

## Appendix C



USFWS

*American Woodcock*

## Species of Regional Conservation Concern

- Iroquois Refuge Species of Conservation Concern
- Habitat Requirements for Selected Species of Conservation Concern
- New York Natural Heritage Report on Rare Animals, Rare Plants, and Significant Ecological Communities

## Iroquois Refuge Species of Conservation Concern

Species*	Seasons on refuge <sup>1</sup>	Federal T&E <sup>2</sup>	New York T&E <sup>3</sup>	NY Comprehensive Wildlife Conservation Strategy Pritotities <sup>4</sup>	USFWS Birds of Management Concern <sup>5</sup>	BCR 13 <sup>6</sup>	Partners in Flight <sup>7</sup>	Shorebird Plan-Atlantic Flyway <sup>8</sup>	Waterbird Plan <sup>9</sup>	Waterfowl Plan <sup>10</sup>
<b>WATERBIRDS</b>										
American bittern	B, M-U		SC	X		H			H	
Black-crowned night heron	B, M-O			X		M			H	
Black tern	B, M-C		E	X		M			H	
Common tern	M-O		T	X	X	H			H	
Great egret				X					L	
King rail	M-R		T	X		H	IB		HI	
Least bittern	B, M-U		T	X		M			M	
Pied-billed grebe	B, M-C		T	X		M			M	
Virginia rail	B, M-U					M			L	
<b>WATERFOWL</b>										
American black duck	B-O, M			X	X	HH	IB			H (H)
Blue-winged teal	B, M-C					M				MH (ML)
Canada goose Atl/SJBP	M-A			X	X	HH				(H)
Canvasback	M-O			X	X	H				
Common goldeneye	M-O					HH				
Common merganser	M-U					M				L (L)
Greater scaup	M-O			X	X	H				(H)
Greater snow goose	M-O					M				
Green-winged teal	B, M									ML (ML)
Hooded merganser	B, M									H (L)
Lesser scaup	M-U			X	X	HH				(H)
Long-tailed duck	M-O			X		HH				
Mallard	B, M-C				X	M				H (M)
Northern pintail	B, M-C			X	X	H				M (M)
Redhead	B, M-O					M				
Ruddy duck	B, M-O			X						
Tundra swan	M-C					H				(H)
Wood duck	B, M-C			X	X	H				H (H)
<b>SHOREBIRDS</b>										
American golden plover	M-R			X	X	H		3		
American woodcock	B, M			X	X	H	IA	4		
Black-bellied plover	M-R			X		M		3		

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Dunlin	M-U			X		M		3		
Greater yellowlegs	M-C			X		M		4		
Hudsonian godwit	M-R			X	X	M		3		
Least sandpiper	M-U					M		3		
Pectoral sandpiper	M-O					M		2		
Sanderling	M-?			X		M		3		
Semipalmated sandpiper	M-C			X		M		3		
Short-billed dowitcher	M-O			X	X	H		4		
Solitary sandpiper	M-O					H		3		
Upland sandpiper	B, M		SC	X		M	IB			
Wilson's snipe	B, M-C					M		3		
<b>LANDBIRDS</b>										
Bald eagle	B, M		T	X	X					
Baltimore oriole	B, M					M	IIA			
Black-billed cuckoo	B, M			X	X	H	IIA			
Blue-winged warbler	B, M			X		H	IB			
Bobolink	B, M			X		M	IIA			
Brown thrasher	B, M			X		H				
Canada warbler	?			X	X	M	IB			
Cerulean warbler	B, M		SC	X	X	HH	IB			
Chimney swift	B, M					M				
Common nighthawk	B, M		SC	X						
Cooper's hawk	B, M		SC	X						
Eastern meadowlark	B, M			X		M				
Field sparrow	B, M					H	IIA			
Golden-winged warbler	B, M		SC	X	X	HH	IB			
Grasshopper sparrow	B, M		SC	X		M	IIC			
Henslow's sparrow	B, M		T	X	X	HH	IB			
Horned lark	M		SC	X						
Long-eared owl	W			X						
Northern flicker	B, M					M				
Northern goshawk	M		SC	X						
Northern harrier	B, M		T	X	X	M				
Osprey	B, M		SC	X						
Peregrine falcon	M-R		E	X	X					
Prothonotary warbler	B, M			X		M	IB			
Red-headed woodpecker	B, M		SC	X	X	M	IB			
Red-shouldered hawk	B, M		SC	X						
Rose-breasted grosbeak	B, M					M	IIB			
Rusty blackbird	M-U			X		M				
Scarlet tanager	B, M			X		M	IIA			

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Sedge wren	B, M		T	X	X		IIC			
Sharp-shinned hawk	B, M		SC	X						
Short-eared owl	M, W-O		E	X	X	M	IB			
Song sparrow	B, M					M				
Vesper sparrow	B, M-O		SC	X			VI			
Whip-poor-will	B, M		SC	X	X					
Willow flycatcher	B, M			X		M	IA			
Wood thrush	B, M			X	X	HH	IA			
Yellow-breasted chat	B, M		SC	X						
<b>MAMMALS</b>										
Eastern red bat	X			X						
Eastern small-footed bat	?			X						
Hoary bat	X			X						
River otter	X			X						
Silver-haired bat	X			X						
<b>AMPHIBIANS</b>										
Blue-spotted salamander	X		SC	X						
Jefferson salamander	X		SC	X						
Western chorus frog	X			X						
<b>REPTILES</b>										
Black rat snake	X			X						
Eastern massasuaga	?	C	E	X						
Eastern box turtle	X		SC	X						
Smooth green snake	X			X						
Snapping turtle	X			X						
Spotted turtle	X		SC	X						
Wood turtle	X		SC	X						

**KEY**

<sup>1</sup>Seasons on the refuge: B=Breeding, W=Wintering, M=Migration, A=Abundant, C=Common, O=Occasional, U=Uncommon, R=Rare, X=Resident

<sup>2</sup>Federal T&E = Federal Endangered Species List: T=Threatened, E=Endangered, C=Candidate, L=Least Concern

<sup>3</sup>State T&E= State of New York Threatened and Endangered Species List: T=Threatened, E=Endangered, SC=Special Concern.

<sup>4</sup>New York State Comprehensive Wildlife Conservation Strategy. X=Species of greatest conservation need

<sup>5</sup>U.S. Fish and Wildlife Service Birds of Management Concern for Region 5 (Northeast) 21 September 2005

<sup>6</sup>BCR 13 = Bird Conservation Region 13: Lower Great Lakes/St. Lawrence Plain. HH=Highest Priority, H=High Priority, M=Medium Priority (Hartley 2007)

<sup>7</sup>Partners in Flight Landbird Priorities for the Lower Great Lakes Plain (Dettmers and Rosenberg 2003). IA=High continental concern and high regional responsibility; IB=High continental concern and low regional responsibility; IIA=High regional concern; IIB=high regional responsibility; IIC=High regional threats

<sup>8</sup>Upper Mississippi Valley/Great Lakes Regional Shorebird Conservation Plan (Szalay et al. 2000) Revised 26 January 2009. 5=highly imperiled species; 4=species of high concern; 3=species of moderate concern; 2=species of low concern

<sup>9</sup>Upper Mississippi Valley/Great Lakes Watershed Conservation Plan. Priorities: HI=Highly Imperiled; H=High; M=Moderate; L=Low; NR=Not at Risk; TD=To be Determined

<sup>10</sup>North American Waterfowl Management Plan: Atlantic Coast Joint Venture Waterfowl Implementation Plan Revision, June 2005 Priorities: H=High; MH=Moderately High; M=Moderate; ML=Moderately Low; L=Low. Example: H(H) = Breeding (Non-Breeding).

