Wildlife Hazard Assessment

Turners Falls Municipal Airport (0B5)
Turners Falls (Montague), MA

February 10, 2022

Prepared for:

Turners Falls Airport Commission
10 Airport Way
Turners Falls, MA 01376

Prepared by:

Stantec Consulting Services Inc.
136 West Street, Suite 203
Northampton, MA US 01060-3711

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

February 10, 2022

Executive Summary

On behalf of the Turners Falls Municipal Airport (0B5 or Airport), Stantec Consulting Services Inc. conducted a Wildlife Hazard Assessment (Assessment) from April 16, 2020, through March 25, 2021. The need for the Assessment was triggered by observations of regular occurrences of wildlife of size and in numbers capable of interfering with aircraft operations and potentially resulting in substantial damage to aircraft, airport property, or other property. The Assessment included regular semi-monthly visits to the Airport to record wildlife sightings and signs through bird point counts, area searches, trail cameras, and small-mammal trapping. The Assessment also included monthly visits to specific off-Airport properties that may attract wildlife due to their habitat characteristics.

Operations at 0B5 are predominately that of a GA airport (local and itinerant) along with a small amount of air taxi, police, and military operations. The airfield can accommodate single- and multi-engine planes, with infrequent turboprop and helicopter operations.

The airport setting is rural and suburban. The airfield is situated in a predominately turf and forested landscape with some surrounding commercial and suburban development. Chief on-airport attractants include maintained turf (native grassland), patches of woody vegetation, and adjacent mature forested landscapes. Surface waterbodies within 1 mile of the Airport property include the Connecticut River, Millers River, Green Pond, and Lake Pleasant. Other chief attractants include (limited) agricultural fields to the northeast and extended/continuous mature forested tracts to the south, east and north. The forested lands are protected from development and managed for wildlife by the Massachusetts Department of Conservation and Recreation.

Many species of birds were documented through the point counts, and mammals were largely documented through the trail cameras and indirect sightings (tracks, scat, and other signs). 0B5 has only a partial perimeter security fence allowing un-interrupted passage of mammals through the property from adjacent forested tracts. Table ES-1 lists wildlife of safety concern that were detected during the Assessment and where they were frequently observed at 0B5. A complete list of wildlife observed as a part of this Assessment is included in Appendix F.

ES-1. Notable hazardous wildlife observed during the Turners Falls Municipal Airport Assessment

Hazardous Wildlife	Seasons	Time of Day	Locale and Conditions
White-tailed deer	Year-round	Anytime, mostly at dawn, dusk and night	Primarily along the northeast edge but intermittent crossing of the runway between the northeast side and the terminal area
Canids: coyotes, foxes	Year-round	Anytime, mostly at dawn, dusk and night	Primarily at the east end within the RW34 approach but frequent sign of runway/taxiway crossing
Crows	Summer, fall, winter	Daytime; dawn and dusk	Very large flocks in winter; flying locally particularly across the RW34 approach
Killdeer	Spring, summer	Daytime	Multiple breeding pairs with resultant young frequently on the runway and taxiway
American robin	Spring, summer	Daytime	Frequent use of the taxiway and runway edge by large flocks, particularly in the early spring following snow melt
Geese	Spring, fall	Daytime; will migrate at night during spring and fall	Individuals and flocks roost on runway and turf in summer and fall; large flocks commute near Airport in early morning and late afternoon particularly along the Connecticut River
Waterfowl	Spring, fall	Daytime; commute at dusk	Individuals / small groups use wetlands and open water off both runway ends associated with the Connecticut and Millers rivers
Bald eagle	Year-round	Daytime	Two breeding pairs associated with the impounded section of the Connecticut River within the RW16 approach. Frequent soaring within the approach airspace

Abbreviations and Acronyms

AC	Advisory Circular
Airport	Turners Falls Municipal Airport
AOA	air operations area
Assessment	Wildlife Hazard Assessment
ATF	Alcohol, Tobacco, and Firearms
Biologists	Qualified Airport Wildlife Biologists
CFR	Code of Federal Regulations
FAA	Federal Aviation Administration
GA	General Aviation
MBTA	Migratory Bird Treaty Act
0B5	Turners Falls Municipal Airport
Plan	Wildlife Hazard Management Plan
Stantec	Stantec Consulting Services Inc.
USC	United States Code
USDA-WS	US Department of Agriculture Wildlife Services
USFWS	US Fish and Wildlife Service
VMA	vegetation management areas
VMP	Vegetation Management Plan
YOP	yearly operational plan

1.0 INTRODUCTION

The Turners Falls Municipal Airport (0B5 or Airport) is a publicly owned General Aviation (GA) airport located 1.5 miles east of the central business district of Montague, Franklin County, Massachusetts (Figure 1). The Town of Montague owns and operates the Airport through a 5-member airport commission who are appointed by a board of selectmen. A part-time airport manager and small maintenance staff perform the routine administrative and maintenance duties of the facility.

Pursuant to Federal Aviation Administration (FAA) regulation 14 Code of Federal Regulations (CFR) 139.337, Part 139 certificated airports must conduct a Wildlife Hazard Assessment (Assessment) if certain conditions have occurred at the airport that would indicate wildlife hazards are present. The need for an Assessment is triggered if any of the following events occur on or near the airport:

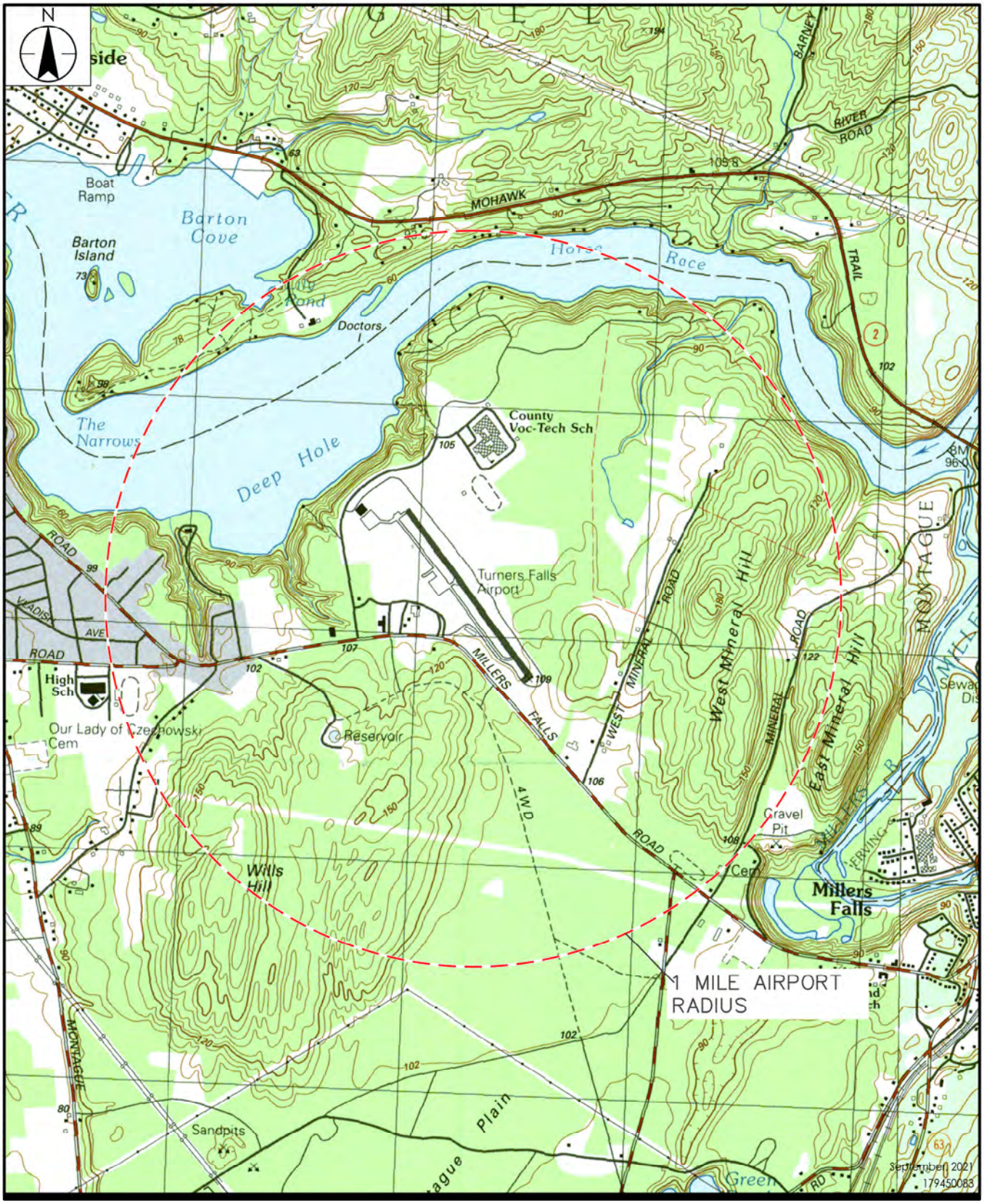
1. An air carrier aircraft experiences multiple wildlife strikes;
2. An air carrier aircraft experiences substantial damage from striking wildlife. As used in this paragraph, substantial damage means damage or structural failure incurred by an aircraft that adversely affects the structural strength, performance, or flight characteristics of the aircraft and that would normally require major repair or replacement of the affected component(s);
3. An air carrier aircraft experiences an engine ingestion of wildlife; or
4. Wildlife of a size, or in numbers, capable of causing an event described in items 1, 2, or 3 above, is observed to have access to any airport flight pattern or aircraft movement area (14 CFR 139.337 (b)).

GA airports are not bound by the regulations established in Part 139. However, states and municipalities use 14 CFR 139 and FAA Advisory Circulars (ACs) to develop their own civil aviation regulations. All airports, GA as well as commercial, have a legal responsibility to provide a safe environment for aircraft operations and this includes implementing measures to control hazardous wildlife within the airport environment. Additionally, if a GA airport receives funding from the FAA through the Airport Improvement Program (AIP), they must evaluate their need for conducting an Assessment per the AIP grant assurances. 0B5 has elected to conduct this Assessment to review and improve safety at their facility.

1.1 OBJECTIVES

Qualified Airport Wildlife Biologists (Biologists) from Stantec Consulting Services Inc. (Stantec) conducted the Assessment at 0B5 to address the following objectives.

- Gather baseline data on wildlife species considered hazardous on or near the Airport
- Gather baseline data on the resources on and off the Airport that provide food, water, and shelter that are attractive to those hazardous wildlife species
- Identify feasible alternatives to minimize the occurrence of hazardous wildlife species on or near the Airport



V:\179450083\ACTIVE\179450083\AVIATION\9_DRAWING\SHEET_FILES\50083_ENVIRO_FIG_01.DWG
2/11/2022 10:03 AM

ORIGINAL SHEET - ANSI A

Stantec

136 West St STE 203
Northampton, MA 01060
www.stantec.com

LEGEND

TURNER FALLS MUNICIPAL AIRPORT

1 MILE AIRPORT RADIUS

Client/Project

TURNERS FALLS AIRPORT
WILDLIFE HAZARD ASSESSMENT

Figure No.

1.0

Title

USGS SITE LOCUS
(1 MILE RADIUS)

0 2000' 4000'

Introduction
February 10, 2022

To achieve the listed objectives of this Assessment, Stantec conducted the following actions, which are discussed in this document:

1. Reviewed available aircraft wildlife strike information at 0B5 from the strike database;
2. Inspected wildlife habitat conditions and notably attractive features in the Airport landscape;
3. Conducted a year-long study of wildlife abundance and temporal use of the Airport vicinity; and
4. Investigated the feasibility of various recommendations for reducing wildlife hazards at OB5, which will provide a framework for the Wildlife Hazard Management Plan (Plan).

0B5 is in a suburban/rural setting located between the communities of Montague, Gill and Erving, Massachusetts (Photo 1). The Airport sits on an elevated, level plain south of the confluence of the Connecticut and Millers rivers. State Route 2 runs east-west north of the airfield and represents the major access route to the Airport. A major impoundment of the Connecticut River, known locally as Barton Cove, borders the Airport to the west. Industrial development, residential districts, and the Franklin County Technical high school border the Airport property. Large blocks of contiguous forest dominate the landscape to the east and south, associated with the Montague Plains Wildlife Management Area; a state-defined and managed property designated for conservation and passive recreational uses. Figures 1 through 4 provide various views of the Airports' surroundings.

Photo 1. Southwest view across Runway 16/34 at the private hangars and the recently acquired Pioneer Aviation (center background). Note the change from the planted non-native turf grasses along the runway to the native bunch grasses beyond the edge of the side safety area.

Introduction
February 10, 2022

There are several notable wildlife attractants immediately proximal to 0B5 as shown in Figures 1 and 2. Prominent features include the Connecticut River (and associated impounded section called Barton Cove) to the west and north, the Millers River and associated river oxbow to the east, and Green Pond and Lake Pleasant to the southeast. The Barton Cove section of the Connecticut Rive contains several ancillary uses including a town park, fish ladder, boat ramp(s) and campground. These potential wildlife attractants are likely to create challenges for sharing the Airport's land and airspace with wildlife. Each potential attractant is discussed further in this assessment.

2.0 BACKGROUND

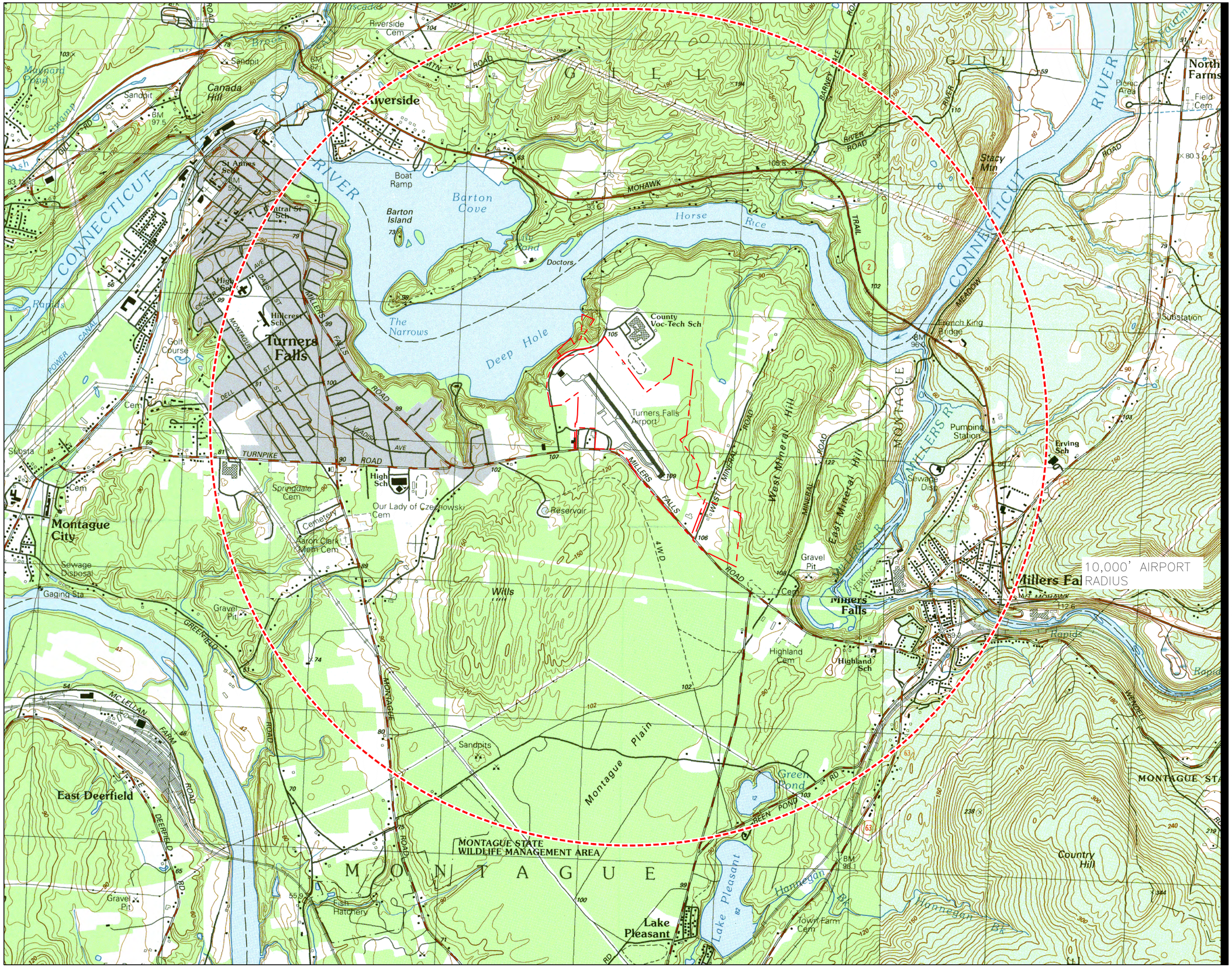
2.1 LOCATION

The Airport is located at 10 Aviation Way on the north side of Millers Falls Road just east of the center of the Town of Montague. The nearest adjacent municipality is the Town of Gill to the north, with the center of the Connecticut River the dividing line between the two municipalities. The Town of Erving and associated village of Millers Falls is located to the east of the airport just across the Millers River. The Airport elevation is 358.7 feet above mean sea level. The airfield is situated in the Connecticut River valley in an area of relatively level topography referred to as the Montague Plains. Notable topographic features include the following:

- East and West Mineral Hills immediately east of the Airport at elevations between 500 and 600 feet above mean sea level;
- Wills Hill immediately south of the Airport across Millers Falls Road at just over 500 feet above mean sea level;
- The twin peaks of Poplar Mountain and Country Hill 2.5 miles to the east of the Runway 34 end, at just over 1,000 feet above mean sea level
- The 1,575-acre Montague Plains Wildlife Management Area bordering the Airport to the south and east;
- The Barton Cove impoundment of the Connecticut River to the west and north of the airport at an approximate elevation of 175 feet above mean sea level.

0B5 sits on soils classified as urban land, i.e., areas of soil where buildings and paved surfaces cover more than 90% of the surface. Surrounding native soils include Windsor Loamy Sands (NRCS 2020). The Airport soils are quite sandy, having formed in glacial outwash material. Drainage is quite rapid providing for a dry, sandplain environment. The coarse, dry, sandy soils dictate the natural vegetative cover type of the Airport environs, restricting the dominant vegetation to drought-tolerant species. Wetlands are mostly absent from the Airport due to these glacial outwash soil conditions.

Property abutting the airport to the west, north, and east is currently zoned primarily for industrial, residential and some limited agricultural (forested) uses. Industrial development borders the airport property boundary to the south, west and north, while the agricultural use predominates the eastern boundary. The adjacent residential use along the south side of the terminal area consists of a high density, trailer park-type development.



ORIGINAL SHEET - ARCH D

Stantec

Stantec Consulting Services Inc.
136 West St STE 203
Northampton MA 01060 U.S.A.
Tel. 413.584.4776
www.stantec.com

LEGEND
APPROX. AIRPORT PROPERTY LINE
10,000' AIRPORT RADIUS

N

0 1000' 2000'

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name: 50083_ENVIRO_FIGURES	ADK Dwn.	LAM Chkd.	RPC Dsgn.	21.09.22 YY.MM.DD

Permit-Seal

Client/Project
TURNERS FALLS MUNIICPAL AIRPORT
MONTAGUE, MA

WILDLIFE HAZARD ASSESSMENT

Title
USGS SITE LOCUS (10,000' RADIUS OF THE AIRPORT)

Project No.	MassDOT Project No.
179450083	AIP#3-25-0032-021-2020

Drawing No.	Sheet	Revision
FIGURE 2	2 of 8	

2.2 FACILITIES AND AIRCRAFT OPERATIONS

2.2.1 Airside

0B5 has one paved runway; Runway 16/34 is 3,200 feet long, 75 feet wide, and orientated in west-east directions. Runway 16/34 has an asphalt surface with non-precision runway markings and is equipped with pilot-activated, medium-intensity runway lights (MIRLs). OB5 has one full parallel taxiway, one stub taxiway, and three taxilanes for accessing aprons. Taxiway A is 35 feet wide and connects to Runway 16/34 at its ends and via the stub taxiway, Taxiway B. Taxiway B is a minimum of 53.76 feet wide, and 185 feet in length located approximately mid-field. A series of paved taxilanes provide apron access from the taxiways. Airport pavement was substantially rehabilitated in 2009.

OB5 is not a tower-controlled facility, but the Airport has several navigation aids, such as runway lighting, a rotating beacon (at the RW 16 end along Industrial Drive), a 4-box airport-owned Precision Approach Path Indicator Light (PAPI) at the RW 16 end, and a lighted windsock (north side of the runway approximately mid-field). Runway 16/34 has three instrument approach procedures that provide electronic guidance to aircraft flying into the airport under instrument conditions.

