Appendix A

Wallops Flight Facility Alternative Energy Demonstration Project
Wind Energy Avian Study Report

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Prepared for
National Aeronautic and Space Administration
Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, Virginia

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EXECUTIVE SUMMARY

The National Aeronautics and Space Administration (NASA) is considering constructing up to two 2.0-megawatt (MW) wind turbines at the Goddard Space Flight Center's (GSFC) Wallops Flight Facility (WFF) in Wallops Island, Virginia. The turbines would be a primary component of a mandated renewable energy initiative for generating electricity to support operations at the WFF. NASA is currently preparing an Environmental Assessment (EA) for the project in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321, *et seq.)* and NASA Procedural Requirement 8580.1. Should wind energy be established as the final preferred alternative energy option, NASA would procure and construct up to two turbines (pending funding availability) in the next two to three years.

As part of its planning process for the wind turbine portion of the proposed alternative energy project, NASA conducted field studies to assess the project's potential impacts to birds and bats. These studies were scoped in consultation with several agency and non-governmental organizations in 2008. All parties received a copy of a draft Avian and Bat Study Plan for review and comment on June 5, 2008. Written comments were provided by the U.S. Fish and Wildlife Service (USFWS) and the Virginia Department of Game and Inland Fisheries (VDGIF). NASA reviewed the comments and incorporated pertinent input into a revised final study plan, while also considering what its project team deems adequate for determining significance of impact given the scope of the proposal while acknowledging the available staff and budget to conduct these studies. A final Avian and Bat Study Pan was submitted to the stakeholder group on October 17, 2008.

This report summarizes the avian use (abundance and behavior) data and bird and bat fatality data from searches of onsite towers collected during the period October 1, 2008 through October 1, 2009. Based on the study methods detailed in the Avian and Bat Study Plan, this effort included diurnal avian surveys during spring and fall migration periods, and fatality searches near existing towers in the vicinity of the proposed wind turbines. Searcher efficiency and carcass removal tests were also incorporated into the fatality surveys.

Avian observations documented throughout the 12-month study period at the two survey sites just east of the two proposed wind turbine sites were generally unremarkable in terms of species encountered and numbers of birds. Bird species totaling over 100 within a survey period included common species such as tree swallow, flicker, brant and yellow-rumped warbler. By far the largest numbers of birds observed were snow geese numbering in the hundreds, and even several thousand on one day in November 2008. Over 81 percent of the recorded flight heights were between 0 and 50 feet above ground level, although larger flocks of birds were generally seen at heights over 100 feet above ground or resting in marshes. Less than 2 percent of the observed birds were within the proposed wind turbine's rotor swept zone and they were generally hunting or feeding and observed in the August/September time period.

With the exception of ten bald eagles, one gull-billed tern and four peregrine falcons, no sensitive avian species were recorded during the point count surveys. No federally endangered piping plovers were observed in any of the surveys, despite their documented existence approximately three miles away on the northeast shoreline on Wallops Island and also three miles away on Assawoman Island. The lack of even one observation of the piping plover during the 12-month survey combined with the absence of suitable habitat in the proposed wind turbine area indicates risk to this species should be nil.

Remains of 25 birds and one bat were found at the towers. Of the bird remains, only 20 were deemed to be from fatalities. Bird fatalities occurred at the taller south Meteorological Tower (13 carcasses, body parts, or feathers) and the guyed Northern Boresight Tower (7 carcasses). Twelve species were identified of the twenty likely fatalities, including three European Starlings and seven night migrants. No rare, threatened, or endangered species were found. Searcher efficiency rates for the first half of the study period were approximately 50%, but improved to 68% in the second half. Overall, annual fatalities were estimated to be about 28 for study period for the Northern Boresight Tower and 52 fatalities for the Meteorological Tower, based on the numbers of carcasses (or feather clumps) multiplied times standard searcher efficiency and carcass removal rates.

Based on the findings from this study, there will be some insignificant risk to birds in the vicinity of the proposed wind turbines once erected. However, projects of this size (i.e., one or two turbines) have never been found to result in significant numbers of bird fatalities. Based on our field observations and on empirical studies conducted at wind plants around the U.S. and in Europe, biologically significant impacts are unlikely to occur. The potential risk to state or federally endangered avian species is insignificant, based on the lack of federally listed species and suitable habitat for piping plover, and the small numbers of state-listed species discovered during the 12-month survey period.

NASA has been closely monitoring the post-construction wildlife studies that have been conducted by the New Jersey Audubon Society (NJAS) at the existing Jersey Atlantic Wind, LLC/Atlantic City Utilities Authority five-turbine project on the Atlantic coastline in Atlantic City, New Jersey. It is a very similar setting to the Wallops Island environment and has allowed for a meaningful assessment of the type of impacts that might occur at the proposed project site. The results regarding relatively low avian and bat fatality at this five-turbine project over a 17-month period lend strong support to the potential for the Wallops Island two-turbine demonstration project to cause low risk to a similar coastal avian community. NASA will continue to review the findings of this on-going effort as it develops a post-construction monitoring study for its demonstration project.

1.0 INTRODUCTION

The National Aeronautics and Space Administration (NASA) is considering constructing up to two 2.0-megawatt (MW) wind turbines at the Goddard Space Flight Center's (GSFC) Wallops Flight Facility (WFF) in Wallops Island, Virginia. The turbines would be a primary component of a mandated renewable energy initiative for generating electricity to support operations at the WFF. WFF is an aerospace technology test site supporting scientific research through carrier systems (e.g., airplanes, balloons, rockets, and uninhabited aerial vehicles). NASA is currently preparing an Environmental Assessment (EA) for the project in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321, *et seq.)* and NASA Procedural Requirement 8580.1. Should wind energy be established as the final preferred alternative energy option, NASA would procure and construct up to two turbines (pending funding availability) in the next two to three years.

As part of its planning process for the wind turbine portion of the proposed alternative energy project, NASA conducted field studies to assess the project's potential impacts to birds and bats. These studies were scoped in consultation with several agency and non-governmental organizations in 2008. This effort included holding a meeting on April 30, 2008 at the Herb Bateman Center at the Chincoteague National Wildlife Refuge (CNWR) to explain the proposed project, review the development schedule, invite feedback regarding both existing local knowledge of Wallops Island avian and bat resources, and solicit ideas about investigations that NASA might undertake to predict risk to birds and bats related to the operation of the wind turbines. Staff from Tetra Tech, Inc., Curry & Kerlinger, LLC and URS, Inc. joined NASA representatives at the meeting. These companies have been contracted to assist NASA in the planning and implementation of the proposed project, which includes the avian and bat risk assessment. Also in attendance at the meeting was staff from CNWR, Virginia Department of Game & Inland Fisheries (VDGIF), U.S. Navy, and College of William & Mary's Center for Conservation Biology. U.S. Fish and Wildlife Service (USFWS; Gloucester, VA Field Office), The Nature Conservancy, and Cape Henry Chapter of the National Audubon Society were also invited but were unable to attend. A conference call with staff from The Nature Conservancy took place on May 13, 2008 to discuss NASA's project plans and proposed avian and bat studies.

All parties received a copy of a draft Avian and Bat Study Plan for review and comment on June 5, 2008. Written comments were provided by the USFWS and the VDGIF. NASA reviewed the comments and incorporated pertinent input into a revised final study plan, while also considering what its project team deems adequate for determining significance of impact given the scope of the proposal while acknowledging the available staff and budget to conduct these studies. A final Avian and Bat Study Pan was submitted to the stakeholder group on October 17, 2008. No additional comments were subsequently received from the stakeholder group.

This report summarizes the avian use (abundance and behavior) data and bird and bat fatality data from searches of onsite towers collected during the period October 1, 2008 through October 1, 2009. Based on the study methods detailed in the Avian and Bat Study Plan, this effort included diurnal avian surveys during spring and fall migration periods, and fatality searches near existing towers in the vicinity of the proposed wind turbines. Searcher efficiency and carcass removal tests were also incorporated into the fatality surveys. A separate report prepared by Stantec Consulting summarizing the results of the summer-fall 2008 acoustical monitoring bat survey was submitted to NASA in December 2008.

2.0 PROJECT SITE AND FACILITY DESCRIPTION

The proposed alternative energy project considers the possible installation of wind turbines on Wallops Island. If selected as NASA's final preferred alternative, the wind energy demonstration project would consist of constructing and operating two 2.0-MW wind turbines with associated underground electrical power collection lines, new access roads, and an interconnection with the existing NASA WFF electrical power distribution system. The nominal planned wind turbine rotor diameter for a 2.0-MW wind turbine is 77 meters (m) (252.6 feet [ft]). Assuming the use of an 80 m (262.5 ft) tower, the assumed height from the ground to the top elevation of a rotating blade would be approximately 118.5 m (388.8 ft). This would result in a turbine blade tip clearance of 41.5 m (136.2 ft) from the ground to the lowest elevation of a rotating blade. The electricity generated by the wind turbines would only be used to power facilities at the WFF. Table 1 provides representative information for a 2.0-MW wind turbine model for evaluation of environmental impacts. NASA may consider other wind turbine models in the future, but they would be similar to the model specifications in Table 1.

Table 1: Basic Data for 2.0-MW Wind Turbine

2.0-MW Wind Turbine	
Rated power	2.0-MW
Cut-in wind speed	3.5 meters/second
Cut-out wind speed	25 meters/second – 10 minutes
Rated wind speed	14 meters/second
Wind class	IIa
Blade length	42.5 meters (139.5 feet)
Total height (to tip of blade)	120.5 meters (395.3 feet)
Installed Cost, 2 Turbines	$10,050,000
Annual kWh Production at WFF, 2 Turbines	10 GWh/year

Figure 1 shows the proposed project site on Wallops Island and Figure 2 provides a more detailed site plan showing specific project features within the immediate development area.

3.0 AVIAN FIELD STUDY OBJECTIVES

As stated in the final avian and bat study plan, NASA is undertaking an avian study plan with the following primary objectives:

1. Perform a pre-construction inventory of resident avian species and habitat in the vicinity of the proposed turbine sites;

2. Identify pre-construction migratory, nesting, and winter avian use (abundance and behavior) of the project site, including use of migration stopover, resting, or feeding areas in the vicinity of the development site;

3. Assess potential risk from wind turbine operation to avian species, primarily through monitoring of avian fatality at existing tall structures on Wallops Island; and

4. If wind turbines are selected as the final preferred alternative energy option, establish an adaptive post-construction management and impact monitoring plan based on results of the pre-construction studies and subsequent monitoring results following turbine installation.

4.0 AVIAN FIELD STUDY METHODS

4.1. Avian Field Observations

The proposed pre-construction avian field study was performed within the 12-month period commencing October 1, 2008 and ending October 1, 2009. Field investigations were conducted by qualified biologists working at Wallops Island for NASA (Joel Mitchell), the U. S. Navy (Marilyn Ailes, Adrianna Ortiz), and the U. S. Department of Agriculture Animal and Plant Health Inspection Service (APHIS) Program (Brian Scharle). These individuals were chosen to conduct the field work because they possess the following characteristics:

- Extensive prior experience conducting biological studies at Wallops Island;

- Ability to adjust work schedules to ensure their presence during key observation periods throughout the year-long field study; and

- Ability to offer historic knowledge of avian activity and habitat on Wallops Island that will strengthen the interpretation of field findings.

Figure 1: Proposed Wind Turbine Sites on Wallops Island

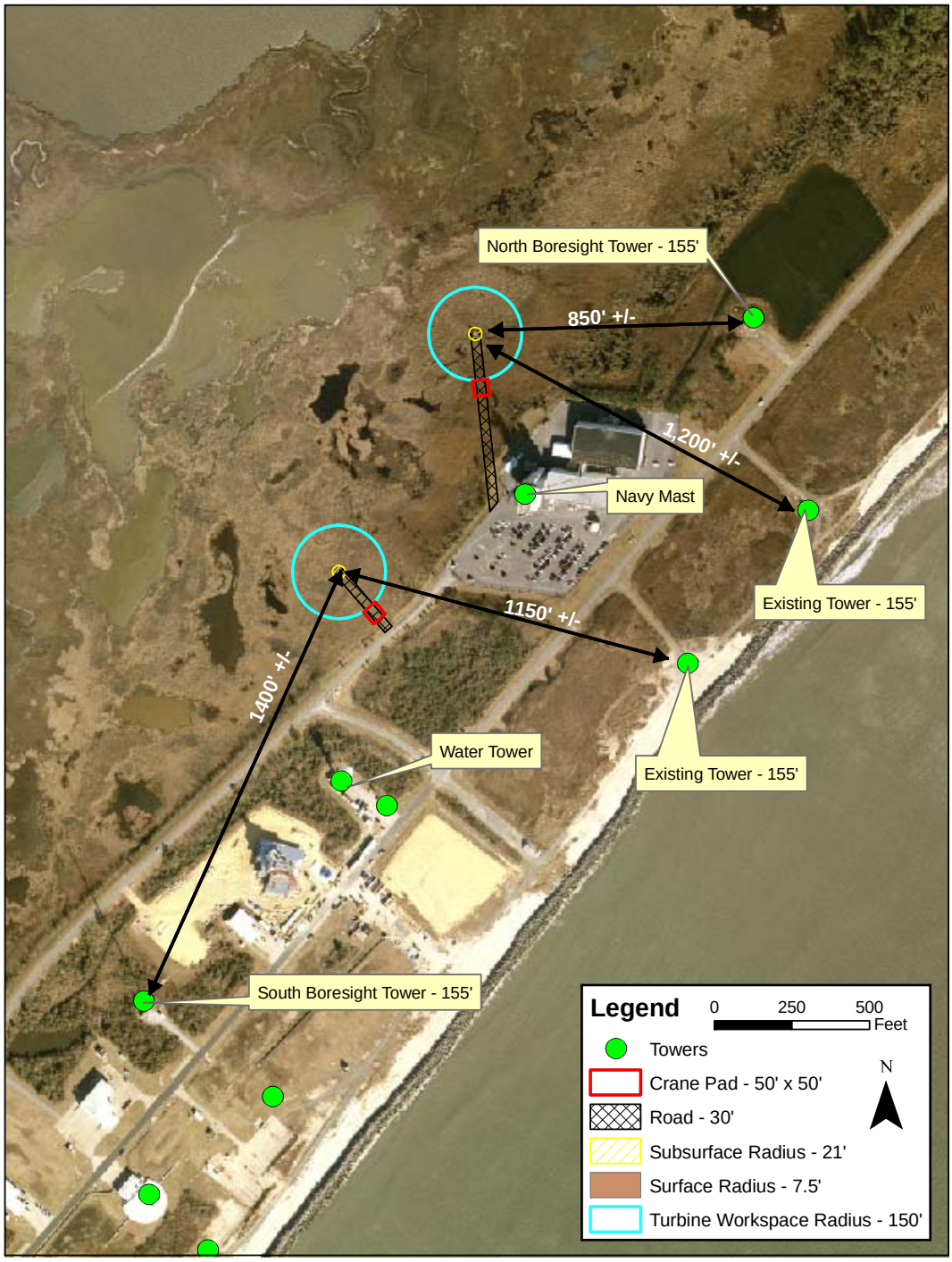

Figure 2: Proposed Wind Turbine Sites and Surrounding Facilities

The specific field investigations include the following:

1. Avian observations were conducted once per week at two point count locations with an unobstructed view of the proposed wind turbine development area. These locations are immediately east of and adjacent to the proposed project development site (see Figure 3). Site 1 is the northernmost survey site and Site 2 is the southernmost survey site shown in Figure 3. Throughout the 52-week period, biologists visited both observation sites at least once per week for a minimum of 15 minutes per day at each location to record avian activity. These field surveys were conducted in the morning between 7:00 am and 9:00 am.

   Data were recorded for birds observed within a 1 kilometer (0.62 mile) radius of the point count locations, including the two proposed wind turbine development locations. Data for each avian observation included: species identity, number of individuals, and behavior of individuals (to include altitude, flight direction, feeding vs. flying/migrating, resting, etc.).

2. During migration seasons (September 1 - October 31 and April 15 - June 15), the biologists conducted 15-minute avian observations at each location at least twice per week at the same two observation points referenced above. These surveys were conducted between 7:00 and 9:00 am and took the place of the weekly surveys discussed above. Additionally, during peak migration days, biologists supplemented these data by conducting observations at the U.S. Navy building mast tower (see Figures 2 and 3), which offers unobstructed, panoramic views of the Wallops Island air space (which includes the rotor swept areas of the proposed turbines). The on-site biologist team targeted fall and spring days when weather front movement was conducive to migratory activity and conducted their spot observations during daytime hours (between 9:00 am and 4:00 pm).

   Data collected during migration season surveys included the date and times of observations, species observed, numbers of individuals, and behavior. Behavioral information included the path where birds were flying in relation to the proposed turbine area(s), height of flight (below, within, or above the rotor height zone), perching behavior, and hunting behavior. Local weather data, including temperature, sky conditions, wind direction, and wind speed were also recorded.

4.2. Avian and Bat Fatality Searches at Existing Towers

Because the proposed wind turbine sites are located near several tall structures on Wallops Island, NASA has used these structures as surrogates for wind turbines to study avian and bat fatalities. By studying fatalities at these tall structures, some of which are far riskier to birds and bats than wind turbines, an indication of potential risk to nocturnal and diurnal birds that use the airspace above Wallops Island was

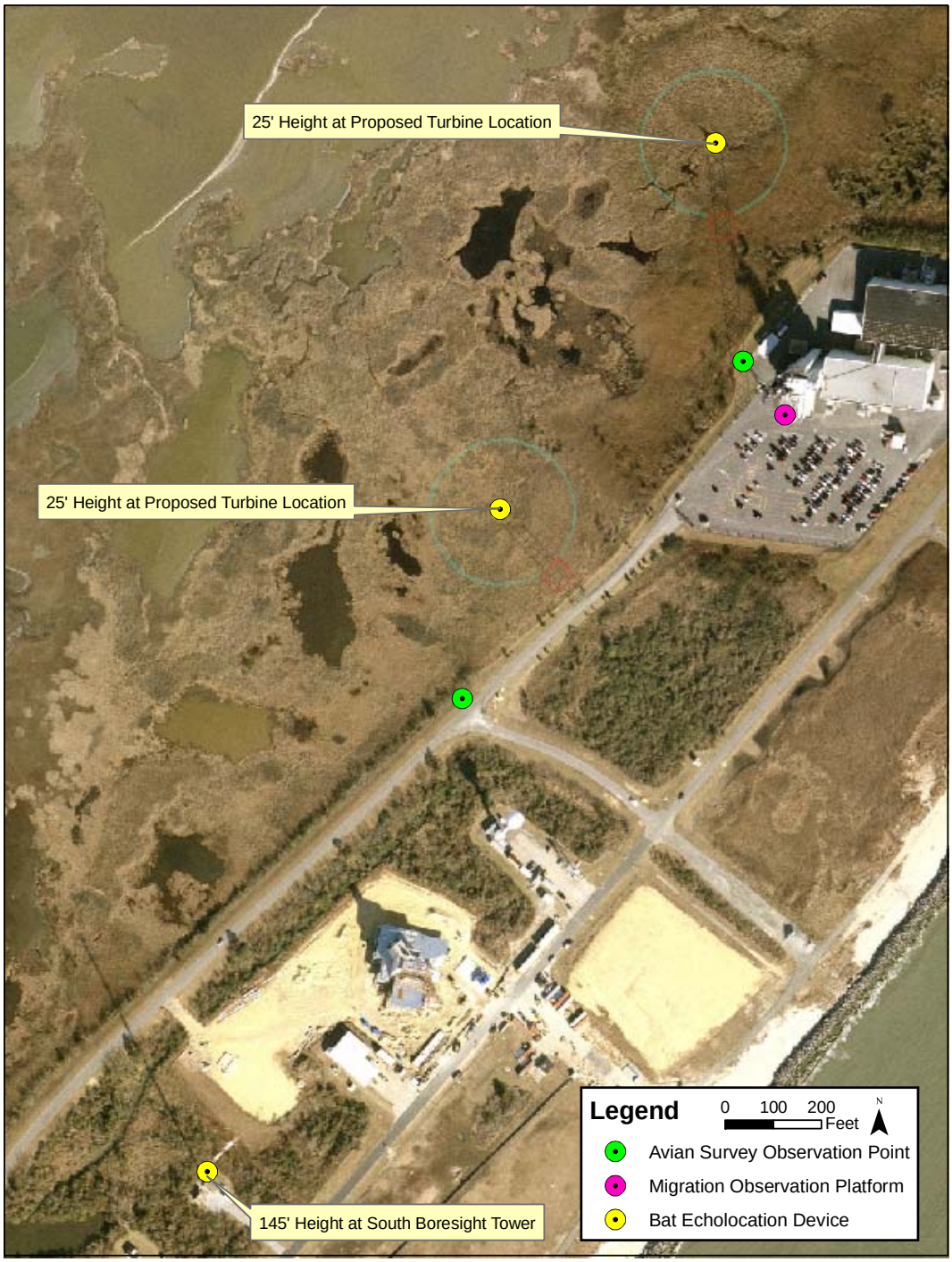

Figure 3: Avian and Bat Field Study Observation Locations

acquired. The rationale for conducting such studies is that wind turbines and unguyed towers in the same height range are responsible for similar numbers of bird fatalities and that guyed towers of the same height kill far more birds than do wind turbines (Gehring et al. 2009). Details regarding the surrogate towers are provided in Table 2 and their locations are shown on Figure 3.

To determine the number, type, and other characteristics of avian and bat fatalities at these structures, the above referenced biologists conducted fatality searches near both the guyed and unguyed towers. Guidance for the design for such studies is suggested in Anderson et al. (1999) and similar more thorough field and analytical designs for both wind turbines and communication towers can be found in Gehring et al. (2009) and Jain et al. (2007).

Table 2: Existing Structures on Wallops Island Employed for Fatality Searches

Type of Tower/Structure	Height, meters (feet)	Guyed vs. Unguyed, Lighting System	Location relative to proposed wind turbines
North Boresight Tower	47 (155)	Guyed Flashing Red strobe: Night only	259 m (850 ft) east of northernmost turbine
South Boresight Tower	47 (155)	Unguyed Flashing Red strobe: Night only (lights not yet installed)	427 m (1,400 ft) south of southernmost turbine
South Meteorological Tower	102 (335)	Unguyed. Flashing white strobe: Day and Night	1,295 m (4,250 ft) south of southernmost turbine

Fatality searches were conducted during the October 1, 2008 – September 30, 2009 time period. Searches took place at the North Boresight Tower and the South Boresight Tower (as listed in Table 2) because of their relatively close proximity to the proposed project site and to provide data on both guyed and unguyed towers of the same height. The taller meteorological tower farther south was also searched to provide data from a structure similar in height to the proposed wind turbines. Construction activities occurring in the vicinity of this tower limited access to the search area during portions of the latter one-half of the study period.

The intensity of searches was greater during the peak spring (April-early June) and fall (August-October) bird and bat migration seasons. Searches took place three times per week during the migration seasons and one time per week during the remainder of the year. Statistical analyses have demonstrated that these frequencies are adequate for determining the levels of avian and bat fatalities at wind turbines with a high degree of certainty and minimal margins of error (Jain et al. 2007).

Carcass searches were conducted as soon after sunrise as possible to discourage diurnal scavengers from foraging at the towers. At the northern boresight tower the search area extended outward to the full

extent of guy wires (approximately 18 m [60 ft]). At the south boresight tower and south meteorological tower, which have no guy wires, the search areas extended from the tower base outward to 80% of the tower height (approximately 38.1 m [125 ft] and 81.7 m [268 ft] radii, respectively). The area searched is a rectangle, with transects separated by 7 m (23 ft) (see Figure 4 for layout of transects). The order in which the towers were searched varied such that they were performed in rotation (for example, the tower searched first on one day was searched last during the next day). This search methodology has been peer reviewed and demonstrated to provide a robust estimate of fatality rates at communication towers and wind turbines (Gehring et al. 2009, Jain et al. 2007).

Information recorded for each carcass included: tower identification, date, time, species identification, number of individuals (if more than one), distance from the base of a tower, distance from the axis of a guy wire or set of guy wires (at guyed towers), the azimuth of a carcass from the tower, and the condition of the carcass. This protocol is similar to that employed during post-construction studies conducted at communication towers (Gehring et al. 2009).

Information on the conditions of a carcass included whether it was intact or a partial carcass, a feather grouping or feather tract, whether the carcass had been scavenged and the degree to which it had been scavenged, and the freshness of the carcass, as described below. In addition, the weather on the day of the carcass find and the night prior to the carcass find was recorded. The latter information specifically included data on visibility on the night prior to the carcass discovery.

With respect to birds, any feathers or clumps of feathers with flesh attached were recorded as a fatality. Loose feathers were not considered fatalities unless there were several primary or tail feathers indicating more than could be lost during normal molt. When unattached single loose feathers were found their location was recorded and the feathers removed and retained but were not recorded as a fatality. An exception to documenting single feathers was implemented at the North Boresight Tower, where single feathers were ubiquitous due to the large number of waterfowl and shorebirds that frequented the area.

The field observer estimated how long carcasses have been on the ground (time since death or injury) using the following categories: less than 1 day, less than 3 days, greater than 7 days, or greater than 1 month. These estimates were made from observations of carcasses. Carcasses rated as being fresh (no maggots, sign of fresh blood, little to no evidence of scavenging, and an eye that is still clear, round, and fluid filled) were estimated to be about 1 day old (less than or slightly greater than about 24 hours). Carcasses were presumed to be 2-4 days (48-96 hours) old if there was evidence of decomposition (slight), moderate-extensive scavenging (flesh removed and, or disarticulated), and the eye was sunken into the skull and shriveled. Carcasses more than 4 days to a week old will show fly larvae (maggots),

Figure 4: Pre-Construction Fatality Searches at Existing Towers on Wallops Island

potentially extensive scavenging, flesh that is either desiccated or decomposing (middle to later stages), and the eye may cease to be visible. If a carcass is shriveled and dried up with little or no flesh, it is likely to be months old. Later stages of decomposition and mummification cannot be aged with precision.

Carcasses were placed in airtight, plastic bags with an identification number linking that carcass to the main database. Carcasses were kept in a freezer on site and may be examined at any time by either the USFWS or the VDGIF.

In the study plan, it was stated that in the event that a state or federal endangered or threatened species was found, the USFWS and VDGIF would be notified within 24 hours via email and/or telephone. Such notification was not necessary as none were found.

4.2.1. Searcher Efficiency and Carcass Removal Trials

The preconstruction fatality study also included searcher efficiency and carcass removal trials to estimate the actual number of fatalities incurred at these structures. These trials adjust for numbers of carcasses that are not found by observers as well as carcasses that are removed by scavengers. These methods and the statistical background for these methods have been described in detail by Arnett et al. (2005) and Jain et al. (2007), and in many of the publications and reports provided in the Additional Resources section of the Avian and Bat Study Plan. Although the field methods, calculations and statistical tests used varies slightly from study to study, most researchers use similar methods and report similar results of those methods.

4.2.1.1. Searcher Efficiency Trials

For searcher efficiency tests, approximately 25 small birds, 25 tailless mice (bat surrogates), and 25 mid-large sized birds were placed under the towers on a randomized basis. The specific locations and numbers of carcasses to be set out in each trial were determined so that carcasses were placed at random distances and directions from the towers and were placed out on random survey dates. After an initial pilot testing period, these tests were performed in all seasons of the year. Carcasses were placed out about one hour prior to sunrise and then checked after fatality searches were completed on that day. GPS coordinates were taken for each carcass so they could be relocated after the tests. Checking after the searches ensured that carcasses remaining on the ground were not seen by observers as opposed to being removed prior to the search by scavengers. The searcher was not told when the carcasses would be placed out under the towers. In addition, the carcasses were marked so that they were recognizable. Initially, the marking consisted of a small piece of dental floss through the nares and around each tarsus. However, this method was discontinued due to difficulty in threading the floss though the cavities. Instead, feet were severed from both legs of the test carcasses just above the toes. This practice proved efficacious. Primary feathers of the wings and rectrices of the birds and bats to be used were clipped so

that they could be distinguished from tower induced fatalities. For the mice used as bat surrogates, the tails were removed. An efficiency rate for each observer was calculated as follows: total number of birds found was divided by total number placed out under towers, which was expressed as a percentage or proportion.

