Spring and Summer 2019 Bird Monitoring Report

Canal Shores

Submitted by: Judy Pollock, Living Habitats

November, 2019

Chestnut-sided Warbler pc: Demayne Murphy

Executive Summary

In the spring and summer of 2019, the section of Canal Shores Golf Course north of Isabella Road was surveyed by ten individuals who visited the site on six mornings and two afternoons per week, recording numbers and locations of birds observed. The study demonstrated the importance of the site for migratory birds.

Sightings were recorded in the online data repository eBird, which allows for comparisons with other sites and aggregates data from all users including the monitors who participated in this study. When the survey began in April, the total number of species recorded since 1985 in the Canal Shores hotspot was 142. The current total is 161. This monitoring effort added 13 of the new sightings. 137 birds were seen this spring in Canal Shores, most by our monitors. The survey demonstrated that most of the regularly-occurring landbirds in our region, with the exception of a few specialized prairie birds, are using Canal Shores.

Certain birds have been designated of high conservation concern by the Bird Conservation Network, which has adapted national lists of Birds of Conservation Concern to the Chicago region. Thirty-three Birds of Conservation Concern were observed on the course; 32 Migrants and one nesting (Northern Flicker).

The mapping exercise revealed the areas of the course that receive the greatest use by birds: all wooded sections along the Channel, all wide sections of woods, and oak-dominated areas. Isabella Woods, with its oak trees, diverse native vegetation and wide swathe of woodland deserves special mention as being used by a great number of birds and bird families, as well as bird species not observed elsewhere on the course. Various features are used by different families in different weeks and different weather conditions. These are summarized in the report.

Recommendations include maintaining a diversity of plant species, ages and heights and including large habitat areas and dense clumps, avoiding fragmentation of woods, maintaining dead wood (snags and brushpiles), and replacing invasives with native vegetation in a phased manner.

Overview

In January 2016, the Evanston Wilmette Golf Course Association, which runs and maintains Canal Shores Golf Course, received a planning grant to enable Canal Shores to "hire a design engineering firm to develop a comprehensive habitat restoration and land use plan." In April 2016, Canal Shores selected PRI, Planning Resources, Inc. for the job. PRI utilized this three-step approach:

1. conduct natural resource inventories, including delineation of wetlands, an inventory of trees, and mapping of the general habitat across the property
2. identify restoration and green infrastructure opportunities; and
3. develop an Ecological Master Plan that provides a clear understanding of the site's goals and tangible direction on how to achieve those goals.

The results of the report can be found at the links here: https://canalshores.org/eco-master-plan/

This study was undertaken as a supplement to the report. The course provides stopover habitat in an urban area for the tens of thousands of Migrant landbirds flying over Lake Michigan at daybreak on heavy migration days. A report describing priority migratory stopover habitat in the Chicago region (Ewert et. al., 2008) assigned its highest ranking to almost the entire length of Canal Shores Golf Course, due to the presence of suitable habitat within 1 km of the lakefront. Only a part of the short section south of Lincoln Street does not meet these criteria.

Section of Canal Shores	Distance to lakeshore from easternmost point (km) (<1km=Highest priority habitat)
North section (across canal from Bahai Temple)	0.27
Isabella Street	0.55
Central Street	0.84
Lincoln Street	0.95
Green Bay Road	I.66

Habitat preferences of migratory birds of conservation concern were studied in the Chicago area (Pollock et. al. 2004). The course has shown to provide superior habitat for migratory birds. The course also provides nesting habitat in an urban area for a few birds of conservation concern. In addition, it is helpful to know nest locations when renovations or maintenance are undertaken.

Purpose

The purpose of this study is to:

- determine the most important concentration areas for migratory birds along the course,
- add to the site's inventory of birds, and
- determine the nesting locations for birds along the north third of the course.

Results were shared with course managers and board members, monitors and stewardship volunteers.

Protocol

Volunteer monitors with good to excellent bird identification skills visited the site once a week if possible during migration, walking the course on both sides of the river from Isabella to Sheridan. They used maps to record approximate locations of birds observed, omitting some very common birds. They also noted landscape features that the birds were using. During nesting season, an additional 3 lists were made to observe nesting behavior and record nest locations. Data was recorded on a map all well as entered into the eBird Hotspot, "Canal Shores Golf Course". Details of the protocols can be found in Appendix A.

Effort

Ten individuals participated in teams of 1-3, visiting the site once a week if possible during migration. Every day but Saturday was covered. The result was 31 complete morning visits, 6 partial morning visits, 15 complete afternoon visits, and 1 partial afternoon visit. In the 58 days of the survey period, 53 visits took place (sometimes on the same day). In every case but one, partial visits omitted the northernmost section, holes 6 and 7. This constitutes very thorough coverage of the course. Because the composition of migratory birds changes from day to day, this through coverage was important to get a complete picture of the bird use of the site.

During the nesting season, three birders each covered 1/6 of the course for an extensive search for nesting behaviors. There were not enough volunteers to cover the entire course.

Volunteers who generously donated their expertise to this project include:

Jeff Bilsky	Jerry Herst	Kat O'Reilly
Julie Dorfman	Tamima Itani	Matthew Rooney
Patti Greenberg	Demayne Murphy	Amanda Tichacek

Analysis

In order to develop the conclusions in this report, the list of eBird sightings was consulted as well as the maps developed by each monitor. Monitors' sightings recorded on the maps were compiled into lists, and were analyzed according to which section of the course they were observed on. Sections were divided according to habitat features. Analysis took into consideration total number of birds using each section, as well as birds per acre, since section size varied. Fourteen very common species were excluded, and only visits on which the entire route was completed were included in the analysis of how birds used the various sections.

Results

EBird is the best-used repository of birders' data. When the survey began in April, the total number of species recorded since 1985 in the Canal Shores hotspot was 142. The current total is 161. This monitoring effort added 13 of the new sightings. 137 birds were seen this spring in Canal Shores, most by our monitors. The survey demonstrated that most of the regularly-occurring landbirds in our region, with the exception of a few specialized prairie birds, are using Canal Shores. A checklist of all birds sighted can be found in Appendix 4.

Comparisons of eBird totals from a few other parks along the North Shore Channel:

Site	Species Recorded	Number of Visits
Canal Shores	161	197
Harbert Park (Main-Dempster)	152	183
*River Park (south of Foster)	174	262
Ronan Park (north of Lawrence)	148	386

*River Park is located at the confluence of the Chicago River and the North Shore Channel; the former dam and broad expanse of water provides habitat for a wider range of birds.