2.2.2 Landside

Landside facilities at 0B5 are located along the southeast side of the single runway and include a 1,000 square foot administration building with adjacent 25-position, paved automobile parking area. Several of the automobile parking positions have recently been improved with solar charging stations to support e-vehicles. The Airport recently acquired Pioneer Aviation; a privately-owned aircraft maintenance and storage operation located at 42 Industrial Boulevard on the south side of the RW 16 end. The acquisition added two large hangars to the previous inventory of 8 privately owned hangars. 0B5 has two defined aprons that together provide 9 tie-down positions; the newly acquired Pioneer Aviation facility will add to the tie-down capacity once planning and rehabilitation efforts for the new facility are completed. Miscellaneous facilities include a building for storing airfield maintenance equipment, fuel farm, partial perimeter/security fencing and a radio-controlled flying club runway along the north edge of the property.

2.2.3 Operations

0B5 is one of 37 airports open to the public that make up the Massachusetts Statewide Airport System. Operations are those typically characteristic of a GA airport (local and itinerant) along with a small, infrequent number of military (helicopter) operations. The airfield can accommodate single and multi-engine piston aircraft; use by smaller jets is limited due to the restrictive runway length.

The Airport Master Plan Update (Gale Associates; 2019) used information from the FAA Master Record 5010 and from Airport Management to estimate aviation activity. Estimated operations at OB5 from 2016-2019 are summarized in Table 1.

Table 1. Estimated aircraft operations at Turners Falls Airport 2016-2019[1]

	Itinerant Operations				Local Operations			
Year	**Air Taxi & Commuter**	**GA**	**Military**	**Total**	**Civil**	**Military**	**Total**	**Total Operations**
2016	100	5,000	0	5,100	12,500	0	12,500	**17,600**
2017	99	5,015	0	5,114	12,550	0	12,550	**17,664**
2018	98	5,030	0	5,128	12,600	0	12,600	**17,728**
2019	97	5,045	0	5,142	12,651	0	12,651	**17,793**

The Airport's forecasted operations consist primarily of single-engine piston aircraft and multi-engine piston aircraft (Table 2).

Table 2. Estimated annual operations by aircraft category[2]

	Itinerant Operations			**Local Operations**		
Aircraft Category	**2022**	**2027**	**2037**	**2022**	**2027**	**2037**
Single-Engine	4,080	4,080	4,080	10,625	10,625	10,625
Multi-Engine	510	510	510	1,875	1,875	1,875
Turbo Prop	255	255	255	0	0	0
Helicopter	204	204	204	0	0	0
Jet	51	51	51	0	0	0
Total	**5,100**	**5,100**	**5,100**	**12,500**	**12,500**	**12,500**

Source: FAA TAF 2016-2045, Gale Associates 2017 Analysis

[1] Turners Falls Municipal Airport – Final Airport Master Plan Update; February 2019 by Gale Associates.
[2] Turners Falls Municipal Airport – Final Airport Master Plan Update; February 2019 by Gale Associates.

3.0 EXISTING CONDITIONS

3.1.1 General Landscape and Setting

The Airport is situated in a relatively level plain within the Connecticut River valley and the terrain rises gradually away from the river corridor including a series of low hills to the east and south. The Town of Montague lies to the west, and the State Route 2 corridor extends east/west just north of the airport across the Connecticut River (Figures 1 and 2). Industrial and minor residential development exists immediately adjacent to the Airport to the west and south. Otherwise, the landscape is predominately forested terrain, and mostly associated with the Montague Plains Wildlife Management Area which is partly visible in Photo 2.

Photo 2. Southwest view across Runway 34 at the forested area across Millers Falls Road.

The Airport sits in the Connecticut River Valley sub-region between the Worcester Plateau to the east and the Vermont Piedmont to the west. The Connecticut River Valley is a clearly discernible subregion with a milder climate than the adjacent hill country; relatively level terrain, ranging from 100 to 500 feet on the highest ridges; and land composed mostly of urban and built-up areas, croplands, and pasture. Deciduous forests of central hardwoods (oak-hickory) and transition hardwoods (maple-beech-birch, oak-

hickory) cover most of the ridges. In this valley, the terrain is much flatter and covered in rich alluvial soils. The area has a milder climate than the surrounding upland and all these characteristics make it quite favorable to agriculture. It is dominated by oak-hickory forests, and by silver-maple and cottonwood in floodplain areas. At the local scale, the Airport is surrounded by industrial development, sparse residential development and woodlands. Groundcover on airport property is mowed regularly and composed of various drought-tolerant native grasses and other herbaceous species. Patches of trees and shrubs occur within the Airport perimeter, primarily north of the runway and the eastern half of the airfield. Recent vegetation management has sought to expand the grassland and scrub-shrub cover and reduce the forested cover type as shown in Photo 3. This modification is being conducted primarily to address obstructions to navigable airspace while addressing permit conditions of the Massachusetts Natural Heritage and Endangered Species Program associated with earlier improvement projects at 0B5.

Photo 3. West view of habitat modifications along the north side of Runway 16-34.

The 0B5 region has a moderate climate where winters are fairly cold, and summers are cool to moderately warm. In winter, the low temperature range is typically 7–28°F, and in summer, the high temperature range is typically 66–82° F. The region receives approximately 43 inches of precipitation a year, which includes roughly 45 inches of snow in winter months.

3.1.2 Surface Water and Wetlands

The deep and excessively drained soils on the Airport preclude the existence of any major wetland features on the property. Airport-owned property on the east side (non-airport side) of West Mineral Road contains an area of wet meadow vegetation but surface water is mostly absent. Wetlands are not a major feature of the airport property but are present within the nearby approaches of both runway ends.

Major surface water resources with 5 miles of the Airport include the Connecticut and Millers rivers and their tributaries, Green Pond and Lake Pleasant (Figure 2). In particular, the Barton Cove impoundment of the Connecticut River is the major surface water in the Airport vicinity relative to the purpose of this Assessment (Photo 4).

Photo 4. Northeast view of a section of Barton Cove; an impoundment of the Connecticut River located off of the Runway 16 end at 0B5.

3.1.3 Vegetation and Wildlife Habitats

Wildlife habitat on the Airport property and immediately proximal can be described as developed (asphalt and buildings), managed planted grassland (mowed turf) along the runway and taxiways, managed native grassland along the northeast side of the runway, and woodlands. The forested habitat consists primarily of mixed hardwoods and pitch pine, with some eastern white pine mixed throughout. The wooded area is contiguous with substantial forested acreage to the north, east and south supporting a substantial deer herd and other large mammals. The native grasslands are dominated by broom sedge but also contain native wildflower component including wild lupine. Native grassland vegetation is considered an

important cover type in Massachusetts as there are several state-listed rare plant and wildlife species associated with this cover type. The Airport is included on the state-listed rare species map overlay and thus Airport improvement projects are routinely subject to review pursuant to the Massachusetts Endangered Species Act (Figure 6).

The combined forested cover type and grasslands provide optimal conditions for several predator/prey relationships to occur at 0B5. The grasslands provide forage for a host of herbivorous species which, in turn provide prey for insectivorous and carnivorous species. Direct observations were collected of red-tailed fox feeding on rodents, coyote stalking of white-tailed deer, American kestrel feeding on grasshopper, and red-tailed hawk eating grey squirrel during the year-long wildlife study at OB5. The wildlife cover and feeding resources presented by the forested and grassland cover types at the Airport support a host of wildlife species known to pose a hazard to airport operations.

3.2 HISTORY OF WILDLIFE HAZARDS AT TURNERS FALLS AIRPORT

3.2.1 Wildlife Threats and Aircraft Collisions

The occurrence of wildlife in size (mass) and in numbers capable of causing a serious event or multiple small strikes triggered the need for an Assessment at 0B5. Stantec interviewed airport personnel to gain existing information about wildlife occurrences. Airport staff and pilots have noted anecdotally wildlife occurrences within the AOA that may pose risks (Table 3). Appendix F provides the list of animals (common and scientific names) recorded during the Assessment.

Table 3. Notable wildlife occurrences based on anecdotal information from Airport staff and pilots; Turners Falls Airport

Species	Number	Remarks
American crow	>1, often >30	Occur daily year-round; usually in small flocks but can occur in large flocks; overflights of large flocks occur in winter; will roost in large flocks around sunset
Canada goose	10-20; occ. >20	Large flocks roost on runways and taxiways in spring during migration; occur in nearby waterbodies and surrounding fields year-round
White-tailed deer	Singly and in small groups (<5)	Regular occurrences on AOA; most prevalent on southern side of Airport and in neighboring agriculture fields
Canids: coyote, fox	Singly	Individuals and scat observed on AOA
Rodents: mouse, vole, squirrel	Singly or in small groups	Beavers are a constant problem in Paull Brook; mammals create burrows and runs on AOA; squirrels regularly observed in neighboring yards
Bald eagle	Singly	Overflights particularly during migration
Killdeer	>1, often >10	Occur daily between April and September in small flocks on and directly adjacent to aircraft movement areas.
Hawks	Singly	Individuals observed circling above the AOA, rarely landing on the property

Numbers of American crows and Canada geese congregate on the primary and transition surfaces at varying times of the year at 0B5. The occurrence of crows and geese in large numbers on the runways is a serious enough event to warrant concern for risks to airport safety. Red foxes, coyotes, and white-tailed deer have been observed crossing the airfield on several occasions. The frequent incidence of white-tailed deer on airport property also poses a serious threat to aircraft while taxiing, landing, and taking off. A collision with such a large animal could produce considerable damage to an aircraft or result in injury to or death of a person.

The FAA Wildlife Strike Database (FAA 2021) was reviewed and found no wildlife strikes had been reported to date at 0B5.

The FAA encourages wildlife strike reporting in the GA community. As part of their strike reporting outreach, the FAA distributes posters and other information to GA airports, aviation schools, other organizations and associations as well as Part 139 certificated airports (FAA 2016). In addition, the FAA provides funding for education and outreach at nationwide workshops for the general aviation community. New data on the number of strikes reported at GA airports demonstrates that the outreach has been successful, and strike reporting has increased considerably.

3.2.2 Wildlife Hazard Management Review

The Wildlife Hazard Assessment conducted in 2020-2021 is the first at 0B5, and there is no formal Wildlife Management Plan currently written or in use at the Airport. Wildlife management techniques currently practiced include driving flocks of birds off the runway using a vehicle, and the removal of woody vegetation near aircraft movement areas to increase separation between deer habitat and the runway.

3.3 REGULATORY FRAMEWORK FOR MANAGING WILDLIFE HAZARDS

Except for European starling, house sparrow, and rock pigeon, all wildlife species seen during the course of the Assessment are protected by both federal and state regulations. Applicable regulations are discussed briefly below.

Title 14 CFR Part 139.337 specifies an airport operator’s responsibilities for addressing wildlife strike hazards on and around airports (Appendix B). Airport operators should be aware of hazardous wildlife and the elements that attract hazardous wildlife to airports. The Assessment provides the scientific foundation for the development and implementation of the Plan should that be the direction of the Administrator after review of this Assessment and based on other measures as specified in Title 14 CFR Part 139.337. The Assessment identifies those species that pose serious risks to airport operations throughout the year. Upon review of the Assessment, the FAA determines the necessity for a Plan, which is based on the results of the Assessment.

Title 40 CFR 258.10 requires owners/operators of new or expanded municipal solid waste landfills within 5,000 or 10,000 feet of a runway serving piston-type or turbojet aircraft, respectively, must demonstrate that the landfill does not create hazardous conditions to the airport as a significant wildlife attractant.

The Endangered Species Act (1973, as amended; 87 Statute 884, 16 United States Code [USC] 1531–1543) provides for the conservation of species that are endangered or threatened throughout all or a significant portion of their range and the conservation of the ecosystems on which they depend. Title 50 CFR 1-199 provides regulations for federally protected species and establishes procedures for issuing permits to “take” federally protected species.

The Massachusetts Endangered Species Act, (1990; Massachusetts General Laws c.131A); protects rare species and their habitats by prohibiting the "take" of any plant or animal species listed as endangered, threatened, or special concern. The Division of Fisheries and Wildlife administers the law and its implementing regulations (321 Code of Massachusetts Regulations 10.00) and can grant permits for taking rare species for management purposes.

The Animal Damage Control Act (1931, as amended, 7 USC 426) authorizes the US Department of Agriculture-Wildlife Services (USDA-WS) to manage wildlife potentially harmful to agricultural interests, other wildlife, or human health and safety, including airport safety. The USDA-WS works in cooperation with the MDIFW to administer the Animal Damage Control Act, often through Animal Control Agents.

The Migratory Bird Treaty Act (MBTA, 1918, as amended, 16 USC 703-712) implements various treaties and conventions among U.S., Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under the MBTA, taking, killing, or possessing migratory birds is unlawful. The MBTA provides that a federal depredation permit is required to destroy migratory species. Federal depredation permits are issued by the US Fish and Wildlife Service (USFWS). Designated Airport staff for the depredation permit must complete firearms safety training and obtain a license to carry firearms.

The Bald and Golden Eagle Protection Act (1940, as amended, 16 USC 668-668d) provides for the protection of bald eagles and golden eagles by prohibiting, except under certain specified conditions, the take, disturbance, possession, and commerce of eagles. A permit from the USFWS is required for harassing, injuring, or killing eagles.

For wildlife harassment at airports, the use of various pyrotechnics is regulated by the Bureau of Alcohol, Tobacco, and Firearms (ATF). Because 0B5 is a municipal, GA airport, Airport staff do not require ATF Explosives Permits. However, ATF storage requirements are required. 0B5 must also have a pyrotechnics license from the Massachusetts Department of Fire Services, which must also certify the storage of explosives. In summary, to implement pyrotechnics for wildlife harassment, 0B5 must comply with ATF and state storage requirements and obtain a state license, and designated Airport staff must complete firearms safety training and obtain a license to carry firearms.

4.0 ASSESSMENT METHODS

4.1 LANDSCAPE ANALYSIS

For the landscape analysis, Stantec identified natural communities and potential wildlife attractants within 5 miles and 10,000 feet of the AOA. Available maps and Geographic Information System analyses were used to locate potentially attractive habitats. This information was used to analyze potential movement patterns of wildlife from known and suspected areas of concentration and evaluate potential risks in the approach, departure, and circling airspace areas. Stantec also reviewed existing wildlife and vegetation management practices along with other plans and documents implemented at 0B5. Based on the landscape analysis, potential wildlife attractants located with 5 miles of the airport were visited to assess habitat conditions for attracting hazardous wildlife. Several observation stations were established to monitor these off-airport locations.

4.2 WILDLIFE OBSERVATIONS

From April 16, 2020 through March 25, 2021, Stantec's wildlife biologists visited the Airport at least two times a month to observe and sample wildlife at 0B5 and sites within 5 miles of the Airport. Site visits were largely conducted during daylight hours but also included observations made during early morning and nighttime hours. During site visits, the biologists conducted point counts, area searches, small-mammal trapping, and maintained trail cameras.

4.2.1 Point Counts

Point counts were conducted from three locations on the Airport movement area (Figure 3) during at least two visits per month during the 12-month study. The three points were sampled at varying times during daylight hours and in various weather conditions. Each point count was conducted over a 5- to 7-minute duration. The point counts represent the bulk of the wildlife observation efforts made as a part of this Assessment. Raw data generated from the point count effort can be found in Appendix F.

Observers recorded wildlife detected visually and acoustically within 0.25 mile of the point count center, with a focus on avian activity. Figure 3 provides the 0.25-mile radius off of each point count station to show the extent of the airport covered by the point count effort. Observers recorded the following information for each observation.

- Position on airport
- Species
- Number of individuals
- Behavioral activity
- Habitat
- Direction of travel if moving (overflights)

The observer also made notes about the incidence of nesting pairs, nests, and fledglings or juveniles. Birds heard or seen outside of the official count period and between point locations were recorded as incidental observations.

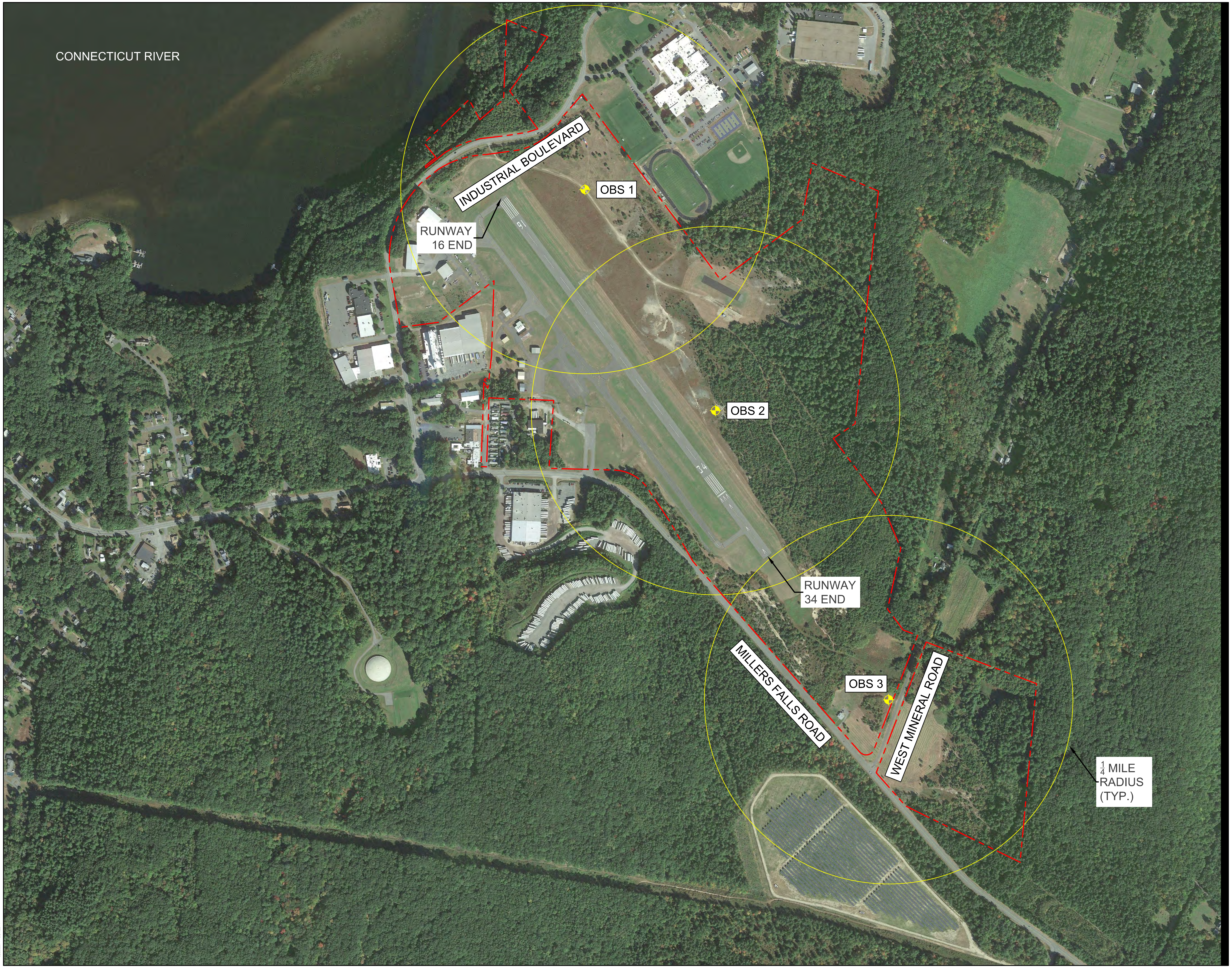
In addition to and during point counts, the Airport Biologist conducted two 1-hour long raptor surveys. Once during each of the spring and fall migration periods, the Biologist stood near the center of the AOA and watched the sky and horizon for 1 hour around noon to locate diurnal raptors and vultures.

4.2.2 Area Searches and Off-Airport Observation Stations

Area searches were conducted routinely on the Airport property to further inform species composition and investigate the occurrence of wildlife that may not be effectively detected during point counts. Area searches included regular walks around parts of the Airport that may be particularly attractive to wildlife; given the favorable snow conditions at 0B5 during the winter of 2020/2021, many of the area searches focused on tracking efforts during the winter months. Areas included inside and outside the perimeter fence, particularly at gates and gaps, around hangars and other buildings, and the seams between wooded areas and grasslands. Wildlife sightings and signs were recorded during each area search, and notable signs were photographed.

Area searches also included two spot-lighting events, conducted on September 16 (early evening) and October 28, 2020 (pre-dawn). This involved driving slowly (<10 miles per hour) through the grasslands along the north side of the runway. A 1-million candle-power lamp was used to search for wildlife from the vehicle.

