas of this soil are in woodland. Some areas are used for homesites, and a few are used for pasture.

The stones and boulders on the surface make this soil poorly suited to cultivated crops. The use of proper stocking rates, deferred grazing, and rotational grazing help maintain desirable pasture plant species.

Poquonock very stony loamy sand, 3 to 15 percent slopes. This soil is deep, gently sloping, and well drained. It is on the upper parts of hills and ridges. The areas are irregular in shape and range from 5 to 50 acres. Slopes are smooth, slightly convex, and 50 to 300 feet long. Stones and boulders 1 to 3 feet in diameter are on the surface 30 to 100 feet apart.

Typically, the surface layer is dark yellowish brown loamy sand about 7 inches thick. The subsoil is loamy fine sand about 17 inches thick. The upper 10 inches is dark yellowish brown, and the lower 7 inches is yellowish brown. The substratum is very firm and brittle, light olive brown gravelly fine sandy loam to a depth of 60 inches or more.

The permeability of this Poquonock soil is rapid or very rapid in the subsoil and slow or very slow in the substratum. Available water capacity is low. Reaction in this soil ranges from very strongly acid to medium acid. A seasonal high water table is perched above the substratum for brief periods in winter and early spring.

Most areas of this soil are in woodland. A few areas are used for homesites.

The stones and boulders on the surface make this soil poorly suited to cultivated crops. The use of proper stocking rates, deferred grazing, and rotational grazing help to maintain desirable pasture plant species.

This soil is suited to trees and to woodland wildlife habitat. The stones and boulders on the surface limit the soil for most types of recreational development.

Wetness caused by the seasonal high water table limits the soil as a site for dwellings and small commercial buildings. Slope is also a limitation for small commercial buildings. The slow or very slow permeability in the substratum limits the soil for septic tank absorption fields. The firmness of the substratum and wetness limit shallow excavations.

BuC—Boxford silt loam, 8 to 15 percent slopes. This soil is deep, moderately sloping, and moderately well drained. It is on broad areas near the ocean and in the larger valleys of the survey area. The areas are irregular in shape and range from 5 to 25 acres. Slopes are smooth, rolling, and 50 to 600 feet long.

Typically, the surface layer is dark grayish brown silt loam about 7 inches thick. The subsoil is about 30 inches thick. It is friable, dark yellowish brown and yellowish brown silt loam in the

Geology

upper 5 inches and firm, mottled, yellowish brown and light olive brown silty clay loam in the lower 25 inches. The substratum is firm, mottled, light olive brown silty clay loam to a depth of 60 inches or more.

The permeability of this Boxford soil is slow to very slow. Available water capacity is high. Reaction is strongly acid to slightly acid in the upper part of the subsoil and medium acid to neutral in the lower part of the subsoil and in the substratum. A seasonal high water table is in the lower part of the subsoil in winter and spring.

Most areas of this soil are in woodland. Some areas are farmed, and some are used for homesites.

This soil is suited to cultivated crops and to hay and pasture. Erosion and the seasonal high water table are the main limitations. The soil commonly is wet in spring, delaying farming operations. Drainage is needed in areas used for crops but generally is not needed for hay and pasture. Farming on the contour and using cover crops and grasses and legumes in the cropping system help to reduce runoff and control erosion. Mixing crop residue and manure into the surface layer helps to improve tilth and increase organic matter content of the soil. Working the soil when wet will reduce the tilth of the surface layer and compact the upper part of the subsoil. Use of proper stocking rates, deferred grazing, and rotational grazing help to maintain desirable pasture plant species. Keeping livestock off the pasture when the soil is wet prevents damage to the sod.

This soil is suited to trees and to openland and woodland wildlife habitat. Slope limits the use of woodland equipment. Slope, wetness, and slow permeability limit the soil for recreational development.

The seasonal high water table and slope limit the soil as a site for dwellings and small commercial buildings and for septic tank absorption fields. The slow permeability is an additional limitation of the soil as a site for septic tanks, and the water table limits shallow excavations.