4.2.1.2. Carcass Removal Trials

Carcass removal tests determine the rate at which carcasses were removed from the site by scavengers. These rates were determined by placing 21 small birds, 26 tailless mice (bat surrogates), and 27 mid-large sized birds out at random under the three towers from March 1, 2009 through October 2, 2009. A pilot study using blackbird carcasses was initially established at each tower between October 3, 2008 and February 22, 2009. GPS coordinates were recorded for each carcass so that each could be relocated. No more than 3 bats and 3 birds were placed out on a given morning. This number was selected as the optimal number of carcasses to be used for this test as a greater number of carcasses would encourage vertebrate scavengers that are capable of learning that more food is available. If scavengers learn that they can find meals under the towers, they could easily bias the study results by removing carcasses on a regular basis. All tailless mice were placed during April through September 2009. Birds were placed out throughout the entire year. Each test carcass was marked via dental floss or by clipping wings or toes. Marking ensures that the test carcasses will not be confused with fatalities caused by the towers or some other source. Carcasses were placed randomly. The distance and direction from the tower, as well as the actual tower used, was recorded.

Once placed out, test carcasses were checked at one day periods. For example, if a carcass was placed out at dawn on day 0, it was checked on day 1, 2, 3, 4, 5, 7, and then at weekly intervals for three weeks after being placed out. This method for carcass removal trials has been employed by Johnson et al. (2002) as well as Jain et al. (2007, 2008).

4.2.2. Final Fatality Rate Calculation

The estimated fatality rate for small birds, bats, and mid-large sized birds, as well as all birds, can be calculated by incorporating the following variables: carcasses found, searcher efficiency rate (mean), and the carcass removal rate (mean). There are several accepted methods for these calculations (Johnson et al. 2002, Jain et al. 2007). For the purposes of this study, we used a multiplier of four to estimate the total number of likely fatalities at the towers. This number comes from the only carcass removal and searcher efficiency studies conducted at a large sample size of towers over multiple years (Gehring et al. 2009).

The estimated fatality rate will be greater than the number of carcasses found during the regular searches and provides a means of assessing the potential fatality rates that are likely to occur at the proposed wind turbine(s).

5.0 AVIAN SURVEY STUDY RESULTS

The following is a summary of avian survey data collected by NASA, U.S. Navy and APHIS Program biologists through the 12-month study period. As described in the Avian and Bat Study Plan the study period began on October 1, 2008 and ran through October 1, 2009. However, data collected prior to this date is also included in this section, particularly diurnal point count observations which began on September 12, 2008 and one migration survey on September 22nd. Fatality searches began on October 3, 2008 and ended on October 2, 2009.

5.1 Point Count Avian Observations

Point count observations were conducted at avian observation Sites 1 (northernmost site) and 2 (southernmost site) on 79 days between September 12, 2008 and October 1, 2009. These observation sites are shown on Figure 3. A total of 32,226 birds were observed during the survey period. Of this total, approximately 72.4 percent were snow geese, with an estimated 20,000 observed resting on the far western side of the adjacent marsh on November 20, 2008. Even without considering this one observation day, snow geese were recorded over twice as much as any other species. Tree swallows were the second most common species observed, followed by European Starling. Approximately 8.9 percent of the birds observed were passerines. A species abundance summary is provided in Table 3 and a summary of avian observations by species class is included in Table 4.

The distribution of survey days throughout the 12-month study period and corresponding numbers of birds observed each month are provided in Table 5. Species observed during the survey were predominantly waterbirds with a much smaller number blackbirds and songbirds. Only 60 raptors were observed through the study period, including 10 bald eagles and 2 peregrine falcons. Flight heights of birds were predominantly between 0 and 50 feet above ground level (81.3 percent). Approximately 12.3 percent of the observed birds were recorded flying between 51 and 150 feet above ground level and 6.4 percent were seen over 150 feet.

The number of birds recorded within the wind turbine rotor-swept zone (136 feet to 389 feet above ground level) was 598 or 1.9 percent of all observed birds. Of these birds, 188 were tree swallows (31.4 percent), 130 were great egrets (21.7 percent), 57 were starlings (9.5 percent) and 50 were snowy egrets (8.4 percent). Flight direction was predominantly to the west (65 percent), followed by south (25 percent),

Table 3: Species Abundance Summary

Species	Number Observed	Percent of Total
Snow Goose	23,321	72.4
Tree Swallow	1,569	4.8
European Starling	708	2.2
Canada Goose	501	1.6
Red-winged Blackbird	500	1.6
Great Egret	495	1.5
All other species	5,132	15.9
Total Birds Observed	32,226	100

Table 4: Avian Observations by Class of Species

Class of Species	Number Observed	Percent of Total
Waterfowl[1]	24,759	76.8
Shorebirds	588	1.8
Waders[2]	986	3.1
Gulls and Terns	951	3.0
Raptors	60	<0.1
Blackbirds[3]	1,554	4.8
Passerines[4]	2,864	8.9
Other[5]	464	1.4

[1] Waterfowl - includes geese, ducks, cormorants, and mergansers.
[2] Waders - includes herons, egrets, and ibis.
[3] Blackbirds - include crows, grackles, blackbirds, starlings, and cowbirds.
[4] Passerines - include all songbirds.
[5] Other - includes all other species, including but not limited to, owls, woodpeckers, doves, and pelicans.

Table 5: Number of Bird Observations by Month and Survey Effort

Month	Number of Surveys	Number of Birds Observed	Average Birds Observed Per Day
September 2008	5	741	148
October 2008	6	2,745	458
November 2008	4	20,665	5,166[1]
December 2008	3	1,833	611
January 2009	5	419	84
February 2009	4	191	48
March 2009	5	543	108
April 2009	12	752	63
May 2009	11	1,070	97
June 2009	7	627	90
July 2009	4	531	133
August 2009	4	682	171
September 2009	8	1,283	160
October 2009	1	154	154

[1] Includes a single daily observation of 20,000 snow geese on November 20, 2008.

east (5 percent) and north (5 percent). The majority of these birds were hunting or feeding (46 percent) or resting (43 percent). These birds were all observed in the August and September fall migration months.

In late September 2008 the largest separate flocks observed were 100-200 tree swallows and northern flicker flying at heights of approximately 30 feet. Over 100 tree swallows were again encountered on two occasions in early October. In mid-October groups of 90-120 yellow-rumped warblers were observed flying at heights below 100 feet on two different days. By far the largest flocks of birds observed were snow geese. Between October 21st and December 2nd separate flocks of snow geese were observed in large numbers generally flying west of the wind turbine sites at heights of 200 to 300 feet. This included snow geese numbering 1,000 on October 21st, 610 on October 29th, 120 on November 7th, 1,300 on December 2nd and 300 on December 8th. In addition, on November 20th approximately 20,000 snow geese were estimated to be resting in a field at the far side of the marsh west of the wind turbine sites.

The overall number of birds observed decreased from mid-December through the winter months in January and February. One bald eagle was observed hunting toward the south on February 19th. A great horned owl was heard calling on February 6th. Average daily avian observations more than doubled in March and sustained similar levels through June before increasing again approximately 50 percent in July and maintaining similar levels through October 1st (see Table 5 for monthly breakdown). Groups of birds over 100 in size were not observed in 2009 until May 14th when 120 brant were observed resting in the vicinity of Site 2. The only other observation of over 100 birds was a sighting of approximately 250 tree swallows on September 22nd flying at a height of 100 feet. Other groups of over 50 birds observed at once occurred 12 times in 2009, including separate sightings of tree swallows, red-winged blackbirds, mixed gulls, ducks, willets and great egrets.

Although no federally listed endangered or threatened species were observed during the field surveys, three species listed as threatened by the state of Virginia were observed. Bald eagle (10), gull-billed tern (1) and peregrine falcon (2) were observed in small numbers during the morning point count surveys. Two additional peregrine falcons were observed flying approximately 100 feet above ground during the diurnal migration surveys (one in spring and one in fall). Of these species, only peregrine falcons might nest on the marshes near the proposed turbine sites. Peregrines have been introduced as nesters to the marshes of the Atlantic coast, although they are not native to those marshes. Also, peregrines observed during the migration season could easily be from the Arctic population, many of which migrate along the Atlantic coast during fall and spring. Bald eagles and gull-billed terns will not likely nest in the vicinity of the turbines because there is little or no suitable habitat for them there. These birds will forage in the general vicinity, but not likely in large numbers. With respect to the Virginia population of bald eagles, the growth rate in recent years has been rapid and it is now nesting in areas where it has not nested in many

decades. It is likely that this species, because of its population growth, geographic expansion within Virginia, and its total numbers there now, should be considered for delisting as a state threatened species.

5.2 Avian Migration Season

During the fall and spring migration seasons birds were observed at least two days per week in the morning hours instead of once per week as was the case during non-migration months. Additional "spot" surveys were conducted during migration periods on days when weather conditions were deemed optimal for migration. These surveys were conducted during mid-morning to mid-afternoon hours from the mast tower location. Results of these observations are shown in Table 6. During Fall 2008, observations took place on four days (September 22, October 2, October 3 and October 7). Several individual raptors were recorded at flight heights under 100 feet. One peregrine falcon was spotted on October 7th at a height of approximately 100 feet. Flocks of birds spotted included Forster's tern and oystercatcher and a group of resting black ducks. Low flying flickers and tree swallows were recorded in groups of over 50 per hour. No large concentrations of raptors or waterbirds were recorded migrating during the survey period. Spring 2009 migration observations occurred on two days (May 7 and May 22). One peregrine falcon was seen flying at a height of 100 feet on May 7th and activity was generally low, with brant, black gulls and peeps the only other species recorded. Fall 2009 migration observations occurred on two days (September 15 and September 24), resulting in observations of two small flocks of four tree swallows flying 80 feet high and individual occurrences of red-winged blackbird, flicker and killdeer. In addition, the morning bird counts conducted during migration seasons resulted in a 50 percent higher incidence of birds in fall versus spring migration months.

5.3 Avian and Bat Carcasses Searches

On each survey day, all three tower locations shown in Figure 4 were surveyed. As stipulated in the study plan, discovery of individual feathers was not included as a fatality incident. Results of these searches appear in Table 7, along with which days fatality searches were conducted. Carcass searches were conducted on 83 days between October 3, 2008 and October 2, 2009 resulting in 25 records of bird carcasses, parts, or feathers and one bat carcass. Of these parts, five sets of remains could easily be from birds that were alive and simply preening or molting. For example, the tail feather of the Red-tailed Hawk was not likely to have been a fatality. Perhaps one or two may have been from birds that collided with the tower but were not killed. Bird remains were not found at the South Boresight (unguyed 155') Tower, whereas seven sets of remains were found at the North Boresight (guyed 155') Tower and 18 records of feathers, parts, or feathers were found at the Meteorological (guyed 355') Tower. At the North Boresight Tower, the records indicate a minimum of seven bird fatalities. At the Meteorological Tower, the information gathered indicates that a minimum of 13 (72% of 18 records) fatalities, based on the presence of remains that could only have come from a bird that expired.

Table 6: Diurnal Avian Migration Observations (from Mast Tower)
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Species	Time 1st seen	Time last seen	Total time (min)	Where seen	Height	Notes	Date	Temperature	Cloud cover
great blue heron	1345	1405	20	5	10		9/22/2008	72	partly cloudy
red tail hawk	1343	1344	1	4	200		9/22/2008	72	partly cloudy
Cooper's hawk	920		2	4	40		10/2/2008	58	Scattered
osprey	927		2	3	80	headed N	10/2/2008	58	Scattered
Cooper's hawk	929		0.3	4	20		10/2/2008	58	Scattered
Cooper's hawk	932		0.1	4	20		10/2/2008	58	Scattered
Cooper's hawk	935		0.3	4	20		10/2/2008	58	Scattered
marsh hawk	938		0.3	5	30		10/2/2008	58	Scattered
marsh hawk	940		0.1	4	30		10/2/2008	58	Scattered
marsh hawk	942		0.1	4	30	headed N	10/2/2008	58	Scattered
Cooper's hawk	942		0.1	4	20		10/2/2008	58	Scattered
Cooper's hawk	946		0.5	4	20		10/2/2008	58	Scattered
Monarch butterfly	948		0.2	3	80		10/2/2008	58	Scattered
Cooper's hawk	950		0.1	4	20		10/2/2008	58	Scattered
Cooper's hawk	952		0.3	4	20		10/2/2008	58	Scattered
marsh hawk	1431	1435	4	5	5	Hunting	10/2/2008	70	partly cloudy
osprey	922		5	6	150		10/3/2008	54	Clear
flicker	922			3	20	64 birds in hour	10/3/2008	54	Clear
black-throated blue warbler	927		0.5	3	50		10/3/2008	54	Clear
tree swallow	953			3 to 6	60	54 birds in hour	10/3/2008	54	Clear
Cooper's hawk	954		0.5	6	?		10/3/2008	54	Clear
Cooper's hawk	955		0.5	6	?		10/3/2008	54	Clear
double-crested cormorant	957		0.5	3	?		10/3/2008	54	Clear
osprey	1010		3	6	100	Hunting	10/3/2008	57	Clear
osprey	1014		1	6	150		10/3/2008	57	Clear
unknown warbler	1017		0.3	3	60	3 birds	10/3/2008	57	Clear
osprey	1020		6	6	100	Hunting	10/3/2008	57	Clear
osprey	1411	1413	2	2	200		10/7/2008	63	thin clouds
flicker	1416	1416	0.1	4	40		10/7/2008	63	thin clouds

Table 6: Diurnal Avian Migration Observations (from Mast Tower)
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Species	Time 1st seen	Time last seen	Total time (min)	Where seen	Height	Notes	Date	Temperature	Cloud cover
yellowlegs	1417			5	0	Resting	10/7/2008	63	thin clouds
marsh hawk (female)	1424		1	5	50	Hunting	10/7/2008	63	thin clouds
Forster's tern	1434		0.1	2	100	flock of 15	10/7/2008	63	thin clouds
Peregrine falcon	1435		0.1	2	100		10/7/2008	63	thin clouds
osprey	1442	1448	6	6	150	headed N	10/7/2008	63	thin clouds
flicker	1444		1	6	200		10/7/2008	63	thin clouds
oyster catcher	1450		1	5	10	flock of 17	10/7/2008	63	thin clouds
double-crested cormorant	1502		1	4	60	headed N	10/7/2008	63	thin clouds
black duck	1417			5	0	flock of 30 resting	10/7/2008	63	thin clouds
double-crested cormorant	1507		1	6	60	headed S	10/7/2008	63	thin clouds
Forster's tern	1512		2	1	30	headed S	10/7/2008	63	thin clouds
brant	1344			5	0	resting	5/7/2009	73	partly cloudy
Peregrine falcon	1414	1415	1	6	100	by mainland	5/7/2009	73	partly cloudy
black back gull	1427			5	0	resting	5/7/2009	73	partly cloudy
peeps	833		5	6	200	by mainland	5/22/2009	69	clear
peeps	850		5	5	50		5/22/2009	69	clear
tree swallow	910	912	2	5	80	Flock of 4	9/15/2009	78	partly cloudy
red-wing blackbird	916	917	1	5	60		9/15/2009	78	partly cloudy
flicker	920		30	4	30		9/15/2009	78	partly cloudy
tree swallow	925		45	6	80	Flock of 4	9/15/2009	78	partly cloudy
killdeer	838		30	3	80	Flying east	9/24/2009	72	overcast

Table 7: Fatality Search Findings (October 3, 2008 – October 2, 2009)
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Tower Location	Date	Qty	Species	Distance from Tower	Distance from Guy	Azimuth	Carcass condition
North Boresight (guyed) 155'							
	10/20/2008	1	Salt marsh sharp tailed sparrow	85	35	185	Eyes sunken but still fluid filled. No maggots; No disarticulation
	11/14/2008	1	double crested cormorant	50	30	45	One eye gone, some maggots, Round hole in dorsal rump area
	11/19/2008	1	Yellow rumped warbler	30	10	180	Good condition
	12/9/2008	1	Common grackle	45	20	165	Good condition, eyes sunken but still there, no maggots, no disarticulation, obvious broken neck. Left in place for searcher to find next a.m. However was gone next morning.
	3/11/2009	1	Unidentified sparrow spp.	1	Found at base	180	Carcass too old to identify
	5/20/2009	1	Red winged blackbird	15	10	65	Black feathers-Primaries and down
	6/19/2009	1	Starling	12.5	8	145	Skeletal body w/flesh and some feathers attached
South Boresight (unguyed) 155'							
No carcasses found							
Meteorological Tower (unguyed) 355'							
	10/9/2008	1	Clapper rail	200	NA	175	Partial wing & feathers
	10/14/2008	1	Northern Flicker	10	NA	175	Head only; 2 primaries
	10/17/2008		unknown	170	NA	72	Single primary feather
	11/14/2008		Red tailed hawk	190	NA	90	Single primary feather
	12/2/2008	1	Tree swallow	0	NA	20	Good
	12/10/2008	1	Clapper rail	75	NA	5	Medium sized foot

Table 7: Fatality Search Findings (October 3, 2008 – October 2, 2009)
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Tower Location	Date	Qty	Species	Distance from Tower	Distance from Guy	Azimuth	Carcass condition
Meteorological Tower (unguyed) 355' (continued)							
	12/16/2008	1	Marsh wren	0	NA	220	Eyes sunken, no maggots; no disarticulation.
	12/31/2008		Starling	300	NA	58	wings only
	1/9/2009	1	Largish bird Gull spp. Or harrier	0	NA	NA	5 feathers
	1/30/2009	1	Gull spp.	115	NA	120	1 primary; 1 down feather
	4/9/2009	1	Snow goose	135	NA	154	Clump of feathers-breast
	4/13/2009	1	American Robin	285	NA	40	Severed wing
	4/17/2009	2	1. Unknown bat 2. Red winged blackbird	250	NA	130	1. Unidentified bat species desiccated beyond recognition. 2. Female with eyes missing, but otherwise in good condition.
	5/18/2009	1	Largish species; gull??	50-100	NA	136-200	Clump of feather and numerous feathers, all apparently from same bird. Scattered by wind.
	6/19/2009	1	Starling	175	NA	180	Skeletal wing with some feathers
	7/1/2009	1	Unknown	270	NA	50	Feather clump
	7/24/2009	1	Starling	60	NA	208	Desiccated carcass; almost skeletal
	9/30/2009	1	Common grackle	50	NA	115	Scattered feathers (primaries or secondaries) gray in color
Fatality Survey Dates (2008):	October 3,7,9,10,14,15,17,20,22,24,28,30,31 November 7,14,19,25 December 2,10,16,22,31						
Fatality Survey Dates (2009):	January 9,13,21,30 February 2,12,21,24 March 5,11,25 April 2,3,8,9,10,13,16,17,21,23,24,27,28,30 May 4,6,8,12,14,15,18,20,22,27,28 June 4,10,11,24 July 1,14,24,31 August 5,14,21,28 September 3,9,10,11,16,17,18,23,24,25,30 October 1,2						
Fatality searches completed at all three tower locations on each survey day. Per plan solitary feathers are recorded but not counted towards totals							

A total of 18 (90%) of the 20 likely fatality finds were identified to species, representing 12 different species. Field crews did not identify 2 of 20 (10.0%) fatality records of carcasses, feathers, or body parts. Of the 18 birds for which identifications were made to species, seven (39%) are nocturnal migrants (Salt Marsh Sharp-tailed Sparrow, Yellow-rumped Warbler, Clapper Rail, Northern Flicker, Marsh Wren, Snow Goose, and American Robin). It is also possible that the unidentified sparrow that was found dead was a night migrant. The remaining species were either non-migratory (European Starlings) or daytime migrants (blackbird, grackle, swallow, and cormorant). Note that three of the 20 recorded fatalities were European Starlings, which are aliens to North America and not protected by the Migratory Bird Treaty Act. We have included these birds and those not likely to have been killed by the towers in Table 7 for completeness.

It is important to note that although many waterfowl, shorebirds, and raptors were noted during the visual observation study (see above); none of these birds were found dead at the towers. The only waterbirds found dead were a Double-crested Cormorant, found at the North Boresight tower, and two Clapper Rails found at the Meteorological tower. No rare, threatened or endangered species were among the fatalities.

Because no fatalities were observed at the unguyed South Boresight, while fatalities were found at the guyed North Boresight Tower, we suggest that guy wires are responsible for all or nearly all fatalities that were found at the North Boresight Tower.

The bat carcass was not identified to species. It is highly unlikely that the bat fatality was an endangered or threatened species because no endangered or threatened bats are known to occur (at least on a regular basis) within about 100 or more miles of the coastal zone of Virginia.

5.4 Searcher Efficiency and Carcass Removal Trials

Pilot Searcher Efficiency and Carcass Removal Study

Between October 3, 2008 and February 22, 2009 the fatality study manager conducted a pilot searcher efficiency study and put out six bird carcasses, all starlings, to test searcher efficiency during the fatality search surveys. This included using the same birds for searcher efficiency and scavenging. When the searcher found a bird, he left it in place. The site was then checked daily the first week and once a week thereafter until the bird was gone.

At the 335-foot south Meteorological Tower, one bird was placed in the evening prior to the morning search. It was not found by the searcher and when the study manager went out to the site the same day of the search it was gone. It was assumed that it was scavenged in 12 hours between the initial placement and the first search. Another starling at the same Meteorological tower was found by the

searcher and left in place and checked daily and then weekly. It was placed on December 16th and disappeared sometime during the week between December 24th and January 1st.

Two starlings were placed at the North Boresight Tower. One was found by the searcher and removed from the site due to a misunderstanding. The second starling was not actually placed, but was found the evening before a search with a broken neck and left in place. It was not found by the searcher, but a subsequent visit to the site the same day found it gone. Again, it was assumed that it was scavenged overnight.

Two starlings were placed at the South Boresight Tower. One was found and one was not. Both were left in place. One was scavenged after 12 days, while the other which was placed on December 16th and was scavenged in the week between December 24, 2008 and January 1, 2009.

In summary, the searchers found three of the six placed birds during this initial portion of the study, for a 50% efficiency rate. Two birds were scavenged completely within 24 hours. Three remained on the ground for over a week.

Full Searcher Efficiency and Carcass Removal Study

From March 1, 2009 through October 2, 2009 an assortment of medium to large birds, small birds and tailless mice (surrogates for bats) were placed at each of the three tower sites. The results of these searcher efficiency tests at the combined three sites were generally positive. Searcher efficiency for medium to large birds was 78% (21 of 27 birds found), efficiency for small birds was 73% (16 of 22 birds found), and efficiency for bat surrogates was 50% (13 of 26 tailless mice found). Only one of the seven (14%) bat surrogate carcasses placed at the North Boresite Tower was found, while the efficiency rate at the remaining two towers was 63% (12 of 19 carcasses found). As for total efficiency rates by tower, 62% (16 of 26 carcasses) were found by searchers at the North Boresite Tower and 71% (17 of 24 carcasses) were found at both, the South Boresite Tower and the South Meteorological Tower.

To determine the overall numbers of birds and bats that were likely killed at the towers, we multiplied the numbers of carcasses found by a factor of four. We used this factor because searcher efficiency rates were found to be roughly 50% or one in two birds were found. This rate is similar to that found at other studies of communication towers (Gehring et al. 2009). We used a similar carcass removal rate. Together these reveal a combined multiplier of four for calculating overall fatality rate. Studies of bird carcasses at communication towers reveal that a factor of four is likely to reflect searcher efficiency and carcass removal at a wide variety of habitats beneath communication towers. Gehring et al. (2009) found a factor of about four after completing over 90 individual searcher efficiency and carcass removal trials

(report coauthored by a U.S. Fish and Wildlife Service biologist and a biologist with the Michigan Natural Features Inventory).

Assuming a combined carcass removal and searcher efficiency multiplier of four, we estimate that a total of 28 birds annually were likely killed at the North Boresite Tower during the study period. For the Meteorological Tower, we estimate 52 fatalities annually based on 13 carcasses found. The study period covered a good portion of a year, but it is likely that the fatality rates for these towers is somewhat greater, based on the fact that the searcher efficiency pilot study conducted between October 3, 2008 and February 22, 2009 included a relatively small number of placed carcasses, when compared to the March 1, 2009 through October 2, 2009 period.

6.0 DISCUSSION AND CONCLUSIONS

6.1 Discussion

Field biologists conducted early morning surveys in accordance with the avian and bat study plan for avian point counts (once per week at the two separate survey locations, and then at least twice per week during spring and fall migration periods) and fatality searches (three times per week at all three towers during the migration seasons and one time per week during the remainder). Periodic diurnal avian migration observation days were to be conducted on fall and spring days when weather front movement was conducive to migratory activity. A total of four migration observation days were conducted in Fall 2008, and two days were surveyed in both the Spring 2009 and the Fall 2009 migration seasons.

This level of effort provided NASA a consistent characterization of avian and bat activity throughout the 12-month study period and efficiently allowed staff biologists, who have been working in the Wallops Island vicinity for several years and very familiar with the habitat there, to conduct the work. Although recommended by USFWS staff, radar surveillance of migrating birds and bats was considered and determined to be of much less value in determining avian and bat risk than steadily performing fatality searches at the three tall towers near the proposed wind turbine site. The presence of these towers so close to the proposed wind turbine sites created an excellent opportunity to study fatality at both guyed and unguyed structures, as well as a 355-foot-tall tower that is very similar in height to the 2.0-MW wind turbine. Pre-construction radar surveys are also rarely conducted for small wind energy facilities of two or less wind turbines, because of the expensive cost of such studies in relation to the overall project development costs, as well as their limited value in determining potential risk in such a small total wind turbine rotor-swept area.

Avian observations documented throughout the 12-month study period at the two survey sites just east of the two proposed wind turbine sites were generally unremarkable in terms of species encountered and numbers of birds. Bird species totaling over 100 within a survey period included common species such

as tree swallow, flicker, brant and yellow-rumped warbler. By far the largest numbers of birds observed were snow geese numbering in the hundreds, and even several thousand on one day in November 2008. Over 81 percent of the recorded flight heights were between 0 and 50 feet above ground level, although larger flocks of birds were generally seen at heights over 100 feet above ground or resting in marshes. Less than 2 percent of the observed birds were within the height range of the proposed wind turbine's rotor swept zone and they were generally hunting or feeding and observed in the August/September time period.

With the exception of ten bald eagles, one gull-billed tern and four peregrine falcons, no sensitive avian species were recorded during the point count surveys. Seven of the bald eagles were seen in the spring and three in the fall. Eight were flying or circling at heights ranging from 20 to 50 feet and two were resting. All were located west or northwest of the wind turbine sites. The gull-billed tern was seen on August 3, 2009 flying south of the project site in an easterly direction. The two peregrine falcons spotted during the point count surveys were located flying at 0 to 10 feet above ground level, one in April 2009 to the east of the proposed wind turbine area and one in September 2009 to the west of the project area. Two additional peregrine falcons were observed during migration surveys flying at heights of 100 feet, one on the far marsh in May 2009 and one along the sand dunes in October 2008.

It is important to note that no federally endangered piping plovers were observed in any of the surveys, despite their documented existence approximately three miles away on the northeast shoreline on Wallops Island, as well as three miles away on Assawoman Island. This is not unexpected because they are typically beach nesters and forage along beaches, and not in the marsh habitat that predominates the vicinity of the proposed wind turbine locations. The lack of even one observation of the piping plover during the 12-month survey combined with the lack of viable habitat in the proposed wind turbine area indicates the risk to this species should be very low.

Documented bird and bat fatalities were greatest at the taller South Meteorological Tower (13) than the shorter Northern Boresight Tower (7). Meanwhile, the lack of any observed fatalities at the unguyed Southern Boresight Tower reinforces the concept that guy wires cause greater fatalities than unguyed towers. Searcher efficiency rates for the first half of the study period were approximately 50%, but improved to 68% in the second half. The study plan states that approximately 25 small birds, 25 bats, and 25 mid-large sized birds would be distributed randomly under the three towers. The total number of carcasses planted for efficiency evaluation throughout the study period was 75, with all but six being planted after March 1st. Overall annual fatalities were estimated to be about 28 for the study period for the Northern Boresight Tower and 52 for the Meteorological Tower, based on the numbers of carcasses (or feather clumps) multiplied times standard searcher efficiency and carcass removal rates.