## Habitat Requirements for Selected Species of Conservation Concern

### Freshwater Emergent Wetlands *High-Priority Habitat*

#### AMERICAN BITTERN (*Botaurus lentiginosus*)

(Poole 2005, Connecticut DEP 2009, USFWS 2009)

- **Associated Species:**
  - Sora, black-crowned night heron, king rail, common tern
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: migrates north to breed from mid-April to early May in most states in the northern half of the continental US, and provinces of southern Canada.
  - Wintering: Southeastern and Gulf States as far south as Central America and Cuba.
- **Habitat:**
  - Freshwater and saltwater wetlands: prefer freshwater wetlands with vegetation that provides protective cover and hosts a forage base of insects, small fish, amphibians, and small mammals.
  - Typically dominated by tall emergent or aquatic bed vegetation including wetland fringes, shorelines, bogs, swamps, and wet meadows.
- **Nesting:**
  - Females nest in wetland areas, usually on the ground or raised slightly on a platform of thick vegetation.
  - Nest is built with reeds, sedges, and similar plant material.
  - Will nest only on wetlands of 2.5 to 11 ha or larger.
- **Food:**
  - Frogs, salamanders, crayfish, water scorpions, diving beetles, dragonflies, killifish, pickerel, suckers, small eels, garter and water snakes, and occasionally voles.
- **Potential Limiting Factors/Threats:**
  - Human disturbance interferes with foraging.
  - Declines in water quality and subsequent changes in vegetative composition and structure.
  - Invasion by exotic species such as purple loosestrife or Phragmites which may reduce the abundance and diversity of species useful to bitterns and their prey.
- **Management:**
  - Preserve freshwater habitats, particularly large (>10 ha) shallow wetlands with dense growth of robust emergent's.
  - Develop standardized survey methodologies for monitoring population and habitat availability.

**VIRGINIA RAIL (*Rallus limicola*)**  
(Poole 2005)

- **Associated Species:**
  - Sora, black-crowned night heron, king rail, common tern
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: locally in North America from northern Washington across to the east coast, cutting through northern Ohio and southern Pennsylvania, extending down to northern Virginia and across to southeastern Texas and southern Arizona.
  - Wintering: predominantly along the East, West and Gulf coasts with large interior populations. From southwest British Columbia south through south Baja California and central Mexico.
- **Habitat:**
  - Freshwater marshes; occasionally inhabits salt marshes. Lives in dense emergent vegetation.
  - Shallow water, emergent cover, and substrate with high invertebrate abundance
  - Needs standing water, moist-soil, or mudflats for foraging.
- **Nesting:**
  - Nest usually placed above shallow water.
  - Basket of loosely woven vegetation, often with a canopy.
- **Food:**
  - Insects, insect larvae, other aquatic invertebrates, fish, frogs, small snakes, a variety of aquatic plants, and seeds of emergent plants.
- **Potential Limiting Factors/Threats:**
  - Spring temperatures may influence breeding and wintering distribution.
  - Competition with other rails (soras, king, and clapper rails) may influence density and habitat breadth.
  - Susceptive to toxic bioaccumulation.
  - Nests are lost or deserted due to flooding in some areas.
- **Management:**
  - Monitor Virginia rail populations.
  - Increase wetland cover of emergent perennial vegetation, while retaining 30-60 percent of the wetland in open water or mudflat to provide an optimal habitat.

**BLACK TERN** (*Chlidonias niger*)  
(Poole 2005, USFWS 2009a)

- **Associated Species:**
  - Sora, black-crowned night heron, king rail, common tern
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: Northern United States through central Canada. Sparse on northeast and along southern edge of the breeding range.
  - Wintering: Mainly marine and marine coastal areas of Central America and northern South America, both Pacific and Caribbean.
- **Habitat:**
  - Shallow freshwater marshes with emergent vegetation, including prairie sloughs, margin lakes, occasionally river or island edges.
  - In the winter the habitat is largely marine with most birds found within 30 km of land and some up to 3,500 km offshore.
- **Nesting:**
  - Location has about 25-75 percent vegetation to open water. Nests are only 2-6 cm above the surface of the water, and shallow in depth. Located within approximately 2 m of open water.
  - Builds nests on a floating substrate of matted vegetation, often cattail or bullrush.
  - Woody debris such as posts, snags, or floating logs is an important component of nesting habitat for perching, breeding, and feeding young.
- **Food:**
  - Variety of aquatic insects, particularly dragonflies, damselflies, mayflies, and caddis flies, as well as small fishes and crustaceans.
- **Potential Limiting Factors/Threats:**
  - Nests and young are readily lost to strong winds, rising water levels, or even to active foraging by waterfowl around a nest.
  - Drought conditions can expose nests to mammalian predation by raccoons, minks, and rats; avian predation includes raptors, bitterns, gulls, crows, and blackbirds.
  - Loss and degradation of wetlands for both breeding and migration stopover.
- **Management:**
  - Target protection for large (>18.9 ha) wetlands within high-density wetland complexes.
  - Wetlands managed for waterfowl are attractive if flooding/drawdown regimes preserve appropriate emergent vegetation, nesting substrate, and stable water levels through the nesting season.
  - Muskrat herbivory should be encouraged as a means to modify ratios of vegetation cover to open water, providing additional nesting substrate and foraging habitat.

**LEAST BITTERN** (*Ixobrychus exilis*)  
(Poole 2005)

- **Associated Species:**
  - Sora, black-crowned night heron, king rail, common tern
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: Southeastern Canada down through the United States and Mexico to Costa Rica.
  - Wintering: Along the Atlantic coastal plain from Maryland and Virginia south to Louisiana and Texas, with peak numbers in southern Florida along the Rio Grande valley, the lower Colorado River, and Baja California. Many also overwinter in the Greater Antilles and eastern and Central America.
- **Habitat:**
  - Breeds in low-lying areas associated with large rivers, lakes and estuaries of the United States.
  - Freshwater and brackish marshes with dense, tall growths or aquatic or semi-aquatic vegetation interspersed with clumps of woody vegetation and open water.
  - Occasionally found in salt marshes and mangrove swamps.
  - Are found in dense tall stands of cattail and sedge bogs.
  - Overwintering birds occur mainly in brackish and saline swamps and marshes.
- **Nesting:**
  - Nest is placed roughly a foot above water, usually on the base of dried plants. Create a canopy by pulling tall marsh plants over and crimping them in place. Placed in dense, tall stands of vegetation.
- **Food:**
  - Small fishes, including top minnows, mud-minnows, sunfishes, and perches. Also snakes, frogs, tadpoles, salamanders, leeches, slugs, crayfish, insects (mainly Odonata and Orthoptera), small mammals (shrews and mice), and vegetable matter.
- **Potential Limiting Factors/Threats:**
  - Destruction of wetland habitat.
  - Invasion of purple loosestrife and Phragmites may alter and degrade marshland habitats.
- **Management:**
  - Protect wetland habitats, particularly large (>10 ha), shallow wetlands with dense growth of robust, emergent vegetation.

**PIED-BILLED GREBE** (*Podilymbus podiceps*)  
(Poole 2005, Seattle Audubon Society 2009)

- **Associated Species:**
  - Sora, black-crowned night heron, king rail, common tern
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: southern Canada and most of the central states down to Arizona and northern Texas, through southern Ohio and most of the Northeast states.
  - Wintering: Northern Idaho, Washington, Arizona, southern California, west coast of Mexico, and Middle America to Panama.
- **Habitat:**
  - During breeding season they are found at low elevations in ponds, lakes, and marshes.
  - During the winter they are found on both fresh and salt water, although more likely to be found on fresh water.
  - Wetlands used have relatively intricate shoreline edge, greater areas of aquatic bed vegetation, and emergent vegetation.
- **Nesting:**
  - Built in shallow water in a marsh, either floating or built up from the bottom.
  - Dense mat of plant material anchored to emergent vegetation. The nest can be approached from under water.
- **Food:**
  - Insects, fish, and other aquatic creatures
  - Bills are adapted to crushing large crustaceans, but also prey on a wide variety of aquatic creatures including fish.
- **Potential Limiting Factors/Threats:**
  - Habitat loss
  - Disturbed nests / human impact
- **Management:**
  - Preserve relatively large (>10 ha) wetlands with a mixture of dense, robust emergent's, submergent vegetation, and open water.
  - Periodically reverse vegetative succession and open up extensive stands of emergent vegetation while maintaining suitable habitats nearby to serve as alternative nesting areas during wetland manipulation.