ScA—Scitico silt loam, 0 to 5 percent slopes. This soil is deep, nearly level and gently sloping, and poorly drained. It is in depressions, along drainageways, and on broad areas near tidal marshes. The areas are irregular in shape or long and narrow and mainly range from 5 to 60 acres. Slopes are smooth and concave and are 50 to 1,000 feet long.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsoil is firm silty clay loam about 34 inches thick and is mottled throughout. The upper 8 inches is grayish brown, the middle 8 inches is gray, and the lower 18 inches is grayish brown. The substratum is firm, mottled, light olive brown silty clay loam to a depth of 57 inches and firm, Olive silty clay from 57 inches to a depth of 70 inches or more.

The permeability of this Scitico soil is slow or very slow. Available water capacity is high. Reaction ranges from strongly acid to neutral in the upper part of the subsoil and from medium acid to neutral in the lower part of the subsoil and in the substratum. A seasonal high water table is at or near the surface in late fall, in winter, and in spring.

Most areas of this soil are covered with grass or are in woodland.

This soil is poorly suited to cultivated crops but is suited to hay and pasture. The seasonal high water table is the main limitation for farming, and drainage is difficult to establish because of the slow or very slow permeability and a lack of outlets. The use of proper stocking rates, deferred and rotational grazing, and restricted grazing when the soil is saturated are practices that help to maintain desirable pasture plant species.

Wetness makes the soil poorly suited to trees. The soil is suitable for most types of wildlife habitat, but wetness and slow permeability are limitations for recreational development.

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The high water table limits the soil as a site for dwellings, small commercial buildings, shallow excavations, and septic tank absorption fields. The slow or very slow permeability is an added limitation for septic tank absorption fields.

WsD—Woodbridge very stony fine sandy loam, 15 to 25 percent slopes. This soil is deep, moderately steep, and moderately well drained. It is in irregularly shaped areas on the lower slopes of hills. The areas range from 5 to 50 acres. Slopes are smooth, slightly concave, and 100 to 800 feet long. Stones and boulders 1 to 3 feet in diameter are 30 to 100 feet apart on the surface.

Typically, the surface layer is dark brown fine sandy loam about 5 inches thick. The subsoil is fine sandy loam about 19 inches thick. It is dark yellowish brown in the upper part and mottled and yellowish brown in the lower part. The substratum is mottled, light olive brown, very firm and brittle gravelly fine sandy loam to a depth of 60 inches or more.

The permeability of this Woodbridge soil is moderate in the subsoil and slow to very slow in the substratum. Available water capacity is moderate. Reaction ranges from very strongly acid to medium acid in the subsoil and very strongly acid to slightly acid in the substratum. A seasonal high water table is perched above the substratum for brief periods in winter and spring.

Most areas of this soil are in woodland. A few areas are used for homesites.

The stones and boulders on the surface make this soil poorly suited to cultivated crops. The use of proper stocking rates and deferred and rotational grazing help to maintain desirable pasture plant species.

The soil is well suited to trees and to woodland wildlife habitat. Slope and the stones and boulders on the surface limit the soil for recreational development.

Slope and the seasonal high water table limit the soil as a site for dwellings and small commercial buildings. • Slope, wetness, and the slow or very slow permeability of the substratum limit the use of the soil for septic tank absorption fields. Wetness and the firm substratum limit shallow excavations.

Iw—Ipswich and Westbrook mucky peats. These soils are deep, nearly level, and very poorly drained. They are in irregularly shaped areas that are subject to daily tidal flooding (fig. 9). The areas range from 10 to 1,000 acres or more. Slopes are less than 1 percent. Some areas consist dominantly of Ipswich soils, some of Westbrook soils, and some of both. The soils were mapped together because they have no major differences in use and management. The total acreage of the unit is about 60 percent Ipswich soils, 30 percent Westbrook soils, and 10 percent other soils.

Typically, the Ipswich soils have a surface layer of very dark grayish brown mucky peat about 17 inches thick. It consists of many live herbaceous roots and decaying plant remains. Below the surface layer is a layer about 25 inches thick of brown, slightly more decomposed organic material. The underlying layer is very dark grayish brown, highly decomposed organic material that extends to a depth of 60 inches or more.

Typically, the Westbrook soils have a surface layer of very dark brown mucky peat about 18 inches thick. This is underlain by black, decomposed organic material 19 inches thick. A layer of very firm, dark greenish gray silty clay extends to a depth of 60 inches or more.