Total # bird species reported from the North Shore Channel eBird hotspot (601 checklists): 171

To view a bar chart that shows seasonal abundance of each species, visit eBird: https://ebird.org/barchart?r=L3780717&yr=all&m=. Also see Appendix 3. This chart shows which birds are present in each month and how abundant they are, and should be helpful in scheduling management activities.

During the monitoring period, site high counts were set for 110 species, although for 22 species the high count was one single bird. These are high counts for one visit. Sparrows, warblers, thrushes and kinglets use the site in high numbers, as do insectivores such as swifts and swallows.

Notable records set in Spring 2019:

Species	Highest total recorded in one visit	Species	Highest total recorded in one visit
Swamp Sparrow	10	Hermit Thrush	11
Belted Kingfisher	3	White-throated Sparrow	32
Veery	4	Ruby-crowned Kinglet	21
Blue-headed Vireo	6	Nashville Warbler	7
Yellow-rumped Warbler	47	Palm Warbler	53
Rose-breasted Grosbeak	16	Black-and-white Warbler	10
Gray Catbird	11	Blue-gray Gnatcatcher	13
Pine Siskin	10	Swainson's Thrush	13
American Redstart	24	Chimney Swift	45
Chestnut- sided Warbler	9	Northern Rough-winged Swallow	25

Certain birds have been designated of high conservation concern by the Bird Conservation Network, which has adapted national lists of Birds of Conservation Concern to the Chicago region. These birds deserve special attention. Thirty-three Birds of Conservation Concern were observed on the course. See Table below and Appendix 2.

Birds of Conservation Concern	
Habitat	**Number of Species**
Nest in local woodlands	8
Nest in local shrublands	6
Nest in local wetlands	2
Nest in local grasslands	1
Migrate through	16

Well-used Sections

For the purposes of this analysis, the route was divided into sections according to discrete habitat elements, which was the most common way that observers divided them when recording data. These sections also often corresponded to locations that had features that were well-used by birds. They are not of uniform size.

The results presented here are all summarized in the maps on the next few pages.

Appendix 5 shows how birds used the marked sections on the Best Used Sections map, and the grading system used. All bird sightings in a section were totaled, except common birds that were omitted from this section of the study. The visits on which each individual species was observed was also totaled. The second total was used to add a + to some of the B and C grades for total number of birds (the first letter grade on the maps), which were assigned as follows:

200+ = A++

150-200 = A+

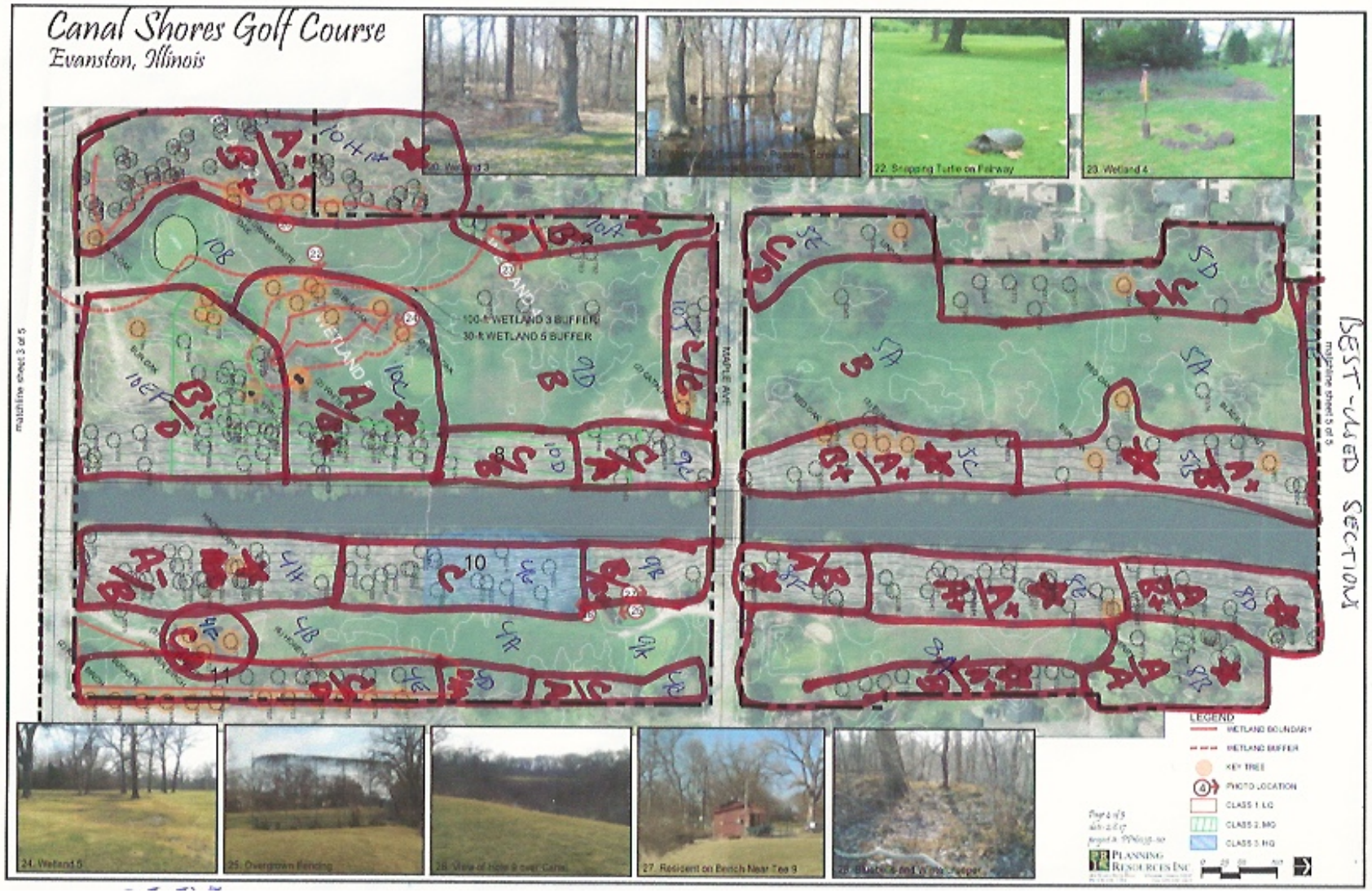
100-150 = A

50-100 = B

25-50 = C

In order to correct for the fact that the sections were of unequal acreage, the total number of birds was divided by the acreage. A second grade was assigned (the lower grade on the maps). This method favored very small sections, since it is easier to see into them. Sections highlighted in yellow received high marks in both columns, and are starred in the maps on the next two page.

