



**Breeding Bird Surveys within  
the Whittlesey Creek Study Area  
1998 ~ 2002**

**By: Pam Dryer ~ February 2004**

**Table of Contents**

Table of Contents.....	1
List of Tables .....	2
Acknowledgements.....	3
Abstract.....	4
Introduction.....	4
Methods.....	7
Results.....	9
Discussion.....	11
References.....	12
Appendices.....	14

## List of Tables

Table 1. Percentage of general habitat types in the surface-water drainage of Whittlesey Creek (Data compiled by Lenz et al. 2003 from WISCLAND land cover). .....	6
Table 2. Number of points surveyed by habitat type. ....	8
Table 3. Number of points surveyed, total species and individuals counted by year. ....	9
Table 4. Species making up > 50% of the total birds counted for all years. ....	10
Table 5. List <sup>1</sup> of U.S. Fish and Wildlife Service, Region 3 resource conservation priority species in study area. ....	11

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## **Abstract**

Breeding bird monitoring surveys were conducted annually during June 1998 to 2002 in the Whittlesey Creek watershed, Bayfield County, Wisconsin. This Lake Superior tributary and its associated coastal wetlands are an important Lake Superior fishery production area, and the adjacent riparian and upland woodlands are important for migratory birds. The Whittlesey Creek watershed includes the recently established Whittlesey Creek National Wildlife Refuge. The point count method was used to conduct 255 songbird surveys, encompassing seven habitat types.

Seventy-nine songbird species were recorded within 100 meters of the survey points for all years combined, with 3,286 individual birds counted. Fifty-six percent of the songbirds recorded during point count surveys were neotropical migrants (birds that breed in North America and winter south of the U.S.). U.S. Fish and Wildlife Service Region 3 conservation priority species observed were black-billed cuckoo, bobolink, eastern meadowlark, field sparrow, golden-winged warbler, LeConte's sparrow, northern flicker, sedge wren, and wood thrush. The most abundant species (those making up 50 percent of the total songbird species counted for all years) in the Whittlesey watershed were savannah sparrow, red-winged blackbird, bobolink, red-eyed vireo, ovenbird, sedge wren, American robin and chestnut-sided warbler.

## **Introduction**

### **Background**

This report provides an update of the breeding bird surveys conducted in the Whittlesey Creek watershed, Bayfield County, Wisconsin. The U.S. Fish and Wildlife Service (Service) began monitoring migratory songbirds in the Whittlesey Creek watershed and the Whittlesey Creek National Wildlife Refuge in 1998. The information will be used to identify priority needs for migratory bird habitat protection and restoration. It will also assist in tracking progress toward refuge goals (Dryer 1999, U.S. Fish and Wildlife Service 1998 and Wilk 1998).

The Lake Superior watershed of Bayfield County encompasses significant federal lands, including portions of the Chequamegon National Forest and Apostle Islands National Lakeshore, and these agencies have initiated breeding bird monitoring programs on their lands (Gostomski and Van Stappen 1997, Hanowski et al. 1999). Bird monitoring was also undertaken in the Raspberry and Sand River watersheds by the Red Cliff Band of Lake Superior Chippewa (Dryer et al. 2002). All these surveys, including the Whittlesey Creek survey, will add to the existing body of knowledge about the Lake Superior watershed.

### **Objectives**

The bird monitoring objectives for the Whittlesey Creek project are:

- 1) To obtain baseline breeding bird information;
- 2) To identify species composition and habitats used by neotropical and short-distance migrants and resident species in the project area;
- 3) To determine response of species' populations to habitat restoration in the project area;

- 4) To provide additional information to the growing international database that will assist in determining population trends related to habitat changes.

The work described in this report contributed to meeting objectives 1, 2 and 4. A more detailed monitoring study will need to be designed to meet objective 3.