Included with these soils in mapping are areas with 2 to 4 feet of organic material over loamy sand or sand that make up as much as 40 percent of some units. Also included are small areas of soils with less than 16 inches of organic material over mineral material and a few small areas of rock outcrop.

Permeability is moderate to rapid in the organic layers of these Ipswich and Westbrook soils and moderate in the substratum of the Westbrook soils. Available water capacity is high in both soils. Reaction in the Ipswich soils ranges from strongly acid to neutral. Reaction in the

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Westbrook soils is strongly acid to neutral in the organic material and medium acid to neutral in the substratum. Acidity increases if these soils are drained.

Most areas of this unit are in salt-tolerant grasses and forbs. The twice-daily tidal flooding limits the soils for most uses other than as wetland wildlife habitat.

Ma—Maybld silt loam. This soil is deep, nearly level, and very poorly drained. It is in depressions and low areas near the larger streams in the survey area and near tidal marshes. The areas are irregular in shape and range from 5 to 120 acres. Slopes range from 0 to 2 percent. They are smooth, gently undulating, and 100 to 800 feet long.

Typically, the surface layer is very dark grayish brown silt loam about 5 inches thick. The subsoil is firm, mottled, olive gray silty clay loam about 14 inches thick. The substratum is very firm, mottled silty clay to a depth of 60 inches or more. It is greenish gray to a depth of 42 inches and gray at a depth of more than 42 inches.

The permeability of this Maybid soil is slow or very slow. Available water capacity is high. Reaction is medium acid to neutral in the subsoil and slightly acid or neutral in the substratum. A high water table is at or near the surface most of the year. Some areas have water on the surface.

Most areas of this soil are farmland or are covered by moisture-tolerant shrubs and trees.

This soil is poorly suited to farming. The high water table is the major limitation. Installing drainage is difficult because of the clayey texture of the soil and a lack of adequate outlets.

The soil is poorly suited to trees but is suited to wetland wildlife habitat. The water on the surface and the slow permeability limit the use of the soil for recreational development.

The water on the surface limits the use of this soil as a site for dwellings, small commercial buildings, septic tank absorption fields, or shallow excavations. The slow permeability is an added limitation for septic tank absorption fields..”

Plant Communities

Assessment of Plant Communities using Massachusetts Plant Community Assay

There are seven (7) identifiable plant community types on this property. Starting at the lowest gradient, the beach and working up to the tops of the hills they are: beach, emergent marsh, saltmarsh, shrub swamp, maritime shrubland, red maple swamp and coastal woodland. I have used Patricia Swain's and Jennifer Kearsley's "Classification of the Natural Communities of Massachusetts", 2001⁹, to describe each community type. Although I have used their words in explaining each type for the sake of economy, I have field verified that their descriptions fit the community types found at the site. And that faunal associations have been documented to occur either by myself or referenced observers.

⁹ Patricia Swain's and Jennifer Kearsley's "Classification of the Natural Communities of Massachusetts", 2001



Maritime Beach Strand

Community Code: CT₂B1A0000 SRANK: S₃

“Sparsely vegetated, long, narrow community between wrack line of high tide and foredunes. Environmental Setting: Usually part of a barrier beach system, seaward of dunes, but above the daily high tides. Beach strands are subject to overwash during storms and spring tides. Vegetation Description: Sparsely vegetated community with scattered cover of sea-rocket (*Cakile edentula*) and dune grass (*Ammophila breviligulata*). Beach pea (*Lathyrus japonicus*), seabeach orchard (*Atriplex pentandra*), seabeach sandwort (*Honckenya peploides*), seaside-flatsedge (*Cyperus filicinus*), seabeach saltwort (*Salsola kali* ssp. *kali*) and seaside goldenrod (*Solidago sempervirens*) occasionally occur at the foot of the dunes or protected beaches, along with the non-native Russian thistle, (*Salsola kali* spp. *tragus*).