This analysis shows that wooded sections along the Channel, all wide sections of woods, and oak-dominated areas are the best used by birds. Isabella Woods, with its oak trees, diverse native vegetation and wide swathe of woodland; and every wooded section along the Channel were very well-used. Sections 8D and 8B function as a single habitat, again showing the value of a wide patch of woods.


Canal Shores Golf Course
Evanston, Illinois
22. Snapping Turtle on Fairway
23. Wetland 4
100-ft WETLAND 3 BUFFER
30-ft WETLAND 5 BUFFER
WETLAND 5
MAPLE AVE.
24. Wetland 5
25. Overgrown Fencing
27. Resident on Bench Near Tee 9
LEGEND
WETLAND BOUNDARY
WETLAND BUFFER
KEY TREE
PHOTO LOCATION
CLASS 1 HQ
CLASS 2 MQ
CLASS 3 RQ
PLANNING RESOURCES INC
BEST-USED SECTION

BEST-USED SECTIONS

This table summarizes the results in Appendix 7. It shows which sections of the course are best used by various bird families. Common birds were omitted from the analysis as described above. Results were not adjusted for acreage.

Sections ranked by how many families used most frequently			
Rank	Section	Number of families	Features
1	10HI (Isabella Woods)	7 (Woodpeckers, Vireos, Flycatchers, Kinglets etc., Thrushes/mimids, Sparrows, Warblers)	Native oaks, puddles, remnant native habitat
2	5C (Along bank, south section)	6 (Woodpeckers, Flycatchers, Kinglets etc., Thrushes/mimids, Sparrows, Warblers)	Dense riparian woods
2	10C (clump of oaks in wet lawn)	6 (Woodpeckers, Vireos, Flycatchers, Kinglets etc., Thrushes/mimids, Warblers)	Oaks, puddles
2	5B (Along bank, north section)	6 (Woodpeckers, Flycatchers, Kinglets, etc., Thrushes/mimids, Sparrows, Warblers)	Dense riparian woods, shrubby clumps and openings, red oak tree in lawn well-used
3	8E (Along bank, center section)	5 (Woodpeckers, Flycatchers, Kinglets etc., Sparrows, Warblers)	Dense riparian woods, shrubby clumps and openings, fresh cut brush pile a big attraction
3	8A (East side plus lawn)	5 (Woodpeckers, Vireos, Kinglets etc., Sparrows, Warblers)	Clump of mature trees used by arboreal species, shrubs used by ground-feeding birds
3	7D (west side, southern section)	5 (Vireos, Flycatchers, Kinglets etc., Thrushes/ mimids, Warblers)	Garden, brushy tangle, tree border
3	6E (Along bank, South section)	5 (Vireos, Kinglets etc., Thrushes/mimids, Sparrows, Warblers)	Dense riparian woods, shrubby clumps
4	8D (Along bank, north section)	4 (Kinglets etc., Thrushes/mimids, Sparrows, Warblers)	Dense riparian woods, shrubby clumps and openings, together with 8B makes a significant area of structurally and species diverse woods

Sections ranked by how many families used most frequently			
5	10EF (along bank, southern section, includes adjacent waste area)	3 Woodpeckers, Thrushes, Warblers	Dense riparian woods, shrubby clumps, piles of landscape waste, openings
5	6D (clump in woods)	3 Thrushes, Sparrows, Warblers	Shrubby clump well used by ground-feeding birds: sparrows, thrushes
5	8B (East side, north section)	3 Woodpeckers, Kinglets etc., Warblers	Woods across trail from riparian section; birds fly back and forth

Isabella Woods deserves special mention not only because high numbers of birds and bird families were observed here, but because its unique habitat hosted two bird species not seen elsewhere on the course: Yellow-throated Vireo, an oak woodland bird and Rusty Blackbird, a rare bird of wet woods. Many more Northern Waterthrushes (another bird of wet woods) were seen here than in other parts of the course.

Well-used Features

Features noted on the maps on the following 2 pages were determined by summarizing notes from monitors. Not all monitors made notes about features. The various features are used by different families in different weeks and different weather conditions.

- Early in the spring, silver maples and cottonwoods were well-used. In early May, oaks were well-used. Late in the season, honey locust and mulberry became important.
- Mature trees, brush piles, wooded slopes, streamside woody vegetation, snags, downed trees, viny tangles were all important throughout the seasons
- Larger areas of woods held more birds, both along the banks and in the remnant oak woods (Isabella Woods)
- When temperatures drop, so do the birds - brushy banks and lawns become important. Swifts and swallows were observed foraging over lawns in large numbers particularly at holes 6 and 7.


BEST-USED FEATURES
matchline sheet 5 of 5
tree row
snags
Canal Shores Golf Course
Evanston, Illinois
LEGEND
WETLAND BOUNDARY
WETLAND BUFFER
KEY TREE
PHOTO LOCATION
CLASS 1: LQ
CLASS 2: MQ
CLASS 3: HQ
PLANNING RESOURCES INC.
MAPLE AVE
matchline sheet 3 of 5
21. Wetland 4
22. Snapping Turtle on Fairway
24. Wetland 5
25. Overgrown Fencing
26. View of Hole 8 over Canal
27. Resident on Bench Near Tee 9
7E
5D
5A
5B
5C
5E
8D
8B
8E
8A
8F
10J
9C
10A
9D
10D
9B
9A
4C
4G
4D
4A
4E
4H
4B
10C
10H I
10B
10EF
downed tree tangle
weed pile
cotton-woods
dense invasive shrubs
cotton-wood
brush pile
silver maples
honey locust
wet garden
fallen logs
shrub clumps
log
brushy understory
puddle
low brush
oak trees
oaks
cottonwood
evergreens
WETLAND 5
100-ft WETLAND 4 BUFFER
30-ft WETLAND 5 BUFFER
8
10
11
NOTE: PART OF 4I OUTSIDE CS BOUNDARY

BEST-USED FEATURES

* NOTE: 6D, 6E, 6C OUTSIDE C5 BOUNDARIES

Observations on the Water

All three sections of the North Shore Channel were used by waterfowl and waterbirds; the section between Maple and Linden was most heavily used by the widest variety of species. The chart below documents sightings during the spring study period.

The most notable sightings were the Black-crowned Night-herons that were almost always present south of Sheridan Rd; as many as 10 were sighted at one time. The area south of the spillway provides excellent foraging. It has long been speculated that these birds nest on the Channel. The spring observation period coincides with the birds' nesting season, which begins in April.

Green Heron is a secretive bird that nests on the banks of the North Shore Channel - it is possible that one may have nested in the section where it was sighted three times, or perhaps in a section nearby. These observations also took place during the birds' nesting season, which begins in April.