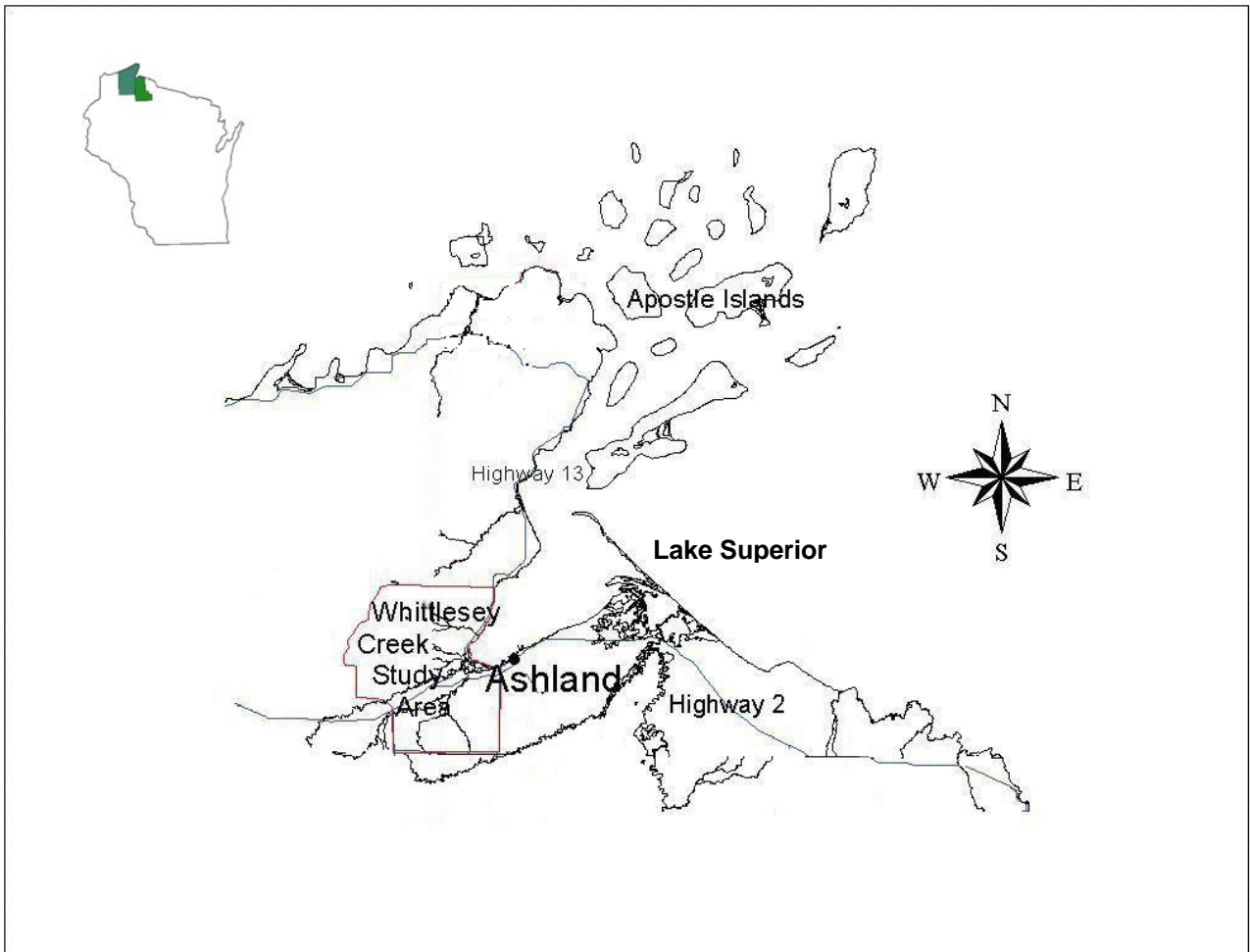
### **Study Area**

The study area is located in the Lake Superior basin in Bayfield County, Wisconsin (Figure 1). It lies between the cities of Ashland and Washburn, and includes the Whittlesey Creek watershed (which covers approximately 12,000 acres, Figure 2) and a portion of the Fish Creek watershed.

The topography of the Bayfield peninsula includes flat lowlands near the mouth of drainages, hills with moderate grades, and gently rolling uplands. The topography ranges from 180 meters (mean sea level) at the mouth of Lake Superior to 360 meters at the upper end. The Whittlesey Creek watershed is rolling, except immediately adjacent to Whittlesey Creek and its tributaries, where the creek has carved a steep-sided valley.

The study area is located in the historic northern conifer-hardwood forest zone (Curtis 1959). Forests include those dominated by deciduous trees, coniferous trees or a mix of both. Dominant deciduous trees include quaking aspen (*Populus tremuloides*), paper birch (*Betula papyrifera*), red oak (*Quercus rubra*), sugar maple (*Acer saccharum*) and red maple (*Acer rubrum*). Dominant coniferous trees include red pine (*Pinus resinosa*), white pine (*Pinus strobus*), jack pine (*Pinus banksiana*), balsam fir (*Abies balsamea*) and white spruce (*Picea glauca*). Lowland forests of black ash (*Fraxinus nigra*), white cedar (*Thuja occidentalis*) and tamarack (*Larix laricina*) are found along river floodplains and next to Lake Superior. Upland shrublands are common in the Chequamegon National Forest where forest clearcuts recently occurred, and are dominated by small red and jack pine, red oak and berry-producing shrubs. Grasslands are planted hayland or pastureland. Wetlands include open meadows of grasses and sedges, and lowland shrublands.