Plant Communities

Habitat for several species of shorebird as beach specialist and foraging on beach strands, including: Least Terns (*Sterna antillarum*), Piping Plover (*Charadrius melodus*), and American Oystercatcher (*Haematopus palliatus*) Beach strands are important shorebird staging areas: migratory shorebirds use barrier beach systems, including the beach strand community, for resting and congregating before and during migration. Merlins (*Falco columbarius*) and Peregrine Falcons (*Falco peregrinus*) forage on beaches during migrations. No amphibians or reptiles regularly occur on beaches. Few mammals use the beaches except for hunting by mid-sized predators such as red fox (*Vulpes vulpes*), striped skunk (*Mephitis mephitis*), and coyote (*Canis latrans*) and resting by seals (mostly *Phoca vitulina*).

Invertebrate specialists include several species of tiger beetles and beach flies.

Associated Rare Plants: *Elymus mollis*

Associated Rare Animals: Piping Plover T “

Estuarine Intertidal Saltmarsh

Community CODE: CE2B100000 SRANK: S3

“A graminoid dominated, tidally flooded coastal community with several zones. Salt marshes form in areas subject to oceanic tides, but are somewhat sheltered from wave energy. They usually occur in estuaries and behind barrier beaches and spits. A peat develops in the higher marshes, with marsh plants extending into flats in stabilized areas, raising the surface area and allowing the marsh to expand. Upper edges may be brackish.

Vegetation Description: Saltwater cord-grass (*Spartina alterniflora*) dominates the low marsh area, between the low and mean high tide. Between the mean high tide and the spring high tide, the high marsh area, saltmarsh hay (*Spartina patens*) dominates, usually mixed with spike grass (*Distichlis spicata*). Towards the upland edge, black grass (*Juncus gerardii*) becomes more common. Mixed throughout, especially towards the upper edges sea - lavender (*Limonium carolinianum*), seaside goldenrod (*Solidago sempervirens*), and salt tolerant species. At the freshest edges, salt marsh switch grass (*Panicum virgatum*) may be common. At those upper edges and on ditch spoils, saltmarsh elder (*Iva frutescens*) can form shrubby zones. Scattered in low, poorly drained, salty areas, salt pannes form, with populations of glasswort (*Salicornia* spp.) and saltwort (*Salsola kali*).

Plant Communities

Many species of birds forage in salt marshes including Seaside Sparrow (*Ammodramus maritimus*) and the Saltmarsh Sharp-tailed Sparrow (*A. caudacutus*). In fall and winter, Short-eared Owls (*Asio flammeus*), Snowy Owls (*Nyctea scandiaca*), and Northern Harrier (*Circus cyaneus*) hunt in salt marshes. In summer, Snowy Egrets (*Egretta thula*) and Glossy Ibis (*Plegadis falcinellus*) forage in pools at low tide. Few mammals are resident in salt marshes, but Meadow voles (*Microtus pensylvanica*) use them, retreating to dryer areas during high tides.”

Deep Emergent Marsh

Community ELCODE: CP2A0A1200 SRANK: S₄

“Tall graminoid/emergent herbaceous wetlands occurring on saturated, mucky mineral soils that are seasonally inundated and permanently saturated. Environmental setting: Deep emergent marshes generally form in broad, flat areas bordering low-energy rivers and streams or along pond and lake margins. The soils are a mixture of organic and mineral components. There is typically a layer of well-decomposed organic muck at the surface overlying mineral soil. There is standing or running water during the growing season and throughout much of the year. Water depth averages between 6 in. and 3 ft. Deep emergent marshes are associated with shrub swamps, and the two communities intergrade.

Vegetation Description: Tall graminoids, like broad-leaved cat-tail (*Typha latifolia*) and phragmites (*Phragmites australis*), often form extensive dense stands. Narrow-leaved cat-tail (*Typha angustifolia*) occurs in more alkaline sites or in saline areas along roads [Weatherbee, 1996].

Other characteristic graminoids include wool-grass (*Scirpus cyperinus*), common threesquare (*Scirpus pungens*), Canada bluejoint (*Calamagrostis canadensis* var. *canadensis*), rice cut-grass (*Leersia oryzoides*), and tussock-sedge (*Carex stricta*). Herbaceous associates include arrow-leaf tearthumb (*Polygonum sagittatum*), bulblet water-hemlock (*Cicuta bulbifera*), swamp-candles (*Lysimachia terrestris*), beggar-ticks (*Bidens* spp.), bedstraw (*Galium* spp.), common arrowhead (*Sagittaria latifolia* var. *latifolia*), slender-leaved goldenrod (*Euthamia tenuifolia*) and marsh-fern (*Thelypteris palustris* var. *pubescens*).