The study period began in early April, which is the end of waterfowl wintering season. Many wintering waterfowl in addition to Red-breasted Merganser and Common Goldeneye use the site during the winter. Waterfowl that nest in our area - Canada Goose, Mallard and Wood Duck - will have been on nests during most of the study period and likely nested nearby. Mallards or Wood Ducks may have nested in Isabella Woods where they were frequently sighted. Belted Kingfisher also likely nested somewhere along the banks, either inside or outside of the study area.

Birds Observed on the Different Sections of the North Shore Channel						
Bird Species	**Maple to Isabella (4,9,10)**		**Linden to Maple (5,8)**		**Sheridan to Linden (6,7)**	
	Number of visits where species was observed	High Count	Number of visits where species was observed	High Count	Number of visits where species was observed	High Count
Canada Goose	4	1	5	2	4	2
Wood Duck			6	5		
Mallard	1	1	8	2	8	2
Blue-winged Teal			1	1		
Common Goldeneye					1	1
Red-breasted Merganser	4	2	5	7	2	5
Ruddy Duck			1	1		
Great Blue Heron	4	1	2	1	1	1
Green Heron	3	1	1	1		
Black-crowned Night-heron	5	2	10	10	Almost every visit	8
Ring-billed Gull	1	1	1	1	1	1
Herring Gull			2	2	1	1
Caspian Tern	1	2	1	1	3	1
Belted Kingfisher	4	1	4	2	1	1

Breeding Season Observations

One Bird of Conservation Concern nested just adjacent to the course - Northern Flickers in the dead tree on the east side of the canal at Linden.

Other observations:

Species	Hole (number of pairs)	Confirmed or Probable	Breeding Behavior
Northern Flicker	8 (1), 10? (nest-building)	Confirmed	Occupied Nest
American Robin	10 (2), 5 (1), 7(1)	Confirmed	Occupied Nest
Balimore Oriole	10 (1), 8 (1)	Confirmed	Occupied Nest
House Finch	7 (south evergreens)	Confirmed	Occupied Nest
Blue Jay	8 (1)	Confirmed	Occupied Nest
Common Grackle	7 (north evergreens), 8(1)	Confirmed	Occupied Nest
European Starling	8(2)	Confirmed	Occupied Nest
Red-Bellied Woodpecker	5, 8, 10	Probable	Nest-building, territorial behavior, pair
Red-winged Blackbird	7	Probable	Courtship, agitated behavior
Hairy Woodpecker	10	Probable	Courtship
Gray Catbird	9	Probable	Carrying food
American Goldfinch	9	Probable	Gathering nest material

Management recommendations

These ideas are based on observation of how birds use the site as well as best practices for migratory birds.

1. Retain brush piles during migration where practical. Consider siting these in locations where they can be retained throughout the season.
2. Remove invasive woody vegetation in a phased manner. Replace with large areas of tall, dense, layered, diverse vegetation interspersed with clearings with diverse native herbaceous plantings and viny, shrubby clumps.
3. Retain brushy, viny clumps and transition them to native species as it becomes feasible.
4. Retain a significant number of dead and downed trees that do not pose a safety hazard
5. Mature trees, especially oak, cottonwood, honey locust, mulberry and silver maple, should not be removed unless necessary
6. Avoid further fragmentation in the largest areas of woods (e.g. Isabella Woods, hole 5 banks, north section of hole 8).

References

Dave Ewert (Principal Investigator), Kimberly Hall (Co-Investigator), Patrick Doran (Co-Investigator), Upper Midwest and Great Lakes Landscape Conservation Cooperative (administrator), Upper Midwest & Great Lakes LCC Data Manager (Point of Contact), LCC Network Data Steward (Point of Contact), 2013-02-06. Report: On-a-wing and a (GIS) Layer: Prioritizing migratory bird habitat along Great Lakes shoreline. https://www.sciencebase.gov/catalog/item/59df97e9e4b05fe04cce9c92 Retrieved May 28, 2019.

Sullivan, B.L., C.L. Wood, M.J. Iliff, R.E. Bonney, D. Fink, and S. Kelling. 2009. eBird: a citizen-based bird observation network in the biological sciences. *Biological Conservation* 142: 2282-2292.

BCN Birds of Conservation Concern. https://www.bcnbirds.org/trends13/concern.html

Pollock, J., K. Glennemeier, and D. Stotz. 2004. Migrant Bird Habitat Study. Published online at http://www.bcnbirds.org/greenpapers_files/migranthabitatstudy.pdf

Appendix 1 Protocols - Migrant and Nesting

Monitoring Protocol: Monitoring activity centers of Migrant Bird Populations
Canal Shores Golf Course
Living Habitats
Developed –March 2019

The purpose of this monitoring program is to determine the most important concentration areas for migratory birds along the course, and to add to the site's inventory of birds. The inventory, according to eBird, currently stands at 132 species. Incidental data suggesting breeding will also be noted. Data collected will be analyzed and shared with course managers and board members, monitors and stewardship volunteers.

Procedures

Overview:

Observers will survey the golf course on both sides of the Channel between Isabella and Sheridan, walking in the opposite direction from play and being careful not to interfere with golfers that are about to hit a ball. Observers will record the number and species of each bird seen or heard, note the location of each bird on the map, and enter the day's list into eBird.

Observers:

Those who undertake this protocol should be capable of identifying at least 95% of the commonly encountered Migrant birds to the family level (warbler, sparrow, thrush, etc.) by sight, and at least 50% to the species level by song.

Note that observers are responsible for their own personal safety during the survey. Neither the Evanston Wilmette Golf Course Association, Living Habitats, nor any other entity or individual accepts any responsibility for observer safety. In an emergency, dial 911.

Survey Timing: Surveys will be conducted at various times. Monitors will visit the site during the assigned time once per week, or as otherwise arranged. Monitors that need to miss a session, are requested to arrange for a substitute from among the group if possible.