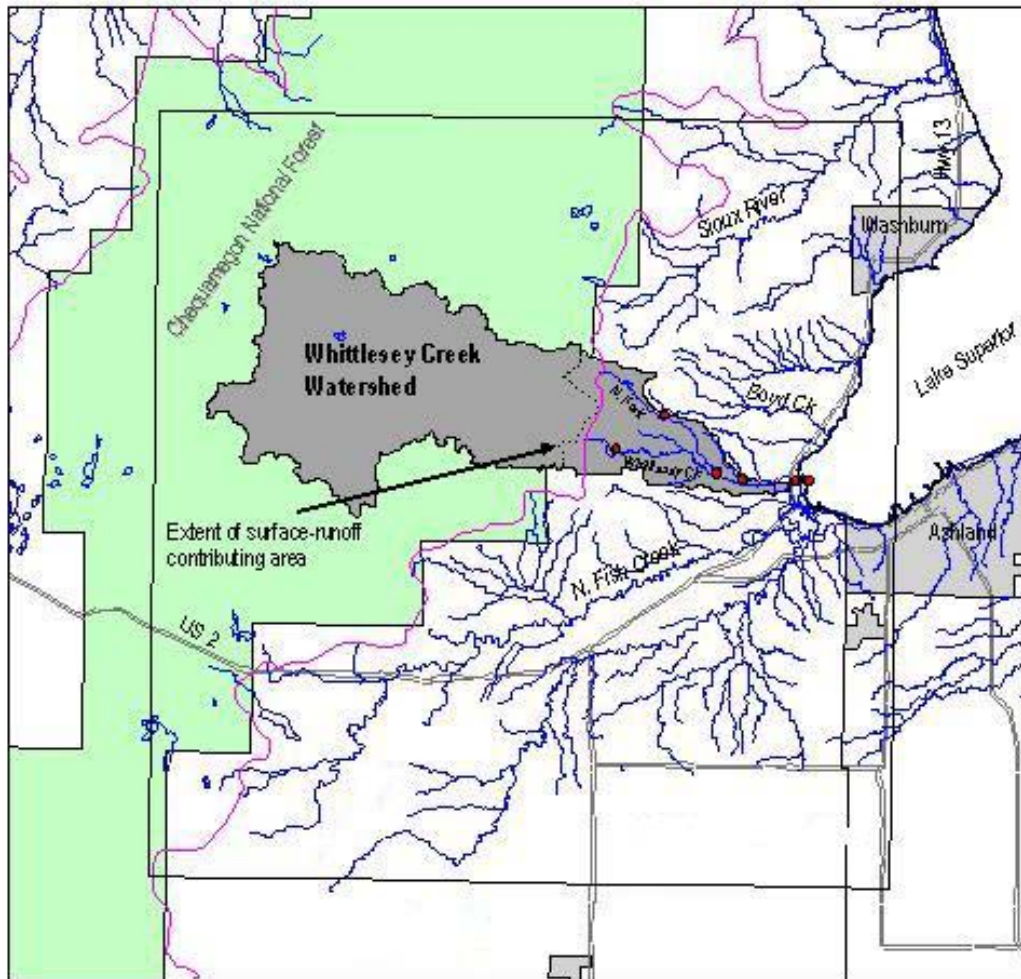
Current land use in the study area includes forest management for timber and recreation, dairy farms, vegetable and fruit farms, rural residences, and tourism. Land ownership includes U.S. Forest Service, U.S. Fish and Wildlife Service, Wisconsin Department of Natural Resources and private land. Table 1 shows types and percentages of land use in the surface-water drainage basin of Whittlesey Creek. The upper portion of the watershed encompasses mostly National Forest, and has very little surface drainage; rain and snowmelt infiltrate directly into sandy soils and feed the regional groundwater system (Lenz et al. 2003).



**Figure 1. Whittlesey Creek Study Area.**

Table 1. Percentage of general habitat types in the surface-water drainage of Whittlesey Creek (Data compiled by Lenz et al. 2003 from WISCLAND land cover).

<b>Habitat Type</b>	<b>Percent Cover</b>
Row crop agriculture	0.04
Forest – deciduous	50.2
Forest – conifer	2.3
Forest – mixed	13
Hayland	0.6
Rangeland	3.4
Grassland/pasture	28.5
Wetland – forested	1.6
Wetland – nonforested	0.4
Urban	0



**Figure 2. Map of Whittlesey Creek Watershed, including surface water drainage area.**

## **Methods**

Bird populations were monitored using the point count protocol established by the Service for Region 3 (U.S. Fish and Wildlife Service 1994), which is similar to the methods presented in Ralph et al. (1995). The method requires the establishment of permanent points from which bird surveys are repeated annually. All birds seen or heard within the point count area are recorded, but songbirds are the target species.

### Point Count Selection

The permanent points were established to include contiguous habitat within 125 meters around the point. A stratified random selection of points was made in the study area. A habitat cover-type map was produced from a Geographic Information System (GIS), using gap analysis data for Wisconsin. The map depicted habitat types in 30 x 30 meter cells, which was overlaid by

250 x 250 meter grid lines. Only grids that primarily contained one habitat type were included in the selection process. Habitat types targeted were deciduous forest, mixed forest, coniferous forest, lowland shrub, upland shrub, grassland, and emergent wetland/wet meadow. Points were randomly selected within habitat types; the number of points per type were based on the percentage of habitat type acreage within the study area. Table 2 shows number of surveys conducted by habitat type.