**AMERICAN BLACK DUCK** (*Anas rubripes*)  
(Poole 2005)

- **Associated Species:**
  - Canvasback, greater yellowlegs
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: northeast, with the greatest concentration of birds between New England and Nova Scotia. From there, it breeds across Ontario and Quebec, and even as far north as the Hudson Bay in Manitoba.
  - Wintering: along the Atlantic coast as far south as Florida, but also west to the Mississippi and points between.
- **Habitat:**
  - Nesting: Palustrine emergent, broad-leaved deciduous forested and broad leaved deciduous scrub-shrub types.
  - Foraging: Ephemeral pools, streams with sandy or stony bottoms interspersed with invertebrate-rich detrital patches.
  - Brood-rearing: Palustrine emergent, scrub-shrub and deciduous forested wetlands. In Maine, they prefer emergent wetlands over evergreen scrub-shrub wetlands;
  - Brood habitat: Emergent and floating leaved aquatics with abundant invertebrates; females with broods use entire surfaces of shallow, relatively permanent wetlands with emergents (e.g., reed grasses [*Calamagrostis* spp.], sedges [*Carex* spp.]), floating-leaved plants (e.g., cow lily [*Nuphar* spp.], pondweeds [*Potamogeton* spp.]), or scrub-shrub vegetation (leatherleaf [*Chamaedaphne calyculata*], sweet gale [*Myrica gale*]) that support abundant invertebrates.
- **Nesting:**
  - Nests on ground, well-concealed in diverse upland sites.
  - Composed of vegetation available on site. Materials (grass, twigs, leaves, stems, conifer needles) are added during egg-laying.
- **Food:**
  - Seeds, roots, tubers, stems, and leaves of moist soil and aquatic plants. Eats corn or other grains when available.
  - Animal food includes aquatic insects, crustaceans, mollusks, and fish, especially in marine habitats.
- **Potential Limiting Factors/Threats:**
  - Hybridization with mallards
  - Acid rain
  - Loss of habitat to development
  - Overhunting

- **Management:**

- Careful monitoring regarding the hunting of this popular game bird to determine future hunting needs.

**BLUE-WINGED TEAL** (*Anas discors*)  
(Poole 2005, Seattle Audubon Society 2009)

- **Associated Species:**

- Canvasback, greater yellowlegs

- **Seasonal Use of Refuge:**

- Breeding, migration

- **Distribution:**

- **Breeding:** over a large portion of North America but occurs irregularly or at low densities in many portions of range. Highest breeding densities occur in mixed-grass prairie and parklands of north central U.S. and Prairie Provinces of Canada, where species is often the most abundant breeding duck.
- **Wintering:** winters on the coast of California along the lower Colorado River in southeast Arizona, in southern New Mexico (lower Rio Grande and lower Pecos Rivers), in central and southern Texas, the southern half of Louisiana, along the Mississippi River north to southwestern Tennessee. Throughout all of Mexico into Central America and throughout Florida.

- **Habitat:**

- Marshes, shallow ponds, and lakes
- Seasonal and permanent wetlands

- **Nesting:**

- On the ground in prairies, coastal meadows, and other open areas. Nests are usually near water, but may be several hundred yards away.
- In a shallow depression with some grass or weeds, lined with down and usually well concealed by vegetation.

- **Food:**

- Vegetative parts of aquatic plants (algae, duckweeds, pondweeds, etc.), seeds (sedges, pondweeds, grasses, etc.), and large amounts of aquatic invertebrates found in shallowly flooded wetlands.

- **Potential Limiting Factors/Threats:**

- Exposed to harmful pesticides used in their wintering areas (Central and South America).
- Wetland degradation
- Disturbance at nest and roost sites

- **Management:**

- Breeding-pair abundance is greater in areas with a high proportion of restored grasslands than in areas with a high proportion of agricultural cropland.

- Nest success higher in areas where Conservation Reserve Program (CRP) and grassland cover is abundant.

**MALLARD** (*Anas platyrhynchos*)  
(Poole 2005)

- **Associated Species:**
  - Canvasback, greater yellowlegs
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: northwestern Canada to southeastern Canada, throughout all of the United States besides for the very southern borders of the country.
  - Wintering: all of US including the southern borders of the country and into Mexico.
- **Habitat:**
  - Nests in a wide variety of situations with dense cover, including grasslands, marshes, bogs, floodplains, dikes, roadside ditches, pastures, cropland, shrubland, fence lines, rock piles, forests, and fragments of cover around farmsteads.
  - Shallow wetlands such as marshes, small ponds, flooded basins, flooded alluvial plains, and flooded agricultural fields.
- **Nesting:**
  - Nest found in depression scraped in the ground. Lined with vegetation and down from female's breast.
  - Prefer to nest in grass fields where the residual vegetation is > 1 ft tall and dense enough to provide overhead cover, must have some lateral and/or overhead cover
  - May nest side-by-side, nests are usually scattered throughout fields at densities ranging from 1 to 8 nests per 40 acres.
  - Also nest over water on muskrat houses and clumps of cattails if they are available.
- **Food:**
  - During breeding season, eats mostly animal foods, including insects such as midge larvae and other Diptera, dragonflies, and caddisfly larvae, aquatic invertebrates such as snails and freshwater shrimp, and terrestrial earthworms.
  - Outside of breeding season, diet predominately seeds from moist-soil plants, acorns, aquatic vegetation, and cereal crops, and wheat.
  - Agricultural foods dominate diet during autumn migration and often during winter, depending on relative availability of natural versus agricultural foods.
- **Potential Limiting Factors/Threats:**
  - Hunting
  - Pesticides and other contaminants/toxins
  - Ingestion of lead

- Degradation of habitat
- Disturbance of nest and roost sites
- **Management:**
  - Conservative hunting regulations during population declines.
  - Enhancement of nesting cover. Used to increase nesting success by establishing dense nesting cover on previously cultivated lands.
  - Controlling wetland levels or cover by cutting, tilling, blasting, or burning vegetation.

**NORTHERN PINTAIL** (*Anas acuta*)  
(Poole 2005, Ducks Unlimited 2009)

- **Associated Species:**
  - Other waterfowl
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: Alaska, the central Canadian Arctic, and western Greenland south to the western and central USA.
  - Wintering: Central Valley of California, but some continue south to the west coast of Mexico. Pintails using the Central Flyway winter in the Texas Panhandle and the Gulf Coast of Texas and western Louisiana. The majority of pintails using the Mississippi Flyway winter in Louisiana with smaller numbers wintering in Arkansas, Tennessee, Mississippi, and Alabama.
- **Habitat:**
  - Nests in open country with shallow, seasonal, or intermittent wetlands and low vegetation. Nests on islands in shallow basins or, in Alaska, on coastal barrier islands, but most nests are on mainland.
  - Prairie Pothole Region, pairs prefer shallow ephemeral to semi-permanent wetlands with emergent vegetation and low upland cover.
  - Males are commonly found on large, shallow marshes with extensive emergent and submersed vegetation that provide abundant cover, food and minimal disturbance.
  - Spring and fall migration, use shallow wetlands when not frozen, larger lakes and reservoirs, and various estuarine and riverine wetlands.
- **Nesting:**
  - Nests in open country with shallow, seasonal wetlands and low vegetation.
  - Bowl of grasses or other vegetative materials from around nest.
  - May use old burrows or natural depressions; completed nest may be flush with or below ground level.
  - In emergent wetland vegetation, may build up bowl on layer of dead vegetation from immediate area.