Deep emergent marshes are excellent waterfowl habitat and also provide important habitat for frogs and newts, especially leopard, pickerel, green and bull frogs, and red-spotted newts. Wood frogs may use areas of deep emergent marsh that are fish free.

Plant Communities

Associated rare animals: American Bittern E; Northern Harrier T; Marsh Wren - WL; Spotted Turtles SC; Common Moorhen SC; Least Bittern E; Pied-billed Grebe E; King Rail T

Threats: Deep emergent marshes are threatened by filling and dredging, impoundments that alter natural water-level fluctuations, and nutrient inputs from adjacent roads, fields, or septic systems. Purple loosestrife (*Lythrum salicaria*), an aggressive non-native species, can be abundant in deep emergent marshes throughout the state. Phragmites is also a problem.”

Management needs: Removal of purple loosestrife and phragmites.

Shrub Swamp

Community ELCODE: CP2AoCoooo SRANK: S5

“Shrub-dominated wetlands occurring on mineral or mucky mineral soils that are seasonally or temporarily flooded. Environmental setting: Shrub swamps are common and widespread. They occur in basin depressions, at pond margins, and along river and streamsides. They can be found in any flat area where the water table is at or above the soil surface for most of the year. Soils are generally well-decomposed organic mucks that are permanently saturated but only seasonally or temporarily inundated. Shrub swamps are often found in the transition zone between emergent marshes and swamp forests.

Vegetation Description: Shrub swamps are highly variable communities that probably can be divided into several types; however, there is currently not enough information available to separate vegetation types. Shrub swamps typically have a mixture of the following shrub species: speckled alder (*Alnus incana* ssp. *rugosa*), smooth alder (*Alnus serrulata*), highbush blueberry (*Vaccinium corymbosum*), meadowsweet (*Spiraea alba* var. *latifolia*), buttonbush (*Cephalanthus occidentalis*), winterberry (*Ilex verticillata*), sweet gale (*Myrica gale*), swamp azalea (*Rhododendron viscosum*), silky dogwood (*Cornus amomum*), northern arrow-wood (*Viburnum dentatum* var. *lucidum*), maleberry (*Lyonia ligustrina*), and the non-native shrub European alder-buckthorn (*Rhamnus frangula*). Scattered red maple (*Acer rubrum*) or gray birch (*Betula populifolia*) saplings also occur. Richer shrub swamps in areas with circumneutral water are often dominated by spicebush (*Lindera benzoin*). Some shrub swamps are dominated by a single species, such as black willow (*Salix nigra*) riverside thickets [which may best be included with floodplain forests], highbush blueberry thickets, or buttonbush swamps. Highbush blueberry thickets that occur on peat are described separately in the peatlands section; with more data, other types

Plant Communities

may also be split off and described as distinct community types. Since shrubs often form dense thickets, the herbaceous layer of shrub swamps is often sparse and species-poor. A mixture of the following species is typical: common arrowhead (*Sagittaria latifolia* var. *latifolia*), skunk cabbage (*Symplocarpus foetidus*), cinnamon fern (*Osmunda cinnamomea*), sensitive fern (*Onoclea sensibilis*), and royal fern (*Osmunda regalis*), sedges (*Carex* spp.), and *Sphagnum* spp. moss. More inventory work is needed.

Habitat values for Shrub swamps often function as vernal pool habitat in sections that have extended periods of ponding (2-3 months) and lack fish; these sections provide important amphibian breeding habitat. “

Maritime Shrubland

Community Code: CT2A4A1000 SRANK: S3

“Shrub community; dominated by patches of dense shrubs with scattered more open areas of low growth or bare ground. Environmental Setting: Coastal, within the area receiving storm salt spray, but out of the normal range of daily salt spray. Occurs on rocky headlands or behind dunes in protected areas of barrier beaches.