Before your field day assemble the following items:

- binoculars
- waterproof boots

- copy of course map
- A voice recorder OR a field notebook OR a smartphone with eBird app
- At least 2 pens

You may also need:
cell phone, field guide, water and snacks, hat, sunscreen, insect spray

On the Field Visit:

- Arrive with enough time to complete the course before the designated end time (9am for most).
- Walk the course in the opposite direction of play.
- Note your name, the date, and any adverse weather conditions on the map.
- When you see or hear a bird, note the location it was observed on the map by writing the 4-letter banding code or a reasonable approximation. Also note the bird on a list that you will enter into eBird. This can be done via the app in the field, or by reconstructing the list from your map, written notes, or voice notes after your field visit. Remember to record the beginning and ending time of your visit, because you will need this information for eBird.
    - Do not re-count individual birds on your bird list, but do note on the map the different places they are seen actively foraging or, in the case of a predator, perching. For example, if a Cooper's Hawk is patrolling the area, you might see the bird at several points. Count it only once on your ebird list, but mark all the places you observe it foraging or perching on the map.
    - Birds that are flying over but not using the habitat on the study area are not counted. Birds flying below or at canopy level, flying from one perch to another, or actively foraging on or above the study area are recorded.
    - Do not use anything to attract birds or otherwise distort the count. You may pish to attract and identify unknown birds that are present.
- If you cannot identify a bird as to species, identify it to the lowest taxonomic level possible and note it as such (e.g. woodpecker sp. or warbler sp.).
- If you observe any of the breeding behaviors listed in the Appendix, note them on the map and clearly indicate the species and location.

•Record all data on the map, and enter the data into eBird within the week. Enter checklist data as traveling count into the hotspot, "Canal Shores".

Finally, more specific data will be collected from the site to characterize the vegetation types at the well-used locations. This will be done by survey organizers. **If you make observations that would be useful - for example specific tree or plant species or other notes about habitat features the birds are using - please record them on the map.**

Transect Location:

The map at left shows the transect location. Surveyors may begin at any point on the course, but must completely cover both sides of the canal and walk in the opposite direction of play.

One sample route would be to start at the 10th hole on Isabella, walk north to Maple, walk east on Maple to the other side of the Channel, walk north to Linden, cross the Channel heading west, walk up the west side of the 7th hole to Sheridan and then turn around and walk back down to Linden on the east side of the 6th hole, walk west on Linden and then south along the 5th hole, then east across the channel on Maple and south along the 4th hole.

Be sure to survey all the golf course and buffer zones, including Isabella Woods.

Data Submittal:

Enter traveling count data for each survey into the eBird hotspot.

Please submit your electronic data as soon as possible after your survey, preferably within a week. Your effort will be most valuable and we'll have better data quality if you do.

Record locations of bird sighted on ta new map each time. At the end of the season, maps may be mailed to Judy Pollock, 411 Darrow Ave, Evanston IL 60202 or scanned and emailed to jpbobolink@gmail.com.

Rarities: If you think you have seen or heard a rare bird, do your best to document your sighting with either a photograph or a recording. Make good notes about the sighting. Contact other observers to verify your sighting if you think it is appropriate. For more information about documenting rare birds, see the Illinois Ornithological Records Committee web page: http://www.illinoisbirds.org/illinois-ornithological-records-committee/

Resources

Song Learning:

- **Bird Song Ear Training Guide: Who Cooks for Poor Sam Peabody? Learn to Recognize the Songs of Birds from the Midwest and Northeast States.** John Feith. A favorite of many.
- **Birding by Ear: Eastern/Central (Peterson Field Guides) Audio CD.** Richard K. Walton and Robert W. Lawson. Edited by Roger Tory Peterson – This is a very good introduction to learning bird songs.
- **Stokes Field Guide to Bird Songs: Easter Region – Audio CD.** Donald and Lillian Stokes and Lang Elliot – This is a fairly complete set of songs with more variations than most collections.
- Phone apps from iBirdPro, Sibley, etc.
- Larkwire.com – Excellent program for song learning and for improving song recognition.

References

Dave Ewert (Principal Investigator), Kimberly Hall (Co-Investigator), Patrick Doran (Co-Investigator), Upper Midwest and Great Lakes Landscape Conservation Cooperative (administrator), Upper Midwest & Great Lakes LCC Data Manager (Point of Contact), LCC Network Data Steward (Point of Contact), 2013-02-06. Report: On-a-wing and a (GIS) Layer: Prioritizing migratory bird habitat along Great Lakes shoreline. https://www.sciencebase.gov/catalog/item/59df97e9e4b05fe04cce9c92 Retrieved May 28, 2019.

Appendix

Nesting codes from the Wisconsin Breeding Bird Atlas.

BREEDING CODES
POSSIBLE
H In appropriate Habitat
S Singing male (excluding Migrants) *PROBABLE*
S7 Singing male heard 7+ days apart
M Multiple (7+) singing males
P Pair in suitable habitat
T Territory defense
C Courtship display/copulation
N Visiting probable Nest site
A Agitated behavior
B Woodpecker/wren nest Building/cavity excavation
CN Carrying Nest material
NB Nest Building (except woodpeckers & wrens)
DD Distraction Display
UN Used Nest (use with caution)
ON Occupied Nest
FL Recently FLedged young
CF Carrying Food
FY Feeding Young
FS Carrying Fecal Sac
NE Nest w/Eggs
NY Nest w/Young

Monitoring Protocol: Monitoring Breeding Bird Populations
Canal Shores Golf Course
Living Habitats
Developed –May 2019

Overview

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Procedures

Overview:

The goal of the summer survey is to confidently describe the location of all nests. Observers will survey an assigned section of the golf course along the Channel between Isabella and Sheridan, walking in the opposite direction from play and being careful not to interfere with golfers that are about to hit a ball. Observers will spend at least 10 minutes each in quiet observation in at least 4 vantage points in their section, in order to observe nesting behaviors. Breeding codes (see Appendix) and species will be noted on a map. Observers will also record the number and species of each bird seen or heard, and enter the day's list into eBird.

Observers:

Those who undertake this protocol should be capable of identifying at least 95% of the commonly encountered nesting birds to the species level by sight and /or by song.

Note that observers are responsible for their own personal safety during the survey. Neither the Evanston Wilmette Golf Course Association, Living Habitats, nor any other entity or individual accepts any responsibility for observer safety. In an emergency, dial 911.

Survey Timing: Surveys will be conducted at times convenient to the monitor. Monitors will visit the site during June and the first half of July at least once every two weeks, or as otherwise arranged. Spend at least 4.5 hours searching for nesting birds in your section spread over at least 3 visits.

Before your field day assemble the following items:

- binoculars
- waterproof boots
- copy of course map
- A voice recorder OR a field notebook OR a smartphone with eBird app
- At least 2 pencils

You may also need:
cell phone, field guide, water and snacks, hat, sunscreen, insect spray

On the Field Visit:

- Walk the course in the opposite direction of play.
- Note your name, the date, and any adverse weather conditions on the map.
- Choose a good vantage point in your section and spend 10-20 minutes in quiet observation. You may want to bring a field chair. Be sure that you are not interfering with play.

- When you observe birds doing any of the breeding behaviors listed in the Appendix, note them on the map and clearly indicate the species and location. Note the location it was observed on the map by writing the 4-letter banding code or a reasonable approximation (See resource section for a list of these codes), and also the breeding code. Optimistic example - RHWO-FY. Use pencil and then go over in pen when you have concluded.