- **Food:**
  - Grain (rice, wheat, corn, barley), moist-soil and aquatic plant seeds, pond weeds, aquatic insects, crustaceans, and snails.
- **Potential Limiting Factors/Threats:**
  - Degradation of habitat
  - Disturbance at nest and roost sites
- **Management:**
  - Preserve wetlands to ensure proper nesting areas.

**ATLANTIC-SOUTHERN JAMES BAY CANADA GOOSE** (*Branta canadensis*)  
(Bellrose, 1978, Poole 2005)

- **Associated Species:**
  - Other waterfowl
- **Seasonal Use/Refuge Habitats:**
  - Migration
- **Distribution:**
  - Breeding: Southern James Bay.
  - Wintering: Ontario, eastern Michigan, Ohio, Indiana, Kentucky, Tennessee and Alabama.
- **Habitat:**
  - Breeds in coastal areas along a gradient of soil moisture, salinity, and drainage from coastline to more elevated inland areas. Most geese nest in elevated inland areas, including banks of tidal rivulets in lower intertidal zone dominated by goose grass, seaside plantain and sea-milkwort; along edges of pools in mid- and upper intertidal zone dominated by sea-milkwort and red fescue and emergent species such as mares-tail and marsh spike-rush.
  - Breeds in or near impoundments in refuges and other managed habitats.
  - Habitat for spring and fall migration include: lakes, slow-moving rivers, freshwater marshes, coastal salt marshes, bays, extensive mud and sand tidal flats, sand and gravel bars, shallow brackish ponds, upland heath, grassy fields, pastures, and agricultural fields.
  - Winters in coastal areas. Inhabits mudflats, shallow tidal waters, and salt-water marshes with extensive beds of bulrush and cord grass near or adjacent to agricultural fields of grain or cover crops; inland, on wet grasslands, freshwater marshes, lakes, reservoirs, and rivers within easy flying distance of agricultural fields.
- **Nesting:**
  - Atlantic and Southern James Bay Canada Geese do not breed on Iroquois Refuge.
- **Food:**
  - Grasses, sedges, or other green monocots during periods of increase in lean body mass.

- Stems and leaves of *Carex mackenziei* and spike-rush, sea-lyme grass, leaves of burreed, and seeds and berries of black crowberry and mountain cranberry.
- **Potential Limiting Factors/Threats:**
  - Unfavorable weather conditions in northern nesting grounds cause poor annual production of young.
  - Low survival rate caused largely by hunting pressures.
- **Management:**
  - In U.S., identification of critical habitats, population objectives, and approaches to harvest regulation are recommended through a series of population-management plans for most populations.

**LEAST SANDPIPER** (*Calidris minutilla*)

(Poole 2005, Seattle Audubon Society 2009, whatbird.com 2009)

- **Associated Species:**
  - Other shorebirds
- **Seasonal Use of Refuge:**
  - Migration
- **Distribution:**
  - Breeding: Alaska to Labrador and, in the east, south to Nova Scotia and, recently, Massachusetts.
  - Wintering: southern U.S. to central South America and the West Indies.
- **Habitat:**
  - Breeds in mossy or wet grassy tundra, occasionally in drier areas with scattered scrubby bushes.
  - Migrates and winters in wet meadows, mudflats, flooded fields, shores of pools and lakes, and, less frequently, sandy beaches.
- **Nesting:**
  - Least Sandpipers do not breed on Iroquois Refuge.
- **Food:**
  - Fly larvae and other insects
  - On the coast, they eat small crustaceans, snails, and other marine creatures.
- **Potential Limiting Factors/Threats:**
  - Habitat destruction; migratory staging areas and wintering areas are concentrated.
- **Management:**
  - Create optimal shorebird habitat for foraging.

**PECTORAL SANDPIPER** (*Calidris melanotos*)  
(Poole 2005, Seattle Audubon Society 2009)

- **Associated Species:**
  - Other shorebirds
- **Seasonal Use of Refuge:**
  - Migration
- **Distribution:**
  - Breeding: tundra of North America and Siberia
  - Wintering: southern South America
- **Habitat:** (Bird Web)
  - During migration they can be found in fresh- and saltwater marshes, on mudflats, or drying lakes and wet meadows.
  - Breeds in dry edges of well-vegetated wetlands.
  - Winters in grasslands.
- **Nesting:**
  - Pectoral Sandpipers do not breed on Iroquois Refuge.
- **Food:**
  - Eats flies and fly larvae, spiders, and seeds.
  - During migration, they eat small crustaceans and other aquatic invertebrates, although insects may still be the major food.
- **Potential Limiting Factors/Threats:** (Cornell Lab of Ornithology online)
  - Loss of tall grass prairie and the draining of seasonal pools in the Great Plains.
  - Loss or degradation of varied migratory stopover habitat in North America, the Caribbean, and in South America.
  - Climate change affects high arctic tundra breeding area.
- **Management:**
  - Management of wetland and agricultural units that maintain shallowly flooded fields (1–15 cm deep) during migratory periods provide good foraging sites.

**SEMPALMATED SANDPIPER** (*Calidris pusilla*)  
(Poole 2005)

- **Associated Species:**
  - Other shorebirds
- **Seasonal Use of Refuge:**
  - Migration
- **Distribution:**
  - Breeding: low arctic from Alaskan coast across Canada to northern Quebec, central Baffin Island and northern Labrador.
  - Wintering: northern and central coasts of South America, primarily Suriname and French Guiana. Fewer in West Indies, Pacific coast of Central America, and very few in southern South America and Florida.
- **Habitat:**
  - Breeds in low and sub-arctic tundra, near water, drained upland tundra with low vegetation near small ponds, lakes, and streams; moist or wet sedge-grass or heath tundra; sandy areas along rivers; and pond-dotted sand dunes.
  - Stages (flock in preparation for migration) in areas of shallow fresh or salt water and little vegetation, muddy intertidal zones, or along edges of lakes, usually on soft silt/clay mudflats, or at junction of short-grass marsh and tidal flats.
  - Winters in areas of shallow lagoons with dead mangroves; also low tidal zone of mudflats, on wet or dry mud.
- **Nesting:**
  - Semi-palmate Sandpipers do not breed on Iroquois Refuge.
- **Food:**
  - Benthic invertebrates (small arthropods, mollusks, and annelids) in fresh or salt water, also some terrestrial invertebrates (insects and spiders).
- **Potential Limiting Factors/Threats:**
  - Habitat degradation
- **Management:**
  - Preserve nesting habitat.

**SOLITARY SANDPIPER** (*Tringa solitaria*)  
(Poole 2005, Seattle Audubon Society 2009)

- **Associated Species:**
  - Other shorebirds
- **Seasonal Use of Refuge:**
  - Migration
- **Distribution:**
  - Breeding: from central Canada through northern Canada and Alaska.
  - Wintering: from southern Texas, Tamaulipas on the Atlantic slope of Mexico, southern Zacatecas and from Sinaloa on the Pacific slope south through Middle America, and virtually throughout South America, including Netherlands Antilles, Trinidad.
- **Habitat:**
  - Breeds in taiga, nesting in trees in deserted songbird nests.
  - Winters along freshwater ponds, stream edges, temporary pools, flooded ditches and fields, more commonly in wooded regions, less frequently on mudflats and open marshes.
- **Patch/Territory Size:**
  - Males defend territories against non-specific's, particularly other males, chasing away intruders.
  - May be territorial all year.
  - Territory can be large; up to 0.5 sq. km.
- **Nesting:**
  - Solitary Sandpipers do not breed on Iroquois Refuge.
- **Food:**
  - Aquatic and terrestrial invertebrates are the most common food of the Solitary Sandpiper. These include insects and insect larvae, spiders, worms, and tadpoles.
- **Potential Limiting Factors/Threats:**
  - Loss of habitat
- **Management:**
  - Maintain good habitat for migration.