Vegetation Description: Often dense patches of shrub, with various species dominating in different areas. Huckleberry (*Gaylussacia baccata*), bayberry (*Myrica pensylvanica*), or red cedar (*Juniperus virginiana*) areas are often distinctive. Black cherry (*Prunus serotina*), beach plum (*Prunus maritima*), chokeberry (*Aronia melanocarpa*), low bush blueberry (*Vaccinium angustifolium*), and bearberry (*Arctostaphylos uva-ursi*) may be abundant. Catbrier (*Smilax rotundifolia*) and poison ivy (*Toxicodendron radicans*) often cover other plants or grow in dense patches on their own.

Habitat Values for Shrub thickets provide nesting areas for Northern Harriers (*Circus cyaneus*), Northern Towhee and Song Sparrows (*Melospiza melodia*). Maritime shrublands are heavily used during fall migrations for cover and forage – many of the plants have fruit attractive to migrants. White-tailed deer (*Odocoileus virginianus*) maintain large populations in shrubland habitats. In such shrub areas, white-footed mice (*Peromyscus leucopus*) are also very abundant, and in the openings meadow voles (*Microtus pennsylvanicus*) are common. Eastern moles (*Scalopus aquaticus*) have an affinity to the sand substrate in the southern part of the state. Long-tailed weasels (*Mustela frenata*) occur in the grass dominated areas where they hunt meadow voles.

Plant Communities

Associated Rare Animals: Northern Harrier T

Threats: Invasive exotics in many occurrences - shrubby honeysuckle (*Lonicera morrowii*) is invasive in many of the locations; barberry (*Berberis thunbergii*), buckthorn (*Rhamnus cathartica*), and Japanese black pine (*Pinus thunbergiana*) are locally dense.

Management Needs: Removal of invasive exotics from otherwise exemplary occurrences”.

Coastal Forest/Woodland

Community Code: CT1A2A2000 SRANK: S3

“Coastal forests are often shorter than forests further inland, but taller than maritime forests. There is often a dense shrub layer and vines, particularly near the edges. Environmental Setting: Communities are found in more protected areas along the coast, such as behind dunes and on slopes away from the water, and behind maritime forests. Coastal forests are sheltered from direct daily maritime influences [not in the daily salt spray zone, but receive wind and salt during storms]. The community occurs within the climate area moderated by being near the ocean, with warmer winters and cooler summers than more inland areas. Although they often occur on sand or bedrock that doesn't hold water, fogs and increased precipitation can produce more available water than further inland. Historically, fire was often an important factor in coastal forests. Coastal and maritime forests and maritime shrublands grade into each other, and into dunes and more inland forests.

Vegetation Description: Tree oaks (scarlet oak (*Quercus coccinea*), black oak (*Q. velutina*) and white oak (*Q. alba*) are the dominant species of the coastal forest,. Red maple (*Acer rubrum*), sassafras (*Sassafras albidum*), black cherry (*Prunus serotina*), tupelo (*Nyssa sylvatica*), beech (*Fagus grandifolia*), pitch pine (*Pinus rigida*), and white pine (*Pinus strobus*) commonly occur, usually in low percentages, but occasionally abundant. Red cedar (*Juniperus virginiana*) occurs in low percentages in the forests, and sometimes as a dominant in woodland thickets. A low-shrub heath layer dominated by low bush blueberries (*Vaccinium pallidum*, *V. angustifolium*) and black huckleberry (*Gaylussacia baccata*) is very characteristic. The herbaceous layer is typically sparse, with Pennsylvania sedge (*Carex pensylvanica*), bracken fern (*Pteridium aquilinum*), wintergreen (*Gaultheria procumbens*) and wild sarsaparilla (*Aralia nudicaulis*) being typical. Sweet pepper-

Plant Communities

bush (*Clethra alnifolia*), surprisingly, is abundant in many sites. Openings in the canopy produce a greater diversity of the herbaceous layer, where little blue-stem grass (*Schizachyrium scoparium*), Canadian rockrose (*Helianthemum canadense*), bush clovers (*Lespedeza* spp.), milkworts (*Lechea* spp.) and bearberry (*Arctostaphylos uva-ursi*) occur. Most occurrences of coastal forests have many vines on the edges and in openings of the forest. Poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*), grape (*Vitis* spp.), and greenbriers (*Smilax* spp.) can be locally abundant.