- If you observe sustained agitated behavior from a nearby bird, change your location. Do not disturb nests or nesting birds. It is not necessary to observe the inside of the nest - use other methods to confirm breeding such as observing adults carrying food and hearing nestlings begging.

- When you see or hear any bird, note it on a list that you will enter into eBird. EBird data entry can be done via the app in the field, or by reconstructing the list from your written notes or voice notes after your field visit. Remember to record the beginning and ending time of your visit, because you will need this information for eBird.
    - Do not double count individual birds on your bird list
    - Birds that are flying over but not using the habitat in the study area are not counted. Birds flying below or at canopy level, flying from one perch to another, or actively foraging on or above the study area including the Channel are recorded on the eBird list.
- Record data on the map, and enter the data into eBird within the week. Enter checklist data as traveling count into the hotspot, "Canal Shores Golf Course".
- Repeat the above steps at other promising locations.

Finally, more specific data will be collected from the site to characterize the vegetation types at the well-used locations. This will be done by survey organizers. **If you make observations that would be useful - for example specific tree or plant species or other notes about habitat features the birds are using - please record them on the map.**

Study Section Location:

Study Section locations will be determined after the number of volunteers is known. The map at left will be revised to divide it into at sections. Surveyors must completely cover both sides of the section and walk in the opposite direction of play when possible.

Be sure to survey all the golf course and buffer zones.

Five preliminary sections: bottom half of 4 and 10; top half of 4 and 10 plus 9; bottom half of 8 and 5; top has of 8 and 5; all of 6 and 7 (we will divide 6 and 7 in half if 6 people are interested)

Data Submittal:

Please send a photo of your first map to jpbobolink@gmail.com.

Enter traveling count data for each survey into the eBird hotspot.

Please submit your electronic data as soon as possible after your survey, preferably within a week. Your effort will be most valuable and we'll have better data quality if you do.

Record locations of bird sighted on a new map each time. At the end of the season, maps may be mailed to Judy Pollock, 411 Darrow Ave, Evanston IL 60202 or scanned and emailed to jpbobolink@gmail.com.

Rarities: If you think you have seen or heard a rare bird, do your best to document your sighting with either a photograph or a recording. Make good notes about the sighting. Contact other observers to verify your sighting if you think it is appropriate. For more information about documenting rare birds, see the Illinois Ornithological Records Committee web page: http://www.illinoisbirds.org/illinois-ornithological-records-committee/

Resources

Banding Codes: Toward the upper right of this page are links to lists of Banding Codes.
https://www.birdpop.org/pages/birdSpeciesCodes.php

Song Learning:

- **Bird Song Ear Training Guide: Who Cooks for Poor Sam Peabody? Learn to Recognize the Songs of Birds from the Midwest and Northeast States.** John Feith. A favorite of many.
- **Birding by Ear: Eastern/Central (Peterson Field Guides) Audio CD.** Richard K. Walton and Robert W. Lawson. Edited by Roger Tory Peterson – This is a very good introduction to learning bird songs.
- **Stokes Field Guide to Bird Songs: Easter Region – Audio CD.** Donald and Lillian Stokes and Lang Elliot – This is a fairly complete set of songs with more variations than most collections.
- Phone apps from iBirdPro, Sibley, etc.
- Larkwire.com – Excellent program for song learning and for improving song recognition.

References

Dave Ewert (Principal Investigator), Kimberly Hall (Co-Investigator), Patrick Doran (Co-Investigator), Upper Midwest and Great Lakes Landscape Conservation Cooperative (administrator), Upper Midwest & Great Lakes LCC Data Manager (Point of Contact), LCC Network Data Steward (Point of Contact), 2013-02-06. Report: On-a-wing and a (GIS) Layer: Prioritizing migratory bird habitat along Great Lakes shoreline. https://www.sciencebase.gov/catalog/item/59df97e9e4b05fe04cce9c92 Retrieved May 28, 2019.

Appendix

BREEDING CODES
PROBABLE
P Pair in suitable habitat
T Territory defense
C Courtship display/copulation
N Visiting probable Nest site
A Agitated behavior
B Woodpecker/wren nest Building/cavity excavation
CONFIRMED
CN Carrying Nest material
NB Nest Building (except woodpeckers & wrens)
DD Distraction Display
UN Used Nest (use with caution)
ON Occupied Nest
FL Recently FLedged young
CF Carrying Food
FY Feeding Young
FS Carrying Fecal Sac
NE Nest w/Eggs
NY Nest w/Young

Nesting codes from the Wisconsin Breeding Bird Atlas.

Appendix 2 Species of Concern

One Species of Concern nested- Northern Flicker

IL Threatened Black-crowed Night-herons roosted near Gillson throughout the study - as many as 7.

Others used the site during their migration.

Birds of Conservation Concern Reported During the Study Period

	Bird of Concern	Number of Reports	COMMON NAME	SCIENTIFIC NAME
Woodland - 8				
	Woodland	1	Acadian Flycatcher	Empidonax virescens
	Woodland	1	Cerulean Warbler	Setophaga cerulea
	Woodland	85	Northern Flicker	Colaptes auratus
	Woodland	3	Red-headed Woodpecker	Melanerpes erythrocepha
	Woodland	1	Red-shouldered Hawk	Buteo lineatus
	Woodland	21	Veery	Catharus fuscescens
	Woodland	9	Wood Thrush	Hylocichla mustelina
	Woodland	1	Yellow-billed Cuckoo	Coccyzus americanus
Migrant - 16				
	Migrant	9	Bay-breasted Warbler	Setophaga castanea
	Migrant	40	Black-and-white Warbler	Mniotilta varia
	Migrant	25	Black-throated Green Warb	Setophaga virens
	Migrant	14	Blackburnian Warbler	Setophaga fusca
	Migrant	13	Canada Warbler	Cardellina canadensis
	Migrant	6	Cape May Warbler	Setophaga tigrina
	Migrant	22	Chestnut-sided Warbler	Setophaga pensylvanica
	Migrant	1	Common Goldeneye	Bucephala clangula
	Migrant	1	Common Loon	Gavia immer
	Migrant	1	Common Nighthawk	Chordeiles minor
	Migrant	1	Golden-winged Warbler	Vermivora chrysoptera
	Migrant	2	Horned Grebe	Podiceps auritus
	Migrant	17	Nashville Warbler	Oreothlypis ruficapilla
	Migrant	4	Philadelphia Vireo	Vireo philadelphicus
	Migrant	2	Purple Finch	Haemorhous purpureus
	Migrant	2	Rusty Blackbird	Euphagus carolinus