Biologists made regular visits to several sites located within 5 miles of 0B5 (Figure 4) at least once a month during the Assessment. Off-Airport sites included vantage points on the Connecticut River, Millers River, Lake Pleasant and Green Pond. Wildlife observations were recorded for each of the off-airport observation stations. In particular, Barton Cove on the Connecticut River was routinely inspected due to its waterfowl habitat value, and location within the approach of the Runway 16 end.



Stantec

Stantec Consulting Services Inc.
136 West St STE 203
Northampton MA 01060 U.S.A.
Tel. 413.584.4776
www.stantec.com

LEGEND

- APPROX. AIRPORT PROPERTY LINE
- POINT COUNT OBSERVATION STATION (1/4 MILE RADIUS SHOWN ON PLAN)

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name: 50083_ENVIRO_FIGURES	ADK	LAM	RPC	21.09.22
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
TURNERS FALLS MUNIICPAL AIRPORT
MONTAGUE, MA

WILDLIFE HAZARD ASSESSMENT

Title
ON-AIRPORT WILDLIFE OBSERVATION STATIONS

Project No. 179450083
MassDOT Project No. AIP#3-25-0032-021-2020

Drawing No. FIGURE 3
Sheet 3 of 8
Revision

ORIGINAL SHEET - ARCH D

4.2.3 Trail Cameras

Trail cameras were placed in 4 locations to sample different parts of the Airport during the Assessment (Figure 5). Cameras were in operation day and night from July 7 through December 31, 2020. This effort added to our general understanding of wildlife activity at 0B5, particularly at nighttime. Camera locations focused on obvious game trails that extended onto the airport from the wooded area northeast of the runway. The sandy soils and sparse grass cover of the airport perimeter easily allowed for identification of frequently used game trails.

Photo 5. Typical trail camera setup at 0B5.

4.2.4 Small-mammal Trapping

Stantec conducted small-mammal trapping on two events, August 31–September 2, 2020, and October 14–16, 2020. Trapping was intended to sample the resident rodent population proximal to the turf areas at 0B5 and characterize the species composition of this potential attractant for raptors and canids. For both trapping events, traps were set in three transects (Figure 5) through the grasslands within 30' spacing between traps; 6 traps per transect. Traps were set along the same transects for both events, but due to changes created by mowing, the individual trap location were positioned differently within each area. Cumulatively, the three transects represent habitat conditions found adjacent to the Airport movement areas.

Trapping efforts used Sherman live-traps (3 inches x 3.5 inches x 9 inches; Photo 3) and targeted small rodents (e.g., mice, voles and shrews). Traps were baited with a mix of bird seed, oats, peanut butter, and bacon fat. Traps were installed within/beneath vegetative cover in the late-afternoon and checked in the early morning the following day. Traps were set for 2 consecutive nights during each event. Trapped individuals were identified to species, recorded, and released at the trap site.

Photo 6. Sherman traps and bait setup (left) and typical trap set for small mammals. Traps were located in the shade and/or covered with plant material during trapping sessions.

5.0 ASSESSMENT RESULTS

5.1 LANDSCAPE ANALYSIS

The Connecticut River surrounds 0B5 to the west and north as shown in Figure 2. It is primarily an impounded river section resulting from the Turners Falls Dam that occurs 1.7 miles northwest of the Runway 16 end. The impounded water extends east and north approximately 3 miles upstream to the Route 2 (French King) bridge over the river. Upstream of the bridge, the river contains flowing water typical for a river of its size. The impounded section (known in this Assessment as Barton Cove but containing several named sections locally) contains high value habitat for waterfowl, particularly during the migration period (photo 6). Mute swan, Canada goose, mallard and black duck, scoter, merganser and ring-billed and herring gulls have a frequent and numerous presence at the cove. Spring and fall migration periods see Canada goose numbers exceeding 300 individuals on the water in the early morning with transitions to local agricultural fields, particularly to the north of the river and Airport. Flock liftoff from the cove occurs immediately in the approach surface of the Runway 16 end. A condition directly observed several times during the Assessment.

Photo 7. View of Turners Falls dam and the lower section of impounded water that ultimately forms Barton Cove. A goose flock is visible in the water.

The Turners Falls Dam contains a fish passage feature that concentrates anadromous species in a particular area of the dam. Here, gulls and mergansers can be quite numerous during the May/June fish migration period (American shad and blueback herring). Other uses at the cove include a campground and town park, but issues of hand feeding, and poor solid waste management were not observed during this Assessment. Signs prohibiting the feeding of wildlife are present around the cove, and the order appears to be respected by users of the various facilities surrounding the cove (photo 8).

Photo 8. Examples of educational signage around Barton Cove instructing facility users on the area's wildlife and the dangers of feeding.

The cove also supports raptor activity such as osprey and bald eagle. Two eagle pairs were frequently observed during the Assessment. Typical raptor soaring heights above the cove place the individuals directly in the approach surface at the Runway 16 end of 0B5.

The Millers River (photo 9) occurs to the east of the Airport, flowing into the Connecticut River at the Route 2 (French King) Bridge. An oxbow of Millers occurs 0.9 miles east of the Airport, within the approach of the Runway 16 end. This oxbow, visible on the USGS map (Figures 1 and 2), provides a series of isolated ponds surrounded by dense brush. The ponds are frequented by dabbling ducks for cover and feeding. The ponds remained open during the winter months providing a duck refuge with counts exceeding 50 individuals. The main river contains rapidly flowing water with little quiet water edge habitat. The Millers River was found to possess only minor attractants to hazardous wildlife beyond the oxbow.

Photo 9. Westward view of the Millers River northeast of 0B5. Significant waterfowl habitat is limited to a few, small oxbows along the south bank near 0B5.

Two open water ponds occur 1.5 miles to the southeast of 0B5, just south of the approach surface to the Runway 34 end; Lake Pleasant and Green Pond are identified in Figure 4. These ponds are surface water supplies for the local water district. The ponds appear suitable as an attractant to migratory waterfowl but were not observed to be consistently used by geese or ducks during the migratory period. Both waterbodies froze early in the 2020/2021 winter season and thawed slowly. The edge of Lake Pleasant contains little aquatic weed growth, and the shorelines are mostly maintained free of woody vegetation. Green Pond is quite small with dense woody shoreline cover and restricted open water area. Observations suggest the ponds are not currently providing significant habitat for waterfowl.

Photo 10. Views of Lake Pleasant (left) and Green Pond (right); two open water bodies near the Runway 34 end at 0B5.

The Montague Plains Wildlife Management Area contains several protected tracts of forested property to the south and east of the Airport. This mature, forested land of mixed deciduous/coniferous tree species provides a large, contiguous expanse of forested habitat surrounding the Airport. The forest understory is rich with lowbush blueberry and other fruit-producing shrubs. Hard mast from the tree species is prevalent. The forested area is contiguous with wetlands associated with the two river systems diversifying the feeding and cover habitat for a host of wildlife species. Turkey vultures were observed to be closely associated with this mature forested area.

The riverine and forested habitats dominate the landscape around the Airport. Other, minor landscape conditions that exist in the vicinity pale in comparison to the influence of the rivers and forest on the presence of hazardous wildlife species at 0B5.

5.2 WILDLIFE ATTRACTANTS AT TURNERS FALLS AIRPORT

5.2.1 Habitats

5.2.1.1 Developed Areas

Developed sites include all paved, gravel, and dirt surfaces, ditches, Airport structures, and airfield equipment. Disturbed sites are found throughout the Airport. This habitat tends to attract generalist species that tolerate human intrusion and may benefit from anthropogenic disturbance. Species include those that will use lawns, nest in buildings, and forage on refuse. Typical of these species include pigeon, European starling, house sparrow, skunk and opossum.

5.2.1.2 Uplands

Maintained turf (grassland), upland scrub-shrub, and forest are located on Airport property. Turf is seeded grassland maintained to provide the required safety areas prescribed by FAA design criteria, but 0B5 also contains natural, native grasslands beyond the limits of the seeded runway safety area environment. The native grassland provides a different food source than the seeded species. The two grasslands are managed by regular mowing; maintained heights are generally less than 8 inches. A conceptual mowing plan for 0B5 is provided in Figure 7. Where unmown, upland herbaceous vegetation is dominated by several species of bunch grasses (native) interrupted by lowbush blueberry. Upland shrubs and tree saplings (pitch pine, scrub oak, grey birch, sweet fern, poplar and blueberry) border the grassland in several places, particularly in the northeastern portion of the Airport property. However, Airport staff have cleared much of the woody vegetation in this area over the past two years to remove wildlife cover and prevent sapling trees from becoming eventual obstructions to safe aircraft operations.

5.2.1.3 Waterbodies and Wetlands

Wetlands and surface waters are mostly absent from the Airport property. An out-parcel of the Airport east of the Runway 34 end and across West Mineral Road contains a very minor (less than ¼-acre) wet meadow area that contains no surface water. The real influence of wetlands and waterbodies is from off-Airport sources only, with a particular emphasis on the two major river systems and associated habitats.

5.2.2 Wildlife Food Resources

The major food attractants at 0B5 and the primary wildlife species are described below. The Airport does not conduct any agricultural crop production on their property.

5.2.2.1 Terrestrial Vegetation

Terrestrial vegetation provides graze (grasses, forbs), browse (woody parts of shrubs and trees), and fruits (seeds, berries); all three vegetative food resources are present at 0B5. Small diameter woody regrowth from past vegetation management provides exceptional winter browse along the northeast side of the Airport. Native grasslands and pitch pine savannah habitat provides a mix of spring herbaceous graze with a dense berry-producing low shrub layer providing fruits and seeds in summary and early-fall. The meadows, particularly the planted turf areas provide graze for white-tailed deer and small mammals, and seeds for birds and small mammals. Note that deer grazing preferences appear to be for the planted turf species adjacent to the runway and taxiways. These seeded areas were developed as a part of past Airport improvement projects. The native grasses around the Airport perimeter provide less nutrients than the planted grass species and are mostly overlooked by deer.

As important as the type of terrestrial vegetation resources afforded by the Airport environment is the continuity of this terrestrial habitat in several directions. The amount and continuity of the forested ecotype around the Airport provides full support for large mammals creating resident populations (as opposed to infrequent transients). This condition ensures the continued presence of problematic mammals at a regular seasonal frequency. The local deer herd is substantial and regularly observed at the Airport. Terrestrial food resources for deer are prevalent and readily available.

Photo 11. View of the native grassland cover type at 0B5 showing the edge of the "frequently mown" (right) versus "infrequently mown" (left) areas.

5.2.2.2 Terrestrial Invertebrates

Terrestrial invertebrates, such as insects, arachnids, isopods, and worms, attract many bird species, small mammals, and reptiles. Invertebrates are found in all terrestrial habitats at 0B5. Terrestrial invertebrates can be found year-round, but most species are more readily available during spring, summer, and fall. In particular, late-season grasshopper production at 0B5 is significant, and readily used as a resource by killdeer and kestrel; two of the more common birds at the Airport.

Earthworms and grasshoppers can be abundant and a common food source for wildlife. Earthworms were commonly observed on the runway and taxiways, particularly after rain events and during the spring thaw. Birds, such as American crows and American robins will be attracted to turf and paved surfaces when earthworms emerge. Flying insects were periodically observed in abundance during the study, attracting flocks of various swallow species.

5.2.2.3 Small Mammals

Small mammals, such as mice, voles, shrews, and squirrels attract raptors, crows, ravens, carnivorous mammals (canids, weasels), and snakes. Small mammals were detected and captured in live traps and appear to be quite abundant at 0B5 in the native grassland and pitch pine savannah sections of the Airport. Substantial captures were recorded during the two trapping efforts, with several rodent species represented including house mouse, white-footed mouse, chipmunk, vole and shrew. Seed and berry production of the native grasslands supports a large rodent population, while the insect and earthworm base further support their numbers. Keeping turf heights <10 inches can often help make the edges of taxiways and runways less attractive to small mammals.

5.2.2.4 Birds

Birds attract other birds that prey on animals, such as corvids and raptors, carnivorous mammals, and snakes. Birds occupy all habitats at 0B5, and they occur year-round. Small, flocking birds such as savannah sparrow and white-throated sparrow were found to be prevalent at 0B5, but more closely associated with the native grasslands. Killdeer are prolific breeders at 0B5 along the taxiways and infield areas, and their fledged young are high value targets for a number of predators. Canada geese were (infrequently) observed using the paved surfaces at 0B5 as a resting site during migration periods, foraging on the planted grass species mainly at night. No long-term goose presence was noted at 0B5 but heightened management and awareness during the migration period appears warranted.

5.2.2.5 Refuse

Garbage cans, dumpsters, litter, and human hand-outs attract wildlife, such as gulls, corvids, raptors, and large and small mammals. Garbage build-up and stray refuse were not observed to be an attractant at the Airport. Furthermore, several inspections of the industrial park (a drive-through of the parking lots and/or dumpster containment areas) and other nearby uses did not reveal solid or putrescible wastes to be a significant wildlife issue.

5.2.2.6 Feeders

Primarily in winter, artificial food sources can come from bird feeders and discarded grains and seeds. Feeders were not discovered on the Airport during the Assessment, but they occur in yards of neighboring houses.

5.2.3 Cover

Cover provides wildlife with protection from adverse weather and predators, and nesting and denning substrate. Ideal cover that is proximal to food resources will greatly reduce the risks of exposure to elements and predators when animals are commuting. At 0B5, suitable cover is represented by trees, shrubs, grasses, and structures which offer year-round security.

At 0B5, there are several buildings that are either not fully enclosed, without doors, or have openings that allow access for wildlife. There are older hangars that have small openings, particularly along the roof line. The Airport's equipment shed is partially open, and house sparrow were observed to use this building. Swallows, house sparrows, rock pigeons, and starlings will enter these buildings and take advantage of the interiors for nesting, and pigeons could use them year-round. In general, an area search of the structures during the peak of the nesting season identified only house sparrow as a major user of these structures.

Low, woody cover used to be prevalent along the north side of the Airport, close-in to the runway. Recent vegetation management has pushed this cover back to the north, replacing it with the native grassland species and some of the pitch pine savannah growth of scrub oak and blueberry with low pitch pine individuals. The cover is now represented by the taller native grasses which, while posing less of a cover issue than the former dense woody edge, continues to provide a haven for wildlife close to the runway environment. Presently, the conceptual mowing plan for the Airport shows maintaining the native grass cover in a taller condition beyond the limits of the runway safety area. This practice is mostly in response to permit conditions associated with state-listed rare bird and plant species. The taller native grasslands attract wildlife, particularly songbirds and small mammals, that would not ordinarily be present at the current numbers at 0B5.

5.2.4 Wildlife Attractants at Off-Airport Sites

Chief wildlife attractants within 5 miles of the Airport include rivers and streams, waterbodies (two ponds), agricultural fields (primarily hay and corn), several businesses, and a park and campground (Figure 2). The Connecticut River and its tributaries provide habitat for a variety of wildlife year-round. The riparian areas attract many species of birds and mammals seeking food, water, and cover. Birds, including bald eagles, waterfowl, waterbirds, crows, and other large birds, are commonly observed feeding and roosting on the river, particularly in the impounded section immediately west of the Airport (Barton Cove). The cove is an important migratory stopover for several species of waterfowl, and also contains resident duck, merganser, swan and gull populations.

The parks and campground associated with the river can promote wildlife feeding and generate putrescible waste that can attract wildlife. Proper signage and timely waste management can prevent hazardous conditions from developing.

Corn and hayfields along the upper section of the Connecticut River, north of Route 2, were observed stopovers for migrating flocks of Canada geese. A synergistic relationship between the fields and the river was noted on a few occasions, with flocks leaving Barton Cove in the early morning and flocking to the northern field areas in the fall (after harvesting). This was a temporary condition, but significant in terms of the type and number of birds involved.

Proximal to the Airport, the various businesses of the adjacent industrial park, and in the center of Turners Falls and Millers Falls provide opportunities to create significant wildlife attractants. Food scraps, garbage, and perching habitat are commonly available in the parking lots.

Observations of wildlife at off-Airport attractants are summarized in Section 6.3.

OBS A

CONNECTICUT RIVER AT UNITY PARK

CONNECTICUT RIVER

RUNWAY 16 END

OBS B

CONNECTICUT RIVER AT ROD & GUN CLUB

RUNWAY 34 END

OBS D

MILLERS RIVER AT GUNN STREET

OBS C

MILLERS RIVER AT OXBOW

OBS E

GREEN POND

OBS F

LAKE PLEASANT

Stantec

Stantec Consulting Services Inc.
136 West St STE 203
Northampton MA 01060 U.S.A.
Tel. 413.584.4776
www.stantec.com

LEGEND

- APPROX. AIRPORT PROPERTY LINE
- TURNER FALLS MUNICIPAL AIRPORT
- 10,000 FOOT AIRPORT RADIUS
- POINT COUNT OBSERVATION STATION (1/4 MILE RADIUS SHOWN ON PLAN)

N

0 1000' 2000'

Revision	By	Apvd.	YY.MM.DD

Issued	By	Apvd.	YY.MM.DD

File Name: 50083_ENVIRO_FIGURES	ADK	LAM	RPC	21.09.22
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project

TURNERS FALLS MUNIICPAL AIRPORT
MONTAGUE, MA

WILDLIFE HAZARD ASSESSMENT

Title

OFF-AIRPORT WILDLIFE OBSERVATION STATIONS

Project No.	MassDOT Project No.
179450083	AIP#3-25-0032-021-2020

Drawing No.	Sheet	Revision
FIGURE 4	4 of 8	

v:\1794\active\179450083\revision\5_drawing\sheet_files\50083_enviro_figure_04 2021.11.19 9:35 AM

ORIGINAL SHEET - ARCH D

5.3 WILDLIFE OBSERVATIONS

5.3.1 Point Count Survey

Results of point counts found American crow, sparrow (spp), blue jay and killdeer to have the highest frequency of detections during each point count; there were a total of 725 point count efforts evenly distributed between the three on-Airport observation stations (Table 4). The four species were detected on much of the Airport property and flying overhead singly and in flocks. Sparrow species were considered together due to their similar habitat and feeding preferences, and similar seasonality.

Table 4. Bird species most often detected during point count survey at Turners Falls Airport

Species	Frequency of Detection	Total Individuals	Species	Frequency of Detection	Total Individuals
American crow	15%	393	American kestrel	5%	101
Sparrow (5 spp.)	17%	335	Red-tailed hawk	5%	48
Blue jay	12%	278	Black-capped chickadee	5%	135
Killdeer	6%	197	Mourning dove	5%	173
American robin	6%	91	Northern cardinal	4%	68

Table 5 lists the top five bird species observed by season.

Table 5. Common bird species observed by season at Turners Falls Airport

Winter (Jan-Mar)	Spring (Apr-Jun)	Summer (Jul-Sep)	Fall (Oct-Dec)
American crow	American crow	American crow	American crow
Blue jay	Sparrow (5 spp.)	Sparrow (5 spp.)	Blue jay
Black-capped chickadee	American robin	Killdeer	Black-capped chickadee
Killdeer	Killdeer	American robin	Sparrow (5 spp.)
Northern cardinal	Blue jay	American kestrel	American kestrel

On several occasions, hundreds of American crows were observed flying over the Airport, particularly in fall and winter. The Airport manager reported several instances of Canada geese (10-30 individuals) roosting on the airfield and paved surfaces, notably in late-summer and early-fall. Large flocks of geese were observed flying just west and east of the Airport mostly during the fall; these individuals tended to roost at Barton Cove at night and commuted at sunrise and sunset flying to and from feeding grounds (corn fields to the north). Killdeer were detected in flocks of 15 or more individuals; these instances happened in late summer.

Raptors were detected at 0B5 year-round, but no raptors were detected during either of the two 1-hour-long point counts. A mated pair of red-tailed hawks maintained a nest just north of the Airport (1/4-mile)

in a stand of mature white pine trees. Fledging success was not determined, but paired feeding was observed by the mature adults with frequent visits back to the nest.

5.3.2 Area Searches

Area searches in vegetation and around structures resulted in locating animals and animal signs that would not have been detected during the point counts. Notably, area searches resulted in locating deer trails, mammal tracks, carcasses, and scat. Signs of deer were detected most often near the middle of the airfield. Deer were observed to cross the runway, focused on the break in the perimeter fence at the terminal area. Frequent fox and coyote tracks were observed traveling across runways and taxiways in the winter months. Bear sign and scat were observed in the blueberry patches just north of the runway.

Nighttime spot-light surveys were conducted on September 16th (pre-dawn) and October 28th, 2020 (early nighttime). Observers detected white-tailed deer (in the RW34 end safety area), fox (in the native grasslands north of the runway) and killdeer (along the taxiway). This activity was also recorded as a part of the trail camera efforts (next section).