6.2 Conclusions

Flocks of over 50 birds were limited in number and with the exception of the 20,000 snow geese observed on November 20, 2008, most flocks were under 100 birds. The existence of the three tall towers in relatively close proximity to the proposed wind turbine sites presented a unique opportunity to evaluate potential fatality for the proposed project site. In 83 fatality survey days, 25 carcasses, parts, or feathers were found, along with one bat carcass were recovered. These fatalities did not include waterfowl, shorebirds, or raptors, nor did it include endangered or threatened species. In addition, the incomplete remains of birds did not appear to be similar to those of endangered or threatened species.

Because the proposed wind turbine sites are located near several tall structures on Wallops Island, NASA has used these structures as surrogates for wind turbines to study avian and bat fatalities. By studying fatalities at these tall structures, many of which are far riskier to birds bats than wind turbines, an indication of potential risk to nocturnal and diurnal birds that use the airspace above Wallops Island was acquired. The rationale for conducting such studies is that wind turbines and unguyed towers in the same height range are responsible for similar numbers of bird fatalities and that guyed towers of the same height kill far more birds than do wind turbines (Gehring et al. 2009). Our estimates of 28 fatalities annually during the study period at the Boresight Tower and 52 fatalities at the Meteorological Tower are similar to those published in the literature. Gehring et al. (2009) estimated that there were about four fatalities for every carcass found and if their numbers are used to calculate yearly fatality rates, they yield about 70 birds per 475 foot, guyed tower per year. These fatality numbers indicate that the estimates of fatalities from towers on Wallops Island are similar to those found at other communication towers. Because wind turbine fatalities are similar in number to fatalities found at unguyed communication towers, we expect similar numbers of fatalities of birds at the proposed Wallops Island turbines as those found at the unguyed tower we studied at Wallops Island. In addition, the numbers of bird fatalities at the two guyed towers are also not greater than what has been found at 470 foot tall, guyed communication towers studied intensively in Michigan. Thus, despite being a coastal site where large numbers of migrants are present, the numbers of birds killed by the two guyed towers are not in excess of communication towers found inland, lending support to our contention that the two wind turbines proposed for Wallops Island are not likely to experience extraordinary or biologically significant numbers of fatalities.

NASA has been closely monitoring the post-construction wildlife studies that have been conducted by the New Jersey Audubon Society (NJAS) at the existing Jersey Atlantic Wind, LLC/Atlantic City Utilities Authority five-turbine project on the Atlantic coastline in Atlantic City, New Jersey. It is a very similar setting to the Wallops Island environment and has allowed for a meaningful assessment of the type of impacts that might occur at the proposed project site. Results of site-specific bird and bat fatality studies taking place between August 2007 and December 2008 have been published and during this period carcasses of 30 birds (17 species) and 53 bats (2 species – red and hoary) were discovered near the

operating wind turbines. Of these carcasses the only sensitive species was a single peregrine falcon, while gulls (9) and common passerines were the most common finds. Carcass searches have taken place three days per week at each wind turbine during the study period. In addition, weekly ten-minute avian point counts and searcher efficiency studies have been part of this post-construction monitoring effort. The results regarding relatively low avian and bat fatality at this five-turbine project over a 17-month period lend strong support to the potential for the Wallops Island two-turbine demonstration project to cause low risk to a similar coastal avian community. NASA will continue to review the findings of this on-going effort as it develops a post-construction monitoring study for its demonstration project.

As a demonstration project, the installation of the two wind turbines will allow for continued avian and bat field studies, including the possible integration of different operational parameters when researching fatality or avian flight behavior in the vicinity of the wind turbines at different times of the year. Based on the post-construction monitoring results, NASA is willing to periodically adapt its operational regime to better investigate fatality during times of year when avian or bat risk is potentially higher (i.e., migration seasons or nesting periods for specific species).

A proposed monitoring study approach focused solely on documenting wind turbine fatalities is described in Section 7. NASA may also consider conducting post-construction field studies at some time that allow for a comparison of avian and bat fatality at the wind turbine sites with fatalities at the existing tower structures surveyed last year. This would allow NASA to determine differences in fatality at these different structure types, while also observing avian and bat behavior with the addition of wind turbines to Wallops Island.

7.0 PROPOSED POST-CONSTRUCTION AVIAN AND BAT FATALITY SURVEYS

NASA proposes to conduct two non-consecutive years of post-construction fatality surveys within the first three years of project operation. Surveys will include carcass searches, searcher efficiency trials, scavenger removal trials, and estimation of searchable area. These trials will be used to estimate overall avian and bat collision fatalities. Surveys will be conducted from March 1 through November 1. Before commencing this effort, NASA will consult with staff from the U.S. Fish and Wildlife Service (USFWS) and the Virginia Department of Game and Inland Fisheries (VDGIF) to discuss the purpose of the study as well as appropriate search intervals and other logistical matters related to the scavenger removal and searcher efficiency trials. The first year of surveys will take place after the wind energy facility is fully operational. A report of findings will be prepared and reviewed with USFWS and VDGIF staff. Adjustments to the study protocol will be made as deemed necessary and a second year of surveys will follow, likely during the third year of operation. NASA may consider adding a third year of study if warranted.

Fatality Searches

Bird and bat carcass searches will be conducted at each wind turbine within a 120 meter by 120 meter rectangular area. Search plots will be centered at the base of the turbine tower and the area will be searched along transects no more than 5 to 6 meters apart. Searches will be made every three days throughout the study period.

Field surveyors will likely be NASA and U.S. Navy biologists trained in the search protocol. Transects at each of the turbines will be walked slowly to visually locate bird and bat carcasses, including portions of carcasses. Search intervals will vary (i.e., approximately one to two hours per turbine location) depending upon specific ground conditions.

A standardized data sheet will be used for each search. The data sheet will include detailed weather observations, time, date, and observer name and carcass species identification. The data collected will also include:

I. Digital photographs of each carcass, including:

1) the posture and habitat in which it was found;
2) the dorsal and ventral sides;
3) photos that indicate the gender and reproductive condition of bats (if possible); and
4) any identifying characteristics such as bill, foot, wing or tail shape, and plumage coloration for birds.

II. Additionally, data collection will include:

1) turbine number;
2) location of carcass;
3) estimated distance and direction from turbine;
4) distance and bearing from transect from which it was first spotted;
5) condition of carcass (whole or partial, extent of injury and some measure of decomposition to estimate time of death);
6) preliminary estimate of days since death;
7) position of carcass (face-up/down, sprawled, balled up, etc);
8) species, age and sex, if determinable; and
9) substrate conditions when found (marsh/water, short/long grass, dense fragmite cover).

Searches will be initiated during optimal weather conditions, when possible, and to maximize the probability of locating carcasses they will commence as close to sunrise as possible. Carcasses found during the survey effort will be cataloged and stored in a freezer. If observers cannot determine species type because partial bird or bat carcasses were found, USFWS, VDGIF, or expert biologists will be asked to assist in species identification efforts. Where individual feathers, as opposed to carcasses or clumps of feathers (including feather tracts) are found, observers will note these but they will not be considered wind turbine fatalities. Any large fatality events or rare, threatened or endangered species found will be reported to USFWS and VDGIF staff within 48 hours of the discovery.

Weather conditions from the night (for night migrants during the migration season) and day (for other birds) prior to the surveys will be collected from local and national weather databases, or from personal observation at or near the site. If carcasses are found, descriptions of visibility conditions the night prior to the fatality surveys will be investigated and reported, particularly information concerning percent cloud cover and the presence of fog or low cloud ceilings.

Carcass Removal Trials

Carcass removal by scavengers will be monitored using no less than 30 specimens per year and will be performed periodically throughout the survey season. Planted carcasses will include an equal assortment of small birds, large birds and bats (or tailless mice, as bat surrogates). Carcasses will be fresh, inconspicuously marked, and will be placed in various ground cover types and at different turbine locations, should two be built. Carcasses will be monitored daily (during the first week) for removal and thereafter weekly until the carcass disappears. During carcass checks, the location and condition of the carcass will be recorded on standardized data sheets to document the degree of scavenging (e.g., wing missing, tail missing, head missing, breast eaten, etc.) over time. Incidental signs such as tracks or scat adjacent to the carcasses will also be identified and documented.

Searcher Efficiency Trials

To produce the best estimates of fatality, a number of individual searcher efficiency trials will be conducted periodically during the survey period to test searcher efficiency. Marked carcasses of various sizes, taxa and species will be left unbeknownst to the searcher at various locations and in various ground cover types. A record of how many days it took for a carcass to be found will be noted and the searcher efficiency findings, in combination with carcass removal results, will be factored into the fatality search results to calculate an estimated bird and bat fatality rate for the project site.

Searchable Area

As a result of brushy vegetation, water, or other conditions, the area beneath turbines may not be entirely searchable. To adjust for carcasses that may not be found because of this potential bias, those areas

that cannot be searched will be measured via GPS. Using the area that could not be searched, in concert with estimates of the "fall" zone (probability density distribution) of carcasses (bats and birds separately); a calculation of how many birds or bats may have actually been present within the unsearchable areas will be performed. Once this estimate has been made, it can be incorporated into the calculation of overall fatalities at the turbines.

Calculation of Adjusted Fatality Estimates

Using searcher efficiency, carcass removal, and searchable area estimates determined empirically, the overall numbers of bird and bat fatalities will be calculated. The resulting estimates will be larger than the numbers of carcasses found for both birds and bats, as well as for different groups of birds. The methodology to be used will be one of those that have been accepted by the USFWS and various state agencies and, therefore, have been peer-reviewed. The methodology is now being used by Bat Conservation International and the Bat Wind Energy Collaborative, although it has been modified slightly several times. The method do be used for this project will be a variant being developed by biologists with Curry & Kerlinger, LLC (methodology will be available before the end of 2010).

Survey Report

After the completion of each annual fatality survey a report of findings will be prepared. A summary of the results of the fatality searches will include recorded data for each carcass found, including the variables described above. Results of the carcass removal and searcher efficiency studies will also be presented. An estimated fatality rate will be calculated and presented which factors in the combined fatality search, carcass removal and searcher efficiency results. A discussion of the species of carcasses discovered during the fatality search will also be presented. Recommendations for any modifications to subsequent post-construction avian and bat fatality studies at the project site will also be presented.

8.0 LITERATURE CITED

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Attachment 1

Avian Point Counts (Sites 1 and 2) September 12, 2008 – October 1, 2009

Attachment 1: Avian Point Counts (Sites 1 and 2) September 12, 2008 - October 1, 2009

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
9/12/2008	1	Starling	8	0845	S	landing	W	15	1	foraging in myrtles
9/12/2008	1	red-bellied woodpecker	1	0852	N	landing	W	20	1	landed on dead tree
9/12/2008	1	common grackle	2	0854	W	flying	W	30	2	landed on marsh
9/12/2008	1	field sparrow	1	0854		calling	NW	5	1	
9/12/2008	1	bald eagle	1	0854	W	circling	NNW	200	3	
9/12/2008	1	herring gull	1	0854	W	circling	NNW	200	3	harrassing eagle
9/12/2008	1	Starling	2	0857	E	fly to mast	N	80	1	
9/12/2008	1	willet	1	0858		calling	W	10	2	
9/12/2008	1	chickadee	1	0859	N	flying	NW	20	1	
9/12/2008	1	pigeon	2	0859	E	flying	NW	30	1	
9/12/2008	1	willet	1	0900	N	flying	W	20	2	near turbine site.
9/12/2008	1	Starling	3	0901	N	flying	NE	80	1	
9/12/2008	1	Starling	2	0902	N	flying	W	20	1	
9/12/2008	2	yellowthroat	1	0908		scolding	W	5	1	
9/12/2008	2	catbird	1	0914		calling	NW	5	1	
9/12/2008	2	Starling	2	0914	S	flying	W	20	1	
9/12/2008	2	pigeon	2	0915	N	flying	W	40	1	
9/12/2008	2	laughing gull	1	0917	N	flying	NW	20	2	
9/12/2008	2	Starling	4	0918	S	flying	W	20	1	
9/16/2008	1	Starling	2	0819		sitting	S	20	1	
9/16/2008	1	Starling	1	0819	S	flying	E	80	1	
9/16/2008	1	Starling	1	0819	S	flying	W	20	1	
9/16/2008	1	herring gull	1	0820	S	flying	W	40	3	
9/16/2008	1	Canada goose	2	0821	N	flying	W	40	2	
9/16/2008	1	Starling	1	0822	N	flying	W	40	2	
9/16/2008	1	Starling	1	0822	N	flying	E	80	1	
9/16/2008	1	Starling	10	0823	S	flying	E	100	3	
9/16/2008	1	great egret	11	0825	S	flying	E	200	3	
9/16/2008	1	Starling	6	0826	N	flying	E	20	1	
9/16/2008	1	herring gull	1	0829	S	flying	S	100	1	
9/16/2008	2	Chipping sparrow	1	0832	N	scolding	E	1	1	
9/16/2008	2	pigeon	2	0834	N	flying	E	20	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
9/16/2008	2	Carolina wren	1	0836		calling	S	20	1	
9/16/2008	2	Chipping sparrow	1	0838	N	flying	N	10	1	
9/16/2008	2	herring gull	2	0839	N	flying	E	100	3	
9/16/2008	2	Black duck	3	0841	N	flying	N	200	1	
9/16/2008	2	osprey	1	0842	N	hunting	E	100	2	
9/16/2008	2	Black duck	1	0842	S	flying	E	40	3	
9/16/2008	2	Black duck	5	0843	N	flying	E	100	2	
9/24/2008	1	Starling	2	0808		calling	W	80	1	on mast
9/24/2008	1	laughing gull	7	0812	N	flying	W	80	1	
9/24/2008	1	Black duck	3	0814	N	flying	W	10	2	
9/24/2008	1	Starling	3	0814	W	flying	S	30	2	landed 0817 in myrtles
9/24/2008	1	herring gull	1	0815	N	flying	W	20	2	
9/24/2008	1	Starling	1	0817	N	flying	W	10	2	landed in myrtles
9/24/2008	1	herring gull	2	0818	N	flying	W	30	3	
9/24/2008	1	Starling	6	0819	W	flying	W	40	1	landed in dead tree
9/24/2008	2	flicker	1	0822	E	flying	W	30	1	
9/24/2008	2	Starling	2	0823	E	flying	E	20	1	
9/24/2008	2	snowy egret	2	0823	N	flying	W	10	3	
9/24/2008	2	snowy egret	1	0824		standing	W		3	
9/24/2008	2	chickadee	1	0827	N	scolding	W	15	1	in myrtles
9/24/2008	2	tree swallow	12	0827	N	flying	W	50	2	
9/24/2008	2	Starling	1	0827	N	flying	W	30	2	
9/24/2008	2	tree swallow	1	0828	N	flying	W	40	2	
9/24/2008	2	chickadee	2	0829		scolding	E	15	1	in myrtles
9/24/2008	2	flicker	1	0830		calling	S	10	1	
9/24/2008	2	tree swallow	220	0831	N	flying	N	30	1	
9/24/2008	2	snowy egret	1	0832	N	flying	N	20	1	
9/24/2008	2	Canada goose	9	0834	N	flying	N	40	1	
9/24/2008	2	pintail	17	0835	NE	flying	E	40	1	
9/24/2008	2	mallard	3	0835	S	flying	E	30	3	
9/26/2008	1	Starling	10	0813		sitting	S	20	1	on dead tree periodic loud banging noises on marsh
9/26/2008	1	Starling	4	0813	N	flying	E	80	1	land on mast