**Table 2. Number of points surveyed by habitat type.**

<b>Habitat Type</b>	<b># Points</b>	<b>Percent</b>
Deciduous forest	33	12.9
Coniferous forest	25	9.8
Mixed forest	40	15.7
Emergent wetland	10	3.9
Grassland	57	22.4
Lowland shrub	12	4.7
Upland shrub	78	30.6
<b>TOTAL</b>	<b>255</b>	<b>100.0</b>

#### Point Count Procedure

Surveys are conducted from established points. All species seen or heard within a 100 meter radius from each point during a 10-minute count are recorded. Birds that fly over are also recorded, but are noted separately. Additional observations within close proximity of the sampling radii are also noted. Flyovers and observations outside the radii are added to the total species list, but are not included in the results or analysis. The counts are conducted between one-half hour before sunrise to about three hours after sunrise. A count is conducted once at each point, between June 10 and June 30. The point count surveys were conducted by Service personnel, University of Extension Service personnel and volunteers. All surveyors had to be capable of identifying at least 95 percent of the birds by sight and song.

#### Analysis

The analysis for this report is descriptive only. Data reported includes only target species (songbirds) counted within the 100 m point count radii. Non-target species (ducks, herons, geese, terns, gulls) were excluded from the analysis, but are listed in Appendices A and B.



## Results

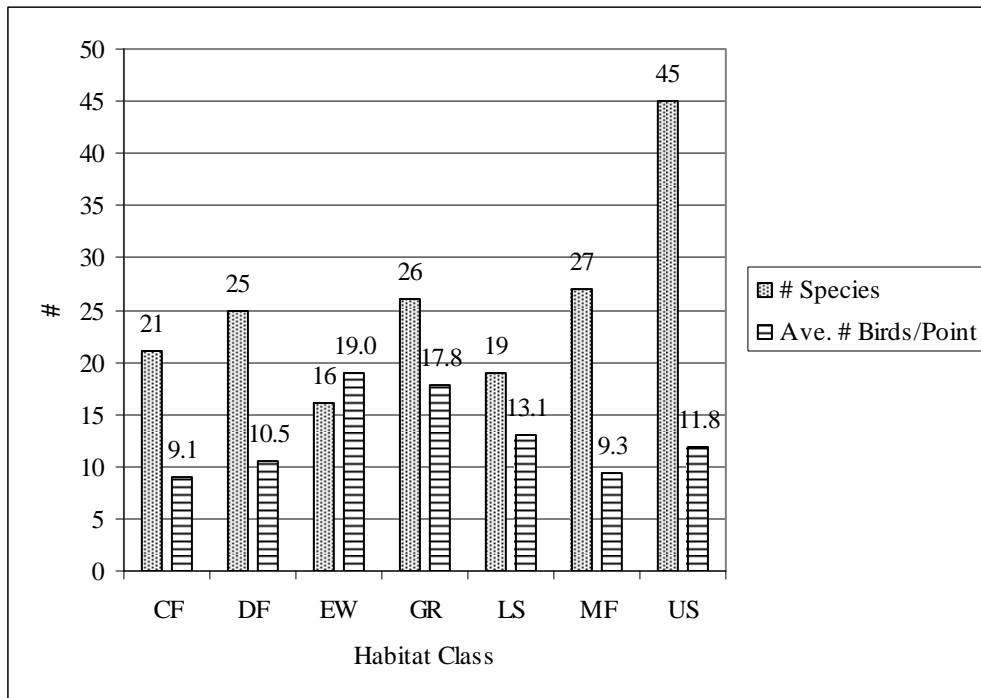
Two hundred fifty-five surveys were conducted at 58 points between 1998 and 2002. A total of 3,286 individuals, representing 79, species were recorded within point count radii in all years combined (Table 3 and Appendix B). Abundance of individuals was highest in emergent wetland and grassland habitat types, but the largest number of species was found in the upland shrub habitat type (Figure 2).

**Table 3. Number of points surveyed, total species and individuals counted by year.**

<b>Year</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>Total All Years</b>
No. Surveys	43	50	54	52	56	<b>255</b>
No. of Species						
<b>Total<sup>1</sup></b>	<b>51</b>	<b>60</b>	<b>62</b>	<b>56</b>	<b>61</b>	<b>79</b>
No. of Individuals						
0-5 Min.	460	496	558	483	617	<b>2,614</b>
5-10 Min.	95	157	153	138	140	<b>683</b>
<b>Total<sup>1</sup></b>	<b>554</b>	<b>650</b>	<b>704</b>	<b>621</b>	<b>757</b>	<b>3,286</b>
Mean Birds/Point	12.9	13.0	13.0	11.9	13.5	<b>12.9</b>

<sup>1</sup> Totals include only target (songbird) species counted within the 100 m point count radii.

**Figure 2. Number of species and average number of birds per point by habitat type<sup>1</sup>, for all years.**



<sup>1</sup> CF = coniferous forest, DF = deciduous forest, EW = emergent wetland, GR = grassland, LS = lowland shrub, MF = mixed forest, US = upland shrub.

The most common species in the Whittlesey Creek watershed included grassland (savannah sparrow and bobolink), wetland (red-winged blackbird and sedge wren), woodland (red-eyed vireo and ovenbird) shrubland (chestnut-sided warbler) and one generalist (American robin) species (Table 4).