5.3.3 Trail Camera Results

Trail cameras were in operation July 7th through December 31st, 2020. Trail cameras were placed proximal to and within the Airport movement area to document wildlife that could enter aircraft movement areas and thus compromise aircraft safety. Trail cameras detected an array of mammals and birds expected to occur at an airport in western Massachusetts. Animals were documented during all hours of the day and night, and mammals photographed included white-tailed deer, eastern coyote and red fox.

White-tailed deer were photographed at all camera locations, in all months sampled, and often close to the runway. Deer were photographed at all hours of the day, but most activity was documented during crepuscular and nighttime hours. Coyotes were photographed in several areas of the Airport but most often in the eastern half of the Airport property. American kestrel were detected only at those cameras with views of runways and taxiways. More photos from trail cameras are provided in Appendix E.

Photo 12. View of white-tailed deer crossing the runway at Camera Station 3 (December 26, 2020).

Photo 13. View of a coyote moving towards the runway at Camera Station 2 (December 1, 2020)

Photo 14. Looking southwest at an American kestrel in flight, feeding along the runway at Camera Station 3 (September 22, 2020)

5.3.4 Small-mammal Trapping

Stantec sampled small-mammals during two events, August 31–September 2, 2020 and October 14–16, 2020. Trap transect locations are shown in Figure 5. Trapping results are provided in Table 6. In summary, over 90 trap-nights, the Sherman live-traps captured 21 small mammals. During the October trapping event, there were 2 instances of trap-malfunction (usually from one of two issues: animal enters trap interior without springing trap or trap springs on its own). One trap was lost during the October event from Transect 3; presumably carried off by a larger mammal.

Table 6. Results of small mammal trapping at Turners Falls Airport, August and October 2020

	August 2020		October 2020	
Transect	**No. Traps**	**Captures**	**No. Traps**	**Captures**
Trap_line_1	6	3	6	4
Trap_line_2	6	4	6	4
Trap_line_3	6	3	6	3

RUNWAY 16 END

TRAP SET 1

TRAP SET 2

CAMERA STATION 4

CAMERA STATION 3

TERMINAL BUILDING

CAMERA STATION 2

TRAP SET 3

RUNWAY 34 END

CAMERA STATION 1

Stantec

Stantec Consulting Services Inc.
136 West St STE 203
Northampton MA 01060 U.S.A.
Tel. 413.584.4776
www.stantec.com

LEGEND

- APPROX. AIRPORT PROPERTY LINE
- CAMERA STATION
- TRAP SET

N

0 150' 300'

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name: 50083_ENVIRO_FIGURES	ADK Dwn.	LAM Chkd.	RPC Dsgn.	21.09.22 YY.MM.DD

Permit-Seal

Client/Project

TURNERS FALLS MUNIICPAL AIRPORT
MONTAGUE, MA

WILDLIFE HAZARD ASSESSMENT

Title

ON-AIRPORT SMALL MAMMAL TRAP SETS AND CAMERA LOCATIONS

Project No.	MassDOT Project No.
179450083	AIP#3-25-0032-021-2020

Drawing No.	Sheet	Revision
FIGURE 5	5 of 8	

5.3.5 Off-Airport Observations

Sites with the potential to attract wildlife and that could be accessed are described briefly in Table 7. The biologists visited each of the sites to check habitat conditions and note wildlife use at least once a month during the 12-month-long Assessment. Of the potential attractants listed in Table 7, only two were deemed significant, the Barton Cove impoundment of the Connecticut River surrounding the Airport to the west and north, and the Montague Plains Wildlife Management Area forested area to the south and east.

Table 7. Summary of wildlife attractants within 5 miles of Turners Falls Airport

Attractant	Distance to AOA	Species	Attractive Seasons	Comments
Barton Cove and Connecticut River	<1 mile West	Waterfowl	Spring, summer, fall	Large impoundment; attractive to waterfowl, particularly geese. Directly within the approach to RW 16
Millers River	1 mile East and North	Waterfowl, crows, eagles	Spring, summer, fall	Rapid flow and minimal edge habitat reduce the potential hazard posed by this waterway
Millers River Oxbow	<1 mile East	Waterfowl	Year-round	A series of irregular, quiet, brushy ponds formed in oxbows of the Millers River. Directly within the approach of RW 34
Montague Plains WMA forested areas	Adjacent to the South and East	Crows, vultures, deer, bear, canids	Year-round	A large, continuous tract of mature forested area contiguous with two major river systems and other water features
River-side agricultural fields	2.5 miles North	Crows, deer, geese, bear, canids	Year-round	Large areas of active agriculture production with a focus on corn. Separated from 0B5 by the CT River
Lake Pleasant	<1 mile Southeast	Waterfowl, geese	Spring, summer, fall	Open water habitat; usually frozen in winter. Public water supply source
Green Pond	<1 mile Southeast	Waterfowl, geese	Spring, summer	Open water habitat, usually frozen in winter. Public water supply source
Downtown Turners Falls and Unity Park	1.7 miles West	Crows	Winter	Colonial roosting in trees, buildings, parking lots

The Barton Cove impounded section of the Connecticut River maintains significant acreage of brushy, weedy backwater coves with irregular, wooded shorelines directly within the approach of the Runway 16 end at 0B5. The habitat affords high value cover and feeding habitat for tenant and migratory waterfowl. Additionally, the area is served by a fish passage device in the dam which facilitates upstream passage of mature, anadromous fish in May and June attracting several piscivorous bird species including cormorant, merganser, heron, osprey and bald eagle. Mute swan breeding is common in the cove, with approximately 20-50 swans present during the spring and summer months. The swans rarely liftoff from the cove, tending to spend the entire time in the water or along the shoreline.

Parts of the cove shoreline have been developed for recreation including a campground, boat ramp, public park, walking path and picnic area. These activities can generate refuse and can also lead to wildlife feeding. Regular inspection of these facilities during the Assessment suggests they are well maintained and serviced, and proper anti-wildlife feeding signage is visible. Turf species were found to be a goose attractant particularly during the migration seasons (photo 15). Note that inspections occurred during the Covid-19 restrictions year and some uses were subdued or absent.

Photo 15. View of Canada geese feeding on maintained turf in town-maintained athletic fields bordering Barton Cove. Goose scat is common on bike trails along the cove.

Upriver of the impounded section is a series of river-side agricultural fields that tend towards corn and hay production. After the late-summer harvest the fields would attract migrating flocks of Canada geese which would then use the Barton Cove area for overnight cover, returning to the fields in the early morning. The mass lift-off of a flock of nearly 200 geese was witnessed in November 2020, with the flock tending northward towards these fields. The connections between the cove and these fields is quite short-lived and restricted to a brief portion of the fall period following the harvest. It was not found to be a long-term, continuous attraction.

The Millers River is a quick-flowing river with mostly steep, abrupt banks containing little or no quiet water or weedy edges. This flow-through characteristic reduces waterfowl attraction and limits cover opportunities. An oxbow section of the river occurs near the Runway 16 end within a protected wildlife management area. Here, a series of small, brushy ponds with strong groundwater inflow provide open water cover throughout the year. Such conditions are attractive to waterfowl and, indeed, several dabbling ducks could be found in the ponds at any time. The ponds are well reduced in the landscape, approximately 100’ lower in elevation than the runway end. When ducks flushed from the oxbow they tended to use the adjacent river as the exit flyway, taking them away from the runway approach. The small size of the ponds combined with the elevation difference between the surface water and runway,

and the tendency for wildlife to enter/exit the habitat from the river (non-Airport side) reduces the overall hazard to aircraft posed by this high value waterfowl habitat.

Lake Pleasant and Green Pond are a pair of open waterbodies located to the southeast of the Airport; see photo 10 for typical views of these waterbodies. They are both within a public water supply aquifer and are largely protected from recreational uses. The southern portion of Lake Pleasant is developed, but the northern part closest to the Airport is protected by the water district. The shoreline is steep and maintained free of brush which reduces its attractiveness to waterfowl. Some migrating flocks of geese were observed to use the lake in the fall, but no resident waterfowl were observed. Flocks tended to have short stays at the lake and appeared to prefer the nearby Connecticut River.

Green Pond is an adjacent, natural pond containing a wide, gradual weedy shoreline. The pond appears to be quite shallow and is surrounded by forested habitat up to the edge of water. Mallard, black and wood duck were observed in low numbers along the pond edge during the spring, summer and fall. The pond was not used by migrating geese. The combination of Green Pond and Lake Pleasant were not found to pose a significant wildlife hazard to aircraft during the Assessment period.

Between the two ponds and the Airport lies the Montague Plains Wildlife Management Area; a conservation property operated by the Massachusetts Department of Conservation and Recreation and preserved for passive recreation. The forested areas provide major wildlife corridors up to the Airport from the south, and beyond the Airport to the north. Deer numbers observed on the Airport, and directional movement of the deer suggest that the Airport is immediately in a movement corridor between the large, forested area to the south of Millers Falls Road and the Millers River / Connecticut River confluence to the north of the Airport. This corridor-type movement is responsible for the Airport crossing action of some of the observed deer and canids. During poor mast crop years, the Airport infield areas are a welcome food source for deer, and the blueberry coverage of the Airport property attracts bears during the height of the berry production period.

As a result of the on-site observation of American crow numbers of a scale to cause concern, the downtown area was inspected on several occasions to determine if high value roosting sites were available to crows in the nearby downtown section of Turners Falls. When large overflights of crows were observed, they tended towards the south and west during the evening period, indicating probable roosting locations in that direction. When followed, the crows stayed to the south and east of the downtown and continued southward well beyond 3 miles from the Airport. In general, the downtown area (including associated waterfront parks around Unity Park) were found to be organized and clean, with regular maintenance by municipal staff. No uncollected refuse piles that would attract crows and other opportunistic feeders were regularly observed during the off-Airport area searches.

RUNWAY
16
END

RUNWAY
34 END

10,000' AIRPORT
RADIUS

Stantec

Stantec Consulting Services Inc.
136 West St STE 203
Northampton MA 01060 U.S.A.
Tel. 413.584.4776
www.stantec.com

LEGEND

- APPROX. AIRPORT PROPERTY LINE
- TURNER FALLS MUNICIPAL AIRPORT
- 10,000 FOOT AIRPORT RADIUS
- STATE-LISTED RARE SPECIES LOCATION

N

0 1000' 2000'

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name: 50083_ENVIRO_FIGURES	ADK	LAM	RPC	21.09.22
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project

TURNERS FALLS MUNIICPAL AIRPORT
MONTAGUE, MA

WILDLIFE HAZARD ASSESSMENT

Title

STATE-LISTED RARE SPECIES MAP

Project No.	MassDOT Project No.	
179450083	AIP#3-25-0032-021-2020	
Drawing No.	Sheet	Revision
FIGURE 6	6 of 8	

v:\1794\active\179450083\revision\5_drawing\sheet_files\50083_enviro_figure_06
2021.11.19 7:32 AM

ORIGINAL SHEET - ARCH D

6.0 DISCUSSION

6.1 MAMMALS

Table 8 lists mammals detected at the Airport during the Assessment.

Table 8. Mammals detected during the Assessment at Turners Falls Airport

Common Name	Detection Type
Black bear	Observed, scat, winter tracks
Eastern coyote	Photographed, scat, winter tracks
Fox	Scat, track
Raccoon	Scat, track
Striped skunk	Observed
White-tailed deer	Observed, photographed, scat, winter tracks
Eastern cottontail	Observed, photographed, scat
Woodchuck	Observed
Vole	Trails, scat
Mouse	Captured
Short-tailed shrew	Captured
Mole	Soil mounds

6.1.1 White-tailed Deer

White-tailed deer and deer signs have been regularly observed at 0B5 with enough frequency to raise concern, and deer may be the first significant hazard. Such a large animal clearly poses a serious problem if struck by an aircraft. Deer are consistently ranked as the most hazardous wildlife to general aviation aircraft based on criteria related to damage, cost, and effect on flight (Dolbeer et al. 2015, 2000; DeVault et al. 2011). The FAA's CertAlert 16-03 (*Recommended Wildlife Exclusion Fencing*) advises deer and coyote are the most frequently struck terrestrial mammals (37% and 34%, respectively), and deer are responsible for 92% of the mammal strikes that resulted in damage.

The high incidences of deer and other large mammals on the AOA prompted the Airport to include a recommendation in their 2019 Airport Master Plan Update to complete the connection of the Airport perimeter fencing. Currently, the Airport has over 5,000 linear feet of perimeter fencing (8' high topped with 2' of barbed wire), but the northern edge of the Airport with the technical high school remains unfenced, as is the terminal and hangar areas. These fence gaps have been observed to be used by deer to move from the forested areas south of the Airport to the wooded acreage to the north. In one observation, nine deer crossed the runway in mid-day during active aircraft operations (photo 11).

6.1.2 Canids

Coyotes and foxes are occasionally seen at 0B5, and their occurrence was documented during this study. Birds that nest on the ground in open habitats and small mammals are the likely attractants for canids. Due to known collisions between canids and aircraft, especially coyotes, the occurrence of coyotes and foxes is considered a serious hazard (Dolbeer et al. 2015). Completing full perimeter fencing would be effective in eliminating coyotes, but regular vegetation maintenance will be important for eliminating foxes, which can climb chain-link fencing. The native grasslands north of the runway routinely attain a height that will provide cover for fox and conceal their movements. Additionally, the pitch pine savannah habitat of the northwest Airport corner further attracts fox to the property. On-Airport rodent populations were found to be significant during this Assessment, and this food source will continually attract canids to the property.

6.1.3 Rodents and Other Small Mammals

Rodent detections were frequent during this Assessment, and 90 small-mammal trap nights captured 21 individuals. The presence of coyotes and foxes suggests small mammals are providing prey base for these predators along with other resources.

The Airport regularly mows the turf at 0B5 near the runways and taxiways, which tends to discourage small mammals due to the poor concealment associated with shorter grass. The Airport also regularly mows brushy areas to maintain runway safety zones. However; certain portions of the Airport are infrequently maintained due to state-listed rare species restrictions placed on the Airport as a part of permits issued for previous Airport projects. The Airport is encumbered by a state-listed rare species map overlay (Figure 6) that shows areas within the jurisdiction of the Massachusetts Endangered Species Act. These restrictions necessitated a mowing regime that does not fully address recommended grass heights of the FAA advisory circulars and orders. The resultant mowing regime is as shown in Figure 7 and includes some areas of native grasslands that remain unmown until late in the growing season. This mowing regime will retain some on-Airport habitat for rodents and canids.

6.2 BIRDS

A complete list of bird species detected on- and off-Airport is provided in Appendix F.

Largest On-Airport flock size:	Canada Goose 65	on March 12, 2021
	Canada Goose 84	on October 27, 2020
	Canada Goose 47	on October 27, 2020

Highest On-Airport species occurrence frequency:	American Crow	15%
	Sparrow	17%
	Blue Jay	12%
	Killdeer	6%
	American Robin	6%

Highest On-Airport number of individuals sighted:	American Crow	393
	Sparrows (spp.)	335
	Blue Jay	278
	Killdeer	197

6.2.1 Geese and Other Waterbirds

Canada geese occur at the Airport primarily in summer and fall. Geese are often attracted to airports and present significant safety risks. The regular occurrence of geese at 0B5 is likely linked directly to the proximity of Barton Cove and the Connecticut River. Geese are often observed resting on and commuting over the AOA. The geese are present at 0B5 solely for the turf grasses along the pavement edges. There is no wetland habitat at 0B5 to support breeding or cover opportunities for geese.

Geese, ducks, and herons are very large-bodied birds that pose a serious risk to aircraft. Based on an analysis of the FAA strike database, Canada goose, mallard, and great blue heron have relatively high hazard scores (FAA AC 150/5200-32B). Fortunately, 0B5 is a dry environment providing little habitat for such birds. The goose foraging opportunities could be discouraged by various forms of harassment implemented only during the migration season.

Typical of most airports, killdeer regularly nest at 0B5, and breeding pairs were detected in the spring and summer of 2020. Adult killdeer may attempt to nest on paved surfaces, including runways. The FAA has reported that shorebirds, primarily killdeer and sandpipers, were involved in 40 reported strikes between 1990 and 1999 (FAA 2002). The killdeer observed at 0B5 include observations of 15 birds at one time, all on or within 5’ of the runway. Such conditions suggest that control of this species is critical to minimizing wildlife hazards at this Airport.

6.2.2 Passerines

The Passerines are an order of birds that includes the large Corvids (crows and jays) as well as the small songbirds (warblers, sparrows, etc.). For the most part, passerines are not usually perceived as significant threats to aircraft. Exceptions would be large-bodied birds, e.g., crows and ravens, and flocking insectivores, e.g., starlings and blackbirds. A strike involving an individual insectivorous bird may not have a major effect; yet a strike entailing a flock of these small birds could be very serious. The deadliest aircraft- bird strike in U.S. history occurred when a civil aircraft collided with a flock of starlings at Logan Airport in 1960 (62 human fatalities). The strike occurred shortly after take-off, and the plane ended up in the Boston Harbor.

This Assessment observed starlings and swallows to be only a minor, seasonal component of the avifauna with little activity near the AOA. Inspection of the on-site buildings suggests that maintenance is of a level that precludes breeding of these problematic species in large numbers. Rough-wing, tree and barn swallow flocks were occasionally observed during a major insect hatch, but their presence was not routine. Overall, insectivorous flocking birds were not a significant issue at 0B5.

Blue jay and chickadee: although numerous at 0B5, were found to be restricted to the wooded areas and rarely using the open grasslands or pavement of the Airport. Furthermore, the local flights of these birds

were infrequent, low in the landscape, and mainly consisting of single birds. Conversely, American robin were frequently encountered along the runway and taxiway edge in the low, maintained turf. After rain events, robin moved to the paved surfaces to feed on worms.

Crows were detected during every visit to 0B5 during the Assessment. Most often, small flocks of 5-10 birds were roosting on the Runway 16 end pavement. Observations of crows in winter were frequently of flocks of 30 or more individuals roosting on the ground where patches of grass were exposed by plowing. Flocks of crows are common at airports. Crow strikes occur but do not occur with the frequency relative to their observed numbers of individuals. In November 1991, a DC-10 struck one or more American crows during takeoff from Chicago O'Hare International Airport. The #1 engine was shut down, and the plane returned to land. Parts of the engine came out the side and damaged the #2 engine (Wright 2007).

6.2.3 Raptors and Vultures

Two 1-hour raptor surveys were conducted during the Assessment, one each in fall and spring over the survey period. However, all raptor observations occurred during the standard point counts or incidental to point counts or area searches. A variety of raptors were detected but none with any frequency to trigger grave concern. Red-tailed hawks had the most detections, and at least one pair nests proximal to the Airport. Note that at least one pair of bald eagle, and probably two pairs, are regular visitors to the nearby Barton Cove. Soaring above the cove places the individuals in the approach flight path to the Runway 16 end. This situation was observed several times during site visits in support of this Assessment.

Bald eagles and red-tailed hawks have both had high incidences of collisions with aircraft in recent years and have caused significant amounts of damage (Dolbeer et al 2015). Deterrence measures are recommended either through pyrotechnics, repellants, or other scare or annoyance tactics. The point-count efforts regularly observed red-tailed hawks circling the Airport; observations suggested a family unit with a nearby nest. Nesting and resident family groups should be immediately discouraged upon discovery using approved techniques.

Turkey vultures were detected on 5 different occasions, predominately during the spring migration. Vultures could potentially pose significant threats to aircraft (Dolbeer et al. 2000, Dolbeer 2006). This is largely due to their flight behavior and size. At higher altitudes, aircraft are likely to be traveling at higher velocities; bird strikes at higher altitudes are then more likely to result in greater damage (Buurma and Dekker 1996 as cited in Dolbeer et al. 2000). The vulture observations at 0B5 were made primarily as a part of the off-Airport area searches, and routinely revealed individuals over the Montague Plains WMA in flocks as large as 12 with an average of about 8 birds per observation. The off-Airport observations were sufficient to view of the vulture as one of the critical aircraft hazards associated with 0B5 operations.

American kestrel are closely associated with the paved surfaces at 0B5. They routinely perch on runway edge lighting and fly across the AOA at a low-level chasing insects. During peak grasshopper periods, kestrel remain over the AOA for extended periods taking full advantage of disturbed grasshopper. Up to eight kestrel were observed on the Airport at one time. They were noted during most point count events.