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
9/26/2008	1	Starling	15	0817	N	flying	E	80	1	land on mast
9/26/2008	1	Black duck	1	0820	N	flying	W	40	2	
9/26/2008	1	Black duck	2	0820	S	flying	W	40	2	
9/26/2008	1	killdeer	1	0822	N	flying	N	70	1	
9/26/2008	1	Carolina wren	1	0824		singing	W	15	1	
9/26/2008	1	Black duck	4	0824	S	flying	W	50	2	
9/26/2008	1	herring gull	1	0826	S	flying	E	100	1	
9/26/2008	1	pigeon	3	0826	S	flying	W	150	2	
9/26/2008	1	herring gull	3	0827	N	flying	W	80	2	
9/26/2008	1	Black duck	1	0828	N	flying	W	110	2	
9/26/2008	2	snowy egret	1	0830		feeding	W	0	2	near turbine site.
9/26/2008	2	tri-colored heron	1	0832	S	flying	W	40	2	
9/26/2008	2	snowy egret	2	0833	S	flying	W	40	2	
9/26/2008	2	Black duck	2	0833	S	flying	W	20	2	
9/26/2008	2	Carolina wren	1	0834		calling	S	15	1	
9/26/2008	2	snowy egret	4	0835	S	flying	W	20	2	
9/26/2008	2	snowy egret	1	0836		feeding	W	0	2	under tower
9/26/2008	2	Black duck	1	0837	N	flying	N	40	3	
9/26/2008	2	laughing gull	2	0837	N	flying	N	40	2	
9/26/2008	2	yellowlegs	2	0838		feeding	W	0	2	
9/26/2008	2	snowy egret	1	0839	S	flying	W	30	2	
9/26/2008	2	Carolina wren	1	0840		calling	W	10	1	
9/26/2008	2	Starling	1	0842	N	flying	W	20	2	
9/26/2008	2	Black duck	2	0843	W	flying	W	15	3	
9/26/2008	2	tri-colored heron	1	0844	S	flying	W	30	3	
9/26/2008	2	boat-tailed grackle	40	0844	N	flying	W	20	3	
9/26/2008	2	yellowlegs	3	0844	N	flying	W	50	3	
9/26/2008	2	laughing gull	1	0845	S	flying	W	10	1	
9/26/2008	2	laughing gull	2	0845	N	flying	W	30	3	
9/30/2008	1	Starling	6	0815		calling	E	80	1	
9/30/2008	1	yellowthroat	1	0818		calling	S	15	1	
9/30/2008	1	flicker	70	0819	S	flying	W	50	2	
9/30/2008	1	red-bellied woodpecker	1	0819	S	perched	S	30	2	
9/30/2008	1	boat-tailed grackle	4	0820	S	flying	W	40	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
9/30/2008	1	black-throated blue warbler	2	0823	S	flying	W	20	2	
9/30/2008	1	catbird	1	0824		perched	W	10	2	
9/30/2008	1	Carolina wren	1	0825		perched	W	15	2	
9/30/2008	1	Starling	1	0826		perched	W	30	2	
9/30/2008	1	goldfinch	1	0829	S	flying	W	20	2	
9/30/2008	1	mourning dove	3	0830	S	flying	W	30	1	
9/30/2008	1	yellow bellied sapsucker	2	0830	S	flying	W	15	2	
9/30/2008	2	song sparrow	5	0834		hunting	W	5	1	
9/30/2008	2	flicker	115	0834	S	flying	E	20	1	
9/30/2008	2	great egret	1	0837		feeding	E	0	3	
9/30/2008	2	boat-tailed grackle	1	0840		perched	E	15	2	
9/30/2008	2	song sparrow	2	0840		calling	E	15	2	
9/30/2008	2	catbird	1	0842		calling	S	15	1	
9/30/2008	2	red-winged blackbird	12	0845	W	flying	W	15	2	
9/30/2008	2	mockingbird	1	0847	S	flying	W	15	1	
9/30/2008	2	boat-tailed grackle	4	0847	S	flying	E	20	2	
9/30/2008	2	red-bellied woodpecker	1	0848	S	flying	E	40	2	
10/2/2008	1	Starling	10	0815		calling	E	80	1	on mast
10/2/2008	1	house finch	5	0818		feeding	S	15	1	
10/2/2008	1	mourning dove	1	0819	N	flying	W	15	1	
10/2/2008	1	flicker	4	0820	S	flying	W	20	1	
10/2/2008	1	pigeon	1	0822		calling	W	80	1	
10/2/2008	1	Cooper's Hawk	2	0823	S	flying	W	50	1	
10/2/2008	1	tree swallow	8	0825	S	flying	W	200	1	
10/2/2008	1	Cooper's Hawk	1	0827	S	flying	W	70	2	
10/2/2008	1	tree swallow	4	0828	S	flying	W	200	1	
10/2/2008	1	Canada goose	6	0829		calling	W	20	3	
10/2/2008	1	ring-billed gull	1	0830	E	flying	W	50	1	
10/2/2008	1	tree swallow	130	0830	S	flying	E	200	3	
10/2/2008	2	herring gull	2	0832	W	flying	W	150	3	
10/2/2008	2	tree swallow	120	0834	S	flying	E	100	3	
10/2/2008	2	Canada goose	11	0835	E	flying	W	20	3	
10/2/2008	2	great egret	1	0836	S	flying	W	10	3	
10/2/2008	2	cormorant	1	0838	N	flying	W	30	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
10/2/2008	2	herring gull	2	0838	W	flying	W	100	3	
10/2/2008	2	great egret	2	0839	S	flying	W	20	3	circlling
10/2/2008	2	yellowlegs	3	0840		feeding	W		2	
10/2/2008	2	ring-billed gull	4	0841	N	flying	W	30	3	
10/2/2008	2	osprey	2	0842	S	flying	W	100	1	
10/2/2008	2	ring-billed gull	1	0842	E	flying	W	100	1	
10/2/2008	2	great egret	1	0843		feeding	W		2	
10/2/2008	2	boat-tailed grackle	13	0844	N	flying	E	40	2	
10/2/2008	2	boat-tailed grackle	20	0845	E	flying	W	20	1	land in myrtles
10/2/2008	2	Cooper's Hawk	1	0846	S	flying	E	100	2	
10/6/2008	1	Starling	2	0822		calling	E	80	1	on mast
10/6/2008	1	song sparrow	1	0825		perched	S	15	1	
10/6/2008	1	white-throated sparrow	2	0825		perched	W	5	1	
10/6/2008	1	boat-tailed grackle	2	0826	N	flying	E	40	1	
10/6/2008	1	pintail	1	0825	N	flying	E	150	2	
10/6/2008	1	house finch	5	0828	N	flying	W	80	2	
10/6/2008	1	Black duck	8	0830	N	flying	W	100	1	
10/6/2008	1	double-crested cormorant	3	0832	S	flying	W	200	3	
10/6/2008	1	house finch	2	0834	N	flying	W	40	2	
10/6/2008	1	flicker	1	0834	S	flying	W	40	2	
10/6/2008	1	red-winged blackbird	2	0835	N	flying	W	40	2	
10/6/2008	1	house finch	2	0835	S	flying	W	40	2	
10/6/2008	1	Carolina wren	1	0837		calling	S	15	1	
10/6/2008	2	yellow-rumped warbler	3	0840		perched	W	15	1	
10/6/2008	2	red-winged blackbird	10	0842	N	flying	W	60	1	
10/6/2008	2	great egret	1	0843		hunting	W		2	
10/6/2008	2	catbird	1	0844		calling	E	20	2	
10/6/2008	2	common grackle	1	0846	N	flying	W	60	3	
10/6/2008	2	great blue heron	3	0846	SE	flying	W	80	3	
10/6/2008	2	red-winged blackbird	1	0847	N	flying	W	60	3	
10/6/2008	2	common grackle	11	0848	N	flying	W	60	1	
10/6/2008	2	flicker	6	0849	N	flying	W	40	1	
10/6/2008	2	yellow-rumped warbler	1	0849	W	flying	W	50	1	
10/6/2008	2	flicker	12	0850	S	flying	W	40	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
10/6/2008	2	common grackle	2	0854	W	flying	W	50	2	
10/6/2008	2	great egret	1	0854		hunting	W	10	3	
10/6/2008	2	Starling	6	0855	N	flying	S	30	1	
10/6/2008	2	herring gull	1	0855	W	flying	S	100	2	
10/8/2008	1	Starling	10	0812		calling	E	80	1	on mast
10/8/2008	1	cormorant	1	0814	N	flying	W	100	1	
10/8/2008	1	yellow-rumped warbler	6	0815	N	perched	W	10	1	working through bushes
10/8/2008	1	herring gull	2	0816	SW	flying	W	200	3	
10/8/2008	1	cowbird	4	0820	N	flying	W	30	2	
10/8/2008	1	flicker	3	0822	S	flying	W	20	1	
10/8/2008	1	song sparrow	1	0822	S	calling	S	15	1	
10/8/2008	1	flicker	1	0823	S	flying	W	15	1	
10/8/2008	1	ring-billed gull	2	0823	S	flying	W	60	2	
10/8/2008	1	herring gull	1	0824	SW	flying	S	60	2	
10/8/2008	1	common grackle	12	0827	N	flying	W	30	2	
10/8/2008	1	pigeon	2	0827		flying	E	80	1	circling mast
10/8/2008	2	great egret	1	0832	S	flying	W	10	3	
10/8/2008	2	cardinal	1	0832		calling	E	15	2	
10/8/2008	2	flicker	1	0833	W	flying	W	20	2	
10/8/2008	2	shorebirds	50	0833		resting	W	0	3	too far to identify
10/8/2008	2	pigeon	1	0834		flying	N	80	1	circling mast
10/8/2008	2	pigeon	8	0835	N	flying	W	50	3	
10/8/2008	2	royal tern	1	0835		hunting	W	30	3	
10/8/2008	2	marsh wren	1	0842		perched	W	20	1	
10/8/2008	2	catbird	1	0842		calling	E	15	1	
10/8/2008	2	herring gull	2	0843	S	flying	E	100	3	
10/8/2008	2	laughing gull	1	0845	W	flying	E	100	1	
10/8/2008	2	flicker	3	0846	S	flying	N	20	1	
10/8/2008	2	pigeon	3	0847		flying	N	80	1	circling mast
10/14/2008	1	cardinal	1	0824		calling	W	15	1	
10/14/2008	1	cormorant	1	0834	N	flying	W	100	2	
10/14/2008	1	brown creeper	1	0834		feeding	W	20	1	
10/14/2008	1	Starling	6	0835		circling	E	80	1	on mast
10/14/2008	1	flicker	1	0835	S	flying	W	100	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
10/14/2008	1	Starling	2	0836	N	flying	W	150	1	
10/14/2008	1	yellow-rumped warbler	12	0837	N	feeding	W	20	1	
10/14/2008	1	yellow-rumped warbler	1	0839	N	flying	W	20	1	
10/14/2008	1	yellow-rumped warbler	2	0840	S	flying	W	20	1	
10/14/2008	1	Starling	3	0840	S	flying	W	60	2	
10/14/2008	1	yellow-rumped warbler	3	0843		feeding	S	20	1	
10/14/2008	2	yellow-rumped warbler	20	0845		feeding	W	15	1	
10/14/2008	2	great egret	2	0846	S	flying	W	20	2	
10/14/2008	2	great egret	2	0847		feeding	W	0	3	
10/14/2008	2	red-winged blackbird	2	0848	N	flying	W	40	1	
10/14/2008	2	Black duck	2	0850		resting	W	0	3	
10/14/2008	2	snowy egret	10	0850		feeding	W	0	3	
10/14/2008	2	marsh hawk	1	0852	N	feeding	W	10	3	
10/14/2008	2	herring gull	1	0853	S	flying	W	140	3	
10/14/2008	2	yellow-rumped warbler	60	0856	N	flying	W	20	1	
10/14/2008	2	yellow-rumped warbler	30	0858	N	flying	E	20	1	
10/14/2008	2	great egret	1	0859	N	flying	W	20	3	
10/14/2008	2	herring gull	1	0859	SW	flying	W	100	3	
10/14/2008	2	cormorant	4	0860		circling	W	40	3	
10/14/2008	2	white-throated sparrow	1	0860		calling	E	15	2	
10/21/2008	1	Starling	10	0815		perched	E	80	1	on mast
10/21/2008	1	pigeon	6	0816		calling	E	80	1	on mast
10/21/2008	1	yellow-rumped warbler	20	0817		feeding	W	20	1	in myrtles
10/21/2008	1	cardinal	1	0819		feeding	W	20	1	in myrtles
10/21/2008	1	red-winged blackbird	1	0820	S	flying	W	100	3	
10/21/2008	1	tree swallow	3	0821	S	flying	W	80	2	
10/21/2008	1	flicker	4	0821	S	flying	W	80	1	
10/21/2008	1	yellow-rumped warbler	1	0821	S	flying	W	80	1	
10/21/2008	1	cardinal	4	0823		feeding	W	10	1	
10/21/2008	1	white-throated sparrow	1	0823		feeding	W	10	1	
10/21/2008	1	robin	2	0824	S	flying	W	10	1	
10/21/2008	1	tree swallow	2	0826	S	flying	W	200	3	
10/21/2008	1	yellow-rumped warbler	30	0827	S	flying	W	100	2	
10/21/2008	1	Starling	6	0827	S	flying	W	40	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
10/21/2008	1	tree swallow	3	0828	S	flying	W	150	1	
10/21/2008	1	pigeon	5	0828	N	flying	W	100	1	
10/21/2008	1	tree swallow	1	0829	S	flying	W	100	2	
10/21/2008	1	pintail	1	0830	E	flying	E	200	2	
10/21/2008	1	snow goose	1000	0830	NE	flying	W	300	3	
10/21/2008	1	yellow-rumped warbler	1	0830	S	flying	W	200	2	
10/21/2008	2	yellow-rumped warbler	40	0834		feeding	W	10	1	
10/21/2008	2	Black duck	2	0835	N	flying	W	100	3	
10/21/2008	2	tree swallow	1	0835	S	flying	E	100	1	
10/21/2008	2	Black duck	2	0837	S	flying	W	20	2	
10/21/2008	2	cormorant	7	0838	S	flying	W	20	3	
10/21/2008	2	Carolina wren	1	0839		calling	W	10	2	
10/21/2008	2	tree swallow	20	0840	N	circling	E	100	2	
10/21/2008	2	white-throated sparrow	1	0841		feeding	W	5	1	
10/21/2008	2	ring-billed gull	1	0841	S	flying	W	100	2	
10/21/2008	2	herring gull	2	0842	W	flying	W	150	2	
10/21/2008	2	tree swallow	20	0843	S	flying	W	200	1	
10/21/2008	2	Black duck	1	0843	N	flying	W	200	3	
10/21/2008	2	catbird	1	0844		calling	W	15	2	
10/29/2008	1	white-throated sparrow	1	0823	N	feeding	W	5	1	
10/29/2008	1	snow goose	140	0825	SW	flying	NE	200	2	
10/29/2008	1	pigeon	10	0825		calling	E	80	1	on mast
10/29/2008	1	snow goose	350	0826	SW	flying	NE	200	2	
10/29/2008	1	yellow-rumped warbler	1	0827	N	feeding	W	2	1	
10/29/2008	1	snow goose	80	0827	SW	flying	NE	200	2	
10/29/2008	1	herring gull	3	0828	S	flying	N	200	2	
10/29/2008	1	pintail	1	0829	S	flying	E	250	3	
10/29/2008	1	Starling	20	0829	S	flying	W	60	2	
10/29/2008	1	snow goose	40	30	SW	flying	NE	300	2	
10/29/2008	1	cowbird	1	0832	N	flying	W	30	2	
10/29/2008	1	yellow-rumped warbler	4	0835	N	flying	W	40	2	
10/29/2008	1	Starling	40	0837	S	flying	W	200	1	
10/29/2008	1	yellow-rumped warbler	4	0837	N	flying	W	100	2	
10/29/2008	1	yellow-rumped warbler	10	0838		feeding	W	10	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
10/29/2008	1	cardinal	1	0838		feeding	W	10	1	
10/29/2008	2	herring gull	7	0840	S	flying	W	100	2	
10/29/2008	2	herring gull	3	0840	S	flying	E	100	3	
10/29/2008	2	Starling	1	0841	S	flying	E	100	3	
10/29/2008	2	yellow-rumped warbler	10	0843		feeding	S	30	1	
10/29/2008	2	Black duck	2	0844	S	flying	N	150	3	
10/29/2008	2	yellow-rumped warbler	5	0845	S	flying	W	50	2	
10/29/2008	2	Starling	20	0845	S	flying	W	50	2	
10/29/2008	2	Black duck	5	0846		feeding	W	0	2	
10/29/2008	2	great blue heron	1	0846		feeding	W	0	2	
10/29/2008	2	Black duck	1	0846	N	flying	W	200	3	
10/29/2008	2	yellow-rumped warbler	2	0848	W	flying	S	50	1	
10/29/2008	2	marsh hawk	1	0850	N	flying	NW	20	3	
10/29/2008	2	herring gull	1	0852	E	flying	N	200	1	
10/29/2008	2	yellow-rumped warbler	1	0853	N	flying	N	100	1	
10/29/2008	2	Starling	30	0854	S	flying	E	50	1	
10/29/2008	2	Starling	10	0855	W	flying	N	100	1	
11/7/2008	1	Starling	10	0818		calling	E	80	1	on mast
11/7/2008	1	cardinal	1	0818		calling	W	10	1	
11/7/2008	1	yellow-rumped warbler	10	0818		feeding	W	10	1	
11/7/2008	1	Cooper's Hawk	1	0822	S	hunting	W	10	1	
11/7/2008	1	Black duck	2	0822	N	flying	W	25	2	
11/7/2008	1	yellowlegs (Greater)	1	0822		calling	M	10	3	
11/7/2008	1	herring gull	2	0824	W	flying	N	100	1	
11/7/2008	1	white-throated sparrow	1	0824		calling	NE	20	2	
11/7/2008	1	cormorant	3	0826	W	flying	N	100	3	
11/7/2008	1	Starling	6	0829	N	flying	W	40	1	
11/7/2008	1	herring gull	1	0829	W	flying	W	100	3	
11/7/2008	1	herring gull	1	0830	E	flying	S	150	1	
11/7/2008	1	pigeon	4	0831		calling	E	80	1	on mast
11/7/2008	1	Black duck	1	0832	N	flying	E	150	3	
11/7/2008	1	herring gull	1	0833		circling	N	100	2	
11/7/2008	2	herring gull	1	0835	N	flying	N	20	3	
11/7/2008	2	red-breasted merganser	1	0835	E	flying	N	120	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
11/7/2008	2	yellow-rumped warbler	15	0835		calling	E	20	2	
11/7/2008	2	catbird	1	0835		calling	E	10	2	
11/7/2008	2	Starling	2	0838	S	flying	W	150	3	
11/7/2008	2	herring gull	4	0838	E	flying	W	150	3	
11/7/2008	2	cormorant	21	0838	E	flying	SW	150	3	
11/7/2008	2	Canada goose	20	0839	N	flying	SW	100	3	
11/7/2008	2	yellow-rumped warbler	2	0844	N	flying	E	80	2	
11/7/2008	2	mourning dove	2	0844	W	flying	E	120	2	
11/7/2008	2	cormorant	1	0844	S	flying	N	100	1	
11/7/2008	2	yellow-rumped warbler	40	0847	N	flying	E	120	2	
11/7/2008	2	yellowlegs (Greater)	1	0847		calling	E	10	3	
11/7/2008	2	snow goose	80	0848	NE	flying	W	200	3	
11/7/2008	2	yellow-rumped warbler	1	0850	S	flying	E	100	2	
11/13/2008	1	pigeon	3	0807	E	flying	N	60	1	
11/13/2008	1	catbird	1	0807		calling	W	10	1	
11/13/2008	1	Black duck	2	0812	N	flying	W	150	3	
11/13/2008	1	yellow-rumped warbler	10	0812		chipping	W	10	1	
11/13/2008	1	pigeon	1	0815	E	flying	W	90	1	
11/13/2008	1	yellow-rumped warbler	1	0815	N	flying	W	150	1	
11/13/2008	1	Canada goose	3	0816		calling	W	0	2	
11/13/2008	1	sharp-shinned hawk	1	0817	S	hunting	W	60	2	
11/13/2008	1	yellow-rumped warbler	1	0817	S	flying	W	100	2	
11/13/2008	1	pigeon	2	0818	N	flying	W	120	2	
11/13/2008	2	yellow-rumped warbler	15	0822		chipping	E&W	10	1	
11/13/2008	2	white-throated sparrow	1	0824		calling	N	10	1	
11/13/2008	2	cardinal	1	0825		calling	W	10	1	
11/13/2008	2	Starling	3	0825	N	flying	W	160	2	
11/13/2008	2	Canada goose	8	0826		swimming	W	0	2	
11/13/2008	2	tree swallow	21	0827	N	flying	W	100	2	
11/13/2008	2	red-winged blackbird	1	0828	N	flying	W	150	1	
11/13/2008	2	Black duck	2	0829	w	flying	w	200	2	
11/13/2008	2	red-winged blackbird	1	0829	N	flying	W	250	2	
11/20/2008	1	herring gull	2	0812	S	flying	W	250	3	
11/20/2008	1	yellow-rumped warbler	5	0812		chipping	W	10	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
11/20/2008	1	herring gull	1	0814	E	flying	E	200	3	
11/20/2008	1	tree swallow	2	0815	N	flying	E	200	2	
11/20/2008	1	junco	5	15		chipping	W	10	1	
11/20/2008	1	Canada goose	15	0816		calling	S	20	2	
11/20/2008	1	junco	1	0817		feeding	W	0	1	
11/20/2008	1	Black duck	2	0818		calling	W	0	2	
11/20/2008	1	Starling	1	0820	S	flying	W	150	3	
11/20/2008	1	yellow-rumped warbler	1	0820	S	flying	W	60	1	
11/20/2008	1	catbird	1	0822		calling	W	10	1	
11/20/2008	1	shorebirds	20	0825	N	flying	W	15	3	too far to identify
11/20/2008	1	American crow	8	0827	N	flying	W	80	2	
11/20/2008	1	yellow-rumped warbler	10	0827	E	flying	W	100	3	
11/20/2008	2	robin	12	0830		calling	E	10	1	
11/20/2008	2	yellow-rumped warbler	30	0830		feeding	E+W	15	1	
11/20/2008	2	white-throated sparrow	3	0831		calling	E	15	1	
11/20/2008	2	catbird	1	0831		calling	E	20	1	
11/20/2008	2	marsh hawk	1	0833	N	hunting	N	20	3	
11/20/2008	2	snow goose	20,000	0833		resting	W	0	3	on a field on the far side of the marsh
11/20/2008	2	yellow-rumped warbler	50	0835	S	flying	W	100	1	
11/20/2008	2	cormorant	1	0835	SE	flying	W	100	3	
11/20/2008	2	mallard	12	0836		feeding	W	0	3	
11/20/2008	2	white-throated sparrow	1	0836		feeding	W	5	1	
11/20/2008	2	yellow-rumped warbler	15	0837	S	flying	W	30	1	
11/20/2008	2	herring gull	1	0840	W	flying	W	60	1	
11/20/2008	2	Black duck	1	0842	W	flying	W	20	3	
11/20/2008	2	great blue heron	1	0842		feeding	W	0	3	
11/20/2008	2	yellow-rumped warbler	15	0844	S	flying	W	20	1	
11/25/2008	1	junco	10	0815		chipping	W	0	1	
11/25/2008	1	Cooper's Hawk	1	0816		hunting	W	10	1	
11/25/2008	1	marsh hawk	1	0816	S	hunting	W	20	2	
11/25/2008	1	mallard	6	0817		calling	W	0	2	
11/25/2008	1	yellow-rumped warbler	2	0822	N	flying	W	60	2	
11/25/2008	1	yellow-rumped warbler	10	0823	S	flying	W	60	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
11/25/2008	1	ring-billed gull	1	0824	E	flying	W	160	2	
11/25/2008	1	Starling	2	0824	S	flying	W	200	2	
11/25/2008	1	yellow-rumped warbler	12	0826		feeding	W	20	1	
11/25/2008	1	chickadee	1	0827		calling	W	20	1	
11/25/2008	1	ring-billed gull	1	0829	S	flying	W	60	1	
11/25/2008	2	robin	2	0832	S	flying	W	15	1	
11/25/2008	2	robin	2	0832	S	flying	W	100	3	
11/25/2008	2	Black duck	2	0835		calling	W	0	2	
11/25/2008	2	robin	50	0834	S	flying	W	60	2	
11/25/2008	2	Black duck	1	0834	S	flying	W	160	3	
11/25/2008	2	white-throated sparrow	15	0835		scolding	W	5	1	
11/25/2008	2	snow goose	10	0840	NE	flying	W	300	3	
11/25/2008	2	tree swallow	1	0842	N	flying	E	100	3	
11/25/2008	2	tree swallow	2	0842	S	flying	E	120	3	
12/2/2008	1	Starling	12	0810		calling	E	80	1	on mast
12/2/2008	1	Starling	2	0814	S	flying	W	50	1	
12/2/2008	1	yellow-rumped warbler	5	0815		chipping	W	10	1	
12/2/2008	1	Starling	10	0817	S	flying	W	50	1	
12/2/2008	1	yellow-rumped warbler	13	0818		circling	W	50	2	
12/2/2008	1	great blue heron	1	0819	S	flying	W	20	1	
12/2/2008	1	yellow-rumped warbler	12	0820		feeding	W	10	1	
12/2/2008	1	Black duck	7	0822	S	flying	W	40	3	
12/2/2008	1	Starling	2	0824	S	flying	N	80	1	
12/2/2008	1	mourning dove	2	0825	S	flying	W	70	2	
12/2/2008	1	yellow-rumped warbler	7	0825	S	flying	W	90	2	
12/2/2008	1	cardinal	1	0825		feeding	W	3	1	
12/2/2008	2	Black duck	2	0828	S	circling	W	60	3	
12/2/2008	2	catbird	1	0829		calling	E	20	1	
12/2/2008	2	herring gull	1	0829	N	flying	W	70	3	
12/2/2008	2	Black duck	2	0831		feeding	W	0	2	
12/2/2008	2	great blue heron	1	0831	N	flying	S	20	1	
12/2/2008	2	snow goose	500	0831	S	flying	W	100	3	on a field on the far side of the marsh
12/2/2008	2	pintail	6	0833		circling	W	60	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
12/2/2008	2	yellow-rumped warbler	1	0835	W	flying	E	40	1	
12/2/2008	2	mallard	1	0840	S	flying	W	100	3	
12/2/2008	2	great blue heron	1	0840	S	flying	W	50	3	
12/2/2008	2	marsh hawk	1	0841		hunting	W	30	3	
12/2/2008	2	snow goose	800	0841	S	flying	W	120	3	on a field on the far side of the marsh
12/2/2008	2	great blue heron	1	0842	W	flying	SE	30	1	
12/2/2008	2	white-throated sparrow	5	0843		scolding	W	5	1	
12/2/2008	2	Cooper's Hawk	1	0843	W	hunting	E	15	1	
12/8/2008	1	yellow-rumped warbler	5	0815		chipping	W	5	1	
12/8/2008	1	herring gull	2	0816		resting	W	0	3	
12/8/2008	1	herring gull	1	0827	S	flying	E	30	1	
12/8/2008	2	yellow-rumped warbler	20	0832		feeding	W	10	1	
12/8/2008	2	song sparrow	2	0833		feeding	W	10	1	
12/8/2008	2	herring gull	12	0834		hunting	W	20	3	
12/8/2008	2	tree swallow	30	0834	S	flying	W	40	3	
12/8/2008	2	tree swallow	2	0838	NE	flying	W	20	1	
12/8/2008	2	tree swallow	11	0841	S	flying	W	40	3	
12/8/2008	2	snow goose	300	0844	N	flying	W	100	3	on a field on the far side of the marsh
12/8/2008	2	red-winged blackbird	1	0844	N	flying	W	120	2	
12/8/2008	2	yellow-rumped warbler	12	0846	S	flying	W	20	1	
12/24/2008	1	starling	10+	0737		vocalizing	E	80	1	on mast
12/24/2008	1	herring gull	1	0740	W	flying	E	100	1	
12/24/2008	1	yellow rumped warbler	1	0742	E	flying	S	30	1	
12/24/2008	1	rock dove	5	0743	SW	flying	W	50	2	
12/24/2008	1	Black duck	1	0746	NE	flying	W	30	2	
12/24/2008	1	herring gull	1	0750	W	flying	E	200	2	
12/24/2008	1	yellow rumped warbler	2	0752	E	flying	W	20	1	
12/24/2008	2	yellow rumped warbler	1	0758	S	flying	W	10	1	
12/24/2008	2	yellow rumped warbler	4	0800		perching	W	10	1	
12/24/2008	2	sparrow spp.	1	0802	ground feeding		W	0	1	
12/24/2008	2	yellow rumped warbler	3	0805	S	flying	W	10	1	
12/24/2008	2	unknown species	1	0807	E	flying	SW	100	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
12/24/2008	2	yellow rumped warbler	6	0808	W	flying	SE	10	1	
1/2/2009	1	Black duck	1	0721	NE	flying	W	50	2	
1/2/2009	1	herring gull	1	0724	w	flying	W	160	2	
1/2/2009	1	herring gull	16	0726	SW	flying	E	160	2	
1/2/2009	1	yellow rumped warbler	1	0727	SW	flying	W	30	2	
1/2/2009	1	Black duck	5	0729	NE	flying	W	50	2	
1/2/2009	2	herring gull	1	0732	E	flying	W	80	2	
1/2/2009	2	Black duck	2	0732	NE	flying	W	50	2	
1/2/2009	2	yellow rumped warbler	1	0738	SW	flying	W	30	2	
1/2/2009	2	herring gull	1	0741	W	flying	N	100	2	
1/2/2009	2	herring gull	1	0742	E	flying	W	80	2	
1/2/2009	2	Black duck	2	0744	NE	flying	N	50	2	
1/2/2009	2	Black duck	12	0745	NE	flying	W	50	2	
1/12/2009	1	Canada goose	12	0835		calling	SE	0	3	
1/12/2009	1	herring gull	1	0845	W	flying	W	100	3	
1/12/2009	1	yellow-rumped warbler	1	0847		scolding	SW	20	1	
1/12/2009	1	yellow-rumped warbler	2	0848	S	flying	S	15	1	
1/12/2009	1	great blue heron	1	0848	N	flying	S	25	1	
1/12/2009	1	Black duck	6	0848	N	flying	W	20	2	
1/12/2009	1	Black duck	3	0849		circling	W	80	2	
1/12/2009	2	Black duck	5	0852		preening	W	0	2	
1/12/2009	2	Canada goose	6	0852		resting	W	0	2	
1/12/2009	2	shoveler	2	0852		feeding	W	0	2	
1/12/2009	2	Black duck	6	0852		feeding	W	0	2	
1/12/2009	2	widgeon	2	0852		feeding	W	0	2	
1/12/2009	2	marsh hawk	1	0855	M	hunting	W	5	2	
1/12/2009	2	herring gull	1	0857	N	flying	W	100	3	
1/12/2009	2	yellow-rumped warbler	1	0858	W	flying	N	15	1	
1/12/2009	2	Black duck	2	0860	N	flying	W	60	2	
1/12/2009	2	yellow-rumped warbler	1	0862	N	flying	W	15	1	
1/12/2009	2	yellow-rumped warbler	1	0864		feeding	W	10	1	
1/12/2009	2	ring-billed gull	1	0865	W	flying	E	60	2	
1/15/2009	1	starling	1	0817		calling	E	80	1	
1/15/2009	1	yellow-rumped warbler	1	0820		feeding	W	20	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
1/15/2009	1	ring-billed gull	1	0821	N	flying	W	160	2	
1/15/2009	1	starling	12	0822	S	flying	W	40	1	
1/15/2009	1	Cooper's Hawk	1	0824	W	hunting	N	40	1	
1/15/2009	1	common grackle	3	0830	S	flying	N	150	1	
1/15/2009	2	Canada goose	6	0831		resting	W	0	2	
1/15/2009	2	Black duck	4	0831		resting	W	0	2	
1/15/2009	2	shoveler	2	0831		resting	W	0	2	
1/15/2009	2	unknown species - peeps	25	0835	N	flying	W	10	3	
1/15/2009	2	ring-billed gull	1	0835	S	flying	W	10	3	
1/15/2009	2	Black duck	6	0836		circling	W	10	3	
1/15/2009	2	herring gull	2	0838	S	flying	W	60	3	
1/15/2009	2	Black duck	2	0838	S	flying	W	60	3	
1/15/2009	2	herring gull	8	0841	S	flying	W	60	3	
1/15/2009	2	kingfisher	1	0843	S	flying	W	30	2	
1/15/2009	2	herring gull	2	0844	S	flying	E	60	2	
1/23/2009	1	starling	12	0812		calling	NE	100	1	on mast
1/23/2009	1	cardinal	1	0813		calling	W	10	1	
1/23/2009	1	cardinal	1	0816		sunning	W	10	1	
1/23/2009	1	Canada goose	5	0818	S	flying	W	20	2	
1/23/2009	1	yellow-rumped warbler	1	0821		feeding	W	20	1	
1/23/2009	1	yellow-rumped warbler	1	0823	S	flying	W	30	1	
1/23/2009	1	yellow-rumped warbler	1	0825	S	flying	W	30	1	
1/23/2009	1	herring gull	1	0826	S	flying	W	200	2	
1/23/2009	2	seaside sparrow	1	0828		sunning	W	5	2	
1/23/2009	2	Cooper's Hawk	1	0832		sunning	W	5	1	
1/23/2009	2	gulls - unidentifiable	50	0834		resting	W	0	3	
1/23/2009	2	gulls - unidentifiable	30	0834		flying	W	30	3	over water beyond marsh
1/23/2009	2	unknown species - peeps	40	0834		resting	W	0	3	
1/23/2009	2	Black duck	1	0841	N	flying	W	100	2	
1/30/2009	1	starling	12	0808		calling	E	80	1	on mast
1/30/2009	1	herring gull	1	0810	W	flying	N	200	1	
1/30/2009	1	mallard	2	0820		calling	W	0	3	
1/30/2009	2	shoveler	2	0821		resting	W	0	2	
1/30/2009	2	widgeon	4	0821		resting	W	0	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
1/30/2009	2	assorted gulls	50	0822		resting	W	0	3	
1/30/2009	2	hooded merganser	2	0822	S	flying	W	10	3	
1/30/2009	2	red-winged blackbird	2	0824		calling	E	15	2	
1/30/2009	2	mockingbird	1	0827		sunning	W	15	1	
1/30/2009	2	Canada goose	20	0828	S	flying	W	20	2	
2/6/2009	1	Canada goose	6	0815		calling	S	0	2	
2/6/2009	1	herring gull	1	0816	S	flying	W	20	3	
2/6/2009	1	great horned owl	2	0817		calling	N	20	2	
2/6/2009	1	herring gull	2	0817	W	flying	N	150	1	
2/6/2009	1	herring gull	1	0818	W	flying	N	150	1	
2/6/2009	1	yellow-rumped warbler	1	0818	S	flying	W	60	2	
2/6/2009	1	rock dove	3	17	S	flying	W	50	1	
2/6/2009	1	herring gull	1	0820	W	flying	N	100	1	
2/6/2009	1	starling	7	0820	E	flying	N	60	1	
2/6/2009	1	yellow-rumped warbler	1	0820	E	flying	N	50	1	
2/6/2009	1	herring gull	1	0822	W	flying	N	100	1	
2/6/2009	1	Black duck	3	0826	S	flying	N	100	1	
2/6/2009	1	pintail	6	0827	E	calling	N	50	1	
2/6/2009	2	white-throated sparrow	12	0830		feeding	W	0	1	
2/6/2009	2	cardinal	5	0830		feeding	W	0	1	
2/6/2009	2	Black duck	4	0834	E	flying	W	80	3	
2/6/2009	2	yellow-rumped warbler	6	0835		feeding	S	0	1	
2/6/2009	2	Black duck	1	0835		resting	W	0	3	
2/6/2009	2	ring-billed gull	5	0836		resting	W	0	3	
2/6/2009	2	herring gull	1	0837	W	flying	N	100	1	
2/13/2009	1	starling	6	0811		calling	N	80	1	on mast
2/13/2009	1	cardinal	5	0813		feeding	S	0	1	
2/13/2009	1	white-throated sparrow	8	0814		feeding	S	0	1	
2/13/2009	1	rock dove	4	0814		sunning	N	80	1	on mast
2/13/2009	1	yellow-rumped warbler	2	0819		feeding	S	0	1	
2/13/2009	1	killdeer	1	0822		calling	E	100	2	
2/13/2009	1	yellow-rumped warbler	2	0823		sunning	W	15	1	
2/13/2009	2	widgeon	4	0827		feeding	W	0	2	
2/13/2009	2	great blue heron	1	0828	N	flying	W	20	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
2/13/2009	2	Black duck	2	0829	S	flying	W	20	2	
2/13/2009	2	yellow-rumped warbler	1	0830	N	flying	W	30	1	
2/13/2009	2	hooded merganser	1	0832		swimming	W	0	2	
2/13/2009	2	great blue heron	1	0837		feeding	W	0	2	
2/13/2009	2	red-winged blackbird	1	0838	N	flying	W	20	2	
2/13/2009	2	Black duck	2	0838		swimming	W	0	2	
2/19/2009	1	cardinal	2	0813		calling	W	10	1	
2/19/2009	1	starling	3	0813		calling	E	80	1	on mast
2/19/2009	1	Canada goose	5	0815		calling	W	0	3	
2/19/2009	1	herring gull	2	0821	N	flying	W	30	3	
2/19/2009	1	herring gull	2	0826	E	flying	W	60	1	
2/19/2009	2	Black duck	4	0827		preening	W	0	2	
2/19/2009	2	hooded merganser	1	0827		preening	W	0	2	
2/19/2009	2	shoveler	1	0827		swimming	W	0	2	
2/19/2009	2	shoveler	20	0830	N	flying	W	30	3	
2/19/2009	2	black back gull	4	0830		hunting	W	40	3	
2/19/2009	2	marsh hawk	1	0837	S	hunting	W	30	3	
2/19/2009	2	red-winged blackbird	1	0842	N	flying	W	60	1	
2/19/2009	2	herring gull	4	0843	W	flying	E	100	2	NOTE: 0850 immature bald eagle hunting in southern direction, W 80 3. Harassed by bb gulls.
2/27/2009		rock dove	2	0813		circling	N	80	1	on mast
2/27/2009	1	killdeer	2	0814		calling	E	0	2	
2/27/2009	1	Canada goose	6	0817		calling	W	0	2	
2/27/2009	1	rock dove	1	0821		circling	N	80	2	
2/27/2009	1	Black duck	1	0822	E	flying	S	30	1	
2/27/2009	1	boat-tailed grackle	1	0823		sunning	S	50	2	
2/27/2009	1	catbird	1	0825		calling	S	20	1	
2/27/2009	2	Canada goose	2	0830		resting	W	0	2	
2/27/2009	2	Black duck	4	0830		resting	W	0	2	
2/27/2009	2	red-winged blackbird	1	0830		calling	W	0	2	
2/27/2009	2	Black duck	2	0834		swimming	W	0	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
2/27/2009	2	widgeon	2	0835		swimming	W	0	2	
2/27/2009	2	Black duck	1	0837	N	flying	W	830	3	
2/27/2009	2	kingfisher	1	0837	N	flying	W	40	3	
2/27/2009	2	yellow-rumped warbler	1	0840	N	flying	E	60	1	
2/27/2009	2	red-winged blackbird	3	0842	S	flying	W	60	2	
3/6/2009	1	Starling	6	0818		calling	N	80	1	on mast
3/6/2009	1	starling	2	0819	N	flying	W	80	1	
3/6/2009	1	rock dove	2	0819		circling	N	80	1	
3/6/2009	1	robin	2	0821		feeding	S	0	1	
3/6/2009	1	cardinal	2	0825		feeding	W	5	1	
3/6/2009	1	house finch	1	0826		calling	S	10	1	
3/6/2009	1	killdeer	2	0827		calling	E	10	2	
3/6/2009	1	herring gull	3	0828	W	flying	N	80	1	
3/6/2009	1	herring gull	2	0830	S	flying	W	30	3	
3/6/2009	2	mallard	8	0834	S	flying	W	20	2	
3/6/2009	2	marsh hawk	1	0837	S	hunting	W	20	2	
3/6/2009	2	Black duck	12	0837	S	flying	W	20	2	
3/6/2009	2	pintail	12	0838	N	flying	W	60	3	
3/6/2009	2	ring-billed gull	50	0839		resting	W	0	3	
3/6/2009	2	herring gull	1	0840	S	flying	W	40	3	
3/6/2009	2	mallard	8	0841	N	flying	W	60	3	
3/6/2009	2	Black duck	2	0841	S	flying	W	40	3	
3/6/2009	2	black back gull	1	0844	S	flying	W	100	3	
3/6/2009	2	robin	4	0846		feeding	E	0	1	
3/6/2009	2	black back gull	3	0847	S	flying	W	60	3	
3/6/2009	2	starling	2	0847	S	flying	W	20	1	
3/13/2009	1	robin	1	0812		feeding	W	0	1	
3/13/2009	1	mockingbird	1	0812		feeding	W	0	1	
3/13/2009	1	cardinal	2	0813		calling	W	0	1	
3/13/2009	1	starling	3	0814		calling	W	0	2	
3/13/2009	2	shoveler	2	0825		feeding	W	0	2	
3/13/2009	2	mallard	14	0826		feeding	W	0	2	
3/13/2009	2	shoveler	8	0827		feeding	W	0	2	
3/13/2009	2	Canada goose	6	0832		calling	W	0	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
3/13/2009	2	yellowlegs (Greater)	1	0834		calling	W	0	2	
3/13/2009	2	white-throated sparrow	4	0835		calling	W	5	2	
3/19/2009	1	starling	1	0820		perching	S	30	1	
3/19/2009	1	herring gull	1	0821	w	flying	S	100	1	
3/19/2009	1	starling	4	0821		calling	S	80	1	
3/19/2009	1	cardinal	1	0822		feeding	S	10	1	
3/19/2009	1	Canada goose	10	0822		calling	S	20	1	
3/19/2009	1	red-winged blackbird	4	0822		calling	W	5	2	
3/19/2009	1	Carolina wren	1	0823		calling	S	10	1	
3/19/2009	1	tree swallow	1	0826		circling	S	100	1	
3/19/2009	1	starling	2	0827	W	flying	E	100	1	
3/19/2009	1	rock dove	1	0827	E	flying	N	80	1	
3/19/2009	1	seaside sparrow	1	0828		feeding	N	0	1	
3/19/2009	1	common grackle	1	0828		perching	S	30	1	
3/19/2009	1	cardinal	1	0829		feeding	S	0	1	
3/19/2009	1	herring gull	3	0833	W	flying	E	100	3	
3/19/2009	2	Canada goose	3	0835		swimming	E	0	2	
3/19/2009	2	mallard	5	0836		swimming	E	0	2	
3/19/2009	2	red-winged blackbird	4	0836		calling	E	5	2	
3/19/2009	2	yellow-rumped warbler	4	0836		feeding	S	10	1	
3/19/2009	2	shoveler	2	0837		feeding	W	0	2	
3/19/2009	2	bald eagle adult	1	-837		resting	W	5	3	
3/19/2009	2	herring gull	30	0838		resting	W	0	3	
3/19/2009	2	meadowlark	1	0839		calling	W	5	2	
3/19/2009	2	ring-billed gull	10	0839	N	flying	W	20	3	
3/19/2009	2	song sparrow	1	0842		feeding	W	5	2	
3/19/2009	2	mockingbird	1	0845		feeding	E	0	1	
3/19/2009	2	red-winged blackbird	2	0846		displaying	S	20	1	
3/26/2009	1	great egret	65	0804	N	flying	S	90	1	
3/26/2009	1	mourning dove	2	0804	N	flying	W	40	2	
3/26/2009	1	red-winged blackbird	2	0805		calling	W	30	1	
3/26/2009	1	starling	5	0805		calling	E	80	1	
3/26/2009	1	white-throated sparrow	7	0810		feeding	S	0	1	
3/26/2009	1	cardinal	1	0810		feeding	S	0	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
3/26/2009	1	Canada goose	12	0815		calling	S	10	2	
3/26/2009	2	widgeon	2	0820		feeding	W	0	2	
3/26/2009	2	mallard	10	0820		feeding	W	0	2	
3/26/2009	2	red-winged blackbird	1	0821		displaying	W	3	3	
3/26/2009	2	common grackle	2	0822		perching	W	5	3	
3/26/2009	2	shoveler	1	0822	N	flying	W	10	3	
3/26/2009	2	yellowlegs (Greater)	1	0824		calling	W	0	3	
3/26/2009	2	great egret	2	0825	N	flying	W	40	2	
3/26/2009	2	great egret	2	0826	N	flying	W	40	2	
3/26/2009	2	red-winged blackbird	2	0827	N	flying	S	20	2	
3/26/2009	2	common grackle	2	0828		calling	N	20	2	
3/26/2009	2	mockingbird	1	0828		calling	N	15	2	
3/30/2009	1	tree swallow	1	0805		perching	W	10	1	
3/30/2009	1	house finch	2	0806		feeding	S	0	1	
3/30/2009	1	cardinal	2	0806		feeding	S	0	1	
3/30/2009	1	white-throated sparrow	4	0806		feeding	S	0	1	
3/30/2009	1	willet	3	0807		calling	W	5	3	
3/30/2009	1	starling	2	0808		calling	E	80	1	on mast
3/30/2009	1	Canada goose	6	0808		calling	W	10	3	
3/30/2009	1	tree swallow	2	0811		circling	W	15	1	
3/30/2009	1	house finch	3	0812		circling	S	10	1	
3/30/2009	1	Starling	1	0813		perching	S	30	1	
3/30/2009	1	Starling	6	0814		calling	E	80	1	on mast
3/30/2009	1	cardinal	1	0816		perching	E	20	2	
3/30/2009	1	common grackle	30	0816		perching	E	20	2	
3/30/2009	1	house finch	3	0818		perching	S	20	1	
3/30/2009	1	rock dove	1	20		calling	E	80	1	on mast
3/30/2009	2	mallard	7	0835		resting	W	0	2	
3/30/2009	2	widgeon	4	0835		resting	W	0	2	
3/30/2009	2	great egret	2	0836		chasing	W	5	3	
3/30/2009	2	chickadee	2	0836		calling	W	10	1	
3/30/2009	2	Black duck	3	0837		resting	W	0	2	
3/30/2009	2	great egret	10	0838	S	flying	W	150	3	
3/30/2009	2	mixed gulls	50	0839		resting	W	0	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
3/30/2009	2	common grackle	1	0839	S	flying	W	100	3	
3/30/2009	2	red-winged blackbird	1	0839		calling	W	3	2	
3/30/2009	2	tree swallow	1	0844	E	flying	W	200	2	
3/30/2009	2	song sparrow	1	0845		perching	W	2	1	
3/30/2009	2	common grackle	4	0845	S	flying	W	150	2	
3/30/2009	2	red-winged blackbird	3	0848		displaying	W	5	2	
3/30/2009	2	house finch	1	0849	S	flying	E	50	3	
3/30/2009	2	Black duck	2	0850	N	flying	W	50	3	
4/6/2009	1	starling	2	0827	na	flitting	E	80	1	day cloudy and slightly foggy, wind out of SE
4/6/2009	1	White throated sparrow (hear	1	0835	NA	singing	N	unkn.	1	
4/6/2009	1	redwinged blackbird (heard)	1	0836	na	calling	E	unkn.	2	
4/6/2009	1	starling	4	0839	S	flying	N	80	1	
4/6/2009	2	flicker	1	0845	E	flying	W	8	1	
4/6/2009	2	G. Egrets	2	0847	S	flying	W	10	2	
4/6/2009	2	Herring Gull	1	0848	S	flying	W	40	3	
4/6/2009	2	Herring Gull	3	0850	na	hunting	W	40-50	3	
4/6/2009	2	Canada Goose	1	0850	na	standing	W	0	2	
4/6/2009	2	Duck spp. Unknown	2	0857	N	landing	W		3	
4/6/2009	2	Redwinged blackbird	1	0858	na	perched	E	10	1	
4/9/2009	1	Starling	4	0815	SE	flying	E	80	1	
4/9/2009	1	Tree swallow	2	0815	SE	flying	E	20	1	
4/9/2009	1	Tree swallow	2	0817	SE	flying	E	60	1	
4/9/2009	1	peregrine falcon	1	0817	N	flying	E	100	1	
4/9/2009	1	Tree swallow	1	0825	SE	flying	E	8	1	
4/9/2009	1	Tree swallow	2	0825	E	flying	N	150	1	
4/9/2009	1	starling	5	0827	SE	flying	E	30	1	
4/9/2009	1	common grackle	2	0828	E	flying	W	80	2	
4/9/2009	1	common grackle	1	0828	W	flying	W	80	1	
4/9/2009	1	cardinal female?	1	0830	N--S	flitting	W	3	2	
4/10/2009	1	starling	1	0802	NA	perched	E	80	1	
4/10/2009	1	tree swallow	2	0803	NA	perched	S	8	1	
4/10/2009	1	tree swallow	1	0805	S	flying	N	120	1	
4/10/2009	1	tree swallow	1	0806	N-S	flying	W	100	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
4/10/2009	1	black duck	2	0808	W	flying	S	80	2	
4/10/2009	1	tree swallow	3	0810	n-S	flying	E	40	2	
4/10/2009	1	tree swallow	2	0812	S	flying	W	80	2	
4/10/2009	1	tree swallow	1	0815	N-S	circling	E	40	1	
4/10/2009	1	starling	1	0816	S	flying	E	80	2	
4/10/2009	2	american crow	1	0820	S	flying	E	30	2	
4/10/2009	2	red-winged blackbird	1	0820	NA	perched	E	15	1	
4/10/2009	2	red-winged blackbird	1	0821	NA	perched	W	15	2	
4/10/2009	2	red-winged blackbird	1	0823	NA	perched	W	5	2	
4/10/2009	2	red-winged blackbird	1	0823	NA	perched	W	20	2	
4/10/2009	2	red-winged blackbird	1	0824	NA	perched	N	8	1	
4/10/2009	2	Canada goose	2	0826	N	fllying	E	100	3	
4/10/2009	2	tree swallow	1	0827	NE	flying	E	30	2	
4/10/2009	2	red-winged blackbird	1	0829	S	flying	W	20	2	
4/10/2009	2	black duck	1	0830	N	landing	W	30	2	
4/10/2009	2	unknown small bird	1	0831	W	flying	W	150	3	
4/10/2009	2	common grackle	5	0832	SE	flying	W	60	2	
4/10/2009	2	unknown small bird	1	0834	SW	flying	E	120	2	
4/10/2009	2	great egret	1	0835	NE	flying	W	150	2	
4/13/2009	1	starling	10+	0804	NA	rched on m	E	50	1	
4/13/2009	1	Unk. Passerine	1	0805	NW	flying	E	60	1	
4/13/2009	1	tree swallow	1	0806	E	flying	E	100	1	
4/13/2009	1	tree swallow	1	0807	E	flying	E	20	1	
4/13/2009	1	starling	1	0808	NA	perched	E	20	1	
4/13/2009	1	unk. Gull (juvenile)	1	0809	E	flying	N	150	2	
4/13/2009	1	herring gull	1	0811	W	flying	N	200	2	
4/13/2009	1	tree swallow	2	0813	N	flying	E	150	1	
4/13/2009	1	house finch	1	0814	NA	perched	W	20	2	
4/13/2009	1	starling	3	0825	NA	perched	E	20	1	
4/13/2009	1	tree swallow	1	0819	N	flying	E	80	1	
4/13/2009	2	red-winged blackbird	1	0826	NA	perched	W	20	2	
4/13/2009	2	red-winged blackbird	1	0826	NA	perched	W	6	2	
4/13/2009	2	red-winged blackbird	1	0828	NA	perched	E	15	1	
4/13/2009	2	unk. Ducks	2	0830	N	landing	W	0	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
4/13/2009	2	unk.tern.	2	0830	N-S	circling	W	20	3	
4/13/2009	2	great egret	1	0834	S	flying	W	40	2	periodic loud banging noises on marsh
4/13/2009	2	grackle	1	0834	S	flying	E	50	2	
4/13/2009	2	grackle	1	0836	SW	flying	S	75	1	
4/13/2009	2	red-winged blackbird	2	0838	S	flying	W	40	2	
4/16/2009	1	red-winged blackbird	3	0825		calling	W	5	2	not in sight
4/16/2009	1	herring gull	2	0827	N	flying	N	200	2	
4/16/2009	1	Unk. Passerine	1	0828	W	flying	W	150	1	(small, black, fast paserine, flew from mast to the marsh)
4/16/2009	1	cardinal	1	0829		perched	W	ground	2	
4/16/2009	1	Carolina wren	3	0829		perched	W	ground	2	
4/16/2009	1	starling	2	0830	N	flying	W	90	1	
4/16/2009	1	Carolina wren	5	0832		perched	W	ground	2	
4/16/2009	1	Cardinal, female	1	0832		perched	W	ground	3	
4/16/2009	1	ducks	8	0835	N	flying	N	15	1	
4/16/2009	1	gull-immature	1	0835	SW	flying	W	50	2	
4/16/2009	1	herring gull	1	0836	NW	flying	W	200	2	
4/16/2009	1	starling	2	0837	N	flying	W	100	1	mast
4/16/2009	2	herring gull	3	0840	N	flying	W	20	2	
4/16/2009	2	herring gull	5	0841	W	flying	W	50	3	circling towards the ground
4/16/2009	2	Canada goose	3	0841		resting	W	0	3	in wtaer
4/16/2009	2	herring gull	3	0842		resting	W	0	3	
4/16/2009	2	gull-immature	1	0843	W	flying	W	30	1	
4/16/2009	2	bald eagle- immature	1	0845	N	flying	W	10	3	
4/16/2009	2	herring gull	2	0847	N	flying	W	10	3	circling towards the ground
4/16/2009	2	unidentified paserine	1	0849	N	flying	E	70	2	black-color (towards sun), weak flight, hovers then dives- maybe Kestel?
4/16/2009	2	herring gull	7	0850	N	flying	W	30	2	
4/16/2009	2	herring gull	1	0851	E	flying	E	30	1	
4/16/2009	2	herring gull	2	0851	N	flying	W	30	2	
4/16/2009	2	herring gull	1	0853	W	flying	W	50	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
4/16/2009	2	black duck	2	0853	S	flying	W	30	1	
4/16/2009	2	herring gull	1	0854	N	flying	S	100	2	4/16/09 very windy conditions following ~2 days of rain
4/17/2009	1	starling	5	0840		perched	E	100	1	4/17/09- outside fenceline; lots of calling, little movement
4/17/2009	1	red-winged blackbird	2	0842		calling	W	10	2	
4/17/2009	1	herring gull	2	0845	N	flying	W	100	2	
4/17/2009	1	cormorant	1	0846	NE	flying	W	150	1	
4/17/2009	1	ducks	3	0847	N	flying	W	80	2	
4/17/2009	1	ducks	2	0847	S	flying	W	40	2	
4/17/2009	1	starling	2	0848	N	flying	S	100	1	
4/17/2009	1	tree swallow	1	0850	N	flying	W	40	2	
4/17/2009	1	tree swallow	2	0852	SE	flying	W	60	1	
4/17/2009	1	osprey	1	0854	E	flying	W	40	1	
4/17/2009	2	red-winged blackbird	2	0857		perched	W	20	1	
4/17/2009	2	great egret	3	0858		standing	W	ground	2	
4/17/2009	2	grackle (boat tail?)	1	0859	SW	flying	W	15	1	
4/17/2009	2	ducks	7	0900	N	flying	W	5	3	
4/17/2009	2	bald eagle	1	0901	N	flying	W	5	2	
4/17/2009	2	gull	1	0903		hunting	W	10	2	diving to hunt
4/17/2009	2	herring gull	1	0906	N	flying	W	20	3	
4/17/2009	2	herring gull	1	0906	S	flying	W	20	3	
4/17/2009	2	ducks	2	0907	S	flying	W	2	3	
4/17/2009	2	tree swallow	1	0908	E	flying	W	20	1	
4/17/2009	2	gulls	2	0909		hunting	W	40	3	diving to hunt
4/17/2009	2	red-winged blackbird	1	0909		perched	W	6	2	
4/17/2009	2	unidentified paserine	1	0909	S	flying	E	70	1	
4/17/2009	2	Canada goose	23	0911	N	flying	E	200	3	
4/17/2009	2	Canada goose	19	0912	N	flying	E	200	3	
4/20/2009	2	red-winged blackbird	1	0845	NA	perched	E	15	2	
4/20/2009	2	tree swallow	1	0844	S	flying	E	70	2	
4/20/2009	2	red-winged blackbird	1	847	NA	perched	W	20	2	
4/20/2009	2	red-winged blackbird	1	850	N	flying	W	10	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
4/20/2009	2	unk. Ducks	5	0853	N	flying	W	50	2	
4/20/2009	2	unk. Ducks	50	0855	N	landing	W	100-0	3	
4/20/2009	2	tree swallow	2	0857	E	flying	W	50	1	
4/20/2009	2	unk.ducks	5	0859	N	flying	W	20	3	
4/20/2009	1	starling	2	0902	NA	perching	E	80	1	
4/20/2009	1	starling	1	0903	E	flying	E	80	1	CLOUDY, SLIGHTLY FOGGY
4/20/2009	1	laughing gull	2	0904	NW	flying	W	90	2	
4/20/2009	1	red-winged blackbird	1	0905	NA	perched	S	10	2	
4/20/2009	1	tree swallow	1	0906	NE	flying	W	30	2	
4/20/2009	1	herring gull	1	0907	SW	flying	E	70	2	
4/20/2009	1	starling	2	0907	E	flying	E	80	1	to mast
4/20/2009	1	tree swallow	2	0909	N-S	circling	W	100	2	
4/20/2009	1	starling	1	0911	N	flying	W	40	1	
4/20/2009	1	starling	1	0914	E	flying	E	80	1	to mast
4/20/2009	1	tree swallow	2	0915	N	flying	E	100	2	
4/21/2009	1	starling	5	0845		perched	E	100	1	4/21- overcast, and wet (rain previous day and night)
4/21/2009	1	tree swallow	3	0846	N	flying	W	40	1	
4/21/2009	1	ducks	2	0846	S	flying	W	40	2	
4/21/2009	1	Canada goose	2	0851		calling	W	ground	3	
4/21/2009	1	Grackle (boat tail?)	1	0851	N	flying	W	20	1	
4/21/2009	1	tree swallow	4	0853	E	flying	E	35	1	
4/21/2009	1	tree swallow	6	0854	N	flying	E	60	1	
4/21/2009	2	red-winged blackbird	2	0900		calling	E		1	many calls at once making them unidentifiable
4/21/2009	2	tree swallow	1	0900	S	flying	S	40	1	
4/21/2009	2	red-winged blackbird	1	0902		perched	W	5	2	
4/21/2009	2	sparrow (chipping?)	1	0906		hopping	W	ground	1	
4/21/2009	2	Canada goose	2	0904		standing	W	ground	2	
4/21/2009	2	sparrow (chipping?)	1	0906		hopping	W	ground	1	
4/21/2009	2	ducks	2	0906	S	flying	W	50	2	
4/21/2009	2	egrets	2	0908		standing	W	ground	3	
4/21/2009	2	red-winged blackbird	1	0909		perched	N	10	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
4/21/2009	2	unknown	4	0910	SE	flying	S	80	1	
4/21/2009	2	ducks/cormorants?	70	0913	N	flying	W	80	3	
4/21/2009	2	red-winged blackbird	1	0913		perched	W	4	2	
4/21/2009	2	Canada goose	3	0914		calling	W	ground	3	
4/21/2009	2	herring gull	1	0915	N	flying	W	30	2	
4/24/2009	2	red-winged blackbird	2	0832	NA	perched	W	20	2	
4/24/2009	2	black duck	2	0833	N	landing	W	200	2	hear numerous killdeer in marsh
4/24/2009	2	herring gull	1	0833	S	flying	W	50	2	
4/24/2009	2	red-winged blackbird	1	0834	E	flying	W	5	2	
4/24/2009	2	fish crow	1	0837	N	flying	E	20	2	
4/24/2009	2	turkey vultures	2	0838	N	flying	W	80	2	
4/24/2009	2	tree swallow	1	0839	S	flying	W	30	2	
4/24/2009	2	starling	1	0840	S	flying	W	30	1	
4/24/2009	2	red-winged blackbird	1	0840	NA	perched	W	5	2	
4/24/2009	2	red-winged blackbird	1	0844	NA	perched	W	5	2	
4/24/2009	2	herring gull	1	0845	E	flying	W	80	2	
4/24/2009	2	american crow	1	0847	NA	perched	W	20	2	
4/24/2009	1	starling	1	0849	E	flying	E	80	1	to mast
4/24/2009	1	red-winged blackbird	4	0850	W	feeding	W	0	1	
4/24/2009	1	tree swallow	2	0852	E	flying	W	20	1	5+ STARLINGS ON MAST
4/24/2009	1	red-winged blackbird	1	0852	E	feeding	W	0	1	
4/24/2009	1	tree swallow	2	0853	W	flying	W	20	1	
4/24/2009	1	tree swallow	1	0853	W	'ched on fe	W	8	1	
4/24/2009	1	tree swallow	1	0854	W	flying	W	8	1	
4/24/2009	1	tree swallow	2	0855	N	flying	E	30	2	
4/24/2009	1	great egret	1	0856	N	flying	W	50	2	
4/24/2009	1	Canada goose	2	0857	S	flying	W	50	2	
4/24/2009	1	Boat tailed grackle	2	0858	S	flying	W	20	1	
4/24/2009	1	starling	2	0859	W	flying	W	80	1	
4/24/2009	1	tree swallow	4	0900	E	flying	W	40	1	
4/24/2009	1	tree swallow	1	0901	S	flying	W	10	1	
4/24/2009	1	starling	1	0902	S	perched	W	20	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
4/24/2009	1	starling	1	0903	N	flying	E	20	1	
4/24/2009	1	red-winged blackbird	1	0904	W	flying	E	50	1	
4/27/2009	1	house finch	1	0755		feeding	S	0	1	
4/27/2009	1	common grackle	1	0755		calling	W	30	1	
4/27/2009	1	tree swallow	6	0755		calling	S	10	1	
4/27/2009	1	starling	3	0757		calling	E	80	1	
4/27/2009	1	Canada goose	6	0858		calling	W	0	2	
4/27/2009	1	willet	2	0858		calling	W	0	2	
4/27/2009	1	cardinal	1	0859	S	flying	W	5	1	
4/27/2009	1	Forster's tern	3	0859		feeding	W	20	3	
4/27/2009	1	red-winged blackbird	2	0800	S	flying	W	100	2	
4/27/2009	1	red-winged blackbird	1	0802		calling	S	30	1	
4/27/2009	1	great egret	2	0803	S	flying	W	60	2	
4/27/2009	1	tree swallow	10	0803		feeding	all	30	1	
4/27/2009	1	cormorant	22	0805	N	flying	E	50	3	
4/27/2009	1	rock dove	2	0807	E	flying	N	70	1	
4/27/2009	1	common grackle	2	0809	S	flying	W	40	1	
4/27/2009	1	house finch	1	0809	S	flying	W	30	1	
4/27/2009	2	willet	2	0813		standing	W	0	2	
4/27/2009	2	mallard	2	0813		standing	W	0	2	
4/27/2009	2	great egret	3	0813	S	flying	W	20	2	
4/27/2009	2	Canada goose	2	0813	N	flying	W	20	2	
4/27/2009	2	house finch	1	0814		calling	W	10	1	
4/27/2009	2	red-winged blackbird	2	0815		calling	W	5	2	
4/27/2009	2	yellow-throat	1	0817		calling	S	5	1	
4/27/2009	2	great egret	2	0818	S	flying	W	30	3	
4/27/2009	2	osprey	1	0818	W	flying	S	40	2	
4/27/2009	2	cardinal	1	0820		calling	S	5	1	
4/27/2009	2	seaside sparrow	3	0820		perched	W	5	2	
4/27/2009	2	meadowlark	1	0821		calling	W	5	3	
4/27/2009	2	common grackle	5	0822		feeding	S	0	1	
4/27/2009	2	barn swallow	2	0823		feeding	W	15	2	
4/27/2009	2	red-winged blackbird	2	0825	N	flying	E	20	2	
4/27/2009	2	black duck	11	0826	N	flying	W	50	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
4/27/2009	2	bald eagle immature	1	0826	S	flying	W	70	2	
4/27/2009	2	cormorant	16	0828	N	flying	W	120	3	
4/29/2009	1	tree swallow	2	0815		hunting	W	10	1	
4/29/2009	1	starling	3	0815		calling	E	80	1	on mast
4/29/2009	1	willet	1	0816		calling	E	0	3	
4/29/2009	1	house finch	1	0817		calling	N	5	1	
4/29/2009	1	pintail duck	2	0820	W	flying	E	200	1	
4/29/2009	1	turkey vultures	2	0821		circling	E	100	2	mowers nearby
4/29/2009	1	Boat tailed grackle	2	0822	E	flying	W	80	2	
4/29/2009	1	killdeer	1	0824	W	flying	E	100	2	
4/29/2009	1	black-backed gull	1	0825	N	flying	E	30	3	
4/29/2009	1	tree swallow	3	0825		hunting	E	40	2	
4/29/2009	1	black duck	2	0828	W	flying	S	50	2	
4/29/2009	2	red-winged blackbird	4	0832		calling	W	5	2	