Habitat Values: No animal species are restricted to coastal forests. Animal species are those of typical coastal oak areas such as the birds Rufous-sided Towhees (*Pipilo erythrophthalmus*), Gray Catbirds (*Dumetella carolinensis*), Common Yellowthroats (*Geothlypis trichas*), Ovenbird (*Seiurus aurocapillus*) and Black-and-white Warbler (*Mniotilta varia*). Small mammals such as meadow voles (*Microtus pennsylvanicus*), and white footed mice (*Peromyscus leucopus*), are common with gray squirrels (*Sciurus carolinensis*) common in mainland forests. Moths, butterflies, and other insects of the southeastern oak and oak-pine forest occur in the coastal forests.

Associated Rare Animals: Eastern Box Turtle SC”

Red Maple Swamp

Community ELCODE: CP1A2A1000 SRANK: S5

“Acidic forested swamps with red maple dominant in the overstory. Red maple swamps are the most common forested wetlands in Massachusetts. Environmental setting: Red maple swamps occur in a variety of physical settings. Golet et al. (1993) describe three basic types: hillside seeps and upland drainageways fed primarily by groundwater seepage and overland flow; seasonally flooded basin swamps in undrained basins; and alluvial swamps. The last category is classified separately in Massachusetts as Alluvial Swamp Forest. Depending on the physical setting, red maple swamps receive water through surface runoff, groundwater inputs, or stream and lake overflow. The hydrogeologic setting is the primary determinant of water regime and the plant community structure and composition. pH ranges from less than 4 to 7. Soils have shallow to thick organic layers overlying mineral sand s/silts.

Plant Communities

Vegetation Description: Red maple is usually strongly dominant in the overstory, and often provides more than 90% of the canopy cover. A variable mixture of tree species co-occurs with red maple, including yellow birch (*Betula alleghaniensis*), black gum (*Nyssa sylvatica*), white ash (*Fraxinus americana*), white pine (*Pinus strobus*), American elm (*Ulmus americana*), hemlock (*Tsuga canadensis*), pin oak (*Quercus palustris*), and swamp white oak (*Quercus bicolor*). The shrub layer of red maple swamps is often dense and well-developed, generally with >50% cover but it can be variable. In eastern Massachusetts, sweet pepperbush (*Clethra alnifolia*) and swamp azalea (*Rhododendron viscosum*) are the dominant shrubs. Other common shrubs are highbush blueberry (*Vaccinium corymbosum*) and common winterberry (*Ilex verticillata*), which are often dominant, and spicebush (*Lindera benzoin*). In richer areas, northern arrow-wood (*Viburnum dentatum* var. *lucidum*), speckled alder (*Alnus incana* ssp. *rugosa*), nannyberry (*Viburnum lentago*), and poison sumac (*Toxicodendron vernix*) also occur. The herbaceous layer is highly variable, but ferns are usually abundant. Cinnamon fern (*Osmunda cinnamomea*) is common; other ferns include sensitive fern (*Onoclea sensibilis*), royal fern (*Osmunda regalis*), marsh fern (*Thelypteris palustris*), and spinulose wood fern (*Dryopteris carthusiana*). Graminoids are common, mixed with a variety of herbaceous species. Some of the most common herbaceous species are skunk cabbage (*Symplocarpus foetidus*), false hellebore (*Veratrum viride*), spotted touch-me-not (*Impatiens capensis*), swamp dewberry (*Rubus hispidus*), marsh marigold (*Caltha palustris*), and the bugleweeds (*Lycopus* spp.).

Habitat values for red maple swamps that have two or three months of ponding and lack fish can function as vernal pools; these sections provide important amphibian breeding habitat.”¹⁰

¹⁰ Authors: P. Swain and J. Kearsley, Date: 7/1/99

Amphibians, Reptiles



Pickerel Frog, Blue-spotted Salamander, Snapping Turtle, Eastern Chipmunk

Amphibians

The study period precluded the opportunity to inventory any amphibians. Any assumptions of species occurrences on the site are made by occurrences in adjacent and similar habitats. Areas to the south by Farm Creek in Gloucester have breeding American Toads and Spring Peepers in flooded areas adjacent to saltmarshes. There may be the opportunity of Bull Frog and Green Frog to inhabit Clark Pond and the Mulholland Drive Pond. Further inventory is needed to assess the wetlands at the interior of the parcel for vernal pools and associated obligate species such as Wood Frog and the mole salamanders. Wood Frog, American Toad and Spring Peeper-choruses have been heard in this area by Wayne Castonguay along with Bull frog, Green Frog and Pickerel Frog.