**Table 4. Species making up > 50% of the total birds counted for all years.**

Species (Total No. of Birds)	Mean Birds/Survey All Years	Mean 1998	Mean 1999	Mean 2000	Mean 2001	Mean 2002
Savannah sparrow (404)	6.5	8.0	6.6	8.9	4.8	4.7
Red-winged blackbird (306)	4.4	5.0	3.1	5.1	3.8	5.1
Bobolink (251)	4.5	6.8	6.0	3.5	4.3	2.7
Red-eyed vireo (225)	1.3	1.2	1.3	1.0	1.2	1.6
Ovenbird (194)	1.5	1.5	1.4	1.4	1.6	1.4
Sedge wren (98)	2.0	3.4	2.4	1.3	2.6	1.2
American robin (105)	0.7	0.4	0.8	0.8	0.7	0.8
Chestnut-sided warbler (93)	0.8	0.6	0.5	0.8	1.3	0.9

Table 5 lists U.S. Fish and Wildlife Service Region 3 conservation priority species (U.S. Fish and Wildlife Service 2002) found in the study area. The Service designates priority species as a means to allocate limited resources toward most critical fish and wildlife needs.

**Table 5. List<sup>1</sup> of U.S. Fish and Wildlife Service, Region 3 resource conservation priority species in study area.**

<b>Species</b>	<b>Total Number of Individuals, all years</b>
Black-billed cuckoo	13
Bobolink	251
Eastern meadowlark	16
Field sparrow	5
Golden-winged warbler	4
LeConte's sparrow	9
Northern flicker	17
Sedge wren	98
Wood thrush	1

<sup>1</sup> Target species within point count only

## Discussion

Species of concern to the U.S. Fish and Wildlife Service, including Region 3 resource conservation priority species (Table 5) and neotropical migrants (Appendix A) are found in the Whittlesey project area. Forty-four species (56 percent of all target species) recorded during point count surveys are neotropical migrants. Of the resource conservation priority species shown in Table 5, bobolink and sedge wren are common species within their habitat type, which is primarily agricultural grassland for both species. Sedge wrens also utilize emergent wetlands and lowland shrub habitats. The additional species listed use grasslands (eastern meadowlark, LeConte's sparrow), upland shrub habitat (golden-winged warbler, field sparrow, black-billed cuckoo), open woodlands or shrublands (northern flicker) or forested habitat with well-established understory (wood thrush).

Percentages of general habitat types found within the Whittlesey watershed are provided in Table 1. These data only include the surface water run-off portion of the watershed; the precipitation from the upper part of the watershed infiltrates into sandy soils and feeds the regional groundwater system (Figure 2). The watershed is dominated by forests and grassland/hayland. Deciduous forest habitats were underrepresented in point counts (Table 2), so it is possible that additional resource conservation priority species, such as wood thrush, would be identified in forested habitats.

The Service will be developing a habitat management plan for the Whittlesey Creek National Wildlife Refuge in 2004. The planning process includes selection of resources of concern, which are used to guide habitat restoration and management efforts on the refuge. Resources of concern often include resource conservation priority species. The species listed in Table 5, along with other appropriate resource conservation priority species, will be considered. We will also consider which species might have used the area historically, but because of major habitat changes, are no longer common or are minimally represented.

Breeding bird monitoring at these points should continue only as identified in the refuge's habitat management plan. If resources of concern include certain bird species, or a guild of species, then population response to management actions will need to be tracked through a monitoring program. The points surveyed for this study have provided good data for inventory purposes, but they may or may not work for future monitoring purposes. A decision about continued monitoring programs will be made after the habitat management plan is complete.

## References

- Curtis, J.T. 1959. The vegetation of Wisconsin, an ordination of plant communities. University of Wisconsin Press, Madison, Wisconsin.
- Dryer, P. 1999. Breeding bird surveys within the Whittlesey Creek watershed, 1998-1999 and Red Cliff Indian Reservation, 1999, Bayfield County, Wisconsin. U.S. Fish and Wildlife Service, Ashland Fishery Resources Office, Ashland, Wisconsin.
- Dryer, P., T. Gostomski and G. Fischer. 2002. Breeding Bird Surveys within the Whittlesey Creek Study Area, 1998-2001, Bayfield County, Wisconsin. U.S. Fish and Wildlife Service, Whittlesey Creek National Wildlife Refuge, Ashland, Wisconsin.
- Gostomski, T.J. and J.F. Van Stappen. 1997. Apostle Island National Lakeshore 1997 breeding bird survey. National Park Service, Apostle Islands National Lakeshore, Bayfield, Wisconsin.
- Hanowski, J.M., G.F. Niemi, R.Y. Hawrot and A.R. Lima. 1999. Breeding bird monitoring in Great Lakes National Forests: 1991-1998. Report to Chequamegon/Nicolet, Chippewa and Superior National Forests. Natural Resource Research Institute, Duluth, Minnesota. NRRI/TR-99/2.
- Lenz, B.N., D.A. Saad, and F.A. Fitzpatrick. 2003. Simulation of Ground-Water Flow and Rainfall Runoff with Emphasis on the Effects of Land Cover, Whittlesey Creek, Bayfield County, Wisconsin, 1999-2001. Water-Resources Investigations Report 03-4120. U.S. Geological Survey, U.S. Dept. of Interior.
- Ralph, C.J., Sauer, J.R., and S. Droege, technical editors. 1995. Monitoring bird populations by point counts. U.S. Forest Service Gen. Tech. Rep. PSW-GTR-149. Albany, California, U.S. Dept. of Ag., Forest Service, Pacific Southwest Research Station. 187 pp.