4/29/2009	2	willet	2	0832		displaying	W	50	2	
4/29/2009	2	Canada goose	2	0833		resting	W	0	2	
4/29/2009	2	willet	4	0833		displaying	W	5	3	mowers left
4/29/2009	2	red-winged blackbird	2	0836	W	flying	E	30	2	
4/29/2009	2	laughing gull	1	0838	N	flying	W	50	2	
4/29/2009	2	herring gull	2	0839	N	flying	S	30	1	
4/29/2009	2	meadowlark	1	0841		calling	E	20	2	
4/29/2009	2	black duck	2	0843	E	flying	W	40	2	
4/29/2009	2	tree swallow	2	0843	N	flying	W	60	2	
4/29/2009	2	herring gull	1	0845	S	flying	W	20	3	
4/29/2009	2	Canada goose	2	0847	N	flying	W	20	3	
4/29/2009	2	herring gull	50	0847	N	flying	W	30	3	
4/30/2009	1	starling	1	0830		perched	S	30	1	
4/30/2009	1	house finch	1	0830		calling	S	10	1	
4/30/2009	1	red-winged blackbird	1	0830		calling	W	5	2	
4/30/2009	1	tree swallow	2	0831		hunting	E	60	1	
4/30/2009	1	starling	3	0831		calling	E	80	1	on mast
4/30/2009	1	house finch	5	0835		feeding	S	0	1	
4/30/2009	1	Canada goose	2	0835		calling	W	0	3	
4/30/2009	1	willet	2	0836		calling	W	0	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
4/30/2009	1	herring gull	1	0837		resting	W	0	3	
4/30/2009	1	common grackle	1	0838		feeding	S	0	1	
4/30/2009	1	rock dove	1	0839		calling	E	80	1	on mast
4/30/2009	2	red-winged blackbird	2	0846		calling	E	15	2	
4/30/2009	2	willet	3	0846		calling	W	0	3	
4/30/2009	2	red-winged blackbird	2	0846		calling	W	5	2	
4/30/2009	2	Canada goose	4	0847		calling	W	0	3	
4/30/2009	2	yellow-throat	1	0847		calling	W	0	2	
4/30/2009	2	seaside sparrow	2	0849		calling	W	3	2	
4/30/2009	2	meadowlark	2	0850		calling	W	3	2	
4/30/2009	2	turkey vultures	1	0852		circling	N	50	2	
4/30/2009	2	red-winged blackbird	3	0853	N	flying	W	40	2	
4/30/2009	2	house finch	1	0854		calling	N	10	2	
4/30/2009	2	willet	2	0856		calling	W	5	2	
4/30/2009	2	bald eagle adult	1	0858		resting	W	3	3	
4/30/2009	2	black duck	1	0859	N	flying	W	6	3	
5/5/2009	1	meadowlark	1	0810		calling	N	10	2	
5/5/2009	1	red-winged blackbird	4	0810		calling	W	5	2	
5/5/2009	1	tree swallow	5	0810		hunting	S	20	1	
5/5/2009	1	Canada goose	2	0812		calling	W	10	3	
5/5/2009	1	catbird	1	0815		feeding	W	0	1	
5/5/2009	1	willet	2	0815		calling	W	0	3	
5/5/2009	1	chat	1	0815		calling	S	20	1	
5/5/2009	1	black duck	2	0817		calling	W	0	3	
5/5/2009	1	tree swallow	4	0817		perched	S	8	1	
5/5/2009	1	starling	1	0818	E	flying	W	10	1	carrying food
5/5/2009	1	starling	1	0818		preening	W	30	1	
5/5/2009	1	barn swallow	1	0819		hunting	E	10	1	
5/5/2009	1	Boat tailed grackle	1	0819	N	flying	S	20	1	
5/5/2009	1	cormorant	25	0820	N	flying	W	100	3	
5/5/2009	1	yellow-throat	1	0821		calling	W	20	2	
5/5/2009	1	killdeer	1	0822		calling	E	30	2	
5/5/2009	2	red-winged blackbird	1	0830		feeding	N	0	1	
5/5/2009	2	black duck	2	0830	N	flying	W	30	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
5/5/2009	2	Forster's tern	3	0830	S	flying	W	30	3	
5/5/2009	2	great egret	1	0830	N	flying	W	50	3	
5/5/2009	2	great blue heron	1	0830	S	flying	W	50	3	
5/5/2009	2	willet	2	0831		calling	W	0	3	
5/5/2009	2	snowy egret	1	0831		feeding	W	0	3	
5/5/2009	2	red-winged blackbird	4	0832		calling	W	5	2	
5/5/2009	2	willet	1	0832	W	flying	W	10	2	
5/5/2009	2	cormorant	15	0833	N	flying	W	50	3	
5/5/2009	2	meadowlark	1	0833		calling	W	10	2	
5/5/2009	2	yellow-throat	1	0836		calling	W	10	2	
5/5/2009	2	catbird	1	0837	E	flying	N	5	2	
5/5/2009	2	Boat tailed grackle	1	0838	S	flying	W	80	2	
5/5/2009	2	laughing gull	2	0838	W	flying	N	100	2	
5/5/2009	2	tree swallow	2	0839		hunting	W	30	2	
5/5/2009	2	red-winged blackbird	2	0839		feeding	N	0	1	
5/5/2009	2	catbird	1	0840	S	flying	W	10	1	
5/5/2009	2	common crow	3	0844	W	flying	W	40	3	
5/6/2009	1	house finch	2	0835		calling	S	5	2	
5/6/2009	1	red-winged blackbird	1	0835		calling	S	10	1	
5/6/2009	1	tree swallow	8	0835		hunting	S	30	1	
5/6/2009	1	chat	1	0836		calling	S	30	1	
5/6/2009	1	starling	4	0836		calling	E	80	1	on mast
5/6/2009	1	herring gull	1	0836	E	flying	W	90	1	
5/6/2009	1	barn swallow	2	0840		perched	W	10	1	
5/6/2009	1	willet	2	0844		calling	W	0	2	
5/6/2009	1	great egret	2	0842		feeding	W	0	2	
5/6/2009	1	ring-billed gull	1	0843	E	flying	W	30	2	
5/6/2009	1	green heron	1	0844	N	flying	W	30	2	
5/6/2009	1	mourning dove	1	0844		calling	N	10	1	
5/6/2009	1	willet	2	0846		calling	W	10	3	
5/6/2009	1	herring gull	2	0847	N	flying	S	120	2	
5/6/2009	2	willet	3	0852		calling	W	5	3	
5/6/2009	2	bald eagle, adult	1	0853	E	flying	W	20	3	
5/6/2009	2	Forster's tern	1	0853		hunting	W	20	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
5/6/2009	2	snowy egret	3	0854		hunting	W	0	3	
5/6/2009	2	red-winged blackbird	2	0856		calling	W	20	1	
5/6/2009	2	yellow-throat	1	0858		calling	W	5	2	
5/6/2009	2	Forster's tern	1	0858	W	flying	E	30	2	
5/6/2009	2	Canada goose	2	0859		calling	W	0	2	
5/6/2009	2	great egret	3	0900		feeding	W	0	3	
5/6/2009	2	great egret	1	0901	N	flying	E	30	2	
5/6/2009	2	tree swallow	2	0901		hunting	N	30	1	
5/6/2009	2	great egret	1	0902	N	flying	W	120	2	
5/6/2009	2	catbird	1	0903		calling	N	10	1	
5/6/2009	2	cardinal	1	0903		calling	N	10	1	
5/6/2009	2	great black-backed gull	1	0905	E	flying	N	60	3	
5/6/2009	2	black duck	1	0905		resting	W	0	2	
5/6/2009	2	rock dove	1	0905	S	flying	W	50	2	
5/6/2009	2	indigo bunting	1	0906		calling	N	20	1	
5/6/2009	2	catbird	2	0907		feeding	S	2	1	
5/6/2009	2	meadowlark	1	0907		calling	W	5	2	
5/8/2009	1	starling	3	0755		calling	E	80	1	on mast
5/8/2009	1	willet	2	0755		calling	W	0	3	
5/8/2009	1	Canada goose	2	0756		calling	W	0	3	
5/8/2009	1	cardinal	1	0757		calling	S	0	1	
5/8/2009	1	rock dove	1	0759		circling	E	80	1	on mast
5/8/2009	1	tree swallow	6	0800		hunting	S	20	1	
5/8/2009	1	herring gull	1	0802	W	flying	E	100	1	
5/8/2009	1	killdeer	1	0802		calling	S	30	1	
5/8/2009	1	meadowlark	1	0803		calling	W	0	3	
5/8/2009	1	red-winged blackbird	5	0804		displaying	W	5	2	
5/8/2009	1	house wren	1	0806		calling	5	10	1	
5/8/2009	1	barn swallow	2	0807		circling	S	20	1	
5/8/2009	1	catbird	1	0807		feeding	S	0	1	
5/8/2009	1	chat	1	0808		calling	S	5	1	
5/8/2009	1	herring gull	1	0809	N	flying	S	120	1	
5/8/2009	1	herring gull	3	0810	N	flying	S	200	2	
5/8/2009	2	meadowlark	1	0812		calling	W	5	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
5/8/2009	2	willet	65	0812		circling	W	20	3	
5/8/2009	2	great egret	2	0813	S	flying	W	10	3	
5/8/2009	2	red-winged blackbird	4	0814		calling	W	5	2	
5/8/2009	2	snowy egret	1	0815		hunting	W	0	3	
5/8/2009	2	meadowlark	1	0815		calling	E	10	1	
5/8/2009	2	house wren	1	0815	E	flying	N	5	1	
5/8/2009	2	yellowlegs (Greater)	20	0817		resting	W	0	2	
5/8/2009	2	green heron	1	0819	N	flying	W	20	2	
5/8/2009	2	Forster's tern	1	0821		hunting	W	30	3	
5/8/2009	2	tree swallow	1	0822		hunting	S	20	1	
5/8/2009	2	Canada goose	2	0824		resting	W	0	3	
5/8/2009	2	brant	20	0825		resting	W	0	3	
5/12/2009	1	meadowlark	1	0745		calling	W	0	2	
5/12/2009	1	tree swallow	2	0745		perched	S	7	1	on box
5/12/2009	1	catbird	1	0745		calling	S	10	1	
5/12/2009	1	willet	2	0746		calling	W	0	3	
5/12/2009	1	starling	5	0746		calling	E	80	1	on mast
5/12/2009	1	red-winged blackbird	1	0746		calling	W	5	2	
5/12/2009	1	barn swallow	1	0747	W	flying	N	20	2	
5/12/2009	1	tree swallow	2	0748		perched	S	7	1	
5/12/2009	1	tree swallow	4	0748		hunting	S	30	2	
5/12/2009	1	snowy egret	2	0749		hunting	W	0	3	
5/12/2009	1	great blue heron	1	0749	S	flying	W	20	3	
5/12/2009	1	house wren	1	0752		perched	W	7	1	
5/12/2009	1	Boat tailed grackle	1	0754		perched	S	20	1	
5/12/2009	1	rock dove	2	0755		calling	E	80	1	
5/12/2009	1	herring gull	1	0757	N	flying	E	100	3	
5/12/2009	1	great egret	1	0757	S	flying	E	40	3	
5/12/2009	1	tree swallow	2	0758		perched	N	7	1	on box
5/12/2009	1	tree swallow	4	0758	E	flying	N	15	1	
5/12/2009	2	red-winged blackbird	6	0802		calling	W	5	2	
5/12/2009	2	great egret	1	0802		resting	W	0	2	
5/12/2009	2	willet	4	0803		calling	W	0	2	
5/12/2009	2	peeps	25	0803	S	flying	W	20	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
5/12/2009	2	great egret	6	0803	S	flying	W	40	3	
5/12/2009	2	snowy egret	2	0803	N	flying	W	20	3	
5/12/2009	2	laughing gull	6	0806	S	flying	S	40	2	
5/12/2009	2	great egret	2	0807	N	flying	W	80	2	
5/12/2009	2	catbird	1	0808		calling	E	10	2	
5/12/2009	2	Canada goose	2	0808		calling	W	0	3	
5/12/2009	2	yellow-throat	1	0809		calling	N	5	2	
5/12/2009	2	meadowlark	1	0810		calling	W	5	2	
5/12/2009	2	barn swallow	1	0810	S	flying	W	15	1	
5/12/2009	2	song sparrow	1	0812		flying	W	10	2	
5/12/2009	2	black duck	1	0812	S	flying	W	20	2	
5/12/2009	2	great egret	1	0813	N	flying	W	160	3	
5/12/2009	2	snowy egret	1	0813	N	flying	W	80	2	
5/12/2009	2	mourning dove	1	0814	N	flying	W	20	2	
5/12/2009	2	seaside sparrow	1	0814	W	flying	W	5	2	
5/12/2009	2	Canada goose	2	0816		feeding	W	0	2	with 6 young
5/14/2009	1	starling	6	0755		calling	E	80	1	on mast
5/14/2009	1	yellowthroat	1	0755		calling	S	5	1	
5/14/2009	1	barn swallow	1	0756		hunting	S	20	2	
5/14/2009	1	red-winged blackbird	1	0757		calling	W	5	1	
5/14/2009	1	tree swallow	6	0757		hunting	E	20	1	
5/14/2009	1	common tern	1	0758	S	flying	E	20	3	
5/14/2009	1	fish crow	2	0759	N	flying	S	20	1	
5/14/2009	1	willet	3	0800		calling	W	10	3	
5/14/2009	1	cardinal	1	0800		calling	S	15	1	
5/14/2009	1	Savannah sparrow	1	0801		calling	W	20	1	
5/14/2009	1	seaside sparrow	1	0801		calling	W	20	2	
5/14/2009	1	snowy egret	1	0801	N	flying	N	60	2	
5/14/2009	1	yellow-breasted chat	1	0804		perched	S	30	1	
5/14/2009	1	rock dove	1	0805	S	flying	N	80	1	
5/14/2009	1	Boat tailed grackle	1	0807	S	flying	N	20	1	
5/14/2009	1	ibis	1	0809	N	flying	S	100	2	
5/14/2009	1	meadowlark	1	0810		calling	W	5	2	
5/14/2009	2	cowbird	1	0812		feeding	S	0	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
5/14/2009	2	cormorant	3	0813	N	flying	S	100	1	
5/14/2009	2	willet	4	0814		calling	W	10	2	
5/14/2009	2	red-winged blackbird	4	0814		calling	W	5	2	
5/14/2009	2	great egret	1	0815	S	flying	W	20	3	
5/14/2009	2	tree swallow	1	0815		hunting	W	15	3	
5/14/2009	2	meadowlark	1	0816		calling	W	5	2	
5/14/2009	2	brant	120	0818		resting	W	0	3	
5/14/2009	2	catbird	1	0819		calling	N	15	1	
5/14/2009	2	great egret	3	0820	S	flying	W	30	3	
5/14/2009	2	laughing gull	1	20	S	flying	W	60	3	
5/14/2009	2	peeps	6	0822	S	flying	W	5	3	
5/14/2009	2	Canada goose	2	0822		resting	W	0	3	
5/14/2009	2	mourning dove	1	0823	N	flying	W	20	2	
5/14/2009	2	red-winged blackbird	4	0824	S	flying	W	10	2	
5/14/2009	2	ibis	2	0827	S	flying	W	80	3	
5/14/2009	2	Boat tailed grackle	2	0827	S	flying	W	20	2	
5/18/2009	1	red-winged blackbird	3	0755		calling	S	10	1	
5/18/2009	1	starling	4	0755		calling	E	80	1	on mast
5/18/2009	1	yellowthroat	1	0756		calling	W	10	1	
5/18/2009	1	snowy egret	8	0756		feeding	W	0	2	
5/18/2009	1	tree swallow	2	0758		feeding	S	20	1	
5/18/2009	1	Forster's tern	4	0802		feeding	W	10	2	
5/18/2009	1	red-winged blackbird	2	0803		calling	W	5	2	
5/18/2009	1	house finch	1	0804	N	flying	W	10	1	
5/18/2009	1	barn swallow	1	0805		feeding	S	10	1	
5/18/2009	1	turkey vultures	1	0806	N	flying	S	20	1	
5/18/2009	1	tree swallow	12	0807		feeding	S	25	1	
5/18/2009	1	willet	2	0808		calling	W	0	3	
5/18/2009	2	Forster's tern	3	0812		hunting	W	5	3	
5/18/2009	2	herring gull	2	0812	E	flying	W	30	3	
5/18/2009	2	willet	2	0812		perched	W	3	2	
5/18/2009	2	Boat tailed grackle	1	0813	N	flying	E	15	2	
5/18/2009	2	yellowthroat	1	0815		calling	W	5	2	
5/18/2009	2	willet	6	0815		calling	W	10	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
5/18/2009	2	red-winged blackbird	4	0816		calling	W	5	2	
5/18/2009	2	Canada goose	2	0816		calling	S	10	2	
5/18/2009	2	tree swallow	1	0816		hunting	W	20	2	
5/18/2009	2	least tern	4	0817		hunting	W	5	3	
5/18/2009	2	Canada goose	2	0817		guard young	W	0	2	
5/18/2009	2	Boat tailed grackle	2	0817	N	flying	W	10	2	
5/18/2009	2	seaside sparrow	2	0818		calling	W	5	2	
5/18/2009	2	meadowlark	1	0819		calling	W	5	2	
5/18/2009	2	common crow	1	0820	N	flying	W	40	2	
5/18/2009	2	ibis	1	0820	N	flying	W	50	2	
5/18/2009	2	laughing gull	2	0822	N	flying	W	30	1	
5/18/2009	2	Forster's tern	1	0823		hunting	W	10	3	
5/18/2009	2	great egret	1	0823		hunting	W	0	2	
5/18/2009	2	green heron	1	0824	S	flying	W	15	2	
5/20/2009	1	meadowlark	1	0815		calling	S	5	2	
5/20/2009	1	starling	6	0815		calling	E	80	1	on mast
5/20/2009	1	cardinal	1	0816	S	flying	N	5	1	
5/20/2009	1	rock dove	2	0817	S	flying	W	20	2	
5/20/2009	1	Canada goose	3	0817	N	flying	E	30	3	
5/20/2009	1	red-winged blackbird	4	0817		calling	W	5	2	
5/20/2009	1	tree swallow	2	0818		hunting	W	15	1	
5/20/2009	1	herring gull	1	0819	N	flying	W	30	3	
5/20/2009	1	great egret	1	0819		hunting	W	0	3	
5/20/2009	1	Forster's tern	2	0819	N	flying	W	5	3	
5/20/2009	1	barn swallow	2	0820		hunting	E	10	1	
5/20/2009	1	yellow-breasted chat	1	0822	N	flying	S	10	1	
5/20/2009	1	Forster's tern	3	0823		hunting	W	10	2	
5/20/2009	1	Canada goose	1	0823		resting	W	0	2	
5/20/2009	1	great egret	1	0824	W	flying	S	20	1	
5/20/2009	1	common grackle	2	0825	N	flying	W	20	1	
5/20/2009	2	Canada goose	2	0827		resting	W	0	2	with 6 young
5/20/2009	2	snowy egret	1	0827	N	flying	W	20	2	
5/20/2009	2	catbird	2	0827		calling	E	15	2	
5/20/2009	2	willet	6	0827		calling	W	10	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
5/20/2009	2	red-winged blackbird	8	0828		calling	W	5	2	
5/20/2009	2	peeps	1	0829	S	flying	W	30	3	
5/20/2009	2	Forster's tern	2	0830	S	flying	W	15	3	
5/20/2009	2	least tern	2	0830	S	flying	W	15	3	
5/20/2009	2	great egret	1	0835	S	flying	W	50	3	
5/20/2009	2	tricolor heron	1	0835	S	flying	W	50	3	
5/20/2009	2	killdeer	1	0837		feeding	W	0	2	
5/20/2009	2	Canada goose	3	0838		landing	W	0	2	
5/20/2009	2	turkey vultures	2	0842	N	flying	W	100	3	
5/20/2009	2	killdeer	4	0843		feeding	S	0	1	
5/20/2009	2	black duck	2	0844	W	flying	W	10	2	
5/20/2009	2	mourning dove	1	0845	N	flying	E	20	2	
5/21/2009	1	tree swallow	6	0800		hunting	S	20	1	
5/21/2009	1	starling	4	0800		calling	E	80	1	on mast
5/21/2009	1	barn swallow	2	0801		hunting	W	20	1	
5/21/2009	1	fish crow	1	0801	N	flying	S	30	1	
5/21/2009	1	common grackle	1	0802	W	flying	S	30	1	
5/21/2009	1	house wren	1	0804		calling	S	15	2	
5/21/2009	1	meadowlark	1	0804		calling	W	5	2	
5/21/2009	1	Forster's tern	4	0805		hunting	W	10	3	
5/21/2009	1	great egret	1	0805		hunting	W	0	3	
5/21/2009	1	bald eagle, adult	1	0806	N	flying	W	15	3	
5/21/2009	1	red-winged blackbird	3	0807		calling	W	5	2	
5/21/2009	1	snowy egret	1	0807		perched	N	40	2	
5/21/2009	1	green heron	2	0808	S	flying	W	80	2	
5/21/2009	1	yellowlegs (Greater)	4	0809	S	flying	W	60	2	
5/21/2009	1	common grackle	1	0811	N	flying	W	30	2	
5/21/2009	1	tricolor heron	1	0812	S	flying	W	100	2	
5/21/2009	1	willet	2	0813		calling	W	10	2	
5/21/2009	1	laughing gull	1	0814	W	flying	E	50	2	
5/21/2009	2	Canada goose	3	0818		feeding	S	0	1	with 6 young
5/21/2009	2	red-winged blackbird	6	0818		calling	W	5	2	
5/21/2009	2	black-backed gull	2	0819	N	flying	W	80	2	
5/21/2009	2	great egret	18	0821		hunting	W	0	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
5/21/2009	2	Forster's tern	10	0822		hunting	W	10	3	
5/21/2009	2	willet	1	0823		resting	W	5	2	
5/21/2009	2	meadowlark	1	0824		calling	E	10	2	
5/21/2009	2	tricolor heron	1	0826	N	flying	W	80	3	
5/21/2009	2	willet	6	0828		scolding	W	20	3	
5/21/2009	2	tree swallow	2	0828		hunting	W	30	3	
5/21/2009	2	barn swallow	1	0828		hunting	W	30	3	
5/21/2009	2	catbird	1	0830		calling	S	10	1	
5/21/2009	2	black duck	1	0832		calling	W	0	2	
5/21/2009	2	black duck	3	0833		circling	W	80	3	
5/27/2009	1	starling	6	0815		calling	E	80	1	on mast
5/27/2009	1	red-winged blackbird	2	0815		calling	N	10	2	
5/27/2009	1	house wren	1	0816		calling	S	10	2	
5/27/2009	1	tree swallow	3	0816		hunting	S	15	1	
5/27/2009	1	barn swallow	1	0817		hunting	N	15	1	
5/27/2009	1	great blue heron	1	0817	S	flying	W	20	2	
5/27/2009	1	cardinal	1	0818		calling	S	10	1	
5/27/2009	1	killdeer	1	0819	N	flying	W	10	1	
5/27/2009	1	house wren	1	0823		calling	N	5	2	
5/27/2009	2	willet	1	0832	S	flying	W	5	2	
5/27/2009	2	red-winged blackbird	4	0832		calling	W	5	2	
5/27/2009	2	cardinal	1	0833		calling	N	10	1	
5/27/2009	2	great egret	4	0834	N	flying	W	10	3	
5/27/2009	2	laughing gull	2	0834		flying	W	15	3	
5/27/2009	2	green heron	1	0835	N	flying	W	20	2	
5/27/2009	2	great egret	3	0835		feeding	W	0	3	
5/27/2009	2	tricolor heron	1	0836	S	flying	W	40	2	
5/27/2009	2	barn swallow	2	0836		feeding	N	10	1	
5/27/2009	2	mourning dove	1	0837		resting	S	10	1	
5/27/2009	2	killdeer	1	0838		calling	W	10	2	
5/27/2009	2	ibis	2	0838	S	flying	W	30	2	
5/27/2009	2	mallard	1	0843	W	flying	W	30	2	
5/27/2009	2	great egret	1	0843	N	flying	W	30	2	
5/27/2009	2	meadowlark	1	0844		calling	S	5	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
5/27/2009	2	yellow warbler	1	0845		calling	E	10	2	
5/27/2009	2	mallard	2	0845	E	flying	E	20	2	
5/27/2009	2	Canada goose	2	0845	S	flying	W	30	2	
5/27/2009	2	great egret	1	0846	N	flying	W	20	2	
5/28/2009	1	cardinal	2	0810		feeding	W	0	1	
5/28/2009	1	starling	6	0810		calling	E	80	1	on mast
5/28/2009	1	house wren	2	0811		calling	N	10	1	
5/28/2009	1	common grackle	2	0811	S	flying	N	80	2	
5/28/2009	1	laughing gull	1	0812	W	flying	N	80	2	
5/28/2009	1	meadowlark	1	0813		calling	N	10	2	
5/28/2009	1	willet	3	0814		calling	W	10	2	
5/28/2009	1	tree swallow	4	0816		resting	S	7	1	
5/28/2009	1	red-winged blackbird	1	0821		calling	W	10	2	
5/28/2009	1	common grackle	1	0823	N	flying	S	20	2	
5/28/2009	1	house finch	2	0823		resting	S	30	1	
5/28/2009	1	black & white warbler	1	0825		feeding	W	15	1	
5/28/2009	2	meadowlark	1	0830		calling	W	5	2	
5/28/2009	2	willet	2	0830		calling	W	10	3	
5/28/2009	2	red-winged blackbird	4	0832		calling	W	5	2	
5/28/2009	2	black duck	2	0832		resting	W	0	2	
5/28/2009	2	snowy egret	5	0833		feeding	W	0	3	
5/28/2009	2	ibis	1	0833		feeding	W	0	2	
5/28/2009	2	great egret	6	0833		feeding	W	0	3	
5/28/2009	2	barn swallow	2	0834		hunting	W	10	2	
5/28/2009	2	black backed gull	1	0834	S	flying	W	100	3	
5/28/2009	2	barn swallow	1	0835		hunting	S	20	1	
5/28/2009	2	house wren	1	0835		calling	N	10	2	
5/28/2009	2	yellowthroat	1	0835		calling	E	15	2	
5/28/2009	2	red-winged blackbird	1	0836		feeding	N	0	1	
5/28/2009	2	herring gull	2	0836	S	flying	W	100	3	
5/28/2009	2	laughing gull	10	0838		resting	W	0	3	
5/28/2009	2	great egret	2	0838		resting	W	0	3	
5/28/2009	2	great egret	1	0839	S	flying	W	50	3	
5/28/2009	2	ibis	1	0840	S	flying	W	10	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
5/28/2009	2	common grackle	3	0841	S	flying	W	20	2	
5/28/2009	2	mallard	2	0842	E	flying	S	60	1	
5/28/2009	2	tree swallow	1	0843		hunting	W	20	2	
5/28/2009	2	great egret	1	0844	N	flying	W	30	2	
5/28/2009	2	Canada goose	15	0845	N	flying	W	10	3	
5/29/2009	1	tree swallow	1	0810		resting	S	7	1	
5/29/2009	1	house wren	2	0810		calling	S	15	2	
5/29/2009	1	starling	5	0810		calling	E	80	1	on mast
5/29/2009	1	catbird	1	0811		calling	W	15	1	
5/29/2009	1	laughing gull	3	0813	S	flying	W	20	2	
5/29/2009	1	common grackle	1	0815	S	flying	E	10	1	
5/29/2009	1	killdeer	1	0810		calling	N	20	1	
5/29/2009	1	barn swallow	2	0816		hunting	N	20	2	
5/29/2009	1	tree swallow	2	0818		hunting	W	30	2	
5/29/2009	1	black-poll warbler	5	0818		hunting	W	20	1	
5/29/2009	1	red-winged blackbird	4	0819	W	flying	W	10	2	
5/29/2009	1	rock dove	3	0820		calling	E	80	1	on mast
5/29/2009	1	Boat tailed grackle	2	0823		perched	W	30	1	
5/29/2009	1	cardinal	2	0824	S	flying	W	15	1	
5/29/2009	1	meadowlark	1	0825		calling	W	5	2	
5/29/2009	2	great egret	1	0827		feeding	W	0	2	
5/29/2009	2	meadowlark	1	0827		calling	W	5	2	
5/29/2009	2	laughing gull	6	0828	S	flying	W	10	3	
5/29/2009	2	willet	8	0828		calling	W	0	3	
5/29/2009	2	tree swallow	4	0829		hunting	W	10	3	
5/29/2009	2	least tern	2	0829		hunting	W	10	3	
5/29/2009	2	great egret	5	0830		resting	W	0	3	
5/29/2009	2	snowy egret	4	0830		resting	W	0	3	
5/29/2009	2	common tern	2	0831		hunting	W	10	3	
5/29/2009	2	red-winged blackbird	5	0832		calling	W	5	2	
5/29/2009	2	mallard	2	0833	E	flying	W	15	2	
5/29/2009	2	house wren	2	0834		calling	S	5	1	
5/29/2009	2	cormorant	1	0836	S	flying	W	120	3	
5/29/2009	2	common crow	1	0836	E	flying	W	30	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
5/29/2009	2	peeps	1	0837	S	flying	W	100	3	
5/29/2009	2	laughing gull	1	0837	S	flying	E	40	2	
5/29/2009	2	willet	2	0839	S	flying	W	100	2	
5/29/2009	2	Forster's tern	2	0841	S	flying	W	30	3	
5/29/2009	2	snowy egret	1	0842	N	flying	W	40	2	
6/1/2009	1	Boat tailed grackle	1	0810		feeding	S	0	1	
6/1/2009	1	house wren	2	0810		calling	S	5	1	
6/1/2009	1	starling	6	0810		calling	E	80	1	on mast
6/1/2009	1	great egret	2	0812	N	flying	W	20	3	
6/1/2009	1	house finch	1	0814	N	flying	S	5	1	
6/1/2009	1	rock dove	1	0815	N	flying	S	20	1	
6/1/2009	1	tree swallow	4	0816		feeding	S	15	1	
6/1/2009	1	cardinal	1	0810		feeding	W	2	1	
6/1/2009	1	barn swallow	2	0818		feeding	S	10	1	
6/1/2009	1	Forster's tern	1	0820	N	flying	W	10	3	
6/1/2009	1	common grackle	2	0821	N	flying	W	15	2	
6/1/2009	1	common grackle	2	0821	N	flying	S	20	1	
6/1/2009	1	laughing gull	2	0821	N	flying	S	30	2	
6/1/2009	1	red-winged blackbird	1	0823		calling	W	5	2	
6/1/2009	1	great egret	1	0824	N	flying	W	20	2	
6/1/2009	2	ibis	3	0827	N	flying	W	20	3	
6/1/2009	2	great egret	1	0827	N	flying	W	20	3	
6/1/2009	2	red-winged blackbird	4	0827		calling	W	5	2	
6/1/2009	2	snowy egret	1	0828	N	flying	W	15	2	
6/1/2009	2	meadowlark	1	0828		calling	W	5	2	
6/1/2009	2	indigo bunting	1	0828	N	flying	W	15	2	
6/1/2009	2	willet	2	0829		resting	W	5	2	
6/1/2009	2	Canada goose	3	0830	N	flying	W	10	3	
6/1/2009	2	laughing gull	3	0830	S	flying	W	15	3	
6/1/2009	2	Boat tailed grackle	1	0832	N	flying	E	15	2	
6/1/2009	2	tree swallow	2	0832		hunting	W	20	2	
6/1/2009	2	meadowlark	1	0833	N	flying	W	5	2	
6/1/2009	2	great egret	1	0838	N	flying	W	30	2	
6/1/2009	2	willet	6	0840	N	flying	W	30	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
6/1/2009	2	rock dove	2	0841	N	flying	W	60	2	
6/1/2009	2	common tern	1	0841		hunting	W	20	2	
6/1/2009	2	starling	2	0842		resting	S	10	1	
6/3/2009	1	ibis	2	0805	N	flying	W	30	2	
6/3/2009	1	tree swallow	4	0805		hunting	S	20	1	
6/3/2009	1	laughing gull	3	0805	S	hunting	E	30	1	
6/3/2009	1	house wren	2	0807		calling	S	5	1	
6/3/2009	1	meadowlark	1	0807		calling	W	5	2	
6/3/2009	1	great egret	8	0811		feeding	W	0	2	
6/3/2009	1	black duck	1	0812	N	flying	W	10	2	
6/3/2009	1	starling	6	0812		calling	E	80	1	on mast
6/3/2009	1	green heron	1	0814	N	flying	E	50	2	
6/3/2009	1	willet	2	0817		calling	W	10	2	
6/3/2009	1	barn swallow	2	0819		hunting	S	30	1	
6/3/2009	2	yellow warbler	1	0822		calling	E	10	2	
6/3/2009	2	red-winged blackbird	8	0822		calling	W	5	2	
6/3/2009	2	willet	6	0822		calling	W	10	2	
6/3/2009	2	seaside sparrow	1	0823		calling	W	5	2	
6/3/2009	2	greater yellow-legs	3	0824	N	flying	W	10	2	
6/3/2009	2	laughing gull	15	0824	S	flying	W	40	2	not all at once
6/3/2009	2	catbird	1	0826		calling	S	10	1	
6/3/2009	2	meadowlark	1	0826		calling	W	10	2	
6/3/2009	2	great egret	1	0826		feeding	W	0	2	
6/3/2009	2	barn swallow	2	0827		hunting	W	10	2	
6/3/2009	2	least tern	1	0827		hunting	W	10	2	
6/3/2009	2	black duck	2	0828		resting	W	0	2	
6/3/2009	2	great egret	4	0828	S	flying	N	20	2	
6/3/2009	2	snowy egret	1	0834	S	flying	W	10	3	
6/3/2009	2	snowy egret	2	0835	S	flying	W	20	3	
6/3/2009	2	Forster's tern	1	0835		hunting	W	10	3	
6/3/2009	2	Canada goose	1	0835		resting	W	0	3	
6/3/2009	2	common crow	1	0837	N	flying	W	60	3	
6/8/2009	1	common grackle	1	0810	E	flying	S	3	1	
6/8/2009	1	house wren	2	0810		calling	S	10	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
6/8/2009	1	house wren	1	0811		calling	N	10	1	
6/8/2009	1	starling	5	0811		calling	E	80	1	on mast
6/8/2009	1	red-winged blackbird	3	0811		calling	W	5	2	
6/8/2009	1	ibis	1	0811	N	flying	W	20	2	
6/8/2009	1	barn swallow	1	0812		hunting	W	20	1	
6/8/2009	1	laughing gull	4	0815	N	flying	W	30	3	
6/8/2009	1	willet	2	0816		calling	W	10	3	
6/8/2009	1	cardinal	1	0816		calling	S	5	1	
6/8/2009	1	common grackle	1	0820	N	flying	W	40	2	
6/8/2009	1	tree swallow	3	0821		hunting	S	20	1	
6/8/2009	1	Boat tailed grackle	1	0822		hunting	W	0	1	
6/8/2009	1	ibis	2	0823	N	flying	E	30	3	
6/8/2009	1	laughing gull	1	0824	S	flying	E	20	2	
6/8/2009	2	red-winged blackbird	4	0826		calling	W	5	2	
6/8/2009	2	mallard	2	0827	N	flying	W	30	3	
6/8/2009	2	great egret	2	0827	S	flying	W	40	3	
6/8/2009	2	willet	3	0828		calling	W	10	3	
6/8/2009	2	catbird	1	0828		calling	S	5	1	
6/8/2009	2	Boat tailed grackle	1	0829	N	flying	W	5	2	
6/8/2009	2	snowy egret	1	0829	S	flying	W	15	2	
6/8/2009	2	laughing gull	1	0829	E	flying	W	25	2	
6/8/2009	2	great egret	2	0831	N	flying	W	15	3	
6/8/2009	2	red-winged blackbird	6	0831		calling	W	5	2	
6/8/2009	2	tree swallow	1	0831		hunting	W	15	2	
6/8/2009	2	barn swallow	1	0831		hunting	W	15	2	
6/8/2009	2	laughing gull	1	0832	E	flying	S	20	2	
6/8/2009	2	great egret	1	0833	S	flying	W	10	3	
6/8/2009	2	laughing gull	6	0835	S	flying	W	20	3	
6/8/2009	2	willet	1	0835		resting	W	5	2	
6/8/2009	2	tree swallow	2	0836		hunting	W	10	2	
6/8/2009	2	barn swallow	2	0839		hunting	W	10	2	
6/8/2009	2	snowy egret	1	0840	S	flying	W	10	3	
6/8/2009	2	willet	1	0840	S	flying	W	10	3	
6/8/2009	2	meadowlark	1	0840	W	flying	W	30	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
6/8/2009	2	house wren	1	0841		calling	N	10	1	
6/8/2009	2	cardinal	1	0841		calling	N	10	1	
6/9/2009	1	house wren	1	0810		calling	S	10	1	
6/9/2009	1	barn swallow	2	0810		hunting	S	20	1	
6/9/2009	1	cardinal	1	0810		calling	S	10	1	
6/9/2009	1	willet	1	0812		calling	W	10	3	
6/9/2009	1	laughing gull	20	0814		circling	W	30	3	
6/9/2009	1	cardinal	1	0815		calling	W	10	1	
6/9/2009	1	common grackle	1	0815	S	flying	W	20	2	
6/9/2009	1	starling	1	0816	E	flying	N	60	2	
6/9/2009	1	house finch	1	0816		resting	N	10	1	
6/9/2009	1	house wren	1	0816		resting	N	10	1	
6/9/2009	1	common tern	1	0817	E	flying	N	100	2	
6/9/2009	1	tree swallow	2	0818		hunting	S	20	1	
6/9/2009	1	laughing gull	1	0818	N	flying	W	40	2	
6/9/2009	1	common grackle	1	0821	S	flying	W	30	2	
6/9/2009	1	common grackle	1	0822	E	flying	N	15	1	carrying nesting material
6/9/2009	1	great egret	1	0822	E	flying	N	80	3	
6/9/2009	1	common grackle	1	0823	S	flying	N	60	2	
6/9/2009	1	laughing gull	2	0823	S	flying	W	40	1	
6/9/2009	1	red-winged blackbird	1	0825		calling	W	10	2	
6/9/2009	2	red-winged blackbird	2	0827		calling	W	15	1	
6/9/2009	2	great egret	1	0817		hunting	W	0	2	
6/9/2009	2	willet	1	0827		resting	W	5	2	
6/9/2009	2	red-winged blackbird	6	0828		calling	W	5	2	
6/9/2009	2	cormorant	8	0829	W	flying	S	120	2	
6/9/2009	2	snowy egret	4	0830		hunting	W	0	2	
6/9/2009	2	ibis	5	0830		hunting	W	0	2	
6/9/2009	2	laughing gull	4	0831	S	flying	W	40	3	
6/9/2009	2	Forster's tern	2	0832		hunting	W	5	3	
6/9/2009	2	mourning dove	1	0832		calling	N	10	1	
6/9/2009	2	yellow-billed cuckoo	1	0832		calling	S	15	1	
6/9/2009	2	common crow	1	0834	S	flying	S	20	1	
6/9/2009	2	yellow-throat	2	0835		calling	W	10	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
6/9/2009	2	mourning dove	1	0837	N	flying	W	50	2	
6/9/2009	2	ibis	1	0837	S	flying	W	80	2	
6/9/2009	2	ibis	4	0837	N	flying	W	100	2	
6/9/2009	2	catbird	1	0838		calling	S	20	1	
6/9/2009	2	meadowlark	1	0838		calling	W	5	2	
6/9/2009	2	willet	10	0838		calling	W	5	3	
6/9/2009	2	laughing gull	4	0839	S	flying	W	100	2	
6/9/2009	2	snowy egret	1	0840	S	flying	W	20	2	
6/10/2009	1	barn swallow	2	0808		hunting	S	20	1	
6/10/2009	1	house wren	2	0808		calling	S	10	1	
6/10/2009	1	red-winged blackbird	4	0808		calling	W	10	2	
6/10/2009	1	starling	1	0809		perched	S	30	1	
6/10/2009	1	yellow-breasted chat	1	0809		perched	S	30	1	
6/10/2009	1	yellow-throat	1	0810		calling	W	5	2	
6/10/2009	1	yellow-billed cuckoo	1	0811	N	flying	S	5	1	
6/10/2009	1	common crow	2	0812	S	flying	W	60	2	
6/10/2009	1	great egret	1	0814	N	flying	W	10	2	
6/10/2009	1	laughing gull	4	0815	S	flying	W	20	3	
6/10/2009	1	killdeer	1	0816	W	flying	S	10	1	
6/10/2009	1	great egret	1	0817	N	flying	W	30	3	
6/10/2009	1	tree swallow	2	0817		hunting	W	20	2	
6/10/2009	1	common grackle	1	0821		hunting	S	0	1	
6/10/2009	1	great egret	1	0822	N	flying	W	30	3	
6/10/2009	1	common tern	1	0822		hunting	W	10	3	
6/10/2009	2	starling	3	0825		feeding	S	0	1	
6/10/2009	2	red-winged blackbird	8	0825		calling	W	5	2	
6/10/2009	2	catbird	1	0825		calling	W	15	1	
6/10/2009	2	great egret	1	0825	S	flying	W	30	3	
6/10/2009	2	willet	5	0827		calling	W	10	3	
6/10/2009	2	ibis	1	0829		feeding	W	0	3	
6/10/2009	2	osprey	1	0831	S	flying	W	10	3	
6/10/2009	2	willet	1	0832		feeding	W	0	2	
6/10/2009	2	tri-colored heron	1	0833	S	flying	N	20	3	
6/10/2009	2	mallard	2	0833	E	flying	W	25	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
6/10/2009	2	great egret	2	0834		hunting	W	0	3	
6/10/2009	2	barn swallow	3	0834		hunting	W	20	3	
6/10/2009	2	least tern	1	0835		hunting	W	10	3	
6/10/2009	2	laughing gull	10	0835	S	flying	W	30	3	
6/19/2009	1	house wren	2	0800		calling	S	10	1	
6/19/2009	1	barn swallow	2	0800		hunting	S	20	1	
6/19/2009	1	willet	1	0801		calling	W	10	2	
6/19/2009	1	ibis	1	0801	N	flying	W	20	2	
6/19/2009	1	tri-colored heron	1	0803	S	flying	W	30	3	
6/19/2009	1	great egret	1	0803	S	flying	W	30	3	
6/19/2009	1	yellowthroat	1	0805		calling	W	10	2	
6/19/2009	1	ibis	1	0807	N	flying	W	30	2	
6/19/2009	1	great egret	1	0807	N	flying	W	30	3	
6/19/2009	1	starling	1	0808		resting	S	40	1	
6/19/2009	1	tree swallow	2	0809		hunting	S	20	1	
6/19/2009	1	great egret	2	0809	E	flying	W	30	2	
6/19/2009	1	willet	5	0809		calling	W	10	2	
6/19/2009	1	meadowlark	1	0809		calling	W	10	2	
6/19/2009	1	green heron	1	0810	S	flying	N	40	1	
6/19/2009	1	tree swallow	6	0810		hunting	N	20	1	
6/19/2009	1	ibis	1	0812	N	flying	W	20	2	
6/19/2009	1	laughing gull	1	0814	S	flying	W	30	2	
6/19/2009	2	red-winged blackbird	16	0817		calling	W	5	2	
6/19/2009	2	great egret	1	0817	S	flying	W	50	2	
6/19/2009	2	yellowthroat	2	0817		calling	W	5	2	
6/19/2009	2	snowy egret	5	0819		hunting	W	0	2	
6/19/2009	2	great egret	6	0819		hunting	W	0	2	
6/19/2009	2	willet	5	0820		calling	W	5	2	
6/19/2009	2	ibis	1	0821	N	flying	W	20	2	
6/19/2009	2	tri-colored heron	3	0822	S	flying	W	30	3	
6/19/2009	2	tree swallow	6	0822		hunting	W	20	2	
6/19/2009	2	Boat tailed grackle	1	0823		displaying	W	5	3	
6/19/2009	2	ibis	2	0823	S	flying	W	20	2	
6/19/2009	2	Forster's tern	1	0824	W	flying	N	30	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
6/19/2009	2	black duck	2	0824		resting	W	0	2	
6/19/2009	2	mourning dove	2	0825	N	flying	W	10	2	
6/19/2009	2	meadowlark	1	0825		calling	W	5	2	
6/19/2009	2	Forster's tern	2	0827		hunting	W	10	3	
6/25/2009	1	yellow-breasted chat	1	0810		calling	S	30	1	
6/25/2009	1	house wren	1	0810		calling	S	10	1	
6/25/2009	1	ibis	1	0811	N	flying	W	40	2	
6/25/2009	1	willet	2	0812		calling	W	10	3	
6/25/2009	1	tree swallow	3	0812		preening	S	10	1	
6/25/2009	1	yellow-throat	1	0813		calling	W	10	2	
6/25/2009	1	black duck	1	0815	W	flying	W	30	2	
6/25/2009	1	barn swallow	4	0815		hunting	W	20	2	
6/25/2009	1	meadowlark	1	0816		calling	W	10	2	
6/25/2009	1	house finch	3	0816		feeding	W	10	1	
6/25/2009	1	great egret	1	0817	N	flying	W	30	2	
6/25/2009	1	starling	7	0818	S	flying	W	30	2	
6/25/2009	1	laughing gull	1	0819	N	flying	W	80	2	
6/25/2009	1	ibis	4	0820	N	flying	W	40	2	
6/25/2009	1	great egret	1	0822	N	flying	W	40	2	
6/25/2009	1	rock dove	2	0823		calling	N	80	1	on mast
6/25/2009	1	red-winged blackbird	1	0823		calling	W	5	2	
6/25/2009	1	mockingbird	1	0823		calling	S	40	1	
6/25/2009	1	cardinal	1	0824		calling	SE	40	2	
6/25/2009	1	green heron	1	0824	S	flying	N	30	1	
6/25/2009	1	barn swallow	2	0825		fighting	N	5	1	
6/25/2009	2	turkey vultures	2	0827		circling	NE	80	2	
6/25/2009	2	black duck	1	0827	s	flying	W	5	2	
6/25/2009	2	willet	8	0828		calling	W	5	2	
6/25/2009	2	red-winged blackbird	12	0828		calling	W	5	2	
6/25/2009	2	meadowlark	1	0829		calling	W	5	2	
6/25/2009	2	mallard	3	0829		resting	W	0	2	
6/25/2009	2	yellow-throat	1	0830		calling	S	5	1	
6/25/2009	2	laughing gull	4	0831	S	flying	W	10	3	
6/25/2009	2	ibis	1	0832	N	flying	W	20	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
6/25/2009	2	great egret	5	0832		hunting	W	0	3	
6/25/2009	2	Forster's tern	2	0833		hunting	W	10	3	
6/25/2009	2	osprey	1	0834		resting	W	10	3	on nest
6/25/2009	2	snowy egret	3	0834		hunting	W	0	3	
6/25/2009	2	barn swallow	10	0835		hunting	W	20	3	
6/25/2009	2	ibis	1	0835		hunting	W	0	2	
6/25/2009	2	ibis	2	0835	S	flying	W	10	2	
6/25/2009	2	indigo bunting	1	0838		resting	S	20	1	
6/25/2009	2	Canada goose	36	0838		grazing	S	0	1	
6/25/2009	2	willet	10	0838		circling	W	10	3	
6/25/2009	2	ibis	1	0839	N	flying	S	10	1	
6/25/2009	2	black duck	2	0840		resting	W	0	2	
6/25/2009	2	mourning dove	1	0841	N	flying	W	10	2	
6/25/2009	2	ibis	2	0842	N	flying	W	10	2	
6/25/2009	2	black duck	1	0842		resting	W	0	2	
6/25/2009	2	tri-colored heron	1	0842	N	flying	W	30	3	
7/2/2009	1	house wren	1	0700		calling	W	15	1\	
7/2/2009	1	willet	4	0700		calling	W	10	3	
7/2/2009	1	snowy egret	1	0700	N	flying	W	30	2	
7/2/2009	1	barn swallow	1	0700		hunting	N	15	1	
7/2/2009	1	ibis	3	0701	N	flying	W	100	2	
7/2/2009	1	great egret	1	0701	S	flying	W	60	2	
7/2/2009	1	laughing gull	1	0702	W	flying	N	100	1	
7/2/2009	1	osprey	1	0703	W	flying	W	40	3	
7/2/2009	1	tri-colored heron	2	0703	S	flying	W	60	3	
7/2/2009	1	meadowlark	1	0704		calling	W	5	2	
7/2/2009	1	red-winged blackbird	2	0704		calling	W	5	2	
7/2/2009	1	laughing gull	3	0705	S	flying	W	60	3	
7/2/2009	1	great egret	2	0705	S	flying	W	100	2	
7/2/2009	1	barn swallow	3	0705		hunting	W	20	2	
7/2/2009	1	Forster's tern	1	0705		hunting	W	10	3	
7/2/2009	1	snowy egret	1	0706	N	flying	W	70	2	
7/2/2009	1	starling	1	0706	E	flying	W	20	1	
7/2/2009	1	mourning dove	3	0707		calling	S	10	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
7/2/2009	1	starling	1	0707		perched	S	30	1	
7/2/2009	1	ibis	1	0708	W	flying	W	40	2	
7/2/2009	1	willet	2	0708	W	flying	W	40	2	
7/2/2009	1	Boat tailed grackle	1	0709	S	flying	W	10	3	
7/2/2009	1	ibis	1	0710	S	flying	W	60	3	
7/2/2009	1	tri-colored heron	1	0710	S	flying	W	80	3	
7/2/2009	1	snowy egret	1	0710	N	flying	W	30	2	
7/2/2009	1	great egret	1	0712		hunting	W	0	3	
7/2/2009	1	barn swallow	6	0713		hunting	N	30	1	
7/2/2009	1	great egret	1	0714	S	flying	W	60	2	
7/2/2009	1	laughing gull	1	0715	W	flying	S	40	1	
7/2/2009	2	yellow-throat	2	0717		calling	S	15	1	
7/2/2009	2	yellow-billed cuckoo	1	0717		calling	E	15	1	
7/2/2009	2	Canada goose	35	0717		resting	W	0	2	
7/2/2009	2	mourning dove	1	0717	S	flying	W	20	2	
7/2/2009	2	laughing gull	1	0717	W	flying	N	30	1	
7/2/2009	2	willet	7	0718		calling	W	10	3	
7/2/2009	2	barn swallow	4	0717		hunting	W	20	2	
7/2/2009	2	black duck	2	0718	N	flying	W	30	2	
7/2/2009	2	red-winged blackbird	12	0720		calling	W	5	2	
7/2/2009	2	ibis	3	0722	S	flying	W	30	2	
7/2/2009	2	great egret	2	0722	N	flying	W	40	3	
7/2/2009	2	snowy egret	1	0723	N	flying	W	40	2	
7/2/2009	2	laughing gull	2	0723	S	flying	W	40	2	
7/2/2009	2	great egret	1	0725	N	flying	W	30	2	
7/2/2009	2	house wren	1	0727		calling	S	15	1	
7/2/2009	2	mourning dove	1	0727		calling	S	15	1	
7/2/2009	2	great egret	1	0728		hunting	W	0	3	
7/2/2009	2	ibis	2	0729	S	flying	W	30	3	
7/2/2009	2	willet	10	0729		displaying	W	40	3	
7/7/2009	1	red-winged blackbird	2	0843		calling	W	10	2	
7/7/2009	1	house wren	2	0843		calling	N	10	1	
7/7/2009	1	starling	3	0844		calling	E	80	1	on mast
7/7/2009	1	barn swallow	4	0844		resting	W	7	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
7/7/2009	1	ibis	2	0847	N	flying	W	60	2	
7/7/2009	1	ibis	1	0848	N	flying	W	60	1	
7/7/2009	1	ibis	2	0848	N	flying	W	60	3	
7/7/2009	1	ibis	2	0849	N	flying	W	60	2	
7/7/2009	1	herring gull	2	0850	W	flying	N	100	2	
7/7/2009	1	ibis	2	0851	N	flying	W	80	2	
7/7/2009	1	great egret	1	0852	S	flying	W	60	2	
7/7/2009	1	ibis	11	0853	S	flying	W	60	3	
7/7/2009	1	great egret	1	0854	S	flying	W	100	2	
7/7/2009	1	killdeer	2	0854		calling	S	10	1	
7/7/2009	1	laughing gull	1	0855		circling	W	30	2	
7/7/2009	1	tree swallow	4	0856		hunting	S	20	1	
7/7/2009	1	ibis	1	0856	N	flying	S	40	1	
7/7/2009	2	red-winged blackbird	8	0859		calling	W	5	2	
7/7/2009	2	willet	6	0859		calling	W	0	3	
7/7/2009	2	tree swallow	6	0859		hunting	W	10	2	
7/7/2009	2	laughing gull	1	0859	E	flying	W	30	2	
7/7/2009	2	yellow-throat	2	0859		calling	W	5	2	
7/7/2009	2	meadowlark	2	0900		calling	W	5	2	
7/7/2009	2	ibis	1	0902	S	flying	W	40	2	
7/7/2009	2	common tern	1	0902		hunting	W	10	3	
7/7/2009	2	laughing gull	6	0904	S	flying	W	80	3	
7/7/2009	2	osprey	2	0904		hunting	W	20	3	feeding young
7/7/2009	2	willet	6	0904		hunting	W	0	3	
7/7/2009	2	ibis	1	0904	S	flying	N	80	3	
7/7/2009	2	common tern	2	0906		hunting	W	20	3	
7/7/2009	2	little blue heron	1	0906	S	flying	W	100	3	
7/7/2009	2	ibis	1	0906	N	flying	W	80	2	
7/7/2009	2	green heron	1	0907	N	flying	W	30	2	
7/7/2009	2	red-winged blackbird	12	0907	W	flying	W	20	2	
7/7/2009	2	great egret	4	0908	S	flying	W	30	3	
7/7/2009	2	ibis	1	0909	N	flying	W	100	2	
7/7/2009	2	green heron	1	0910	N	flying	W	20	2	
7/7/2009	2	catbird	1	0912		calling	S	10	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
7/7/2009	2	black duck	1	0914	S	flying	N	10	3	
7/7/2009	2	great egret	1	0914		hunting	N	0	3	
7/20/2009	1	barn swallow	3	0808		hunting	S	10	1	
7/20/2009	1	starling	4	0808		calling	E	80	1	on mast
7/20/2009	1	ibis	1	0813	S	flying	W	30	2	
7/20/2009	1	rock dove	12	0813	N	flying	W	30	1	
7/20/2009	1	house wren	1	0814		calling	N	20	1	
7/20/2009	1	ibis	3	0815	N	flying	W	30	2	
7/20/2009	1	snowy egret	1	0815		hunting	W	0	2	
7/20/2009	1	common grackle	1	0817		perched	S	30	2	
7/20/2009	1	red-winged blackbird	1	0817	N	flying	S	20	1	
7/20/2009	1	great egret	1	0818	N	flying	W	40	2	
7/20/2009	1	catbird	1	0820		hunting	W	15	1	
7/20/2009	1	ibis	1	0822	N	flying	W	30	3	
7/20/2009	1	great egret	1	0823	S	flying	W	50	3	
7/20/2009	2	great egret	1	0825	N	flying	W	50	3	
7/20/2009	2	ibis	7	0826	N	flying	W	30	2	
7/20/2009	2	ibis	4	0826	S	flying	W	50	3	
7/20/2009	2	Forster's tern	1	0826		hunting	W	5	3	
7/20/2009	2	red-winged blackbird	3	0827		c	W	5	2	
7/20/2009	2	meadowlark	1	0827		calling	W	5	2	
7/20/2009	2	Forster's tern	1	0828		hunting	W	5	3	
7/20/2009	2	great egret	1	0828	S	flying	W	80	3	
7/20/2009	2	great egret	1	0828		hunting	W	0	3	
7/20/2009	2	laughing gull	2	0829	S	flying	W	60	3	
7/20/2009	2	yellow-throat	1	0830		calling	W	5	2	
7/20/2009	2	starling	2	0831		preening	S	15	1	
7/20/2009	2	red-winged blackbird	2	0833	S	flying	W	40	2	
7/20/2009	2	great egret	2	0833	N	flying	W	80	3	
7/20/2009	2	green heron	1	0834	N	flying	W	30	2	
7/20/2009	2	ibis	17	0835	S	flying	W	60	3	
7/20/2009	2	snowy egret	1	0837	N	flying	W	40	2	
7/20/2009	2	black duck	1	0838	N	flying	W	10	3	
7/20/2009	2	red-winged blackbird	60	0838		circling	N	5	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
7/20/2009	2	laughing gull	2	0839	N	flying	W	40	3	
7/20/2009	2	osprey	1	0839		resting	W	15	3	on nest
7/20/2009	2	great egret	1	0840	S	flying	W	10	3	
7/20/2009	2	herring gull	1	0840	E	flying	W	30	3	
7/24/2009	1	house wren	1	0820		calling	S	5	1	
7/24/2009	1	killdeer	1	0820		calling	S	10	1	
7/24/2009	1	yellow-throat	1	0821		calling	S	5	2	
7/24/2009	1	ibis	6	0822	N	flying	E	30	2	
7/24/2009	1	starling	14	0823		feeding	S	0	1	
7/24/2009	1	barn swallow	10	0823		hunting	S	15	1	
7/24/2009	1	great egret	2	0825		feeding	W	0	2	
7/24/2009	1	willet	1	0825		calling	W	60	2	
7/24/2009	1	great egret	2	0828	S	flying	W	100	3	
7/24/2009	1	tri-colored heron	1	0828	N	flying	W	100	3	
7/24/2009	1	cardinal	1	0829		calling	S	10	1	
7/24/2009	1	laughing gull	1	0830	W	flying	S	50	1	
7/24/2009	1	willet	4	0830		calling	W	10	3	
7/24/2009	1	laughing gull	3	0832	N	flying	W	40	3	
7/24/2009	1	Forster's tern	2	0832		hunting	W	20	3	
7/24/2009	1	black duck	2	0832	N	flying	W	50	3	
7/24/2009	1	black-backed gull	1	0832	S	flying	W	100	3	
7/24/2009	1	mockingbird	1	0833	S	flying	N	10	1	
7/24/2009	1	ibis	7	0833	S	flying	W	80	3	
7/24/2009	1	great egret	2	0834	N	flying	W	120	3	
7/24/2009	2	black duck	7	0836	N	flying	W	80	2	
7/24/2009	2	great egret	19	0837		feeding	W	0	3	
7/24/2009	2	snowy egret	8	0837		feeding	W	0	3	
7/24/2009	2	greater yellow-legs	1	0838		feeding	W	0	2	
7/24/2009	2	barn swallow	5	0838		hunting	W	10	2	
7/24/2009	2	yellow-throat	2	0838		calling	W	5	1	
7/24/2009	2	red-winged blackbird	3	0838		calling	W	5	2	
7/24/2009	2	laughing gull	2	0842	N	flying	W	20	3	
7/24/2009	2	meadowlark	1	0844		calling	W	10	2	
7/24/2009	2	common tern	1	0845		hunting	W	15	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
7/24/2009	2	great egret	3	0846	N	flying	W	80	3	
7/24/2009	2	tri-colored heron	1	0846	N	flying	W	60	3	
7/24/2009	2	tri-colored heron	1	0846		hunting	W	0	3	
7/24/2009	2	laughing gull	3	0848	N	flying	W	60	3	
7/24/2009	2	willet	2	0848	N	flying	W	20	3	
7/24/2009	2	osprey	1	0848		resting	W	15	3	on nest
7/24/2009	2	great egret	1	0849	N	flying	W	60	2	
7/24/2009	2	tri-colored heron	1	0850	N	flying	W	40	2	
7/24/2009	2	starling	7	0850	N	flying	S	20	1	
7/24/2009	2	great egret	1	0851	N	flying	W	80	3	
7/24/2009	2	tri-colored heron	1	0851	N	flying	W	100	3	
7/24/2009	2	little blue heron	1	0851	N	flying	W	120	3	
7/24/2009	2	laughing gull	2	0851	W	flying	W	60	3	
8/3/2009	1	tree swallow	6	0817		hunting	S	30	1	
8/3/2009	1	starling	4	0817		calling	E	80	1	on mast
8/3/2009	1	house wren	2	0818		calling	S	15	1	
8/3/2009	1	killdeer	2	0820		feeding	S	0	1	
8/3/2009	1	yellow-billed cuckoo	1	0820		calling	S	10	1	
8/3/2009	1	tree swallow	30	0822		hunting	W	30	1	
8/3/2009	1	house finch	1	0823		resting	S	10	1	
8/3/2009	1	great egret	1	0824	S	flying	W	60	3	
8/3/2009	1	gull-billed tern	1	0826	E	flying	S	60	1	***listed species**
8/3/2009	1	red-winged blackbird	1	0826		calling	W	5	2	
8/3/2009	1	yellow-throat	1	0828		calling	W	5	2	
8/3/2009	1	mockingbird	1	0829		resting	W	10	1	
8/3/2009	1	barn swallow	12	0831		resting	E	60	1	with young on mast
8/3/2009	2	yellow-throat	2	0834		calling	S	10	1	
8/3/2009	2	tree swallow	10	0834		hunting	W	20	2	
8/3/2009	2	ibis	20	0834	N	flying	W	30	2	
8/3/2009	2	red-winged blackbird	12	0836		resting	W	10	2	
8/3/2009	2	black-crowned night heron	2	0837	E	flying	W	20	2	
8/3/2009	2	catbird	2	0838		resting	S	20	1	
8/3/2009	2	greater yellow-legs	1	0839		hunting	W	0	2	
8/3/2009	2	great egret	3	0840		hunting	W	0	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
8/3/2009	2	meadowlark	1	0841		calling	W	5	2	
8/3/2009	2	great egret	1	0842	N	flying	W	100	3	
8/3/2009	2	house wren	1	0844		calling	S	15	1	
8/3/2009	2	osprey	1	0845	E	flying	N	100	2	
8/3/2009	2	laughing gull	1	0845	W	flying	N	120	2	
8/3/2009	2	great egret	1	0845	N	flying	W	100	2	
8/3/2009	2	great egret	1	0846	S	flying	W	60	3	
8/3/2009	2	great egret	1	0847	S	flying	W	100	3	
8/3/2009	2	snowy egret	1	0847	S	flying	W	100	3	
8/3/2009	2	green heron	1	0847	N	flying	W	80	2	
8/3/2009	2	cardinal	1	0848		calling	E	15	2	
8/13/2009	1	tree swallow	8	0809		hunting	S	40	1	
8/13/2009	1	laughing gull	1	0810	E	flying	S	60	1	
8/13/2009	1	starling	1	0810		resting	S	40	2	
8/13/2009	1	rock dove	3	0811	N	flying	W	30	2	
8/13/2009	1	cardinal	1	0812	N	flying	W	5	1	
8/13/2009	1	killdeer	1	0812		calling	N	0	1	
8/13/2009	1	red-winged blackbird	1	0813		perched	N	50	1	
8/13/2009	1	mockingbird	1	0814	N	flying	W	15	1	
8/13/2009	1	red-winged blackbird	2	0814	N	flying	W	15	2	
8/13/2009	1	red-winged blackbird	1	0815		preening	W	15	1	
8/13/2009	1	common grackle	1	0817	S	flying	W	30	2	
8/13/2009	1	tree swallow	10	0819		hunting	W	30	2	
8/13/2009	1	willet	1	0820		calling	W	5	2	
8/13/2009	1	killdeer	3	0821		feeding	S	0	1	
8/13/2009	1	tree swallow	40	0822		hunting	W	70	2	
8/13/2009	2	red-winged blackbird	1	0824		calling	W	5	2	
8/13/2009	2	common tern	1	0825	S	flying	W	15	3	
8/13/2009	2	ibis	1	0825	S	flying	W	100	3	
8/13/2009	2	great egret	2	0825	S	flying	W	120	3	
8/13/2009	2	herring gull	1	0827	S	flying	W	100	3	
8/13/2009	2	green heron	1	0827	W	flying	W	80	3	
8/13/2009	2	osprey	1	0828		resting	W	10	3	on nest
8/13/2009	2	great egret	6	0828		hunting	W	0	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
8/13/2009	2	meadowlark	1	0829		calling	W	5	2	
8/13/2009	2	red-winged blackbird	1	0829		calling	W	5	2	
8/13/2009	2	tree swallow	30	0831		hunting	W	40	3	flock gradually working south
8/13/2009	2	laughing gull	3	0832	N	flying	W	30	3	
8/13/2009	2	Forster's tern	3	0833		hunting	W	10	3	
8/13/2009	2	tree swallow	80	0836		hunting	N	30	3	
8/13/2009	2	catbird	1	0838		calling	W	10	1	
8/13/2009	2	orchard oriole	2	0838		hunting	S	15	1	
8/13/2009	2	yellow-throat	1	0839		calling	W	10	2	
8/13/2009	2	ibis	25	0839	S	flying	W	100	3	
8/13/2009	2	great egret	1	0839	S	flying	W	120	3	
8/17/2009	1	red-winged blackbird	2	0820	S	flying	W	20	2	
8/17/2009	1	tree swallow	1	0821		hunting	S	25	1	
8/17/2009	1	willet	1	0822		calling	W	15	2	
8/17/2009	1	cardinal	1	0822		scolding	S	10	1	
8/17/2009	1	great egret	8	0824		hunting	W	0	2	
8/17/2009	1	snowy egret	4	0824		hunting	W	0	2	
8/17/2009	1	tree swallow	4	0825	S	flying	W	30	2	
8/17/2009	1	plover species	1	0828	N	flying	W	20	2	
8/17/2009	1	laughing gull	1	0830	W	flying	N	100	2	
8/17/2009	1	brown pelican	1	0832	E	flying	N	80	2	
8/17/2009	1	royal tern	2	0834	W	flying	S	120	2	
8/17/2009	1	house finch	1	0835		resting	S	10	1	
8/17/2009	2	starling	3	0837		resting	S	20	1	
8/17/2009	2	marsh hawk	1	0838		hunting	W	15	2	
8/17/2009	2	great egret	2	0838	S	flying	W	80	3	
8/17/2009	2	laughing gull	2	0838	W	flying	W	100	3	
8/17/2009	2	red-winged blackbird	6	0839		resting	W	5	3	
8/17/2009	2	tree swallow	30	0839		hunting	W	15	3	
8/17/2009	2	ibis	5	0842		hunting	W	0	3	
8/17/2009	2	great egret	45	0842		hunting	W	0	3	
8/17/2009	2	snowy egret	15	0842		hunting	W	0	3	
8/17/2009	2	laughing gull	3	0844	S	flying	W	15	3	
8/17/2009	2	osprey	1	0845		resting	W	15	3	on nest