Stantec

Stantec Consulting Services Inc.
136 West St STE 203
Northampton MA 01060 U.S.A.
Tel. 413.584.4776
www.stantec.com

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name: 50083_ENVIRO_FIGURES	ADK	LAM	RPC	21.09.22
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
TURNERS FALLS MUNIICPAL AIRPORT
MONTAGUE, MA

WILDLIFE HAZARD ASSESSMENT

Title
AIRPORT CONCEPTUAL MOWING PLAN

Project No.	MassDOT Project No.	
179450083	AIP#3-25-0032-021-2020	
Drawing No.	Sheet	Revision
FIGURE 7	7 of 8	

ORIGINAL SHEET - ARCH D

6.3 OFF-AIRPORT WILDLIFE ATTRACTANTS

The chief wildlife attractants off-Airport include the impounded section of the Connecticut River (Barton Cove) and the forested area associated with the Montague Plains Wildlife Management Area; both sites are clearly visible in Figure 2. These sites have the potential to attract wildlife that may pose risks to aircraft safety, particularly geese, ducks and various mammals. These sites tend to be most attractive in warmer months and during waterfowl migration seasons. However, these areas should be monitored routinely in all months of the year to alert the Airport manager of high concentrations of wildlife, particularly large-bodied birds like geese and vultures.

7.0 RECOMMENDATIONS

Based on the results of the Assessment, we recommend that 0B5 implement the actual Wildlife Hazard Management Plan or WHMP; a companion document to this Assessment. This section briefly provides a summary of the important elements of an effective WHMP. More details of the control and mitigation measures are provided in the WHMP after the Airport Commission and FAA have an opportunity to review the Assessment and the recommendations. If considered feasible, the measures are memorialized in the WHMP and implemented by the Airport.

7.1 WILDLIFE INVENTORY

Because wildlife occurrences and habitat conditions are dynamic, it is recommended that the 0B5 staff conduct regular seasonal wildlife surveys on- and off-Airport. Wildlife attractants within 10,000 feet and 5-mile areas should be monitored periodically for potentially hazardous concentrations of animals. Table 9 summarizes the conditions in which important hazardous wildlife are likely to occur at the 0B5.

Table 9. Important hazardous wildlife observed during the Assessment at Turners Falls Airport

Hazardous Wildlife	Seasons	Time of Day	Locale and Conditions
White-tailed deer	Year-round	Dusk and night	Airport-wide but primarily along the north side of the runway and off the Runway 34 end.
Canids: coyotes, foxes	Year-round	Dusk and night	Primarily observed along the north side of the runway and off the Runway 34 end. An affinity for the taller native grasses. Canids will readily dig under and climb fencing
Crows	Summer, fall, winter	Anytime during day	Very large flocks in winter; roosting and flying locally
Killdeer and American robin	Spring, summer, fall	Anytime during day	On and adjacent to the AOA in the planted turf grasses, particularly following rain events. Killdeer nest on pavement edge
American kestrel	Spring, summer, fall	Anytime during day	Along the edge of the AOW in the grasslands. Particularly frequent during late-summer during peak grasshopper activity
Geese	Spring, fall	Any time during day; will migrate at night during spring and fall	Individuals and flocks roost on runway and turf in summer and fall; large flocks commute near Airport in early-morning and late-afternoon

We recommend the Airport keep records of wildlife of a size or in numbers capable of causing a strike, as this is an important practice. Records should include information on dates, weather conditions, times, location, numbers, size, and activity. Periodically these records should be reviewed to take account for changes in wildlife activity and possible consequences of those changes. Typically, a logbook is kept in airfield vehicles for such record keeping.

7.2 HABITAT MANAGEMENT

We observed that 0B5 current practices for managing turf appear to be keeping small mammal populations near an acceptable level. The Airport should continue to implement their existing turf management procedures as shown in Figure 7, including those methods for managing brush and trees, until new information indicates that this plan is no longer ideal for aircraft operations. It is recognized that turf management at 0B5 is constrained by state-listed endangered species regulations. Modifications to the mowing regime may be required if the conditions noted in this Assessment become problematic for aircraft operations. Discussions with the pertinent agencies regarding the ability to effect such changes in vegetation management should be pursued.

A Qualified Airport Biologist should review future Airport landscaping and development plans to avoid the creation of any new potential wildlife attractants or increase any existing features that have attractant potential. Vegetation that provides fruits, nuts, and nesting/roosting sites should be avoided. Dense stands of evergreens and deciduous trees that provide roosting or cover habitat should not be cultivated.

7.3 WILDLIFE DETERRENTS AND REPELLANTS

The current, incomplete perimeter fence at OB5 is largely a security fence and does not completely restrict all wildlife. The fence cap along the northeast side of the Airport is particularly problematic due, in part, the extensive wooded habitat afforded to wildlife along that side of the runway. A full perimeter fence is needed to address the principal wildlife hazard at 0B5; white-tailed deer. For deterring wildlife, a fence is only effective if it is maintained routinely. We recommend monthly, if not weekly, inspections for gaps and “dig-unders” (entrances mammals created where the fence meets the ground). Routinely remove all vegetation within 10 feet of the fence on either side. Woody vegetation can damage a fence quickly and also provides places for animals to easily crawl up and over. Pursuit of the perimeter fence should be initiated immediately.

Figure 8 provides a preliminary layout of new perimeter fence necessary to close the gap along the northeast property boundary at 0B5. This layout approximates the recommended perimeter fence contained in the February 2019 Airport Master Plan Update (AMPU). The AMPU recommended completion of the perimeter fence in the mid-term phase of the plan approximately 10 years out. The approved Airport Layout Plan contained in the AMPU showed fencing along the northeast Airport boundary, but also along the terminal area and the recently acquired Pioneer Aviation property. While Figure 8 does not show these other areas of proposed fencing, completion of the full perimeter is recommended in this Assessment. The fence route design for the terminal area will require additional study as a result of the recent Pioneer Aviation acquisition and thus a conceptual fence route for that area is not provided here.

0B5 staff currently do not use repellant techniques other than vehicle dispersal. Other recommended techniques include pyrotechnics and predator decoys. These techniques can be utilized as Airport staff see fit. We recommend the Airport acquire pyrotechnic devices and use them regularly to repel geese, killdeer and crows. Killdeer harassment in the early spring could reduce the current high level of nesting

that occurs along the pavement edges at 0B5. March and April would be critical months for this harassment and nest destruction.

0B5 staff should carefully document any efforts implemented to deter and repel wildlife congregations. Valuable information recorded during these efforts may include identification of assumed attractant, deterrent technique and devices used, wildlife behavioral response, timing and frequency of deterrence efforts, and perceived efficacy.

7.4 LETHAL CONTROL

The Airport staff currently do not use any lethal control. We recommend 0B5 acquire a depredation permit from the U.S. Fish and Wildlife Service to address the regular occurrence of Canada geese and killdeer. Airport staff could use lethal control when non-lethal tactics are not effective.

Stantec

Stantec Consulting Services Inc.
136 West St STE 203
Northampton MA 01060 U.S.A.
Tel. 413.584.4776
www.stantec.com

LEGEND

CONCEPTUAL FENCE LINE (5,060 LF)

TURNER FALLS MUNICIPAL AIRPORT

N

0 200' 400'

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name: 50083_ENVIRO_FIGURES	ADK	LAM	RPC	21.09.22
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project

TURNERS FALLS MUNIICPAL AIRPORT
MONTAGUE, MA

WILDLIFE HAZARD ASSESSMENT

Title

CONCEPTUAL FENCE PLAN

Project No.	MassDOT Project No.
179450083	AIP#3-25-0032-021-2020

Drawing No.	Sheet	Revision
FIGURE 8	8 of 8	

v:\1794\active\179450083\revision\5_drawing\sheet_files\50083_enviro_figure_08 2021-11-12 12:34 AM

ORIGINAL SHEET - ARCH D

ORIGINAL SHEET - ARCH D

7.5 STRIKE REPORTING

The FAA strongly recommends that public-use airports and aviation industry personnel participate in wildlife strike reporting. The FAA's AC No. 150/5200-32B explains the importance of wildlife strike reporting, the reporting system and how to use it, how to access the National Wildlife Strike Database, and the feather identification program. Strike reporting has steadily increased over the past 2 decades, but it is not consistent across the industry. According to AC No. 150/5200-32B, larger airports with established wildlife programs have reporting rates 4 times higher on average compared to other Part 139 and GA airports.

The effectiveness of a Plan to reduce wildlife hazards both on and near an airport requires accurate and consistent reporting. Therefore, 0B5 should include a commitment to document and report to the FAA's National Wildlife Strike Database all wildlife strikes that occur within the separation distances, as described in sections 1-2 and 1-3 of AC 150/5200-33 (*Hazardous Attractants On or Near Airports*), to effectively recognize, understand, and to reduce of threats to safe aviation.

7.6 HAZARD AWARENESS

The Airport manager and staff should continue to encourage awareness of hazardous wildlife through frequent communication. Table 9 provides a list of hazardous wildlife and those times when risks for exposure are the greatest. Notices to Airmen (NOTAM) should be expanded to include information about the proximity of hazardous wildlife when they occur. Airport staff should monitor wildlife activity in hangars and other Airport buildings and coordinate with building owners as needed to control rock pigeon or starling flocks should they occur.

7.7 STAKEHOLDER INVOLVEMENT

Two important off-Airport attractants are Barton Cove and associated public recreational venues, operated by the Town of Montague and the Massachusetts Department of Conservation and Recreation (MADCR), and nearby wildlife management area, operated by the MADCR. Involving these stakeholders would be beneficial for implementation of the Airport's Plan. 0B5 is encouraged to work closely with these parties to discourage practices and activities that provide food sources for problem wildlife species. 0B5 may need to meet regularly with the Town to discuss wildlife control, particularly during the migration seasons. Of importance is the continued maintenance and replacement of signage at the cove restricting the feeding of wildlife. Signage was present and in good condition at the time of the preparation of this report.

8.0 LITERATURE CITED

DeButts, A., M. Barden, P. Pekins, and M. Ellingwood. 2008. A population of wild turkeys (*Meleagris gallapavo* (sic) *sylvestris* (sic)) in relation to air traffic hazards at Pease International Airport. Proceedings of Bird Strike Committee USA/Canada 10th annual meeting, Orlando, Florida, USA.

DeVault, T. L., J. L. Belant, B. F. Blackwell, and T. W. Seamans. 2011. Interspecific variation in wildlife hazards to aircraft: implications for airport wildlife management. Wildlife Society Bull: 35: 394-402.

Dolbeer, R. A. 2006. Height distribution of birds recorded by collisions with civil aircraft. Journal of Wildlife Management 70: 1345-1350.

Dolbeer, R. A., S. E. Wright, and E. C. Cleary. 2000. Ranking the hazard level of wildlife species to aviation. Wildlife Society Bulletin 28: 372-378.

Dolbeer, R. A., S. E. Wright, J. Weller, A. L. Anderson, and M. J. Begier. 2015. Wildlife strikes to civil aircraft in the United States 1990–2014. Federal Aviation Administration and USDA Wildlife Services. Report of the Associate Administrator of Airports Office of Airport Safety and Standards Airport Safety & Certification, Washington, DC, USA. July.

FAA (Federal Aviation Administration). 2002. Memorandum of Agreement between the Federal Aviation Administration, the U.S. Air Force, the U.S. Army, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the U.S. Department of Agriculture to address aircraft-wildlife strikes. Federal Aviation Administration, Washington, D.C. December.

FAA. 2016. Fact sheet – the Federal Aviation Administration's (FAA) wildlife hazard mitigation program. Federal Aviation Administration, Washington, DC. 9 September.

Gale Associates. 2019. Turners Falls Municipal Airport Final Master Plan Update. AIP No. 3-25-0032-19-2017. February 2019.

Griffith, G. E., J. M. Omernik, S. A. Bryce, J. Royte, W. D. Hoar, J. W. Homer, D. Keirstead, K. J. Metzler, and G. Hellyer. 2009. Ecoregions of New England map (scale 1:1,325,000). U.S. Geological Survey, Reston, Virginia, USA.

MassDOT (Massachusetts Department of Transportation). 2010. Statewide airport system plan. <https://www.mass.gov/doc/massachusetts-statewide-airport-system-plan-technical-report/download>. Accessed 28 December 2020.

NRCS (Natural Resources Conservation Service). 2020. Web soil survey. Soil Survey Staff, USDA Natural Resources Conservation Service. <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>. Accessed 12/28/2020.

Wright, S. 2007. Some significant wildlife strikes to civil aircraft in the United States, January 1990–December 2006. USDA Wildlife Services, Sandusky, Ohio, USA.

February 10, 2022

APPENDICES

Appendix A CODE OF FEDERAL REGULATIONS – AVIATION WILDLIFE MANAGEMENT

Title 14, Volume 3
Revised as of January 1, 2011
TITLE 14--AERONAUTICS AND SPACE
CHAPTER I--FEDERAL AVIATION ADMINISTRATION, DEPARTMENT OF TRANSPORTATION
PART 139 - CERTIFICATION OF AIRPORTS
Subpart D – Operations

obstructions that are acceptable to the Administrator.

§ 139.333 Protection of NAVAIDS.

In a manner authorized by the Administrator, each certificate holder must—

(a) Prevent the construction of facilities on its airport that, as determined by the Administrator, would derogate the operation of an electronic or visual NAVAID and air traffic control facilities on the airport;

(b) Protect—or if the owner is other than the certificate holder, assist in protecting—all NAVAIDS on its airport against vandalism and theft; and

(c) Prevent, insofar as it is within the airport's authority, interruption of visual and electronic signals of NAVAIDS.

§ 139.335 Public protection.

(a) In a manner authorized by the Administrator, each certificate holder must provide—

(1) Safeguards to prevent inadvertent entry to the movement area by unauthorized persons or vehicles; and

(2) Reasonable protection of persons and property from aircraft blast.

(b) Fencing that meets the requirements of applicable FAA and Transportation Security Administration security regulations in areas subject to these regulations is acceptable for meeting the requirements of paragraph (a)(l) of this section.

§ 139.337 Wildlife hazard management.

(a) In accordance with its Airport Certification Manual and the requirements of this section, each certificate holder must take immediate action to alleviate wildlife hazards whenever they are detected.

(b) In a manner authorized by the Administrator, each certificate holder must ensure that a wildlife hazard assessment is conducted when any of the following events occurs on or near the airport:

(1) An air carrier aircraft experiences multiple wildlife strikes;

(2) An air carrier aircraft experiences substantial damage from striking wildlife. As used in this paragraph, substantial damage means damage or structural failure incurred by an aircraft that adversely affects the structural strength, performance, or flight characteristics of the aircraft and that would normally require major repair or replacement of the affected component;

(3) An air carrier aircraft experiences an engine ingestion of wildlife; or

(4) Wildlife of a size, or in numbers, capable of causing an event described in paragraphs (b)(1), (b)(2), or (b)(3) of this section is observed to have access to any airport flight pattern or aircraft movement area.

(c) The wildlife hazard assessment required in paragraph (b) of this section must be conducted by a wildlife damage management biologist who has professional training and/or experience in wildlife hazard management at airports or an individual working under direct supervision of such an individual. The wildlife hazard assessment must contain at least the following:

(1) An analysis of the events or circumstances that prompted the assessment.

(2) Identification of the wildlife species observed and their numbers, locations, local movements, and daily and seasonal occurrences.

(3) Identification and location of features on and near the airport that attract wildlife.

(4) A description of wildlife hazards to air carrier operations.

(5) Recommended actions for reducing identified wildlife hazards to air carrier operations.

(d) The wildlife hazard assessment required under paragraph (b) of this section must be submitted to the Administrator for approval and determination of the need for a wildlife hazard management plan. In reaching this determination, the Administrator will consider—

(1) The wildlife hazard assessment;

(2) Actions recommended in the wildlife hazard assessment to reduce wildlife hazards;

(3) The aeronautical activity at the airport, including the frequency and size of air carrier aircraft;

(4) The views of the certificate holder;

(5) The views of the airport users; and

(6) Any other known factors relating to the wildlife hazard of which the Administrator is aware.

(e) When the Administrator determines that a wildlife hazard management plan is needed, the certificate holder must formulate and implement a plan using the wildlife hazard assessment as a basis. The plan must—

(1) Provide measures to alleviate or eliminate wildlife hazards to air carrier operations;

(2) Be submitted to, and approved by, the Administrator prior to implementation; and

(3) As authorized by the Administrator, become a part of the Airport Certification Manual.

(f) The plan must include at least the following:

(1) A list of the individuals having authority and responsibility for implementing each aspect of the plan.

(2) A list prioritizing the following actions identified in the wildlife hazard assessment and target dates for their initiation and completion:

(i) Wildlife population management;

(ii) Habitat modification; and

(iii) Land use changes.

(3) Requirements for and, where applicable, copies of local, State, and Federal wildlife control permits.

(4) Identification of resources that the certificate holder will provide to implement the plan.

(5) Procedures to be followed during air carrier operations that at a minimum includes—

(i) Designation of personnel responsible for implementing the procedures;

(ii) Provisions to conduct physical inspections of the aircraft movement areas and other areas critical to successfully manage known wildlife hazards before air carrier operations begin;

(iii) Wildlife hazard control measures; and

(iv) Ways to communicate effectively between personnel conducting wildlife control or observing wildlife hazards and the air traffic control tower.

(6) Procedures to review and evaluate the wildlife hazard management plan every 12 consecutive months or following an event described in paragraphs (b)(1), (b)(2), and (b)(3) of this section, including:

(i) The plan's effectiveness in dealing with known wildlife hazards on and in the airport's vicinity and

(ii) Aspects of the wildlife hazards described in the wildlife hazard assessment that should be reevaluated.

(7) A training program conducted by a qualified wildlife damage management biologist to provide airport personnel with the knowledge and skills needed to successfully carry out the wildlife hazard management plan required by paragraph (d) of this section.

(g) FAA Advisory Circulars contain methods and procedures for wildlife hazard management at airports that are acceptable to the Administrator.

§ 139.339 Airport condition reporting.

In a manner authorized by the Administrator, each certificate holder must—

(a) Provide for the collection and dissemination of airport condition information to air carriers.

(b) In complying with paragraph (a) of this section, use the NOTAM system, as appropriate, and other systems and procedures authorized by the Administrator.

(c) In complying with paragraph (a) of this section, provide information on the following airport conditions that may affect the safe operations of air carriers:

(1) Construction or maintenance activity on movement areas, safety areas, or loading ramps and parking areas.

(2) Surface irregularities on movement areas, safety areas, or loading ramps and parking areas.

(3) Snow, ice, slush, or water on the movement area or loading ramps and parking areas.

(4) Snow piled or drifted on or near movement areas contrary to §139.313.

(5) Objects on the movement area or safety areas contrary to §139.309.

(6) Malfunction of any lighting system, holding position signs, or ILS critical area signs required by §139.311.

(7) Unresolved wildlife hazards as identified in accordance with §139.337.

(8) Nonavailability of any rescue and firefighting capability required in §§139.317 or 139.319.

(9) Any other condition as specified in the Airport Certification Manual or that may otherwise adversely affect the safe operations of air carriers.

(d) Each certificate holder must prepare and keep, for at least 12 consecutive calendar months, a record of each dissemination of airport condition information to air carriers prescribed by this section.

(e) FAA Advisory Circulars contain methods and procedures for using the NOTAM system and the dissemination of airport information that are acceptable to the Administrator.

§ 139.341 Identifying, marking, and lighting construction and other unserviceable areas.

(a) In a manner authorized by the Administrator, each certificate holder must—

(1) Mark and, if appropriate, light in a manner authorized by the Administrator—

(i) Each construction area and unserviceable area that is on or adjacent to any movement area or any other area of the airport on which air carrier aircraft may be operated;

(ii) Each item of construction equipment and each construction roadway, which may affect the safe movement of aircraft on the airport; and

(iii) Any area adjacent to a NAVAID that, if traversed, could cause derogation of the signal or the failure of the NAVAID; and

(2) Provide procedures, such as a review of all appropriate utility plans prior to construction, for avoiding damage to existing utilities, cables, wires, conduits, pipelines, or other underground facilities.

(b) FAA Advisory Circulars contain methods and procedures for identifying and marking construction areas that are acceptable to the Administrator.

§ 139.343 Noncomplying conditions.

Unless otherwise authorized by the Administrator, whenever the requirements of subpart D of this part cannot be met to the extent that uncorrected unsafe conditions exist on the airport, the certificate holder must limit air carrier operations to those portions of the airport not rendered unsafe by those conditions.

Appendix B FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULARS

AC No: 150/5200-32B, Reporting Wildlife Aircraft Strikes, May 31, 2013

AC No: 150/1500-33C, Hazardous Wildlife Attractants on or near Airports, February 21, 2020

AC No: 150/5200-34A, Construction or Establishment of Landfills Near Public Airports, January 26, 2006

AC No: 150/5200-36B, Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports, January 24, 2019

U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject: Reporting Wildlife Aircraft Strikes | **Date:** 5/31/2013 | **AC No:** 150/5200-32B
Initiated by: AAS-300 | **Change:**

1. Purpose.

This Advisory Circular (AC) explains the importance of reporting collisions between aircraft and wildlife, more commonly referred to as wildlife strikes. It also explains recent improvements in the Federal Aviation Administration's (FAA's) Bird/Other Wildlife Strike Reporting system, how to report a wildlife strike, what happens to the wildlife strike report data, how to access the FAA National Wildlife Strike Database (NWSD), and the FAA's Feather Identification program.