- U.S. Fish and Wildlife Service. 2002. Fish and wildlife resource conservation priorities, Region 3, Version 2.0. U.S. Fish and Wildlife Service, Fort Snelling, Minnesota.
- U.S. Fish and Wildlife Service. 1998. Whittlesey Creek National Wildlife Refuge environmental assessment and interim comprehensive conservation plan. U.S. Fish and Wildlife Service, Fort Snelling, Minnesota.
- U.S. Fish and Wildlife Service. 1994. Interim guidelines for monitoring birds on national wildlife refuge system lands using the point count method. U.S. Fish and Wildlife Service, Fort Snelling, Minnesota.
- Wilk, R.J. 1998. Habitat and occurrence of breeding birds near a proposed national wildlife refuge at Whittlesey Creek, Bayfield County, Wisconsin, 1998. U.S. Fish and Wildlife Service, Ashland Fishery Resources Office, Ashland, Wisconsin.

## Appendices

### Appendix A. List of All Target Species Recorded from 1998 to 2002.

Common Name	Scientific Name (AOU 1998)	Migratory status	Federal Status	WI Status
Alder flycatcher	<i>Empidonax alnorum</i>	NEO A <sup>1</sup>		
American bittern	<i>Botaurus pinnatus</i>		R3	SC
American black duck	<i>Anas rubripes</i>		R3	SC
American crow	<i>Corvus brachyrhynchos</i>			
American goldfinch	<i>Carduelis tristis</i>	NEO B		
American kestrel	<i>Falco sparverius</i>	NEO B		
American redstart	<i>Setophaga ruticilla</i>	NEO A		
American robin	<i>Turdus migratorius</i>	NEO B		
American widgeon	<i>Anas americana</i>			SC
Bald eagle	<i>Haliaeetus leucocephalus</i>		R3, T	SC
Baltimore oriole (Northern oriole)	<i>Icterus galbula</i>	NEO A		
Barred owl	<i>Strix varia</i>			
Barn swallow	<i>Hirundo rustica</i>	NEO A		
Belted kingfisher	<i>Ceryle alcyon</i>	NEO B		
Black-and-white warbler	<i>Mniotilta varia</i>			
Black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>	NEO A	R3	
Black-backed woodpecker	<i>Picoides arcticus</i>			SC
Black-capped chickadee	<i>Poecile atricapillus</i>			
Black-throated green warbler	<i>Dendroica virens</i>			
Blue jay	<i>Cyanocitta cristata</i>			
Blue-winged teal	<i>Anas discors</i>		R3	

<sup>1</sup> NEO -Neotropical migrant (Probst and Thompson 1995). A = winters south of U.S.

B = winters in U.S. and south.

R3 - Region 3 resource conservation priority species (U.S. Fish and Wildlife Service 2002)

T - Federally threatened

SE - State endangered

SC - Special concern are those species about which some problem of abundance or distribution is suspected but not yet proved. The main purpose of this category is to focus attention on certain species before they become threatened or endangered.

Common Name	Scientific Name (AOU 1998)	Migratory status	Federal Status	WI Status
Bobolink	<i>Dolichonyx oryzivorus</i>		R3	
Brewer's blackbird	<i>Euphagus cyanocephalus</i>			
Broad-winged hawk	<i>Buteo platypterus</i>	NEO A		
Brown creeper	<i>Certhia americana</i>	NEO B		
Brown thrasher	<i>Toxostoma rufum</i>			
Brown-headed cowbird	<i>Molothrus ater</i>	NEO B		
Canada goose	<i>Branta canadensis</i>			
Canada warbler	<i>Wilsonia canadensis</i>			
Cedar waxwing	<i>Bombycilla cedrorum</i>	NEO B		
Chestnut-sided warbler	<i>Dendroica pensylvanica</i>			
Chipping sparrow	<i>Spizella passerina</i>	NEO A		
Chimney swift	<i>Chaetura pelagica</i>	NEO A		
Clay-colored sparrow	<i>Spizella pallida</i>	NEO A		
Cliff swallow	<i>Petrochelidon pyrrhonota</i>	NEO A		
Common grackle	<i>Quiscalus quiscula</i>			
Cooper's hawk	<i>Accipiter cooperii</i>			
Common loon	<i>Gavia immer</i>		R3	SC
Common merganser	<i>Mergus merganser</i>			SC
Common raven	<i>Corvus corax</i>			
Common snipe	<i>Gallinago gallinago</i>			
Common tern	<i>Sterna hirundo</i>		R3	SE
Common yellowthroat	<i>Geothlypis trichas</i>	NEO A		
Dickcissel	<i>Spiza americana</i>		R3	SC
Double-crested cormorant	<i>Phalacrocorax auritus</i>		R3	
Downy woodpecker	<i>Picoides pubescens</i>			
Eastern bluebird	<i>Sialia sialis</i>			
Eastern kingbird	<i>Tyrannus tyrannus</i>	NEO A		
Eastern meadowlark	<i>Sturnella magna</i>	NEO B	R3	
Eastern phoebe	<i>Sayornis phoebe</i>	NEO B		
Eastern towhee (Rufous-sided towhee)	<i>Pipilo erythrophthalmus</i>	NEO B		