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
8/17/2009	2	ibis	3	0846	S	flying	W	15	3	
8/17/2009	2	laughing gull	1	0847	N	flying	W	100	3	
8/17/2009	2	ibis	6	0849	N	flying	W	60	2	
8/27/2009	1	starling	6	0810		calling	E	80	1	on mast
8/27/2009	1	great egret	30	0811		hunting	W	0	3	
8/27/2009	1	snowy egret	20	0811		hunting	W	0	3	
8/27/2009	1	laughing gull	6	0811	N	flying	W	25	3	
8/27/2009	1	Forster's tern	1	0814	N	flying	W	15	3	
8/27/2009	1	pelican	2	0815		resting	W	0	3	
8/27/2009	1	red-winged blackbird	1	0817	N	flying	W	20	2	
8/27/2009	1	mockingbird	1	0818		hunting	N	15	1	
8/27/2009	1	starling	4	0818	S	flying	W	15	2	
8/27/2009	1	mourning dove	1	0818	S	flying	W	20	2	
8/27/2009	1	great egret	3	0819	N	flying	W	100	3	
8/27/2009	1	ibis	1	0821	N	flying	W	10	3	
8/27/2009	1	black duck	1	0821	S	flying	W	100	2	
8/27/2009	1	ibis	4	0822	S	flying	W	15	3	
8/27/2009	1	common grackle	1	0824		resting	S	15	1	
8/27/2009	2	killdeer	2	0826		resting	S	0	1	
8/27/2009	2	tree swallow	4	0827		hunting	W	5	3	
8/27/2009	2	yellow-billed cuckoo	1	0832		eating	W	5	1	eating Chinese praying mantis
8/27/2009	2	red-winged blackbird	1	0835	S	flying	W	10	2	
8/27/2009	2	Forster's tern	1	0836		hunting	W	10	3	
8/27/2009	2	common grackle	2	0836	S	flying	W	15	3	
8/27/2009	2	herring gull	1	0838	S	flying	W	40	3	
8/27/2009	2	ibis	1	0838	S	flying	W	20	3	
8/27/2009	2	great egret	1	0838	S	flying	W	60	3	
8/27/2009	2	snowy egret	4	0838	S	flying	W	30	3	
8/27/2009	2	rock dove	7	0839	N	flying	W	50	2	
8/27/2009	2	peeps	20	0840	E	flying	N	50	2	
8/27/2009	2	red-winged blackbird	2	0840	S	flying	W	30	2	
8/27/2009	2	tri-colored heron	40	0841	S	flying	W	5	3	
9/14/2009	1	starling	6	0805		resting	S	30	1	
9/14/2009	1	starling	4	0806		calling	E	80	1	on mast