**WILSON'S SNIPE** (*Gallinago gallinago*)  
(Poole 2005, Seattle Audubon Society 2009)

- **Associated Species:**
  - Other shorebirds
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: all of Canada and part of the Northern United States.
  - Wintering: central and southern US, Mexico, and Central America.
- **Habitat:**
  - Breeds in sedge bogs, fens, willow and alder swamps, and marshy edges of ponds, rivers, and brooks. Requires soft organic soil rich in food organisms just below surface, with clumps of vegetation offering both cover and good view of approaching predators. Avoids marshes with tall, dense vegetation.
  - Winters in marshes (including cattails), swamps, wet meadows, wet pastures, wet fallow fields, and marshy edges of streams and ditches.
- **Nesting:**
  - Shallow depression lined with moss, leaves, and grass, sometimes with plants from above woven in a canopy.
- **Food:**
  - Eats mostly larval insects, but also takes crustaceans, earthworms, and mollusks. Also eat leaves and seeds.
- **Potential Limiting Factors/Threats:**
  - Loss of wetlands continues to reduce available habitat.
- **Management:**
  - Preserve wetlands to ensure proper breeding habitat.

**BALD EAGLE** (*Haliaeetus leucocephalus*)  
(Poole 2005)

- **Associated Species:**
  - Osprey
- **Seasonal Use/Refuge Habitats:**
  - Breeding, migration, winter
- **Distribution:**
  - Breeding: associated with aquatic habitats (coastal areas, rivers, lakes, and reservoirs) with forested shorelines or cliffs in North America. Extensive breeding populations in Alaska, and Canada. Extensive breeding populations along the Atlantic Coast from Florida (extending south to Florida Keys). Extensive breeding populations in Great Lakes states (Michigan, Wisconsin, and Minnesota) and Pacific Northwest (n. California, Oregon, and Washington). Breeds in all other contiguous U.S. states except Rhode Island and Vermont.
  - Wintering: majority of wintering population located in lower 48 states, coastal Canada and Alaska.
- **Habitat:**
  - Breeds in forested areas near large bodies of water.
  - Winters in coastal areas, along large rivers, and large unfrozen lakes.
- **Nesting:**
  - Associated with fishable waters.
  - River nests sites are close to the shores of rivers with large aquatic areas and little forest edge.
  - Lake nest sites are near water, had super dominant trees, and little overall human disturbance.
  - Large nests of sticks lined with finer woody materials. Reused over many years. Placed in large trees, usually the largest in the area. Rarely nests are found on ground or cliff.
- **Food:**
  - Uses birds and mammals often as carrion, especially in winter.
  - Eats a great variety of aquatic and terrestrial mammals, including muskrats and hares, reptiles and amphibians, crustaceans, and a variety of birds, including many species of waterfowl, gulls, and even Great Blue Herons.
- **Potential Limiting Factors/Threats:**
  - Degradation of habitat: breeding and wintering.
- **Management:**
  - Limit human disturbance.

**Bottomland Hardwood Forest *High-Priority Habitat***

**WOOD DUCK (*Aix sponsa*)**  
(USGS 2009)

- **Associated Species:**
  - Prothonotary warbler, Baltimore oriole, rusty blackbird, northern flicker, bats, river otter
- **Seasonal Use/Refuge Habitats:**
  - Breeding, migration
- **Distribution:**
  - Breeding: western North America from southern British Columbia and southwestern Alberta south to central California and western Montana; in eastern North America from east-central Saskatchewan east to Prince Edward Island and Nova Scotia south (east of the Rockies) to central and southeastern Texas and the Gulf Coast.
  - Wintering: in the East, winters primarily in the southern parts of the breeding range. Wintering Birds are increasingly found in n. Mexico, extending south to central Mexico, sporadically south to Veracruz and Yucatán Peninsula.
- **Habitat:**
  - Wide variety of habitats: creeks, rivers, overflows, bottomlands, swamps, marshes, beaver and farm ponds. Although swamps, marsh, and overflow areas may provide better habitat than streams, the extensive distribution of streams creates the single most important habitat for breeding birds. Current data suggest that structure and use of habitats are similar among seasons. Freshwater wetlands with an abundance of vegetative cover are important habitats in all seasons.
  - Wood ducks nest in woodland areas along lakes, rivers, and vegetated wetland areas. During the winter months, wood ducks inhabit bottomland hardwood wetlands, beaver ponds and flowages, river oxbows, meanders and backwaters, and other inland freshwater forested wetland areas. Habitat areas chosen by wood ducks are commonly used by other waterfowl species such as black ducks, hooded mergansers, and ring-necked ducks. High-quality wood duck habitat is intricately linked to preservation and management of old growth timber along river corridors and availability of nesting sites.
- **Nesting**
  - Cavity nester, but does not excavate cavity; instead uses preformed cavities. In forested areas, female selects nest sites near canopy openings. Rarely nests on ground.
  - Mature forests are needed for development of trees with suitable cavities. Birds prefer sites close to or over water and near good brood-rearing areas; depending on availability of cavities, will use nest sites within 2 km of water. Most cavities (> 60 percent) suitable for Wood Ducks develop when branches break and permit subsequent heart rot of the trunk. Abandoned woodpecker cavities (e.g., Pileated Woodpecker) are used infrequently. Trees species providing nest cavities include various oaks, maples, and ashes, quaking aspen (*Populus tremuloides*), sycamore (*Platanus occidentalis*), American beech (*Fagus grandifolia*), American elm (*Ulmus americana*), bald cypress (*Taxodium distichum*), tupelo, and black gum.

- **Food:**
  - Wood Duck is an omnivore with a broad diet. Seeds, fruits, and aquatic and terrestrial invertebrates are main foods taken (similar to many dabbling ducks). Food for young birds and adults differs dramatically.
  - The early diet of ducklings consists largely of insects, aquatic invertebrates, small fish, and other high-protein animal material. After six weeks of age, the young switch to plant foods until their diet consists of approximately 90 percent vegetative material, primarily aquatic plants such as algae, watermeal, watershield, sago pondweed, and duckweed. Adult wood ducks feed on a variety of nuts and fruits, aquatic plants and seeds, and aquatic insects and other invertebrates. Insects and aquatic invertebrates are particularly important food items of adult hens during egg laying in spring. Acorns and other forest mast are important fall and winter foods. Wood ducks feed primarily in shallow water areas, but will also forage on the forest floor for seeds, acorns, and nuts.
- **Potential Limiting Factors/Threats:**
  - Not enough natural nesting sites, loss of habitat, and over hunting.
- **Management:**
  - Natural cavities are scarce in some areas, and nest boxes have been used widely to supplement natural cavities.
  - Recommend habitat management measures include: (1) eliminate stream channelization; (2) establish greenways of timber and shrubs along stream banks that would reduce erosion and provide food, cover, and nest sites; (3) reduce drainage of wooded wetlands and bottomland forests; (4) control water levels by levees and weirs to enhance food availability of moist soil plants and mast in bottomland hardwoods in fall and winter; (5) encourage development of beaver and farm ponds; and (6) establish predator-resistant nest houses where food and cover resources warrant this approach.

**CERULEAN WARBLER (*Dendroica cerulea*)**  
(Poole 2005)

- **Associated Species:**
  - Prothonotary warbler, Baltimore oriole, rusty blackbird, northern flicker, bats, river otter
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: southeastern Nebraska across the southern Great Lakes region to southern Ontario, southwestern Quebec, and western New England, south to northern Texas, Arkansas, northern Alabama, and northern Georgia.
  - Wintering: primarily on the eastern slopes of the Andes from Colombia and Venezuela through Ecuador to Peru. Relatively few are found elsewhere during the winter, though a small population can be found in the Tepui region of Venezuela.
- **Habitat:**
  - Large, contiguous forest tracts composed of structurally matured hardwoods with a high variably closed canopy. Establish territories near interior forest gaps.