2. Applicability.

The FAA provides the standards and practices in this AC as guidance for all public-use airports, aviation industry personnel (e.g., Air Traffic Control, pilots and airline personnel, and engine manufacturers), and others who possess strike information. The FAA strongly recommends that the above aviation representatives and others possessing strike information participate in reporting.

3. Cancellation.

This AC cancels AC 150/5200-32A, Reporting Wildlife Aircraft Strikes, dated December 22, 2004.

4. Background.

The FAA has long recognized the threat to aviation safety posed by wildlife strikes. Each year in the United States, wildlife strikes to U.S. civil aircraft cause about $718 million in damage to aircraft and about 567,000 hours of civil aircraft down time. For the period 1990 to 2011, over 115,000 wildlife strikes were reported to the FAA. About 97 percent of all wildlife strikes reported to the FAA involved birds, about 2 percent involved terrestrial mammals, and less than 1 percent involved flying mammals (bats) and reptiles. Waterfowl (ducks and geese), gulls, and raptors (mainly hawks and vultures) are the bird species that cause the most damage to civil aircraft in the United States, while European starlings are responsible for the greatest loss of human life. Vultures and waterfowl cause the most losses to U.S. military aircraft.

Studies have shown that strike reporting has steadily increased over the past two decades; however, strike reporting is not consistent across all stakeholders (pilots, air carriers, airport operators, air traffic control personnel, etc.) in the National Airspace System. Although larger 14 CFR Part 139 airports and those with well-established wildlife programs have improved strike reporting, there is a wide disparity in overall reporting rates between Part 139 airports and general aviation (GA) airports in the National Plan of Integrated Airport Systems (NPIAS). Less than 6 percent of total strike reports come from NPIAS GA airports, whose reporting rates average less than 1/20th the rates at Part 139 airports. Most Part 139 airports (97 percent) have

reported at least one strike into the database through 2011, while only 43 percent of NPIAS GA airports have documented a strike into the database.

While overall reporting rates are much higher for strikes at Part 139 airports than at NPIAS GA airports, there is also a major disparity in reporting rates among Part 139 airports. Larger Part 139 airports, especially those with well-established wildlife hazard management programs, have reporting rates about four times higher on average compared to other Part 139 airports. The pattern of disparity in strike reporting among Part 139 airports is also found in reporting rates for commercial air carriers. However, the FAA believes the current voluntary reporting rate is adequate to track national trends in wildlife strikes, to determine the hazard level of wildlife species that are being struck, and to provide a scientific foundation for FAA policies and guidance about the mitigation of risk from wildlife strikes.

Ultimately, improvements can be made in the quantity and quality of strike reporting. In addition to the above-mentioned gaps in reporting to the NWSD, there is an overall bias toward the reporting of damaging strikes compared to non-damaging strikes, especially for NPIAS GA airports and certain Part 139 airports. The quality of data within a strike report can also be improved by providing as much information as possible, including species struck and cost of strike.

The FAA has initiated several programs to address this important safety issue, including the collection, analysis, and dissemination of wildlife strike data. The effectiveness of a Wildlife Hazard Management Plan (WHMP) to reduce wildlife hazards both on and near an airport and the reevaluation of all facets of damaging/non-damaging strikes from year to year requires accurate and consistent reporting. Therefore, every WHMP should include a commitment to document and report to the NWSD all wildlife strikes that occur within the separation distances described in sections 1-2 and 1-3 of Advisory Circular 150/5200-33, Hazardous Attractants On or Near Airports (current version), to better identify, understand, and reduce threats to safe aviation.

5. Types of Animals to Report if Involved in a Strike with Aircraft.

a. All birds.

b. All bats.

c. All terrestrial mammals larger than 1 kg (2.2 lbs) (e.g., report rabbits, muskrats, armadillos, foxes, coyotes, domestic dogs, deer, feral livestock, etc., but not rats, mice, voles, chipmunks, shrews, etc.). If in doubt, report the incident with a note in the comment section, and the Database Manager will determine whether to include the report into the NWSD based on body mass.

d. Reptiles larger than 1 kg (2.2 lbs).

6. When to Report a Wildlife Aircraft Strike.

A wildlife strike has occurred when:

a. A strike between wildlife and aircraft has been witnessed.

b. Evidence or damage from a strike has been identified on an aircraft.

c. Bird or other wildlife remains, whether in whole or in part, are found:

(1) Within 250 feet of a runway centerline or within 1,000 feet of a runway end unless another reason for the animal's death is identified or suspected.

(2) On a taxiway or anywhere else on or off the airport that you have reason to believe was the result of a strike with an aircraft. Examples might be:

(i) A bird found in pieces from a prop strike on a taxiway.

(ii) A carcass retrieved within 1 mile of an airport on the final approach or departure path after someone reported the bird falling out of the sky and a report of a probable wildlife strike.

d. The presence of birds or other wildlife on or off the airport had a significant negative effect on a flight (i.e., aborted takeoff, aborted landing, high-speed emergency stop, or the aircraft left pavement area to avoid collision with wildlife).

7. How to Report a Bird/Wildlife Strike.

The FAA strongly encourages pilots, airport operations, aircraft maintenance personnel, Air Traffic Control personnel, engine manufacturers, or anyone else who has knowledge of a strike to report it to the NWSD. The FAA makes available an online reporting system at the Airport Wildlife Hazard Mitigation web site (http://www.faa.gov/go/wildlife) or via mobile devices at http://www.faa.gov/mobile. Anyone reporting a strike can also print the FAA's Bird/Other Wildlife Strike Report Form (Form 5200-7) at the end of this AC or download it from the web site to report strikes. Paper copies of Form 5200-7 may also be obtained from the appropriate Airports District Offices (ADO), Flight Standards District Offices (FSDO), and Flight Service Stations (FSS) or from the Airman's Information Manual (AIM). Paper forms are pre-addressed to the FAA. No postage is needed if the form is mailed in the United States. It is important to include as much information as possible on the strike report.

Note: These forms are to be used to report strikes that do not have bird remains associated with them (instructions with addresses for sending remains to the Smithsonian Institute Feather Identification Lab are discussed in Paragraph 11, Instructions for Collecting and Submitting Bird/Wildlife Remains for Identification, of this AC). Please do not send bird remains to the FAA.

8. FAA National Wildlife Strike Database Management and Data Analysis.

The FAA NWSD Manager edits all strike reports to ensure consistent, error-free data before entering a single, consolidated report into the database. This information is supplemented with non-duplicated strike reports from other sources. About every six weeks, the FAA posts an updated version of the database on the web site. Annually, the FAA sends a current version of the database to the International Civil Aviation Organization (ICAO) for incorporation into ICAO's Bird Strike Information System (IBIS) Database. Also, the FAA prepares and makes available a report summarizing wildlife strike results from 1990 through the most current year online at http://www.faa.gov/airports/airport_safety/wildlife/.

Analyses of data from the FAA NWSD have proved invaluable in determining the nature and severity of the aviation wildlife strike hazard. The database provides a scientific basis for identifying risk factors, justifying and implementing corrective actions at airports, and judging the effectiveness of those corrective actions. Table 1 below depicts the ranking of 50 bird and mammal species or groups by their relative hazard to aircraft in airport environments. The data for the analysis are from the NWSD. The database is invaluable to engine manufacturers, aeronautical engineers, and wildlife biologists as they develop new technologies for the aviation industry. Each wildlife strike report contributes to the accuracy and effectiveness of the database. Moreover, each report contributes to the common goal of increasing aviation safety and reducing the cost of wildlife strikes.

9. Access to the FAA National Wildlife Strike Database.

On April 24, 2009, the FAA made the NWSD available to the public. The FAA began systematically analyzing wildlife strike data in the 1990s for use by the FAA's Office of Airports, academia, and researchers as a means of improving airport safety and reducing wildlife hazards. The NWSD web site (http://www.faa.gov/go/wildlife) was retooled to make it more user-friendly and to allow more advanced data mining. The site has search fields that enable users to find data on specific airports, airlines, aircraft, and engine types, as well as damage incurred, date of strike, species struck, and state without having to download the entire database.

10. Bird/ Wildlife Identification.

Accurate species identification is critical for wildlife-aircraft strike reduction programs. The identification of the exact species of bird struck (e.g., ring-billed gull, Canada goose, mallard, mourning dove, or red-tailed hawk as opposed to gull, goose, duck, dove, or hawk) is particularly important. This species information is critical for airports and biologists developing and implementing wildlife hazard management programs at airports because a problem that cannot be measured or defined cannot be solved. Wildlife biologists must know what species of wildlife they are dealing with in order to identify local attractants and to make proper management decisions within the framework of the Migratory Bird Treaty Act and state and local regulations. The FAA, the U.S. Air Force, the U.S. Navy, and the U.S. Department of Agriculture – Wildlife Services work closely with the Feather Identification Lab at the Smithsonian Institution, Museum of Natural History, to improve the understanding and prevention of bird-aircraft strike hazards. Bird strike remains that cannot be identified by airport personnel or by a local biologist can be sent (with FAA Form 5200-7) to the Smithsonian Museum for identification. Remains may also be submitted to the Smithsonian for verification of the field identification and for long-term storage of the evidence.

Bird strike identification using feathers, DNA, or other body parts or materials from birds involved in bird-aircraft strikes will be provided free-of-charge to all U.S. airport operators, all U.S. aircraft owners/operators (regardless of where the strike happened), and to any foreign air carrier if the strike occurred at a U.S. airport.

11. Instructions for Collecting and Submitting Bird/Wildlife Remains for Identification.

Please observe the following guidelines for collecting and submitting feathers or other bird/wildlife remains for species identification. These guidelines help maintain species identification accuracy, reduce turn-around time, and ensure a comprehensive FAA National Wildlife Aircraft Strike Database. Many airports have found it beneficial to construct strike reporting kits for use by airport personnel and aircraft operators. Having pre-made kits available improves strike reporting and encourages the sampling of strike remains. A kit suitable for collecting remains from most strikes would include the following materials stored in a 1-quart, re-sealable plastic bag: (1) collection instructions, (2) a pre-packaged alcohol hand-wipe for softening/removing tissue/blood ("snarge"[1]) off of the aircraft, (3) a Whatman FTA® collection card for preserving blood/tissue for DNA identification, and (4) a pair of disposable gloves.

[1] Snarge is the term used for the residue and feathers left on an aircraft after an animal (typically a bird) collides with it.

a. Collect and submit remains from known/suspected bird strikes or strike remains that involved an unknown animal from each impact location as soon as possible and send to the Feather Lab (Smithsonian). If remains are known to be other than those of birds, please contact the Smithsonian before mailing them at (202) 633-0801. Collect remains using the criteria listed in item c below. If you cannot send the remains as soon as possible, refrigerate or freeze them in a sealed plastic bag until you can mail them.

b. Provide complete information about the incident.

(1) Fill out FAA Form 5200-7 – Bird/ Other Wildlife Strike Report.

(i) Print a copy of Form 5200-7 at the end of this AC or download a copy at http://www.faa.gov/go/wildlife.

(ii) File a report online and print a copy to send with the remains.

(2) Mail the report with feather material (see address below).

(3) Provide your contact information if you wish to be informed of the species identification.

c. Collect as much material as possible in a clean plastic/ Ziplock® bag. (Please, do not send whole birds.)

(1) Pluck/pick a variety of many feathers representing color or patterns from the wings, tail, and body.

(2) **Do not** cut off feathers. This removes the downy region needed to aid in identification.

(3) Include any feathers with distinct colors or patterns.

(4) Include any downy “fluff”.

(5) Include beaks, feet, and talons if possible.

(6) Where only a small amount of snarge material is available, such as scrapings from an engine or smears on wings or windshields, send all of it.

(i) **Dry material** – Scrape or wipe off into a clean re-sealable bag **or** wipe the area with pre-packaged alcohol wipe **or** spray with alcohol to loosen material then wipe with clean cloth/gauze. Include the alcohol wipe or piece of cloth in the bag. (Do not use water, bleach, or other cleansers – they destroy or degrade DNA.)

(ii) **Fresh material** – Wipe the area with alcohol wipe and/or clean cloth/gauze **or** apply fresh tissue/blood to an optional Whatman FTA® DNA collecting card.

(1) **Do not** use any sticky substance such as tape or post-it notes to attach feathers.

(2) Collect remains from each impact location and place them in separate, labeled bags. Indicate the location on aircraft from which each sample came (i.e., windshield, radome, etc.) on the bag.

Please send whole feathers (tip and base) whenever possible as diagnostic characteristics are often found in the downy barbules at the feather base. Wings, as well as breast and tail feathers, should be sent whenever possible. Beaks, feet, bones, and talons are also useful diagnostic materials. Even blood smears can provide material for DNA analysis. Do not send entire bird carcasses through the mail. However, photographs of the carcasses can be very useful supplemental documentation.

If you send fresh blood/ tissue samples frequently for DNA identification, you may want to consider getting Whatman FTA® DNA cards. The material is sampled with a sterile applicator and placed onto the surface of the card that "fixes" the DNA in the sample. For more information about ordering these items, contact the Feather Lab. Otherwise, if you only occasionally send blood/ tissue samples, consider using a paper towel soaked with alcohol or an alcohol wipe to collect this type of material. Ethanol is the preferred type of alcohol.

Additional information on sending bird remains to the Smithsonian is available at http://www.faa.gov/go/wildlife.

d. Mail the Bird/Other Wildlife Strike Report and collected material to the Smithsonian's Feather Identification Lab. The lab will forward the report to the National Wildlife Strike Database Manager.

For Material Sent via Express Mail Service:	**For Material Sent via US Postal Service:**
Feather Identification Lab Smithsonian Institution NHB, E600, MRC 116 10th & Constitution Ave NW Washington DC 20560-0116 (This can be identified as "safety investigation material".)	Feather Identification Lab Smithsonian Institution PO Box 37012 NHB, E600, MRC 116 Washington DC 20013-7012 (Not recommended for priority cases.)

The species identification turn-around time is usually 24 hours from receipt if sufficient material is submitted and unless the sample is submitted for DNA analysis. DNA results usually take 6 to 10 days. Once processed, the lab sends the reports and species identification information to the Database Manager for entry into the FAA National Wildlife Strike Database. Persons wishing to be notified of the species identification must include contact information (e-mail, phone, etc.) on the report.

For more information contact the FAA National Wildlife Biologist at (202) 267-8731 or the Smithsonian's Feather Identification Lab at (202) 633-0801.

Michael J. O'Donnell
Director, Office of Airport Safety and Standard

FORM APPROVED OMB No. 2120-0045
Exp. 7/31/2013

BIRD / OTHER WILDLIFE STRIKE REPORT

U S. Department of Transportation
Federal Aviation Administration

Paperwork Reduction Act Statement: The information collected on this form is necessary to allow the Federal Aviation Administration to assess the magnitude and severity of the wildlife-aircraft strike problem in the U.S. The information is used in determining the best management practices for reducing the hazard to aviation safety caused by wildlife-aircraft strikes. A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number. The OMB Control Number for this information collection is 2120-0045. Public reporting for this collection of information is estimated to be approximately 6 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, completing and reviewing the collection of information. The information collected is voluntary. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to the FAA at: 800 Independence Ave. SW, Washington, DC 20591, Attn: Information Collection Clearance Officer, AES-200.

1. Name of Operator

2. Aircraft Make/Model

3. Engine Make/Model

4. Aircraft Registration

5. Date of Incident
/ /
Month Day Year

6. Local Time of Incident
☐ Dawn ☐ Dusk __HR __MIN
☐ Day ☐ Night ☐ AM ☐ PM

6A. Flight Number

6B. Wildlife/Bird Remains:
☐ Collected ☐ Sent to Smithsonian

7. Airport Name/ID

8. Runway Used

9. Location if En Route (Nearest Town/Reference & State/Airport)

10. Height (AGL)

11. Speed (IAS)

12. Phase of Flight
- ☐ A. Parked
- ☐ B. Taxi
- ☐ C. Take-off Run
- ☐ D. Climb
- ☐ E. En Route
- ☐ F. Descent
- ☐ G. Approach
- ☐ H. Landing Roll

13. Part(s) of Aircraft Struck or Damaged

	Struck	Damaged		Struck	Damaged
A. Radome	☐	☐	H. Propeller	☐	☐
B. Windshield	☐	☐	I. Wing/Rotor	☐	☐
C. Nose	☐	☐	J. Fuselage	☐	☐
D. Engine No. 1	☐	☐	K. Landing Gear	☐	☐
E. Engine No. 2	☐	☐	L. Tail	☐	☐
F. Engine No. 3	☐	☐	M. Lights	☐	☐
G. Engine No. 4	☐	☐	N. Other: (Specify)	☐	☐

Bird(s) Ingested? ☐ Yes

Specify if "N. Other" is checked:

14. Effect on Flight
- ☐ None
- ☐ Aborted Take-Off
- ☐ Precautionary Landing
- ☐ Engines Shut Down
- ☐ Other: (Specify)

15. Sky Condition
- ☐ No Cloud
- ☐ Some Cloud
- ☐ Overcast

16. Precipitation
- ☐ Fog
- ☐ Rain
- ☐ Snow
- ☐ None

17. Bird/Other Wildlife Species

18. Number of birds seen and/or struck

Number of Birds	Seen	Struck
1	☐	☐
2-10	☐	☐
11-100	☐	☐
more than 100	☐	☐

19. Size of Bird(s)
- ☐ Small
- ☐ Medium
- ☐ Large

20. Pilot Warned of Birds ☐ Yes ☐ No

21. Remarks *(Describe damage, injuries and other pertinent information)*

DAMAGE / COST INFORMATION

22. Aircraft time out of service
_____ hours

23. Estimated cost of repairs or replacement (US $)
$

24. Estimated other Cost *(U.S. $) (e.g. loss of revenue, fuel, hotels)*
$

Reported by *(Optional)*

Title

Date

Email

Phone

FAA Form 5200-7 (5/13) SUPERSEDES PREVIOUS EDITION

U.S. Department of Transportation

Federal Aviation Administration

800 Independence Ave SW
Washington DC 20591

Official Business
Penalty for Private Use, $300

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 12438 WASHINGTON D.C.

POSTAGE WILL BE PAID BY FEDERAL AVIATION ADMINISTRATION

Federal Aviation Administration
Office of Airport Safety and Standards, AAS-300
Attn: Wildlife Strike Report
800 Independence Avenue SW
WASHINGTON DC 20591

FOLD AND TAPE HERE

Directions for FAA Form 5200-7
Bird/Other Wildlife Strike Report

1. Name of Operator - This can be an airline (abbreviations okay - UAL, AAL, etc.), business (Coca Cola), government agency (Police Dept., FAA), or if a private pilot, his/her name.
2. Aircraft Make/Model - Abbreviations are okay, but include the model (e.g., B737-200).
3. Engine Make/Model - Abbreviations are allowed (e.g., PW 4060, GECT7, LYC 580).
4. Aircraft Registration - This means the N# (for USA registered aircraft).
5. Date of Incident - Give the local date, not the ZULU or GMT date.
6. Local Time of Incident - Check the appropriate light conditions and fill in the hour and minute local time and check AM or PM or use the 24-hour clock and skip AM/PM.

6A. Flight Number - Self-explanatory.

6B. Wildlife/Bird Remains - If remains were found at the airport or on the aircraft, check “Collected”. If the remains were also sent to the Smithsonian for identification, also check “Sent to Smithsonian”.