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
9/14/2009	1	tree swallow	40	0806		hunting	N	100	2	
9/14/2009	1	flicker	2	0806	S	flying	W	10	1	
9/14/2009	1	flicker	1	0807	N	flying	W	20	1	
9/14/2009	1	great egret	2	0809	N	flying	W	30	3	
9/14/2009	1	common grackle	4	0810		resting	N	30	1	
9/14/2009	1	red-winged blackbird	2	0810		resting	N	20	1	
9/14/2009	1	flicker	4	0812	S	flying	W	20	2	
9/14/2009	1	Canada goose	5	0814		calling	W	5	3	
9/14/2009	1	yellow-breasted chat	1	0816		feeding	S	15	1	
9/14/2009	1	yellow-rumped warbler	3	0816		feeding	S	15	1	
9/14/2009	1	great egret	2	0817	S	flying	W	60	3	
9/14/2009	1	common grackle	1	0817		feeding	S	20	1	
9/14/2009	1	rose-breasted grosbeak	1	0818		feeding	S	20	1	
9/14/2009	1	red-winged blackbird	4	0818	S	flying	S	15	1	
9/14/2009	1	yellow-rumped warbler	1	0819	S	flying	W	20	1	
9/14/2009	2	osprey	1	0821	S	flying	W	60	2	
9/14/2009	2	mallard	1	0822	N	flying	W	30	3	
9/14/2009	2	snowy egret	1	0822	S	flying	W	30	1	
9/14/2009	2	cormorant	1	0823		resting	W	5	3	
9/14/2009	2	great egret	15	0824		feeding	W	0	3	
9/14/2009	2	snowy egret	5	0824		feeding	W	0	3	
9/14/2009	2	black duck	6	0825	N	flying	W	20	3	
9/14/2009	2	flicker	4	0825	S	flying	W	20	2	
9/14/2009	2	tri-colored heron	10	0825	S	flying	W	140	3	
9/14/2009	2	laughing gull	1	0827	W	flying	W	30	2	
9/14/2009	2	herring gull	5	0828	N	flying	W	30	3	
9/14/2009	2	common tern	1	0828	N	flying	W	10	3	
9/14/2009	2	herring gull	4	0829		resting	W	5	3	
9/14/2009	2	peeps	40	0832		resting	N	0	3	
9/14/2009	2	common tern	1	0832		hunting	W	5	3	
9/14/2009	2	catbird	1	0832		calling	N	10	1	
9/14/2009	2	red-winged blackbird	1	0833	S	flying	N	20	1	
9/14/2009	2	cormorant	1	0834	S	flying	W	80	2	
9/14/2009	2	pine warbler	1	0835	E	flying	W	10	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
9/14/2009	2	black-throated blue warbler	1	0836	N	flying	W	20	1	
9/14/2009	2	Carolina wren	1	0836		calling	S	20	1	
9/15/2009	1	starling	1	0820	W	flying	N	30	2	
9/15/2009	1	starling	6	0820		calling	E	80	1	on mast
9/15/2009	1	Canada goose	15	0820		calling	W	10	2	
9/15/2009	1	Canada goose	10	0824	N	flying	W	10	2	
9/15/2009	1	redstart	1	0827		feeding	W	15	1	
9/15/2009	1	herring gull	2	0829	W	flying	N	80	2	
9/15/2009	1	great egret	1	0829	N	flying	W	120	3	
9/15/2009	1	herring gull	1	0830	W	flying	S	140	2	
9/15/2009	1	mourning dove	1	0831	S	flying	W	40	1	
9/15/2009	1	mallard	3	0832	N	flying	W	120	3	
9/15/2009	1	orchard oriole	1	0834	S	flying	W	20	2	
9/15/2009	1	flicker	3	0834	S	flying	W	30	2	
9/15/2009	1	snowy egret	1	0834	N	flying	W	40	2	
9/15/2009	1	tree swallow	3	0835		hunting	W	80	2	
9/15/2009	2	boat-tailed grackle	1	0837		resting	W	5	2	
9/15/2009	2	black duck	1	0837	S	flying	W	60	2	
9/15/2009	2	marsh hawk	1	0839		hunting	W	10	2	
9/15/2009	2	great egret	1	0840	N	flying	W	40	3	
9/15/2009	2	cormorant	1	0840	E	flying	S	100	2	
9/15/2009	2	great egret	1	0842	N	flying	W	80	3	
9/15/2009	2	cormorant	3	0843	S	flying	W	120	2	
9/15/2009	2	merlin	1	0844	S	flying	W	15	1	
9/15/2009	2	yellow-throat	1	0844		calling	W	10	1	
9/15/2009	2	laughing gull	8	0845	S	flying	W	180	3	
9/15/2009	2	Canada goose	20	0845	N	flying	W	10	3	
9/15/2009	2	Forster's tern	1	0846	S	flying	W	30	3	
9/15/2009	2	great egret	5	0847		feeding	W	0	3	
9/15/2009	2	flicker	10	0849	S	flying	E	20	2	
9/15/2009	2	Canada goose	5	0849	N	flying	W	40	2	
9/15/2009	2	boat-tailed grackle	2	0852		chasing	W	15	2	
9/16/2009	1	mockingbird	2	0816		feeding	S	0	1	
9/16/2009	1	starling	11	0816		feeding	S	0	1	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
9/16/2009	1	black duck	1	0818	W	flying	S	120	1	
9/16/2009	1	herring gull	2	0819	W	flying	N	100	1	
9/16/2009	1	boat-tailed grackle	3	0821	E	flying	S	20	1	
9/16/2009	1	cardinal	1	0825		calling	S	5	1	
9/16/2009	1	herring gull	1	0829	W	flying	N	120	1	
9/16/2009	2	great egret	1	0833	N	flying	W	40	2	
9/16/2009	2	great egret	9	0833		feeding	W	0	3	
9/16/2009	2	snowy egret	3	0833		feeding	W	0	3	
9/16/2009	2	Canada goose	1	0834		feeding	W	0	3	
9/16/2009	2	Carolina wren	1	0834		calling	S	5	1	
9/16/2009	2	herring gull	2	0835	E	flying	S	80	1	
9/16/2009	2	yellow-throat	1	0837		calling	N	10	1	
9/16/2009	2	black duck	1	0839		feeding	N	0	3	
9/16/2009	2	great egret	2	0840	N	flying	N	5	2	
9/16/2009	2	snowy egret	1	0840	N	flying	N	5	2	
9/16/2009	2	starling	3	0840	W	flying	S	15	2	
9/16/2009	2	snowy egret	2	0841	N	flying	W	20	3	
9/16/2009	2	laughing gull	1	0841	S	flying	W	20	3	
9/16/2009	2	black duck	2	0843		circling	W	10	2	
9/16/2009	2	cormorant	1	0843	S	flying	W	80	2	
9/16/2009	2	laughing gull	3	0844	S	flying	W	140	3	
9/16/2009	2	red-winged blackbird	12	0844		circling	W	10	3	
9/16/2009	2	great egret	1	0846		feeding	W	0	2	
9/16/2009	2	herring gull	1	0847	W	flying	W	100	2	
9/16/2009	2	flicker	1	0848		resting	E	30	2	
9/18/2009	1	mockingbird	1	0802		resting	S	20	1	
9/18/2009	1	starling	6	0804		calling	E	80	1	on mast
9/18/2009	1	fish crow	1	0805		calling	E	80	1	on mast
9/18/2009	1	catbird	1	0806		feeding	W	20	1	
9/18/2009	1	scarlet tanager	1	0807		scolding	S	20	1	
9/18/2009	1	Canada goose	12	0809		calling	S	15	2	
9/18/2009	1	herring gull	1	0810	S	flying	W	100	3	
9/18/2009	1	yellow-rumped warbler	2	0810	W	flying	S	30	1	
9/18/2009	1	laughing gull	12	0812	S	flying	E	60	3	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
9/18/2009	1	herring gull	1	0814	W	flying	N	50	2	
9/18/2009	1	fish crow	1	0815	S	flying	E	60	3	
9/18/2009	1	herring gull	1	0815	W	flying	N	160	2	
9/18/2009	1	starling	1	0816		resting	S	20	1	
9/18/2009	1	mockingbird	1	0817		resting	W	15	1	
9/18/2009	1	cardinal	1	0817		calling	N	10	1	
9/18/2009	2	Canada goose	19	0819	E	flying	S	60	1	
9/18/2009	2	great egret	8	0820		feeding	W	0	3	
9/18/2009	2	snowy egret	3	0820		feeding	W	0	3	
9/18/2009	2	Forster's tern	3	0820		feeding	W	5	3	
9/18/2009	2	herring gull	2	0821	S	flying	W	80	3	
9/18/2009	2	ibis	1	0822		feeding	W	0	3	
9/18/2009	2	black duck	4	0824		resting	W	0	2	
9/18/2009	2	great egret	1	0826	N	flying	W	30	3	
9/18/2009	2	killdeer	2	0827	W	flying	S	60	2	
9/18/2009	2	Canada goose	2	0829	E	flying	W	40	3	
9/18/2009	2	bald eagle adult	2	0829	S	flying	W	60	3	
9/18/2009	2	black duck	3	0829	E	flying	W	40	2	
9/18/2009	2	great egret	10	0829	S	flying	W	30	3	
9/18/2009	2	cormorant	2	0829	W	flying	W	60	3	
9/18/2009	2	laughing gull	18	0832	S	flying	W	200	3	
9/18/2009	2	great egret	2	0832		resting	W	0	2	
9/18/2009	2	peregrine falcon	1	0833	N	flying	W	15	2	
9/18/2009	2	cormorant	1	0834	S	flying	W	30	2	
9/21/2009	1	starling	6	0820		calling	E	80	1	on mast
9/21/2009	1	yellow-rumped warbler	5	0822	N	flying	S	40	1	
9/21/2009	1	great egret	2	0823	N	flying	W	60	3	
9/21/2009	1	red-winged blackbird	4	0823		chasing	N	40	1	
9/21/2009	1	rock dove	3	0826	N	flying	S	80	1	
9/21/2009	1	cardinal	1	0828		calling	N	20	1	
9/21/2009	1	catbird	4	0831		feeding	W	15	1	
9/21/2009	1	laughing gull	1	0832	W	flying	S	80	2	
9/21/2009	2	boat-tailed grackle	1	0834	E	flying	S	80	1	
9/21/2009	2	green heron	1	0836		scolding	W	0	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
9/21/2009	2	great egret	1	0838		feeding	W	0	3	
9/21/2009	2	Canada goose	30	0838		resting	W	0	3	
9/21/2009	2	common grackle	1	0838		resting	W	0	3	
9/21/2009	2	common crow	3	0839		resting	S	60	1	
9/21/2009	2	red knot	15	0840	N	flying	W	15	2	
9/21/2009	2	great egret	1	0841	N	flying	W	30	2	
9/21/2009	2	great egret	1	0842	N	flying	W	30	3	
9/21/2009	2	great egret	1	0843	S	flying	W	20	3	
9/21/2009	2	black duck	2	0843	S	flying	W	10	2	
9/21/2009	2	great egret	4	0844	N	flying	W	100	3	
9/21/2009	2	black duck	3	0845	S	flying	W	10	2	
9/21/2009	2	laughing gull	3	0845	S	flying	W	160	3	
9/21/2009	2	tri-colored heron	1	0845	N	flying	W	100	3	
9/21/2009	2	great egret	1	0847	N	flying	W	100	3	
9/21/2009	2	black duck	2	0848	N	flying	W	80	3	
9/21/2009	2	herring gull	6	0849		resting	W	0	3	
9/21/2009	2	yellow-billed cuckoo	1	0849	E	flying	S	10	1	
9/22/2009	1	starling	6	0757		calling	E	80	1	on mast
9/22/2009	1	common grackle	2	0800	W	flying	N	100	2	
9/22/2009	1	herring gull	1	0801	S	flying	W	120	3	
9/22/2009	1	tree swallow	250	0801	S	flying	W	100	2	
9/22/2009	1	starling	8	0802		resting	N	40	1	
9/22/2009	1	herring gull	1	0806	W	flying	N	60	2	
9/22/2009	1	tree swallow	40	0808	S	flying	W	80	2	
9/22/2009	1	flicker	1	0810	S	flying	W	80	2	
9/22/2009	2	laughing gull	4	0813	E	flying	W	20	2	
9/22/2009	2	great egret	1	0814		resting	W	0	2	
9/22/2009	2	black duck	3	0814		resting	W	0	2	
9/22/2009	2	great egret	4	0816		resting	W	0	3	
9/22/2009	2	laughing gull	20	0816		resting	W	0	3	
9/22/2009	2	herring gull	2	0817	N	flying	W	80	3	
9/22/2009	2	herring gull	1	0818	S	flying	W	100	3	
9/22/2009	2	great egret	2	0818	N	flying	W	100	3	
9/22/2009	2	common grackle	1	0821	S	flying	W	20	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
9/22/2009	2	yellow-throat	1	0822		calling	E	10	1	
9/22/2009	2	killdeer	1	0822	E	flying	N	40	2	
9/22/2009	2	catbird	1	0824		resting	E	30	1	
9/22/2009	2	cormorant	1	0826	S	flying	W	20	2	
9/22/2009	2	tree swallow	70	0826	S	flying	W	40	2	
9/22/2009	2	laughing gull	1	0827	N	flying	W	60	2	
9/22/2009	2	yellow-rumped warbler	1	0828	S	flying	W	15	2	
9/22/2009	2	laughing gull	3	0828	S	flying	W	200	3	
9/23/2009	1	starling	3	0810		resting	S	30	1	
9/23/2009	1	starling	5	0810		calling	E	80	1	on mast
9/23/2009	1	laughing gull	7	0812	S	flying	N	200	3	
9/23/2009	1	herring gull	2	0813		resting	W	0	3	
9/23/2009	1	laughing gull	1	0814	S	flying	W	100	3	
9/23/2009	1	starling	6	0816		resting	W	20	1	
9/23/2009	1	great egret	1	0817	N	flying	W	160	3	
9/23/2009	1	black duck	1	0817	S	flying	W	40	2	
9/23/2009	1	great egret	2	0818	N	flying	W	80	2	
9/23/2009	1	herring gull	1	0819	S	flying	W	80	3	
9/23/2009	2	black duck	1	0828	S	flying	W	40	3	
9/23/2009	2	killdeer	2	0829		calling	S	20	1	
9/23/2009	2	great egret	1	0830		hunting	W	0	3	
9/23/2009	2	snowy egret	1	0830		hunting	W	0	3	
9/23/2009	2	Forster's tern	5	0832		hunting	W	15	3	
9/23/2009	2	laughing gull	10	0833		resting	W	0	3	
9/23/2009	2	herring gull	5	0833		resting	W	0	3	
9/23/2009	2	black duck	2	0834	N	flying	W	40	3	
9/23/2009	2	cormorant	1	0835	S	flying	W	60	3	
9/23/2009	2	great egret	1	0835	E	flying	W	40	3	
9/23/2009	2	great egret	1	0835	N	flying	W	5	3	
9/23/2009	2	red-winged blackbird	1	0836	E	flying	N	15	1	
9/23/2009	2	great egret	1	0837	N	flying	W	30	3	
9/23/2009	2	kingfisher	1	0837	N	flying	W	20	2	
9/23/2009	2	great egret	1	0838		feeding	W	0	2	
9/23/2009	2	common crow	1	0839	N	flying	W	80	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
9/23/2009	2	laughing gull	1	0839	S	flying	W	10	3	
9/23/2009	2	snowy egret	1	0840		resting	W	5	3	
9/23/2009	2	great egret	1	0842	E	flying	E	40	1	
9/23/2009	2	red-winged blackbird	50	0842	N	flying	E	60	2	
9/28/2009	1	starling	5	0805		calling	E	80	1	on mast, jackhammer in use nearby
9/28/2009	1	common grackle	30	0807	E	flying	N	30	2	
9/28/2009	1	black duck	2	0808		calling	W	0	2	
9/28/2009	1	red-winged blackbird	3	0812	S	flying	W	20	1	
9/28/2009	1	cowbird	15	0813	E	flying	N	30	1	
9/28/2009	1	herring gull	1	0816	N	flying	W	30	2	
9/28/2009	1	merlin	1	0820	S	flying	W	40	2	I minute in sight
9/28/2009	2	cowbird	30	0822		circling	N	40	1	
9/28/2009	2	herring gull	1	0823	S	flying	W	80	2	
9/28/2009	2	yellow-throat	1	0823		calling	N	5	2	
9/28/2009	2	ring-billed gull	1	0823	E	flying	S	30	1	
9/28/2009	2	flicker	2	0825	N	flying	S	20	1	
9/28/2009	2	common crow	1	0826	W	flying	S	5	1	
9/28/2009	2	great egret	1	0827		feeding	W	0	3	
9/28/2009	2	black duck	2	0829	N	flying	W	40	3	
9/28/2009	2	herring gull	2	0829		resting	W	0	3	
9/28/2009	2	ring-billed gull	6	0829		resting	W	0	3	
9/28/2009	2	peeps	30	0829		resting	W	0	3	
9/28/2009	2	house wren	1	0832	E	flying	N	2	1	
9/28/2009	2	herring gull	1	0832	S	flying	W	80	2	
9/28/2009	2	great egret	1	0833		hunting	W	0	2	
9/28/2009	2	catbird	1	0834		calling	N	10	1	
9/28/2009	2	flicker	2	0834		resting	S	20	1	
9/28/2009	2	black-backed gull	1	0835	S	flying	E	60	2	
9/28/2009	2	common grackle	1	0836		resting	W	30	2	
9/28/2009	2	common grackle	1	0836	S	flying	W	60	2	
10/1/2009	1	starling	10	0810		calling	E	80	1	on mast
10/1/2009	1	rock dove	5	0810		resting	E	80	1	on mast
10/1/2009	1	great egret	1	0812	S	flying	W	160	2	