- Tree size is important, both height and diameter at breast height (DBH). Almost always found above the midpoint of a tall tree, often in the canopy and are usually found in the stands where most trees fall into the larger DBH classes.
- Specific forest types vary throughout the species' range and include bottomland hardwood and riparian forests (especially with tall sycamores or cottonwoods), dry ridgetops with mature oaks and hickories, mesic cove forests with tulip-polar and other southern hardwoods, red-maple swamps, and lake margins.
- **Nesting:**
  - The nest is usually placed 6-25 feet from the bole of a large tree, saddled on a large, lateral branch and sometimes attached to a small protruding twig. Most nests are located from 10-40 feet high and can range to over 65 feet.
  - Nests are most often found in oaks, elms and American sycamore.
  - The shallow cup is constructed by a female of finely woven grass, plant stems/fibers, tree bark, mosses, and lichens. The entire structure is bound together on the outside with spider silk. The cup is lined with plant fibers and moss.
- **Food:**
  - Includes adult and immature insects such as; wasps, beetles, weevils, caterpillars, ants, sawflies, and locusts.
- **Potential Limiting Factors/Threats:**
  - Because of its small overall range and population, its dependence on mature bottomland and ridgetop forests and rapid deforestation on its tropical wintering grounds causes conservation concerns.
  - Sensitive to forest fragmentation.
- **Management:**
  - Need a better understand of precise habitat requirements, area sensitivity and response to land-use practices and how these vary geographically.
  - Identify and protect important breeding sites and habitat.

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## **Grasslands Moderate-Priority Habitat**

### **BOBOLINK** (*Dolichonyx oryzivorus*) (Poole 2005)

- **Associated Species:**
  - Eastern meadowlark, horned lark, sedge wren
- **Seasonal Use/Refuge Habitats:**
  - Breeding, migration
- **Distribution:**
  - Breeding: breeds in U.S. and Canada from British Columbia and Alberta in west to w. Newfoundland in east, and as far south as West Virginia. Breeds more or less continuously throughout this range wherever suitable habitat exists; distribution is patchy in western and southern portions of breeding range.
  - Winter: in South America east of Andes principally from eastern Bolivia and southwestern Brazil south through Paraguay and northeastern Argentina to Buenos Aires. Small numbers also occur along the coast of Peru, and as far south as northern Chile. Full winter range may include broader area, but principal wintering area as described above.
- **Habitat:**
  - Short and tall, particularly graminoid cover.
  - Chooses sites with increased tall graminoid, tall forb, and blueberry cover, and reduced tall shrub cover.
  - Prefers a mixture of grasses and broad-leaved forbs.
  - Densities significantly higher in fields with relatively low amounts of total vegetative cover, low alfalfa cover, and low total legume cover. These vegetative characteristics occur in hay fields  $\geq 8$  yr old.
- **Nesting:**
  - Nests are often placed beneath forbaceous growth, which provides shading and temperature modulation.
  - On ground; outer wall of dead grass with central lining of fine grass or sedges. May have canopy of dead grass hanging over top.
- **Food:**
  - Breeding season: weed seeds, a variety of larval and adult insects, spiders, harvestmen.
  - Migration and winter periods: wild and domesticated rice, oats, other small grains, corn, tassels, weed seeds, occasional insects. Young are fed exclusively invertebrates.
- **Potential Limiting Factors/Threats:**
  - Loss of habitat, predation and human disturbance.
- **Management:**

- Fields should be mowed annually to maintain breeding habitat, but mowing should be delayed until early Jul to minimize impacts on fledglings. Even later mowing would allow fledging of birds in re-nesting situations.
- Natural prairies can be managed by prescribed burning, but this should be done after one nesting season or at least several weeks prior to arrival of adults in spring.

**GRASSHOPPER SPARROW** (*Ammodramus savannarum*)  
(Poole 2005)

- **Associated Species:**
  - Eastern meadowlark, horned lark, sedge wren
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: mostly in central and eastern United States.
  - Wintering: southeastern lower states of United States and Mexico.
- **Habitat:**
  - Generally prefers moderately open grasslands and prairies with patchy bare ground; selects different components of vegetation, depending on grassland ecosystem. More likely to occupy large tracts of habitat than small fragments.
  - Dry grassy fields, hayfields, overgrown pastures and cultivated fields. Prefers habitat that is not extensively brushy.
- **Nesting:**
  - Cup of grass stems and blades, very well concealed on the ground. Usually has a dome made of overhanging grasses with a side entrance.
- **Food:**
  - Insects, including grasshoppers (staple), beetles, caterpillars, and crickets; spiders, earthworms, snails, weed seeds, grass seeds, waste grain.
- **Potential Limiting Factors/Threats:**
  - Declining throughout range from habitat loss, fragmentation, and degradation.
- **Management:**
  - Three primary management techniques have been used and are recommended for this species: prescribed burning, grazing, and mowing. Each has different impacts depending on the type of grassland ecosystem.
  - Mowing: Early-season mowing of hayfields and other agricultural lands is generally responsible for major nest failure of grassland birds, including Grasshopper Sparrows. In general, contemporary farming practices cut hayfields more frequently, and the first cuttings occur 1–3 wk earlier in spring than they did 50 yr ago; these practices have had significant negative impacts on nesting success of grassland birds. Deferred mowing on publicly owned lands would provide improved breeding opportunities for Grasshopper

Sparrows and other grassland birds. Incentives to encourage private farmers to defer mowing should be developed.

- Grazing: In more lush grassland habitats, i.e., tall grass prairie and eastern hayfields, light to moderate grazing is generally beneficial to Grasshopper Sparrow.
- Prescribed Burning: Grasshopper Sparrow generally prefers large, recently burned grassland tracts >1 yr after fire.

**HENSLOW'S SPARROW** (*Ammodramus henslowii*)  
(Poole 2005)

▪ **Associated Species:**

- Eastern meadowlark, horned lark, sedge wren

▪ **Seasonal Use of Refuge:**

- Breeding, migration

▪ **Distribution:**

- Breeding: breeding range is shrinking in many areas (especially northeast) and apparently increasing in others (mostly west). Minnesota; Wisconsin; Michigan; Ontario, but declining and now much reduced New York: almost throughout, except Adirondack Mtns., and Long Island regions; Nebraska; Kansas; Oklahoma; Iowa; Missouri; Arkansas; Illinois; Indiana; Ohio; Kentucky; W. Virginia; Pennsylvania; Maryland; N. Carolina; Virginia.
- Wintering: given secretive habits, winter range not precisely known, but appears to winter largely in se. U.S. Winter range includes e. Texas, s. Louisiana, s. Mississippi, s. Alabama, Florida (except for southern tip), s. Georgia, e. South Carolina, and se. North Carolina. Northern limit unclear, but extends north at least to s. Arkansas.

▪ **Habitat:**

- Habitat can be characterized as relatively large fields consisting of tall, dense grass, a well-developed litter layer, standing dead vegetation, and sparse or no woody vegetation. Habitat also usually dominated by grasses and has scattered forbs for singing perches.

▪ **Nesting:**

- An open bowl of loosely woven dry grasses, placed in layer of grass litter just off the ground.
- Nests typically placed among layers of thick litter about 2 - 4 cm off ground. In areas with little litter, nests generally placed within large clumps of grass close to ground. Deep litter may contribute to higher nesting success.