7. Airport Name - Use the airport name or 3 letter code if a US airport. If a foreign airport, use the full name or 3 letter code and location (city/country).
8. Runway used - Self-explanatory.
9. Location if En Route - Put the name of the nearest city and state.
10. Height AGL - Put the feet above ground level at the time of the strike (if you don't know, use MSL and indicate this). For take-off run and landing roll, it must be 0.
11. Speed (IAS) - Speed at which the aircraft was traveling when the strike occurred.
12. Phase of Flight - Phase of flight during which the strike occurred. Take-off run and landing roll should both be 0 AGL.
13. Part(s) of Aircraft Struck or Damaged - Check which parts were struck and damaged. If a part was damaged but not struck, indicate this with a check on the damaged column only and indicate in comments (#21) why this happened (e.g., the landing gear might be damaged by deer strike, causing the aircraft to flip over and damage parts not struck by deer).
14. Effect on Flight - You can check more than one. If you check “Other”, please explain in Comments (#21).
15. Sky condition - Check the one that applies.
16. Precipitation - You may check more than one.
17. Bird/Other Wildlife Species - Try to be accurate. If you don't know, put unknown and some description. Collect feathers or remains for identification for damaging strikes.
18. Number of birds seen and/or struck - check the box in the Seen column with the correct number if you saw the birds/other wildlife before the strike and check the box in the Struck column to show how many were hit. The exact number can be written next to the box.
19. Size of Bird(s) - Check what you think is the correct size (e.g. sparrow = small, gull = medium, and geese = large).
20. Pilot Warned of Birds - Check the correct box (even if it was an ATIS warning or NOTAM).
21. Remarks - Be as specific as you can. Include information about the extent of the damage, injuries, anything you think would be helpful to know (e.g., number of birds ingested).
22. Aircraft time out of service - Record how many hours the aircraft was out of service.
23. Estimated cost of repairs or replacement - This may not be known immediately, but the data can be sent at a later date or put down a contact name and number for this data.
24. Estimated other cost - Include loss of revenue, fuel, hotels, etc. (see directions for #23).
25. Reported by - Although this is optional, it is helpful if questions arise about the information on the form (a phone number could also be included).
26. Title - This can be Pilot, Tower, Airport Operations, Airline Operations, Flight Safety, etc.
27. Date - Date the form was filled out.

Table 1. Composite ranking (1 = most hazardous, 50 = least hazardous) and relative hazard score of 50 wildlife species with at least 100 reported strikes with civil aircraft based on three criteria (damage, major damage, and effect-on-flight). Data were derived from the FAA National Wildlife Strike Database.

Wildlife species	% of strikes with:			Mean hazard level[4]	Composite ranking	Relative hazard score[5]
	Damage[1]	Major damage[2]	Effect on flight[3]			
White-tailed deer	84	36	46	55	1	100
Snow goose	77	41	39	53	2	95
Turkey vulture	51	19	35	35	3	63
Canada goose	50	17	28	31	4	57
Sandhill crane	41	13	27	27	5	48
Bald eagle	41	12	28	27	6	48
D.-crested cormorant	34	15	24	24	7	44
Mallard	23	9	13	15	8	27
Osprey	22	7	15	15	9	26
Great blue heron	21	6	16	15	10	26
American coot	24	7	11	14	11	25
Coyote	9	2	21	11	12	19
Red-tailed hawk	15	5	11	10	13	19
Cattle egret	10	3	15	9	14	17
Great horned owl	15	3	6	8	15	14
Herring gull	10	5	9	8	16	14
Rock pigeon	10	4	10	8	17	14
Ring-billed gull	8	3	8	6	18	11
American crow	8	3	8	6	18	11
Peregrine falcon	8	2	5	5	20	9
Laughing gull	5	2	7	5	21	8
American robin	7	1	4	4	22	7
Snow bunting	1	1	9	4	23	7
Red fox	3	0	8	4	23	7
European starling	4	1	5	3	25	6
Amer. golden-plover	4	2	4	3	26	6
Barn owl	4	2	3	3	27	5
Upland sandpiper	4	1	4	3	27	5
Purple martin	5	1	2	3	29	5

Wildlife species	% of strikes with: Damage[1]	Major damage[2]	Effect on flight[3]	Mean hazard level[4]	Composite ranking	Relative hazard score[5]
Mourning dove	3	1	4	3	30	5
Red-winged blackbird	3	0	5	3	31	5
Woodchuck	2	0	4	2	32	4
Northern harrier	2	1	2	2	33	3
Chimney swift	2	0	2	1	34	2
Killdeer	1	0	2	1	35	2
House sparrow	2	0	1	1	35	2
Blk-tailed jackrabbit	1	1	1	1	37	2
American kestrel	1	<1	2	1	38	2
Eastern meadowlark	1	<1	2	1	38	2
S.-tailed flycatcher	0	0	2	1	40	1
Horned lark	1	<1	1	1	41	1
Pacific golden-plover	1	0	1	1	41	1
Barn swallow	1	0	1	1	43	1
Savannah sparrow	1	0	<1	1	43	1
Common nighthawk	1	0	1	1	45	1
Tree swallow	0	0	1	<1	46	1
Burrowing owl	1	0	0	<1	46	1
Western kingbird	0	0	1	<1	48	0
Virginia opossum	1	0	0	<1	48	0
Striped skunk	0	0	0	0	50	0

[1] Aircraft incurred at least some damage (destroyed, substantial, minor, or unknown) from strike.

[2] Aircraft incurred damage or structural failure, which adversely affected the structure strength, performance, or flight characteristics, and which would normally require major repair or replacement of the affected component, or the damage sustained made it inadvisable to restore aircraft to airworthy condition.

[3] Aborted takeoff, engine shutdown, precautionary landing, or other negative effect on flight.

[4] Based on the mean value for percent of strikes with damage, major damage (substantial damage or destroyed), and negative effect-on-flight.

[5] Mean hazard level (see footnote 4) was scaled down from 100, with 100 as the score for the species with the maximum mean hazard level and thus the greatest potential hazard to aircraft.

U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject: Hazardous Wildlife Attractants on or near Airports

Date: 02/21/2020
Initiated By: AAS-300

AC No: 150/5200-33C
Change:

1 Purpose.

This Advisory Circular (AC) provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports. It also discusses airport development projects (including airport construction, expansion, and renovation) affecting aircraft movement near hazardous wildlife attractants. Appendix 1 provides definitions of terms used in this AC.

2 Cancellation.

This AC cancels AC 150/5200-33B, *Hazardous Wildlife Attractants on or near Airports,* dated August 28, 2007.

3 Application.

The Federal Aviation Administration recommends the guidance in this AC for land uses that have the potential to attract hazardous wildlife on or near public-use airports. This AC does not constitute a regulation, is not mandatory, and is not legally binding in its own right. It will not be relied upon as a separate basis by the FAA for affirmative enforcement action or other administrative penalty. Conformity with this AC is voluntary, and nonconformity will not affect rights and obligations under existing statutes and regulations, except as follows:

1. Airports that hold Airport Operating Certificates issued under Title 14, Code of Federal Regulations (CFR), Part 139, Certification of Airports, Subpart D, may use the standards, practices and recommendations contained in this AC as one, but not the only, acceptable means of compliance with the wildlife hazard management requirements of Part 139.
2. The FAA recommends the guidance in this AC for airports that receive funding under Federal grant assistance programs, including the Airport Improvement Program. See Grant Assurance #34.

3. The FAA recommends the guidance in this AC for projects funded by the Passenger Facility Charge program. See PFC Assurance #9.
4. The FAA recommends the guidance in this AC for land-use planners and developers of projects, facilities, and activities on or near airports.

4 Principal Changes.

Changes are marked with vertical bars in the margin. Change in this AC include:

1. Clarification by the FAA that non-certificated airports are recommended to conduct a Wildlife Hazard Assessment (Assessment) or a Wildlife Hazard Site Visit (Site Visit);
2. Table 1, Ranking of Hazardous Species, has been moved to Advisory Circular 150/5200-32, *Reporting Wildlife Aircraft Strikes* (5/31/2013);
3. Consolidation and reorganization of discussion on land uses of concern; and updated procedures for evaluation and mitigation. Discussion addresses off-airport hazardous wildlife attractants, followed by discussion of on-airport attractants. It also clarifies language regarding the applicability of the AC.

5 Background.

1. Information about the risks posed to aircraft by certain wildlife species has increased a great deal in recent years. Improved reporting, studies, documentation, and statistics clearly show that aircraft collisions with birds and other wildlife are a serious economic and public safety problem. While many species of wildlife can pose a risk[1] to aircraft safety, they are not equally hazardous[2]. These hazard rankings can help focus hazardous wildlife management efforts on those species or groups that represent the greatest risk to safe air and ground operations in the airport environment. Used in conjunction with a site-specific Assessment that will determine the relative abundance and use patterns of wildlife species, these rankings combined with a systematic risk analysis can help airport operators better understand the general threat level (and consequences) of certain wildlife species. Also, the rankings can assist with the creation of a "high risk" list of hazardous species that warrant immediate attention.
2. Most public-use airports have large tracts of open, undeveloped land that provide added margins of safety and noise mitigation. These areas can also present potential hazards to aviation if they encourage wildlife to enter an airport's approach or departure airspace or aircraft operations area. Constructed or natural areas— such as

[1] Risk is the relationship between the severity and probability of a threat. It is the product of hazard level and abundance in the critical airspace, and is thus defined as the probability of a damaging strike with a given species.
[2] Hazardous wildlife are species of wildlife (birds, mammals, reptiles), including feral and domesticated animals, not under control that may pose a direct hazard to aviation (i.e., strike risk to aircraft) or an indirect hazard such as an attractant to other wildlife that pose a strike hazard or are causing structural damage to airport facilities (e.g., burrowing, nesting, perching).

poorly drained locations, detention/retention ponds, roosting habitats on buildings, landscaping, odor-causing rotting organic matter (putrescible waste) disposal operations, wastewater treatment plants, agricultural or aquaculture activities, surface mining, wetlands, or some conservation-based land uses — can provide wildlife with ideal locations for feeding, loafing, reproduction, and escape. Even small facilities, such as fast food restaurants, taxicab staging areas, rental car facilities, aircraft viewing areas, and public parks, can produce substantial attractions for hazardous wildlife.

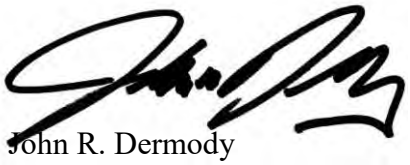
3. During the past century, wildlife-aircraft strikes have resulted in the loss of hundreds of lives worldwide, as well as billions of dollars in aircraft damage. Hazardous wildlife attractants on and near airports can jeopardize future airport expansion, making proper community land-use planning essential. This AC provides airport operators and those parties with whom they cooperate with the guidance they need to assess and address potentially hazardous wildlife attractants when locating new facilities and implementing certain land-use practices on or near public-use airports.

6 Memorandum of Agreement Between Federal Resource Agencies.

The FAA, the U.S. Air Force, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the U.S. Department of Agriculture - Wildlife Services signed a Memorandum of Agreement (MOA) to acknowledge their respective missions in protecting aviation from wildlife hazards. Through the MOA, the agencies established procedures necessary to coordinate their missions to address more effectively existing and future environmental conditions contributing to collisions between wildlife and aircraft (wildlife strikes) throughout the United States. These efforts are intended to minimize wildlife risks to aviation and human safety while protecting the Nation’s valuable environmental resources.

7 Feedback on this AC.

If you have suggestions for improving this AC, you may use the Advisory Circular Feedback form at the end of this AC.



John R. Dermody
Director of Airport Safety and Standards

CONTENTS

Paragraph **Page**

Page Intentionally Blank

CHAPTER 1. GENERAL SEPARATION CRITERIA FOR HAZARDOUS WILDLIFE ATTRACTANTS ON OR NEAR AIRPORTS

1.1 Introduction.

1.1.1 Airport operators should maintain an appropriate environment for the safe and efficient operation of aircraft, which entails mitigating wildlife strike hazards by fencing, modifying the landscape in order to deter wildlife or by hazing or removing wildlife hazardous to aircraft from congregating on airports. When considering proposed land uses, operators and sponsors of airports certificated under Part 139, local planners, and developers must take into account whether the proposed land uses, including new development projects, will increase wildlife hazards. Land-use practices that attract or sustain hazardous wildlife populations on or near airports, specifically those listed in Chapter 2, can significantly increase the potential for wildlife strikes.

1.1.2 The FAA urges regulatory agencies and planning and zoning agencies to evaluate proposed new land uses within the separation criteria and prevent the creation of land uses that attract or sustain hazardous wildlife within the separation distances.

1.1.3 The FAA recommends the use of minimum separation criteria outlined below for land-use practices that attract hazardous wildlife to the vicinity of airports. Please note that FAA criteria include land uses that cause movement of hazardous wildlife onto, into, or across the airport's approach or departure airspace or aircraft operations area. (See the discussion of the synergistic effects of surrounding land uses in Paragraph 2.8 of this AC.). For the purpose of evaluating distance criteria, the delineation of the aircraft operations area may also consider future airport development plans depicted on the Airport Layout Plan (e.g., planned runway extension).

1.1.4 The separation distances are based on (1) flight patterns and performance criteria of piston-powered aircraft and turbine-powered aircraft, (2) the altitude at which most strikes happen (78 percent occur under 1,000 feet and 90 percent occur under 3,000 feet above ground level), and (3) National Transportation Safety Board recommendations.

1.2 Airports Serving Piston-Powered Aircraft.

Airports that do not sell Jet-A fuel normally serve piston-powered aircraft. Notwithstanding more stringent requirements for specific land uses, the FAA recommends a separation distance of 5,000 feet from these airports for any of the hazardous wildlife attractants discussed in Chapter 2 or for new airport development projects meant to accommodate aircraft movement. This distance is to be maintained between the closest point of the airport's aircraft operations area and the hazardous wildlife attractant. Figure 1 depicts an example of the 5,000-foot separation distance measured from the nearest aircraft operations area.

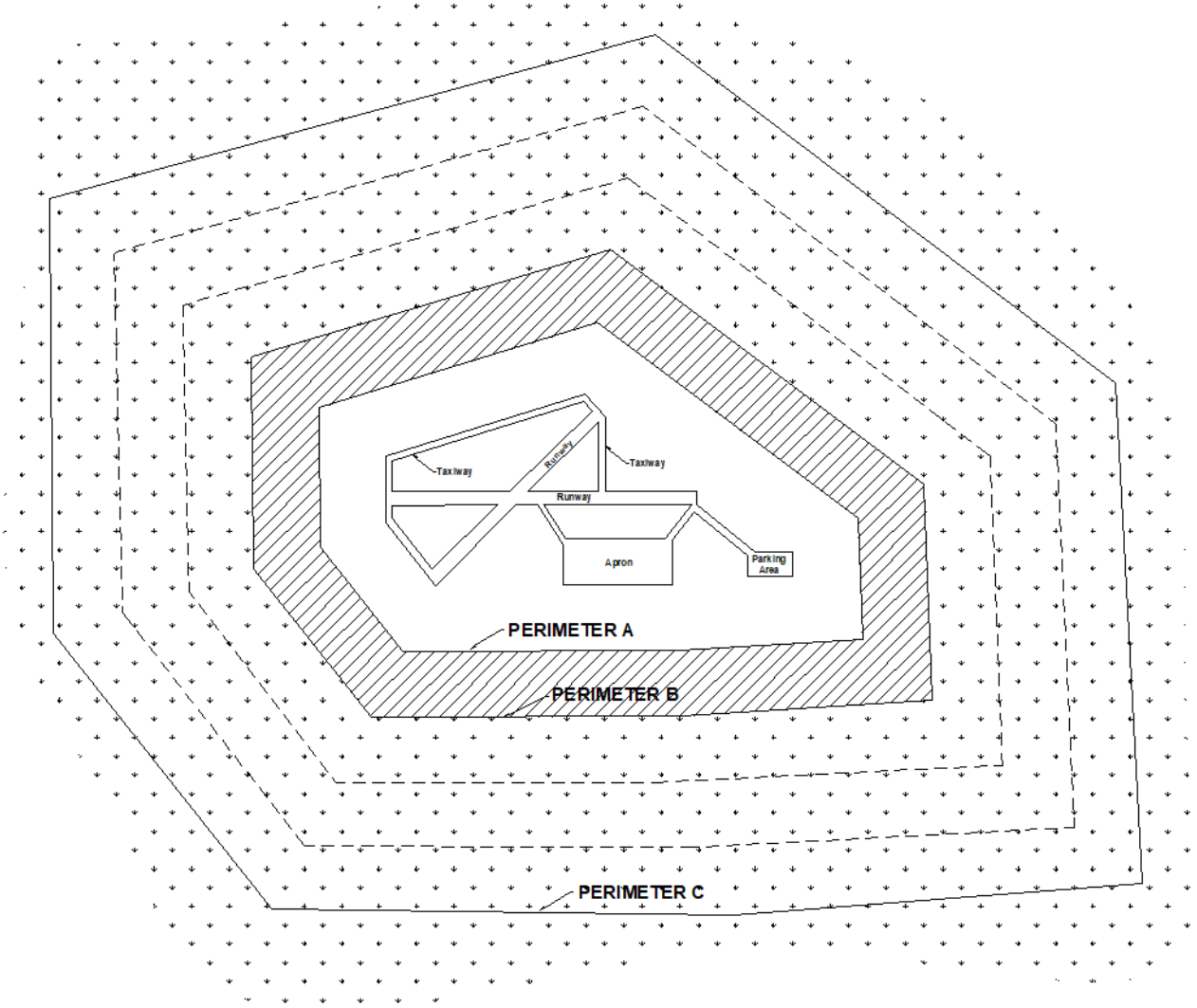
1.3 Airports Serving Turbine-Powered Aircraft.

For airports serving turbine-powered aircraft, the FAA recommends a separation distance of 10,000 feet from these airports for any of the hazardous wildlife attractants discussed in Chapter 2 or for new airport development projects meant to accommodate aircraft movement. This distance is to be maintained between the closest point of the airport's aircraft operations area and the hazardous wildlife attractant. Figure 1 depicts an example of the 10,000-foot separation distance from the nearest aircraft movement areas.

1.4 Protection of Approach, Departure, and Circling Airspace.

For all airports, the FAA recommends a distance of 5 miles between the closest point of the airport's aircraft operations area and the hazardous wildlife attractant. Special attention should be given to hazardous wildlife attractants that could cause hazardous wildlife movement into or across the approach or departure airspace. Figure 1 depicts an example of the 5-mile separation distance measured from the nearest aircraft operations area.

Figure 1. Example of recommended separation distances described in Chapter 1 within which hazardous wildlife attractants should be avoided, eliminated, or mitigated.



PERIMETER A: For airports serving piston-powered aircraft, it is recommended hazardous wildlife attractants be 5,000 feet from the nearest aircraft operations area.

PERIMETER B: For airports serving turbine-powered aircraft, it is recommended hazardous wildlife attractants be 10,000 feet from the nearest aircraft operations area.

PERIMETER C: Recommended for all airports, 5-mile range to protect approach, departure and circling airspace.

Page Intentionally Blank

CHAPTER 2. LAND-USE PRACTICES ON OR NEAR AIRPORTS THAT POTENTIALLY ATTRACT HAZARDOUS WILDLIFE

2.1 General.

2.1.1 Many types of vegetation, habitats and land use practices can provide an attractant to animals that pose a risk to aviation safety. Hazardous wildlife use the natural or artificial habitats on or near an airport for food, water or cover. The wildlife species and the size of the populations attracted to the airport environment vary considerably, depending on several factors, including land-use practices on or near the airport. In addition to the specific considerations outlined below, airport operators should refer to *Wildlife Hazard Management at Airports* manual, prepared by FAA and U.S. Department of Agriculture (USDA) staff. (This manual is available in English, Spanish, and French). This manual, as well as other helpful resources can be viewed and downloaded free of charge from the Wildlife Strike Resources section of the FAA's wildlife hazard mitigation web site: http://www.FAA.gov/airports/airport_safety/wildlife).

2.1.1.1 The USDA / Animal and Plant Health Inspection Service (APHIS) / Wildlife Services developed a new publication series on wildlife damage management and is available online. The Wildlife Damage Management Technical Series highlights wildlife species or groups of wildlife species that cause damage to agriculture, property and natural resources, and/or impact aviation and human health and safety. The publications can be found at: https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/sa_reports/ct_wildlife+damage+management+technical+series.

2.1.1.2 Additional resources have been provided by the USDA / APHIS / Wildlife Services National Wildlife Research Center (NWRC) at: https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/programs/nwrc/sa_publications/ct_research_gateway. The NWRC Research Gateway contains research articles, reports, factsheets, technical notes, data and other materials on wildlife hazard mitigation, risk reduction, animal ecology, habitats, and advanced technologies and methodologies.

2.1.2 This section discusses land-use practices having the potential to attract hazardous wildlife and threaten aviation safety. The FAA has determined that the land uses listed below are generally not compatible with safe airport operations when they are located within the separation distances provided in Paragraphs 1.2 through 1.4.

2.1.3 As a reminder, these types of land uses or facilities often require permits from the appropriate permitting agency. The FAA may work with the permitting agency to include conditions for monitoring and mitigation measures, if necessary. Ultimately, the permittee is responsible for compliance to these conditions and the permitting agency is responsible for tracking compliance.

2.2 Waste Disposal Operations.

Municipal solid waste landfills (municipal landfills) are known to attract large numbers of hazardous wildlife, particularly birds. Because of this, these operations, when located within the separations identified in the siting criteria in Paragraphs 1.2 through 1.4, are considered incompatible with safe airport operations.