Shrubland - 6				
	Shrubland	1	Black-billed Cuckoo	Coccyzus erythropthalmu
	Shrubland	4	Blue-winged Warbler	Vermivora cyanoptera
	Shrubland	12	Brown Thrasher	Toxostoma rufum
	Shrubland	7	Eastern Kingbird	Tyrannus tyrannus
	Shrubland	9	Field Sparrow	Spizella pusilla
	Shrubland	5	Willow Flycatcher	Empidonax traillii
Wetland - 2				
	Wetland	40	Black-crowned Night-Heron	Nycticorax nycticorax
	Wetland	1	Wilson's Snipe	Gallinago delicata
Grassland -1				
	Grassland	1	Eastern Meadowlark	Sturnella magna

Appendix 3 EBird Histogram for Canal Shores Golf Course

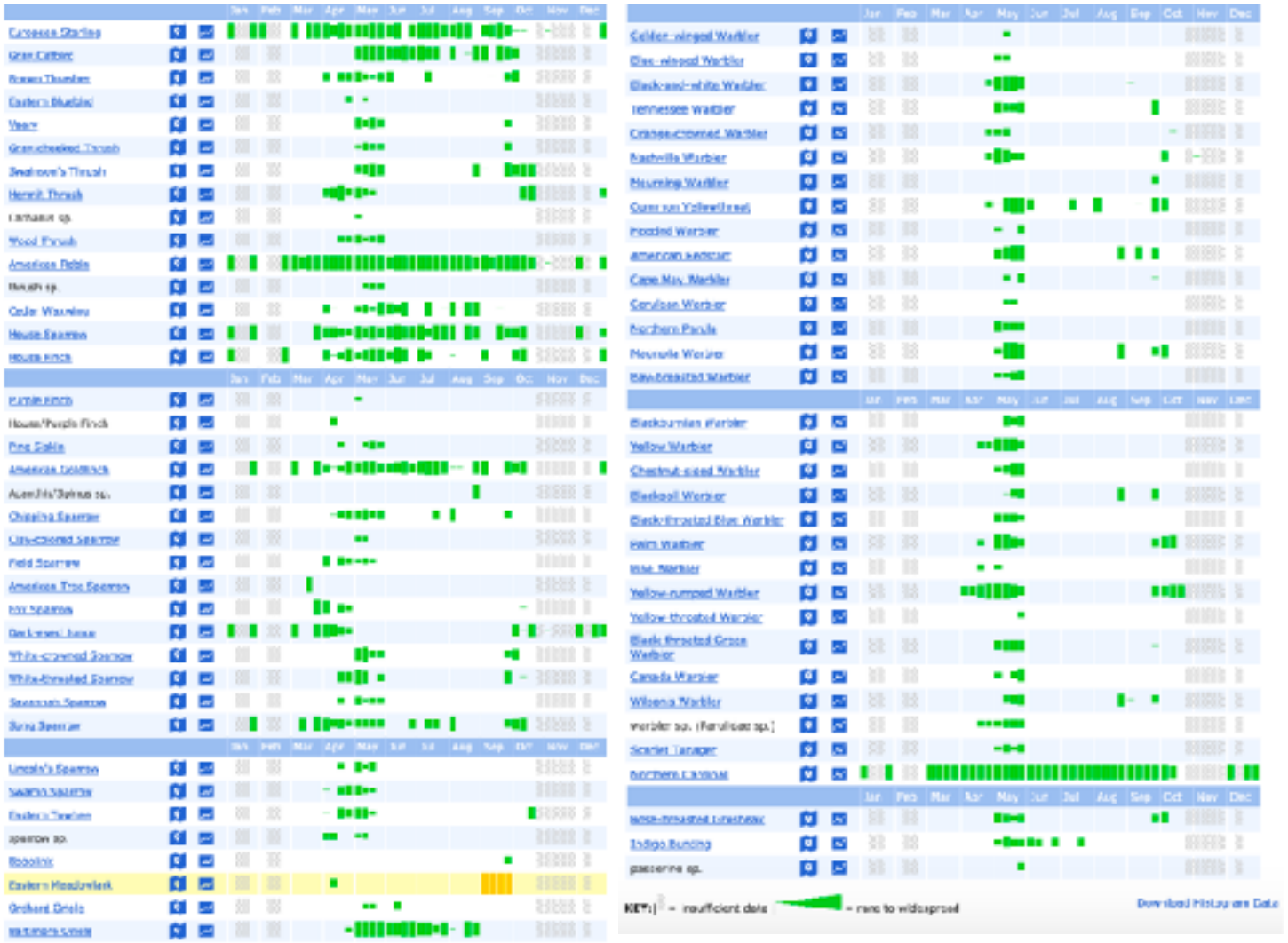

Image provided by eBird (www.ebird.org) and created August 2019.

Appendix 4 Checklist of Birds Reported to eBird Canal Shores Hotspot

		Canada Goose
		Wood Duck
		Blue-winged Teal
		Mallard
		Bufflehead
	Migrant	*Common Goldeneye*
		Red-breasted Merganser
		Ruddy Duck
		duck sp.
Geese and Ducks		
	Migrant	*Horned Grebe*
		Mourning Dove
	Woodland	*Yellow-billed Cuckoo*
	Shrubland	Black-billed Cuckoo
	Migrant	*Common Nighthawk*
		Chimney Swift
		Ruby-throated Hummingbird
Non-passerine Landbirds		
		Killdeer
	Wetland	Wilson's Snipe
		Ring-billed Gull
		Herring Gull
		gull sp.
		Caspian Tern
	Migrant	*Common Loon*
		Double-crested Cormoran
		Great Blue Heron
		Green Heron
	Wetland	Black-crowned Night-Heron
		Belted Kingfisher
Shorebirds, Waterbirds		
		Turkey Vulture
		Sharp-shinned Hawk
		Cooper's Hawk
	Woodland	*Red-shouldered Hawk*
		Red-tailed Hawk
		hawk sp.
		Long-eared Owl
Raptors		
		Yellow-bellied Sapsucker
	Woodland	Red-headed Woodpecker