<b>Common Name</b>	<b>Scientific Name (AOU 1998)</b>	<b>Migratory status</b>	<b>Federal Status</b>	<b>WI Status</b>
Eastern wood-pewee	<i>Contopus virens</i>	NEO A		
European starling	<i>Sturnus vulgaris</i>			
Evening grosbeak	<i>Coccothraustes vespertinus</i>			SC
Field sparrow	<i>Spisella pusilla</i>		R3	
Gadwall	<i>Anas strepera</i>			
Golden-winged warbler	<i>Vermivora chrysoptera</i>		R3	
Gray catbird	<i>Dumetella carolinensis</i>	NEO A		
Great blue heron	<i>Ardea herodias</i>			SC
Great-crested flycatcher	<i>Myiarchus crinitus</i>	NEO A		
Green heron	<i>Butorides virescens</i>			
Hairy woodpecker	<i>Picoides villosus</i>			
Herring gull	<i>Larus argentatus</i>			
Hermit thrush	<i>Catharus guttatus</i>			
Hooded merganser	<i>Lophodytes cucullatus</i>			
House finch	<i>Carpodacus mexicanus</i>			
House sparrow	<i>Passer domesticus</i>			
House wren	<i>Troglodytes aedon</i>	NEO A		
Indigo bunting	<i>Passerina cyanea</i>	NEO A		
Killdeer	<i>Charadrius vociferus</i>	NEO B		
LeConte's sparrow	<i>Ammodramus leconteii</i>		R3	SC
Least flycatcher	<i>Empidonax minimus</i>	NEO A		
Lesser yellowlegs	<i>Tringa flavipes</i>			
Mallard	<i>Anas platyrhynchos</i>		R3	
Magnolia warbler	<i>Dendroica magnolia</i>			
Marsh wren	<i>Cistothorus palustris</i>			
Mourning dove	<i>Zenaida macroura</i>	NEO B		
Mourning warbler	<i>Oporornis philadelphia</i>	NEO A		
Nashville warbler	<i>Vermivora ruficapilla</i>	NEO A		
Northern flicker	<i>Colaptes auratus</i>		R3	
Northern harrier	<i>Circus cyaneus</i>		R3	SC



Common Name	Scientific Name (AOU 1998)	Migratory status	Federal Status	WI Status
Northern waterthrush	<i>Seiurus noveboracensis</i>			
Ovenbird	<i>Seiurus aurocapillus</i>	NEO A		
Pine siskin	<i>Carduelis spinus</i>			SC
Pine warbler	<i>Dendroica pinus</i>			
Pileated woodpecker	<i>Dryocopus pileatus</i>			
Purple finch	<i>Carpodacus purpureus</i>	NEO B		
Red-breasted nuthatch	<i>Sitta canadensis</i>			
Red crossbill	<i>Loxia curvirostra</i>			
Red-eyed vireo	<i>Vireo olivaceus</i>	NEO A		
Red-tailed hawk	<i>Buteo jamaicensis</i>	NEO B		
Red-winged blackbird	<i>Agelaius phoeniceus</i>	NEO B		
Ring-billed gull	<i>Larus delawarensis</i>			
Ring-necked pheasant	<i>Phasianus colchicus</i>			
Rock dove	<i>Columbia livia</i>			
Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	NEO A		
Ruby-throated hummingbird	<i>Archilochus colubris</i>	NEO A		
Ruffed grouse	<i>Bonasa umbellus</i>			
Sandhill crane	<i>Grus canadensis</i>			
Savannah sparrow	<i>Passerculus sandwichensis</i>	NEO B		
Scarlet tanager	<i>Piranga olivacea</i>	NEO A		
Sedge wren	<i>Cistothorus platensis</i>		R3	
Solitary vireo	<i>Vireo solitarius</i>	NEO A		
Song sparrow	<i>Melospiza melodia</i>	NEO B		
Sora	<i>Porzana porzana</i>			
Spotted sandpiper	<i>Actitis macularia</i>			
Swamp sparrow	<i>Melospiza georgiana</i>	NEO B		
Tree swallow	<i>Tachycineta bicolor</i>	NEO B		
Upland sandpiper	<i>Batramia longicauda</i>	NEO A	R3	SC
Veery	<i>Catharus fuscescens</i>			
Vesper sparrow	<i>Poocetes gramineus</i>			