▪ **Food:**

- Insects, mostly grasshoppers, and beetles

▪ **Potential Limiting Factors/Threats:**

- Pesticides and/or herbicides used in habitat
- Degradation of breeding habitats
- Human disturbance; ill-timed mowing/haying

▪ **Management:**

- Declining in the northeastern portion of its range, and apparently increasing in some other parts, the Henslow's Sparrow has been identified as the highest priority for grassland bird conservation in eastern and midwestern North America by Partners in Flight (PIF), a cooperative effort of many organizations dedicated to bird conservation. Henslow's Sparrow does not have federally protected status in the United States, but is listed as Endangered in seven states, as well as Canada. PIF is promoting establishment of large grassland conservation areas for this and other species. The CRP, a program of the U.S. Department of Agriculture that assists farmers in setting aside qualifying land for conservation, has apparently successfully contributed to local population increases in isolated cases.

**Shrublands Moderate-Priority Habitat****FIELD SPARROW (*Spizella pusilla*)**

(Poole 2005)

- **Associated Species:**
  - Brown thrasher, song sparrow, willow flycatcher, black-billed cuckoo, American woodcock
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: midwestern and eastern US.
  - Wintering: lower midwestern and eastern US; Kansas, Missouri, Illinois, southern Michigan, northern Ohio, Pennsylvania, and Massachusetts south to southeastern New Mexico, northern Coahuila, central Nuevo León, northern Tamaulipas, the Gulf Coast, and southern Florida.
- **Habitat:**
  - Generally in successional old fields, woodland openings and edges, roadsides and railroads near open fields. Does not breed close to human habitation. Will nest in old fields directly after a burn or within a year of cultivation, but only if there is scattered woody vegetation with elevated perches in the territory. As thickets of trees spread in the habitat, numbers decline. The general trend for old field habitats is that Field Sparrows begin breeding within 1-2 years after human uses stop; population sizes rise for perhaps a decade, then decline. After ~30 years of old field succession, the habitat is overgrown with trees and shrubs and no longer used for breeding.
  - Breeds in old fields, woodland openings, and edges. Winters in fields and forest edges.
- **Nesting:**
  - Open cup of large grass pieces interwoven with finer grasses. Lined with fine grasses, rootlets, and hair. Placed on or near ground in grass clumps or at base of shrubs.
  - Later nests higher in crotches of shrubs or saplings.
- **Food:**
  - Winter: small seeds, primarily grasses.
  - Breeding season: small seeds, adult and larval insects.
- **Potential Limiting Factors/Threats:**
  - Sensitivity to disturbance at nests and roost sites
  - Pesticides and other contaminants
  - Degradation of habitat
- **Management:**
  - Management includes protecting existing prairie and successional habitats; avoiding practices that completely remove woody vegetation; burning to prevent the

encroachment, but not removal, of woody vegetation; and removing the canopy and thinning shrubs and saplings in forested habitats.

**BLUE-WINGED WARBLER** (*Vermivora pinus*)

(Poole 2005, USFWS 2009b)

▪ **Associated Species:**

- Brown thrasher, song sparrow, willow flycatcher, black-billed cuckoo, American woodcock

▪ **Seasonal Use of Refuge:**

- Breeding, migration

▪ **Distribution:**

- Breeding: eastern U.S., northeast through Massachusetts, the southern tip of New Hampshire, and the extreme southern tip of Maine.
- Wintering: Mexico, Central America, and northern South America.

▪ **Habitat:**

- Early to mid-succession habitats, especially abandoned farmland and forest clearings.
- Breeds at forest/field edges, often shaded by large trees.

▪ **Nesting:**

- Open cup of grasses, bark and dead leaves. Leaves may form cap over eggs. Usually on or near ground.
- Forest-field eco-tones, often shaded by large trees. Nests also along edge of deer trails. Most nests 30 m outside forest edge.
- Nests usually placed at base of goldenrod (*Solidago* spp.) or berry bushes (*Rubus* spp.); sometimes built in a clump of grass or sedge (*Carex* spp.). Most well concealed by leafy material.
- Nest sites similar to those of Golden-winged Warbler.

▪ **Food:**

- Arthropods, especially Lepidoptera larvae, small orthopterans (crickets and grasshoppers), and arachnids (spiders).

▪ **Potential Limiting Factors/Threats:**

- Loss of breeding habitat is accelerating because of suburban expansion.
- Populations may be declining in some parts of range because of decreased abandonment of farmland, increased succession of forests, and conversion of old fields to suburbs.

▪ **Management:**

Dependence on successional habitat and regional patterns of forestry and farmland abandonment may lead to continued range expansion and contraction. As with all Neotropical migrants, should be monitored continuously because of threats posed by increased human consumption of land (e.g., television and cellular-phone towers, suburban sprawl, agriculture, and tropical deforestation).

**GOLDEN-WINGED WARBLER** (*Vermivora chrysoptera*)  
(Poole 2005)

- **Associated Species:**
  - Brown thrasher, song sparrow, willow flycatcher, black-billed cuckoo, American woodcock
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: northeastern and north-central U.S. and southern Ontario.
  - Wintering: central and northern South America.
- **Habitat:**
  - Breeds in patchy shrubland and forest edge, such as shrubby fields, marshes, and bogs. Winters in canopy of tropical forests.
- **Nesting:**
  - Open cup of grasses, bark, and dead leaves. Leaves may form cap over eggs. Usually on or near ground.
  - Nest usually on the ground, often at the base of a cluster of leafy plant material. Base of supporting plants often above the nearby ground level, with leafy material quite thick and obscuring the nest, especially later in the growing season. Most nests include a taller, thicker stem in the supporting basal material, which adults grasp when arriving at the nest.
- **Food:**
  - Insects and spiders
- **Potential Limiting Factors/Threats:**
  - Possible but unknown if invading Blue-winged Warblers directly cause the extinction of local populations of Golden-winged Warblers.
  - Nest parasitism by the Brown-headed Cowbird
  - Loss of habitat
- **Management:**
  - Increase habitat.

**Upland Forests *Moderate-Priority Habitat***

**WOOD THRUSH** (*Hylocichla mustelina*)  
(Poole 2005, Smithsonian Migratory Bird Center 2009)

- **Associated Species:**
  - Rose-breasted grosbeak, scarlet tanager
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: south from southern Canada to northern Florida and west from the Atlantic coast to the Missouri River and the eastern regions of the Great Plains.
  - Wintering: Mexico and Central America, mostly in the lowlands along the Atlantic and Pacific coasts from Mexico to Panama.
- **Habitat:**
  - Breed in the Interior and edges of deciduous and mixed forests, especially well-developed, upland, mesic ones.
  - Winters in interior understory of tropical primary, closed-canopy, semi-evergreen, broad-leaved, and mixed palm forests.
- **Nesting:**
  - In trees or shrubs, usually in crotch or saddled over horizontal branch at fork or where twigs provide support and where some concealment exists.
  - First material is dead grass, stems, or leaves or piece of pliable, pale plastic or paper, often draped over support; sometimes extends noticeably below the nest. Similar materials form enlarged base and walls. Wall woven by placing material at edge of base, lifting loose part up and inward and tucking it into bottom. Mud added and molded inside cup, followed by rootlet lining.
- **Food:**
  - Some arboreal insects, snails, and small salamanders.
  - Soil invertebrates; use of fruit greater in late summer, fall, and late winter.
  - Larval and adult insects, millipedes, and isopods.
  - Fruits in diet include spicebush, fox grape, blueberry, holly, elderberry, jack-in-the-pulpit, Virginia creeper, pokeweed, dogwood, black cherry, and black gum.
- **Potential Limiting Factors/Threats:**
  - Forest fragmentation may cause lower reproductive success.
  - Loss of Central American primary and old second-growth forest on lower slopes threatens winter survival.
- **Management:**
  - Protection of primary and old, secondary broad-leaved tropical forests.