Date	Site	Species	No.	Time	Direction	Behavior	Sector	Height	Path	Notes
10/1/2009	1	cowbird	10	0813	S	flying	E	40	2	
10/1/2009	1	herring gull	1	0816	W	flying	N	200	3	
10/1/2009	1	Canada goose	1	0819	N	flying	W	200	3	
10/1/2009	1	ring-billed gull	1	0822	E	flying	N	220	1	
10/1/2009	1	killdeer	2	0824	W	flying	S	60	1	
10/1/2009	1	tree swallow	50	0825	N	flying	E	100	3	
10/1/2009	2	catbird	1	0827		calling	N	5	1	
10/1/2009	2	great egret	4	0827		feeding	W	0	3	
10/1/2009	2	snowy egret	1	0829	N	flying	W	30	2	
10/1/2009	2	Canada goose	5	0830		calling	S	20	2	
10/1/2009	2	snow goose	21	0832	N	flying	S	100	1	
10/1/2009	2	snowy egret	2	0833	N	flying	W	20	3	
10/1/2009	2	black duck	8	0835	N	flying	W	120	3	
10/1/2009	2	black duck	1	0835	S	flying	W	120	3	
10/1/2009	2	black duck	5	0838	N	flying	W	40	3	
10/1/2009	2	boat-tailed grackle	2	0838	N	flying	W	60	3	
10/1/2009	2	snowy egret	1	0838	N	flying	W	100	3	
10/1/2009	2	killdeer	1	0839		calling	S	20	1	
10/1/2009	2	red-winged blackbird	1	0840	N	flying	W	100	2	
10/1/2009	2	tree swallow	20	0842	S	flying	N	120	2	