		Red-bellied Woodpecker
		Downy Woodpecker
		Hairy Woodpecker
	Woodland	Northern Flicker
Woodpeckers		
		American Kestrel
Falcons		
		Eastern Wood-Pewee
		Yellow-bellied Flycatcher
	Woodland	Acadian Flycatcher
		Alder Flycatcher
	Shrubland	Willow Flycatcher
		Alder/Willow Flycatcher (Traill's Flycatcher)
		Least Flycatcher
		Empidonax sp.
		Eastern Phoebe
		Great Crested Flycatcher
	Shrubland	Eastern Kingbird
		Flycatcher sp. (Tyrannidae sp.)
Flycatchers		
		Yellow-Throated Vireo
		Blue-headed Vireo
	Migrant	Philadelphia Vireo
		Warbling Vireo
		Red-eyed Vireo
		Vireo sp
Vireos		
		Blue Jay
		American Crow
Corvids		
		Northern Rough-winged Swallow
		Purple Martin
		Tree Swallow
		Barn Swallow
		Cliff Swallow
Swallows		
		Black-capped Chickadee
		Red-breasted Nuthatch
		White-breasted Nuthatch
		Brown Creeper
		House Wren
		Winter Wren
		Blue-gray Gnatcatcher

		Golden-crowned Kinglet
		Ruby-crowned Kinglet
Chickadees through Kinglets		
	Woodland	Veery
		Gray-cheeked Thrush
		Swainson's Thrush
		Hermit Thrush
		Catharus sp.
	Woodland	Wood Thrush
		American Robin
		Eastern Bluebird
		Thrush sp.
		Gray Catbird
	Shrubland	Brown Thrasher
Thrushes, Mimids		
		European Starling
		Cedar Waxwing
		House Finch
	Migrant	*Purple Finch*
		Pine Siskin
		American Goldfinch
Finches, Waxwing, Starling		
		Chipping Sparrow
		Clay-colored Sparrow
	Shrubland	Field Sparrow
		Fox Sparrow
		Dark-eyed Junco
		White-crowned Sparrow
		White-throated Sparrow
		Savannah Sparrow
		Song Sparrow
		Lincoln's Sparrow
		Swamp Sparrow
		Eastern Towhee
		sparrow sp.
Sparrows		
	Grassland	Eastern Meadowlark
		Orchard Oriole
		Baltimore Oriole
		Red-winged Blackbird
		Brown-headed Cowbird
	Migrant	Rusty Blackbird
		Common Grackle

Blackbirds		
		Ovenbird
		Northern Waterthrush
		Louisiana/Northern Wa erThrush
	Migrant	*Golden-winged Warbler*
	Shrubland	Blue-winged Warbler
	Migrant	Black-and-white Warbler
		Tennessee Warbler
		Orange-crowned Warbler
	Migrant	Nashville Warbler
		Common Yellowthroat
		Hooded Warbler
		American Redstart
	Migrant	Cape May Warbler
	Woodland	*Cerulean Warbler*
		Northern Parula
		Magnolia Warbler
	Migrant	Bay-breasted Warbler
	Migrant	Blackburnian Warbler
		Yellow Warbler
	Migrant	Chestnut-sided Warbler
		Blackpoll Warbler
		Black-throated Blue Warbler
		Palm Warbler
		Pine Warbler
		Yellow-rumped Warbler
		Yellow-throated Warbler
	Migrant	Black-throated Green Warbler
	Migrant	Canada Warbler
		Wilson's Warbler
		warbler sp. (Parulidae sp.)
Warblers		
		Scarlet Tanager
		Northern Cardinal
		Rose-breasted Grosbeak
		Indigo Bunting
Grosbeaks and Tanagers		
		House Sparrow

Italicized species are common species that were eliminated from the analysis.

Green Font indicates that the bird was recorded in eBird during the monitoring period somewhere on the course, by someone other than one of the study monitors.

Appendix 5 Use of Sections by Bird Species

Section	Total # Birds Observed	Acres	Total birds per acre	Number of visits where individual species were observed	Total Number of Birds	Total Adjusted for Acreage
10HI	252	1.57	160.50	182	A++	B+
8E	188	0.62	303.22	127	A+	A+
8A	172	1.12	153.57	110	A+	B
5C	164	0.91	180.21	116	A+	B+
5B	150	1.2	125	121	A+	B
8B	138	0.62	222.58	88	A	A
8D	131	0.71	184.50	88	A	B+
10C	125	0.7	178.57	89	A	B+
6E	120	0.95	126.31	82	A	B
4H	116	0.75	154.66	69	A-	B
7D	99	0.64	154.68	84	B+	B+
10A	98	0.48	204.16	79	B+	A
8F	76	0.38	200	49	B	A
6D	75	0.39	192.30	52	B	A
10EF	75	1.94	38.659	58	B+	
5A	62	Lawn		34	B	
9D	61	Lawn		49	B	
9C	50	0.21	238.09	41	C	A
10J	48	0.4	120	46	C	C
4G	48	0.73	65.753	41	C	
5D	46	0.77	59.740	44	C	
4C	42	0.2	210	32	C	A
9B	42	0.25	168	37	B	B+
10D	41	0.29	141.37	39	C	B
4F	38	0.12	316.66	30	C	A+
5E	35	0.56	62.5	23	C	
4E	34	1	34	19	C	
7C	33	0.38	86.842	28	C	
4D	27	0.13	207.69	26		A
6C	27	0.32	84.375	22		
7E	27	0.43	62.790	20		
6B	20	0.19	105.26	18		C
10B	16	Lawn		5		
4A	12	Lawn		8		
6F	9	0.1	90	7		
9A	9	Lawn		8		
7B	8	0.15	53.333	7		
6A	7	Lawn		6		
7A	6	Lawn		5		
4B	2	Lawn		2		

Appendix 6 Use of Sections by Bird Families

Woodpeckers

Site	Total birds observed
5A	34
5C	33
8E	30
10HI	30
8A	24
5B	23
10C	18
10D	14
10A	11
5D	10
8B	10
10EF	10

Chickadees through Kinglets

Site	Total birds observed
8B	39
10HI	26
5B	24
8D	20
10C	19
8E	19
8A	19
6E	19
5C	18
4H	17
4G	13
7D	11
9B	10

Vireos

Sites	Total birds observed
10C	8
10HI	5
8A	4
4C	3
6E	3
7D	3

Thrushes, Mimids

Sites	Total birds observed
10C	19
4H	19
10HI	14
8D	13
5B	12
7D	12
10EF	12
6E	11
5C	11
4G	10
6D	10

Sparrows

Sites	Total birds observed
8E	39
6E	38
8A	33
5C	22
8D	20
5B	16
5E	15
6D	14
10HI	13

Flycatchers

Sites	Total birds observed
10HI	21
7D	12
10C	10
5B	9
10J	9
5C	8
10A	8
8E	7

Warblers-

	Total birds observed
10HI	113
8E	66
8B	62
8A	61
4H	61
5C	54
8D	52
5B	51
10A	45
7D	44
10C	40
8F	38
6D	37
10EF	36
6E	31