**BLACK-BILLED CUCKOO** (*Coccyzus erythrophthalmus*)  
(Poole 2005)

- **Associated Species:**
  - Rose-breasted grosbeak, scarlet tanager
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: Upper midwest and eastern US.
  - Wintering: Mexico and South America.
- **Habitat:**
  - They inhabit extensive areas of upland woods that provide a variety of trees, bushes and vines. Streamside woods and moist thickets in overgrown pastures and orchards are preferred; however, they are also found in brushy pastures, hedgerows, open woodlands, orchards, thickets, and along wooded roadsides.
- **Nesting:**
  - Nest typically saddled on or placed between horizontal branches; sometimes in crotch against main trunk. Few nests built over water. Nests generally well concealed by overhanging branches and leaf clusters.
  - The nest is a platform, typically four to six feet above the ground, constructed out of loosely woven twigs and lined with grasses and roots.
- **Food:**
  - Primarily of caterpillars, especially tent caterpillars, but they also feed on other insects, spiders, small mollusks, fish and wild fruits and berries.
- **Potential Limiting Factors/Threats:**
  - May be susceptible to habitat fragmentation.
  - May be poisoned by caterpillars sprayed by pesticides.
- **Management:**
  - Maintain mature hardwood forest.

**CERULEAN WARBLER**

See discussion in Bottomland Hardwood Forest section above.

**AMERICAN WOODCOCK** (*Scolopax minor*)  
(Sepik et al., 1994)

- **Associated Species:**
  - Rose-breasted grosbeak, scarlet tanager
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: throughout the eastern half of U.S., north of Gulf Coast State.
  - Wintering: southern states from Louisiana east, and is limited in northern extent by snow cover and ground frost.
- **Habitat:**
  - Singing Ground: range from less than 1 acre to over 100 acres. Is usually an abandoned field, forest openings, clear-cuts, dirt roads, blueberry fields, new tree plantations, and pastures and abandoned farmlands.
  - Daytime Male Habitat: close to singing grounds and have moist, rich soils with plenty of earthworms and dense overhead cover of young alders, aspen, or birch.
  - Daytime Feeding: predominately second-growth (15-30 year-old) hardwood or mixed woods with shrubs, bottomland hardwoods, and upland mixed pine-hardwoods. Dense alder thickets < 20 years of age and young aspen and birch stands.
  - Nesting: young, open second growth deciduous forests with well-drained soils. Dense deciduous sapling or conifer cover including young open woodlands, low shrubby cover, old fields, tall herbage bordering clearings, thickets, scrub oaks or pines, open woodland with dead leaf cover on ground, and flat bottomlands near water.
  - Roosting: large fields (similar or the same as singing grounds).
  - Brood Rearing: similar to nesting cover.
- **Nesting:**
  - Nests are often within 100 yards of an occupied singing ground.
  - Nest consists of a shallow depression lined with a few leaves and occasionally small twigs placed around the edges.
- **Food:**
  - Earthworms make up 50 to 90 percent of their diet.
  - Other foods include beetles and fly larvae.
- **Potential Limiting Factors/Threats:**
  - Hunting
  - Habitat loss on both breeding and wintering grounds
- **Management:**
  - Stands of alder and similar shrub species should be encouraged and maintained by strip-cutting on a 20 year rotations.

- Block or strip cuts on a 40 -50 year rotations to provide a continuous supply of young growth.
- Shelterwood and seed trees that are often left over in partial timber harvests help to retain a patchy structure.
- Singing Ground: Create openings where few are present adjacent to feeding habitat. Clearings should be at least 0.5 acres where surrounding trees are taller than 25 feet. Openings with shorter surrounding vegetation can be as small as 0.25 acres.
- Roosting cover: clearcuts.

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**New York Natural Heritage Report  
on Rare Animals, Rare Plants, and Significant Ecological Communities  
of Iroquois National Wildlife Refuge**

Prepared February, 2006 from the Biodiversity Databases of the New York Natural Heritage Program  
NYS DEC, 625 Broadway, Albany, NY, 12233-4757.



COMMON NAME	SCIENTIFIC NAME	NY STATE LISTING	NY STATE RANK*
<b><u>Documented on the refuge since 1985</u></b>			
<b>Birds</b>			
Pied-billed Grebe	<i>Podilymbus podiceps</i>	Threatened	S3
Least Bittern	<i>Ixobrychus exilis</i>	Threatened	S3
Great Blue Heron	<i>Ardea herodias</i>		S5
Ruddy Duck	<i>Oxyura jamaicensis</i>		S1
Black Tern	<i>Chlidonias niger</i>	Endangered	S2
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened**	S2S3
Upland Sandpiper	<i>Bartramia longicauda</i>	Threatened	S3
Short-eared Owl	<i>Asio flammeus</i>	Endangered	S2
Sedge Wren	<i>Cistothorus platensis</i>	Threatened	S3
Prothonotary Warbler	<i>Protonotaria citrea</i>		S2
Henslow's Sparrow	<i>Ammodramus henslowii</i>	Threatened	S3
<b>Plants</b>			
Smooth Bur-marigold	<i>Bidens laevis</i>	Threatened	S2
Georgia Bulrush	<i>Scirpus georgianus</i>	Endangered	S1
<b>Ecological Communities</b>			
Deep Emergent Marsh			S5
Hemlock-Northern Hardwood Forest			S4
<b><u>Other Species and Community Types Documented near the refuge since 1985</u></b>			
<b>Birds</b>			
King Rail	<i>Rallus elegans</i>	Threatened	S1B
Northern Harrier	<i>Circus cyaneus</i>	Threatened	S3B, S3N
<b>Dragonflies</b>			
American Rubyspot	<i>Hetaerina americana</i>		S2S3
<b>Freshwater Mussels</b>			
Threeridge	<i>Amblema plicata</i>		S1
Wabash Pigtoe	<i>Fusconaia flava</i>		S2
Wavyrayed Lampmussel	<i>Lampsilis fasciola</i>	Threatened	S1
Pocketbook	<i>Lampsilis ovata</i>		S2S3

COMMON NAME	SCIENTIFIC NAME	NY STATE LISTING	NY STATE RANK*
Fragile Papershell	<i>Leptodea fragilis</i>		S3
Black Sandshell	<i>Ligumia recta</i>		S2S3
Kidneyshell	<i>Ptychobranthus fasciolaris</i>		S2
Rainbow	<i>Villosa iris</i>		S2S3
<b>Plants</b>			
Harbinger-of-spring	<i>Erigeron bulbosa</i>	Endangered	S1
Heartleaf Plantain	<i>Plantago cordata</i>	Threatened	S3
Nodding Trillium	<i>Trillium flexipes</i>	Endangered	S1
Nodding Pogonia	<i>Triphora trianthophora</i>	Endangered	S2
<b>Ecological Communities</b>			
Rich hemlock-hardwood peat swamp			S2S3
<b><u>Documented from "Tonawanda Swamp" at unknown date at unknown location</u></b>			
<b>Plants</b>			
Eastern Prairie Fringed Orchid	<i>Plantanthera leucophaea</i>	Endangered**	SH
<b><u>Documented near the refuge before 1975; current status unknown</u></b>			
<b>Butterflies</b>			
Karner Blue	<i>Lycaeides melissa samuelis</i>	Endangered**	S1
<b>Plants</b>			
Pink Wintergreen	<i>Pyrola asarifolia</i> ssp. <i>asarifolia</i>	Threatened	S2

\* Rarity in NYS as ranked by NY Natural Heritage Program on a 1 to 5 scale:  
 S1 = Critically imperiled; S2 = Imperiled; S3 = Rare or uncommon;  
 S4 = Abundant and apparently secure; S5 = Demonstrably abundant and secure;  
 SH = Historical records only; no recent information available;  
 SU = Not yet ranked.



\*\* Also Federally Listed.

Natural community occurrences in this report are all ranked as being of excellent quality, and therefore are considered significant from a statewide perspective. By meeting specific, documented significance criteria, the NY Natural Heritage Program considers this occurrence to have high ecological and conservation value.