<b>Common Name</b>	<b>Scientific Name (AOU 1998)</b>	<b>Migratory status</b>	<b>Federal Status</b>	<b>WI Status</b>
Warbling vireo	<i>Vireo gilvus</i>	NEO A		
White-breasted nuthatch	<i>Sitta carolinensis</i>			
White-throated sparrow	<i>Zonotrichia albicollis</i>	NEO B		
Wood duck	<i>Aix sponsa</i>		R3	
Wood thrush	<i>Hylocichla mustelina</i>		R3	
Yellow-billed cuckoo	<i>Coccyzus americanus</i>			SC
Yellow warbler	<i>Dendroica petechia</i>	NEO A		
Yellow-bellied flycatcher	<i>Empidonax flaviventris</i>			
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>			
Yellow-rumped warbler	<i>Dendroica coronata</i>	NEO B		

**Appendix B. List of Species Counts by Year.**

<b>Species Code</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>Grand Total</b>
<b>Target species found within 100 m of point</b>						
Alder flycatcher		6	8	6	15	35
American crow	8	4	6	1	17	36
American goldfinch	3	10	4	8	12	37
American redstart	5	21	14	16	17	73
American robin	11	24	24	21	25	105
Barn swallow			4			4
Black-and-white warbler	2	3	4	4	6	19
Black-billed cuckoo	5	2	2	1	4	14
Black-backed woodpecker		1				1
Black-capped chickadee		7	9	4	6	26
Brown-headed cowbird	5	8	4	6	12	35
Blue jay	15	21	11	11	14	72
Bobolink	61	66	42	47	35	251
Brewers blackbird		12	9	5		26
Brown creeper		2				2
Brown thrasher	6	10	9	8	3	36
Black-throated green warbler	5	2	4	3	3	17
Canada warbler			1			1
Clay-colored sparrow	12	18	19	15	22	86
Cedar waxwing	14	10		6	17	47
Chipping sparrow	16	6	9	4	9	44
Cliff swallow	0		2			2
Common grackle	3				1	4
Common raven	2	7	4	4	6	23
Common yellowthroat	5	10	12	16	11	54
Chestnut-sided warbler	11	12	20	29	21	93
Dark-eyed junco					1	1
Downy woodpecker	1	1	1	2		5
Eastern bluebird		2	1			3
Eastern kingbird	1	1	8	1	2	13
Eastern meadowlark	3	3	2	2	6	16
Eastern phoebe	1	1	1		5	8
Eastern wood pewee	6	7	4	5	6	28

<b>Species Code</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>Grand Total</b>
European starling	1		3		2	6
Field sparrow	2		1	2		5
Great-crested flycatcher	2	1	2	4		9
Gray catbird			1	1	4	6
Golden-winged warbler					4	4
Hairy woodpecker		1	1			2
Hermit thrush	10	22	14	20	12	78
House sparrow			1		4	5
House wren	1				1	2
Indigo bunting	5	3	1	3	2	14
LeConte's sparrow		3	1		5	9
Least flycatcher	10	14	17	12	11	64
Magnolia warbler		3				3
Mourning dove	1	6	7	2	3	19
Mourning warbler	6	4				10
Nashville warbler	8	12	12	12	28	72
Northern flicker	6	4	3	2	2	17
Baltimore (northern) oriole				1	1	2
Northern waterthrush			1		1	2
Ovenbird	37	39	37	42	39	194
Pine grosbeak					1	1
Pine warbler		2	1	1	1	5
Purple finch		1		2	2	5
Rose-breasted grosbeak	8	7	12	20	27	74
Red-breasted nuthatch	2	2	1	2		7
Red-eyed vireo	38	46	39	41	61	225
Rufous-sided towhee	16	16	17	19	20	88
Ruby-throated hummingbird	1	1		1	1	4
Red-winged blackbird	45	40	81	53	87	306
Savannah sparrow	72	73	125	63	71	404
Scarlet tanager		5	4	12	6	27
Sedge wren	17	22	15	29	15	98
Song sparrow	24	14	20	9	14	81
Solitary vireo		1		5		6
Swamp sparrow	1	5	7	4	7	24
Swainson's thrush					2	2
Tree swallow			1			1

<b>Species Code</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>Grand Total</b>
Veery	22	6	17	14	28	87
Vesper sparrow	5	3	7	5	2	22
Warbling vireo			1		1	2
White-breasted nuthatch				2		2
Wood thrush	1					1
White-throated sparrow	5	6	4	2	3	20
Yellow-billed cuckoo					1	1
Yellow-bellied sapsucker		2	8	1		11
Yellow-rumped warbler	2	6	3	5	5	21
Yellow warbler	5	3	1	5	7	21
<b>Grand Total</b>	<b>554</b>	<b>650</b>	<b>704</b>	<b>621</b>	<b>757</b>	<b>3,286</b>