Reptiles

Inventory in this area is confined to the casual observations by Wayne Castonguay. He has confirmed the breeding of Snapping and Painted Turtles. We may speculate that the site has Brown Water Snake, Garter Snake and Milk Snake.

Summary

Exemplary Property for Conservation

To summarize what we know about this piece of land it really comes down to location. This is a diverse mosaic of wetland and upland types on the coast with boundaries bridging two estuaries. It is part of one of this continent's premier migration stop-overs for shorebirds, waterfowl and landbirds. It is under severe threat because of its proximity to the ocean and due to mankind's desire to live near the ocean. It is currently in a degraded state from lack of management and without immediate attention it will only become less diverse from the intrusion of exotic plants.



Tiger beetle

There are seven natural community types on this property and three of them are rare: beach, emergent marsh and saltmarsh. The property historically accommodated 4 state-listed breeding birds: King Rail, American bittern, Least bittern, Pied-billed Grebe, and Sora. It still has the potential of attracting King Rail, Least bittern and Sora. More inventory work will confirm this. These habitats support a number of birds listed by the US Fish and Wildlife Service on the Birds of Conservation Concern (BCC). They are King Rail, Peregrine Falcon, Red Knot, Common Tern, Least Tern, Marsh Wren, Wood Thrush, Blue-winged Warbler, Prairie Warbler, Canada Warbler and Baltimore Oriole. This is breeding habitat for the King Rail, American Woodcock, Mallard, Gadwall, Virginia Rail and Green Heron. Black-crowned and Yellow-crowned Night-heron use the trees by the pond near Mulholland Drive for a daytime roost in the summer and early fall.

Summary

Additional inventory is required to confirm the occurrences of some breeding birds, all mammals, amphibians, reptiles and some groups of insects and aquatic invertebrates. There is, in my opinion, sufficient information to demonstrate that this property should be protected as wildlife habitat and managed for those species that are on the official lists of national and statewide concern.

Jim MacDougall March, 2005

Addendum

I asked Wayne Castonguay to comment on a draft of this report. Wayne is an ecologist who works for the Trustees of Reservations and has lived adjacent to this site for a number of years. His observations are obvious throughout the report but I wish to include his general impression of the property which supports the position that this property is extraordinary.

Wayne writes, *“I would further emphasize the unique landscape position of this parcel which contributes significantly to its ecological value: Great Neck is essentially a coastal island formed by two drumlins. This parcel consists of the valley and steep slope-sides between the two with an ocean bay, barrier beach, salt marsh and coastal freshwater pond on one end and extensive salt-marsh and another coastal freshwater pond on the other. The valley consists of predominately freshwater wetland (open emergent marsh, shrub swamp, forested swamp).*

I would further emphasize the significance of “Pasture Pond.” This is among the most ecologically significant areas in the county and easily among the best places to observe wildlife in the area. The pond is loaded with fish, waterfowl, and supports a small anadromous alewife population. The steep slopes around it are a major migratory sink. Peregrine falcons are routinely observed there. Amphibians include bull, green and leopard frogs. The surrounding trees is the best place in the county to observed black crown, green, and yellow crown heron (in summer, 2004, a quick inventory counted 60 adult and 65 fledgling black crown night herons.). Also, unlike Clark Pond, this pond and its surrounding habitats is located entirely within the parcel that’s part of the project.

Summary

The wooded slope-sides surrounding Clark and Pasture ponds are also a highly significant staging area for egrets. In one day in Early September, 2003, I counted over 300 snowy and American egrets roosting in the trees on the slopes around these ponds.

In the summary, I would remove the statement about degraded habitat. While Clark Pond certainly has issues and the entire area is under pressure from exotics (like everywhere), the parcel itself is in relatively good shape and is a tremendous wildlife habitat.”