2.2.1 Siting for New Municipal Solid Waste Landfills Subject to AIR 21.

2.2.1.1 Section 503 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (P. L. 106-181) (AIR 21), 49 U.S.C. § 44718(d), prohibits the construction or establishment of a new municipal landfill within 6 miles of certain public-use airports. Before these prohibitions apply, both the airport and the landfill must meet the very specific conditions described below. These restrictions do not apply to airports or landfills located within the state of Alaska.

2.2.1.2 The airport must (1) have received a Federal grant(s) under 49 U.S.C. § 47101, et. seq.; (2) be under control of a public agency; (3) serve some scheduled air carrier operations conducted in aircraft with less than 60 seats; and (4) have total annual enplanements consisting of at least 51 percent of scheduled air carrier enplanements conducted in aircraft with less than 60 passenger seats.

2.2.1.3 The proposed municipal landfill must (1) be within 6 miles of the airport, as measured from airport property line to the landfill property line, and (2) have started construction or establishment on or after April 5, 2001. Section 44718(d) only limits the construction or establishment of some new landfills. It does not limit the expansion, either vertical or horizontal, of existing landfills.

2.2.1.4 Regarding existing municipal landfills and lateral expansions of landfills, 40 CFR § 258.10 requires owners or operators of a landfill units located within the separation distances provided in Paragraphs 1.2 through 1.4 to demonstrate that the unit is designed and operated so that it does not pose a bird hazard to aircraft. To accomplish this, follow the instructions provided in Paragraphs 3.2 and 3.3, document the wildlife monitoring and mitigation procedures that are cooperatively developed, and place this documentation in the operating permit of the facility.

2.2.2 Siting for New Municipal Landfills Not Subject to AIR 21.

If an airport and a municipal landfill do not meet the criteria of § 44718(d), then FAA recommends against locating the landfill within the separation distances identified in Paragraphs 1.2 through 1.4. In determining this distance separation, measurements should be made from the closest point of the airport property boundary to the closest point of the landfill property boundary.

2.2.3 Considerations for Existing Waste Disposal Facilities Within the Limits of Separation Criteria.

The FAA recommends against airport development projects that would increase the number of aircraft operations or accommodate larger or faster aircraft near landfill operations located within the separations identified in Paragraphs 1.2 through 1.4. In addition, in accordance with 40 CFR § 258.10, owners or operators of existing landfill units that are located within the separations listed in Paragraphs 1.2 through 1.4 must demonstrate that the unit is designed and operated so it does not pose a bird hazard to aircraft. (See Paragraph 4.3.2 of this AC for a discussion of this demonstration requirement.)

2.2.4 Enclosed Trash Transfer Stations.

Enclosed waste-handling facilities that receive garbage behind closed doors; process it via compaction, incineration, or similar manner; and remove all residue by enclosed vehicles generally are compatible with safe airport operations, provided they are constructed and operated properly and are not located on airport property or within the Runway Protection Zone. These facilities should not handle or store putrescible waste outside or in a partially enclosed structure accessible to hazardous wildlife. Trash transfer facilities that are open on one or more sides; or store uncovered quantities of municipal solid waste outside, even if only for a short time; or use semi-trailers that leak or have trash clinging to the outside; or do not control odors by ventilation and filtration systems (odor masking is not acceptable) do not meet the FAA's definition of fully enclosed trash transfer stations. The FAA considers fully enclosed waste-handling facilities constructed or operated incorrectly incompatible with safe airport operations if they are located closer than the separation distances specified in Paragraphs 1.2 through 1.4.

2.2.5 Composting Operations on or near Airport Property.

Composting operations that accept only yard waste (e.g., leaves, lawn clippings, or branches) generally do not attract hazardous wildlife. Sewage sludge, woodchips, and similar material are not municipal solid wastes and may be used as compost bulking agents. The compost, however, must never include food or other municipal solid waste. Composting operations should not be located on airport property unless effective, risk-reducing mitigations are in place. Off-airport property composting operations should be located no closer than the greater of the following distances: 1,200 feet from any aircraft operations area or the distance called for by airport design requirements (see AC 150/5300-13, *Airport Design*). This spacing should prevent material, personnel, or equipment from penetrating any Object Free Area, Obstacle Free Zone, Threshold Siting Surface, or Clearway. Airport operators should monitor composting operations located in proximity to the airport to ensure that steam or thermal rise does not adversely affect air traffic.

2.2.6 Underwater Waste Discharges.

The FAA recommends against the underwater discharge of any food waste (e.g., fish processing offal) within the separations identified in Paragraphs 1.2 through 1.4 because it could attract scavenging hazardous wildlife.

2.2.7 Recycling Centers.

Recycling centers that accept previously sorted non-food items, such as glass, newspaper, cardboard, aluminum, electronic, and household wastes such as paint, batteries, and oil, are, in most cases, not attractive to hazardous wildlife and are acceptable.

2.2.8 Construction and Demolition Debris Facilities.

2.2.8.1 Construction and demolition landfills generally do not attract hazardous wildlife and are acceptable if maintained in an orderly manner, admit no putrescible waste, and are not co-located with other waste disposal operations. However, construction and demolition landfills have similar visual and operational characteristics to putrescible waste disposal sites. When co-located with putrescible waste disposal operations, construction and demolition landfills are more likely to attract hazardous wildlife because of the similarities between these disposal facilities.

2.2.8.2 Therefore, a construction and demolition landfill co-located with another waste disposal operation should be located outside of the separations identified in Paragraphs 1.2 through 1.4.

2.2.8.3 Airport operators should be aware that on-site storage of construction and maintenance debris, as well as out-of-service aircraft or aircraft components, may provide an attractant for hazardous species (e.g., nesting or perching locations). The FAA recommends these on-site areas be monitored and/or mitigated, if necessary.

2.2.9 Fly Ash Disposal.

2.2.9.1 The incinerated residue from resource recovery power/heat-generating facilities that are fired by municipal solid waste, coal, or wood is generally not a wildlife attractant because it no longer contains putrescible matter. Landfills accepting only fly ash are generally not considered to be wildlife attractants and are acceptable as long as they admit no putrescible waste of any kind, and are not co-located with other disposal operations that attract hazardous wildlife.

2.2.9.2 Since varying degrees of waste consumption are associated with general incineration (not resource recovery power/heat-generating facilities), the FAA considers the ash from general incinerators a regular waste disposal by-product and, therefore, a hazardous wildlife attractant if disposed of within the separation criteria outlined in Paragraphs 1.2 through 1.4.

2.3 Water Management Facilities.

Drinking water intake and treatment facilities, storm water and wastewater treatment facilities, associated retention and settling ponds, ponds built for recreational use, ponds

and fountains for ornamental purposes, and ponds that result from mining activities often attract large numbers of potentially hazardous wildlife. Development of new open water facilities within the separation criteria identified in Paragraphs 1.2 through 1.4 should be avoided to prevent wildlife attractants. If necessary, land-use developers and airport operators may need to develop management plans, in compliance with local and state regulations, to support the operation of storm water management facilities on or near all public-use airports to ensure a safe airport environment. The FAA recommends these plans be developed in consultation with a Qualified Airport Wildlife Biologist[3], to minimize hazardous wildlife attractants.

2.3.1 Existing Stormwater Management Facilities.

2.3.1.1 On-airport stormwater management facilities allow the quick removal of surface water, including discharges related to aircraft deicing, from impervious surfaces, such as pavement and terminal/hangar building roofs. Existing on-airport detention ponds collect stormwater, protect water quality, and control runoff. Because they slowly release water after storms, they may create standing bodies of water that can attract hazardous wildlife. Where the airport has developed a Wildlife Hazard Management Plan, Part 139 regulations require the immediate correction of any wildlife hazards arising from existing stormwater facilities located on or near airports using appropriate wildlife hazard mitigation techniques. Airport operators should develop measures to minimize hazardous wildlife attraction in consultation with a Qualified Airport Wildlife Biologist.

2.3.1.2 Where possible, airport operators should modify stormwater detention ponds to allow a maximum 48-hour detention period for the design storm. The combination of open water and vegetation is particularly attractive to waterfowl and other hazardous wildlife. Water management facilities holding water longer than 48 hours should be maintained in a manner that keeps them free of both emergent and submergent vegetation. The FAA recommends that airport operators avoid or remove retention ponds and detention ponds featuring dead storage to eliminate standing water. Detention basins should remain totally dry between rainfalls. Where constant flow of water is anticipated through the basin, or where any portion of the basin bottom may remain wet, the detention facility should include a concrete or paved pad and/or ditch/swale in the bottom to prevent vegetation that may provide nesting habitat. Drainage basins with a concrete or paved pad should be maintained to prevent or remove any sediment build-up to prevent vegetation growth.

2.3.1.3 When it is not possible to drain a large detention pond completely, airport operators may use physical barriers, such as bird balls, wire grids, pillows,

[3] See Advisory Circular 150/5200-36, *Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports.*

or netting, to deter birds and other hazardous wildlife. When physical barriers are proposed, airport operators must evaluate their use, effectiveness and maintenance requirements. Airport operators must also ensure physical barriers will not adversely affect water rescue. Before installing any physical barriers over detention ponds on Part 139 airports, airport operators must get approval from the appropriate FAA Regional Airports Division Office.

2.3.1.4 The FAA recommends that airport operators encourage off-airport stormwater treatment facility operators to incorporate appropriate wildlife hazard mitigation techniques into stormwater treatment facility operating practices when their facility is located within the separation criteria specified in Paragraphs 1.2 through 1.4.

2.3.2 New Stormwater Management Facilities.

The FAA recommends that storm water management systems located within the separations identified in Paragraphs 1.2 through 1.4 be designed and operated so as not to create above-ground standing water. Stormwater detention ponds should be designed, engineered, constructed, and maintained for a maximum 48–hour detention period after the design storm and to remain completely dry between storms. To facilitate the control of hazardous wildlife, the FAA recommends the use of steep-sided, rip-rap or concrete lined, narrow, linear-shaped water detention basins. When it is not possible to place these ponds away from an airport's aircraft operations area (but still on airport property), airport operators may use physical barriers, such as bird balls, wire grids, floating covers, vegetation barriers (bottom liners), or netting, to prevent access of hazardous wildlife to open water and minimize aircraft-wildlife interactions. Caution is advised when nets or wire grids are used for deterring birds from attractants. Mesh size should be < 5 cm (2") to avoid entangling and killing birds and should not be made of a monofilament material. Grids installed above and across water to deter hazardous birds (e.g., waterfowl, cormorants, etc.) are different than using a small mesh covering but also provides an effective deterrent. Grid material, size, pattern and height above water may differ on a case-by-case basis. When physical barriers are used, airport operators must evaluate their use and ensure they will not adversely affect water rescue. Before installing any physical barriers over detention ponds on Part 139 airports, a review by a Qualified Airport Wildlife Biologist should be conducted, prior to approval from the appropriate FAA Regional Airports Division Office. All vegetation in or around detention basins that provide food or cover for hazardous wildlife should be eliminated. If soil conditions and other requirements allow, the FAA encourages the use of underground storm water infiltration systems because they are less attractive to wildlife.

2.3.3 Existing Wastewater Treatment Facilities.

2.3.3.1 The FAA recommends that airport operators immediately correct any wildlife hazards arising from existing wastewater treatment facilities located on or near the airport.

2.3.3.2 Where required, a wildlife management plan will outline appropriate wildlife hazard mitigation techniques. Accordingly, airport operators should encourage wastewater treatment facility operators to incorporate measures, developed in consultation with a Qualified Airport Wildlife Biologist, to minimize hazardous wildlife attractants. Airport operators should also encourage those wastewater treatment facility operators to incorporate these mitigation techniques into their standard operating practices. In addition, airport operators should consider the existence of wastewater treatment facilities when evaluating proposed sites for new airport development projects and avoid such sites when practicable.

2.3.4 New Wastewater Treatment Facilities.

The FAA recommends against the construction of new wastewater treatment facilities or associated settling ponds within the separations identified in Paragraphs 1.2 through 1.4. Appendix 1 defines wastewater treatment facility as "any devices and/or systems used to store, treat, recycle, or reclaim municipal sewage or liquid industrial wastes." The definition includes any pretreatment involving the reduction or elimination of pollutants prior to introducing such pollutants into a treatment facility. When a wastewater treatment facility is proposed within the separation criteria, the airport operator, project proponent, and local jurisdiction should discuss the proposed project location with regard to its location near the airport and the separation distances identified in Paragraphs 1.2 through 1.4. If possible, a more suitable location for the proposed facility should be identified. If no other suitable location exists, FAA recommends that the proposed facility plans be reviewed by a Qualified Airport Wildlife Biologist to identify measures to avoid or reduce the facility's potential to attract hazardous wildlife. If appropriate measures cannot be incorporated to reduce potential wildlife hazards, airport operators should document their opposition in a letter to the local jurisdiction.

2.3.5 Artificial Marshes.

In warmer climates, wastewater treatment facilities sometimes employ artificial marshes and use submergent and emergent aquatic vegetation as natural filters. These artificial marshes may be used by some species of flocking birds, such as blackbirds and waterfowl, for breeding or roosting activities. The FAA recommends against establishing artificial marshes within the separations identified in Paragraphs 1.2 through 1.4.

2.3.6 Wastewater Discharge and Sludge Disposal.

The FAA recommends careful consideration regarding the discharge of wastewater or biosolids (i.e., secondarily treated sewage sludge) on airport property. Such discharges might improve soil moisture and quality on unpaved areas and lead to improved turf growth. Depending on the airfield plant communities and habitats present, this can be an attractive food source for many species of animals or, conversely, could result in limited attractiveness to hazardous wildlife. Also, improved turf requires more frequent mowing and could attract geese. Airports should improve their turf with the goal of a monoculture of turf that is least attractive to wildlife. Wastewater or biosolids

applications might assist in achieving this goal. Caution should be exercised when discharges saturate airfield areas adjacent to paved surfaces. The resultant soft, muddy conditions could restrict or prevent emergency vehicles from reaching accident sites in a timely manner.

2.4 Wetlands.

Wetlands provide a variety of functions and can be regulated by local, state, and Federal laws. Wetlands can be attractive to many types of wildlife, including many which rank high on the list of hazardous wildlife species (Table 1 - AC 150/5200-32). Some types of wetlands are not as attractive to wildlife as others and they should be reviewed on a case-by-case basis to determine the likelihood of proposed wetlands increasing the numbers of hazardous wildlife at the airport. Factors such as size, shape, location, canopy cover and vegetative composition among other things should be considered when determining compatibility.

Note: If questions exist as to whether an area qualifies as a wetland, contact the District Office of the U.S. Army Corps of Engineers, the Natural Resources Conservation Service, or a wetland consultant qualified to delineate wetlands.

2.4.1 Existing Wetlands on or near Airport Property.

If wetlands are located on or near airport property, airport operators should be alert to any wildlife use or habitat changes in these areas that could affect safe aircraft operations. At public-use airports, the FAA recommends immediately correcting, in cooperation with local, state, and Federal regulatory agencies, any wildlife hazards arising from existing wetlands located on or near airports within 5 miles of the aircraft operations area. Where required, a wildlife management plan will outline appropriate wildlife hazard mitigation techniques. Accordingly, airport operators should develop measures to minimize hazardous wildlife attraction in consultation with a FAA Qualified Airport Wildlife Biologist.

2.4.2 New Airport Development.

Whenever possible, the FAA recommends locating new airports using the separations from wetlands identified in Paragraphs 1.2 through 1.4. Where alternative sites are not practicable, or when airport operators are expanding an existing airport into or near wetlands, a Qualified Airport Wildlife Biologist, in coordination with the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, and the state wildlife management agency should evaluate the wildlife hazards and prepare a wildlife management plan that indicates methods of minimizing the hazards.

2.4.3 Mitigation for Wetland Impacts from Airport Projects.

Wetland mitigation may be necessary when unavoidable wetland disturbances result from new airport development projects or projects required to correct wildlife hazards from wetlands. Wetland mitigation must be designed so it does not create a wildlife hazard. The FAA recommends that wetland mitigation projects that may attract hazardous wildlife be sited outside of the separations identified in Paragraphs 1.2 through 1.4.

2.4.3.1 **Onsite Mitigation of Wetland Functions.**

Wetland mitigation/conservation easements must not inhibit the airport operator's ability to effectively control hazardous wildlife on or near the mitigation site or effectively maintain other aspects of safe airport operations. Enhancing such mitigation areas to attract hazardous wildlife must be avoided. The FAA will review any onsite mitigation proposals to determine compatibility with safe airport operations and grant assurance compliance. Early coordination with the FAA is encouraged for any proposal to use airport land for wetland mitigation. A Qualified Airport Wildlife Biologist should evaluate any wetland mitigation projects that are needed to protect unique wetland functions and that must be located in the separation criteria in Paragraphs 1.2 through 1.4 before the mitigation is implemented. A wildlife management plan should be developed to reduce the wildlife hazards.

2.4.3.2 **Offsite Mitigation of Wetland Functions.**

2.4.3.2.1 The FAA recommends that wetland mitigation projects that may attract hazardous wildlife be sited outside of the separations identified in Paragraphs 1.2 through 1.4 unless they provide unique functions that must remain onsite (see 2.4.3.1). Agencies that regulate impacts to or around wetlands recognize that it may be necessary to split wetland functions in mitigation schemes. Therefore, regulatory agencies may, under certain circumstances, allow portions of mitigation to take place in different locations.

2.4.3.2.2 The FAA encourages landowners or communities supporting the restoration or enhancement of wetlands to do so only after critically analyzing how those activities would affect aviation safety. To do so, landowners or communities should contact the affected airport sponsor, FAA, and/or a Qualified Airport Wildlife Biologist.

2.4.3.2.3 Those parties should work cooperatively to develop restoration or enhancement plans that would not worsen existing wildlife hazards or create such hazards. See Paragraphs 4.1.1 – 4.1.3 for land-use modifications evaluation criteria.

2.4.3.2.4 If parties develop a mutually acceptable restoration or enhancement plan, the landowner or community proposing the restoration or enhancement must monitor the restored or enhanced site. This monitoring must verify that efforts have not worsened or created hazardous wildlife attraction or activity. If such attraction or activity occurs, the landowner or community should work with the airport sponsor, or a Qualified Airport Wildlife Biologist to reduce the hazard to aviation.

2.4.3.3 **Mitigation Banking.**

Wetland mitigation banking is the creation or restoration of wetlands in order to provide mitigation credits that can be used to offset permitted wetland losses. Mitigation banking benefits wetland resources by providing advance replacement for permitted wetland losses; consolidating small projects into larger, better-designed and managed units; and encouraging integration of wetland mitigation projects with watershed planning. This last benefit is most helpful for airport projects, as wetland impacts mitigated outside of the separations identified in Paragraphs 1.2 through 1.4 can still be located within the same watershed. Wetland mitigation banks meeting the separation criteria offer an ecologically sound approach to mitigation in these situations. Airport operators should work with local watershed management agencies or organizations to develop mitigation banking for wetland impacts on airport property.

2.5 Dredge Spoil Containment Areas.

The FAA recommends against locating dredge spoil containment areas (also known as Confined Disposal Facilities) within the separations identified in Paragraphs 1.2 through 1.4 if the containment area or the spoils contain material that would attract hazardous wildlife. Proposals for new dredge spoil containment areas located within the separation distances should be reviewed on a case-by-case basis to determine the likelihood of resulting in an increase in hazardous wildlife. The FAA recommends that airport sponsors work with a Qualified Airport Wildlife Biologist and/or the FAA to review proposals for dredge spoil containment areas located within separation criteria.

2.6 Agricultural Activities.

Many agricultural crops can attract hazardous wildlife and should not be planted within the separations identified in Paragraphs 1.2 through 1.4. Corn, wheat, and other small grains in particular should be avoided. If the airport has no financial alternative to agricultural crops to produce the income necessary to maintain the viability of the airport, then the airport should consider growing crops that hold little food value for hazardous wildlife, such as grass hay. Attractiveness to hazardous wildlife species during all phases of production, from planting through harvest and fallow periods, should be considered when contemplating the use of airport property for agricultural production. Where agriculture is present, crop residue (e.g., waste grain) should not be left in the field following harvest. Also, airports should consult AC 150/5300-13, *Airport Design,* to ensure that agricultural crops do not create airfield obstructions or other safety hazards. Before planning or initiating any agricultural practices on airport property, operators should get approval from the appropriate FAA regional Airports Division Office and demonstrate that the additional cost of wildlife control and potential accidents is offset by revenue generated by agricultural leases. Annual review of the Airport Certification Manual by the Certification Inspector does not constitute approval and is insufficient to meet this requirement.

2.6.1 Livestock Production.

Confined livestock operations (i.e., feedlots, dairy operations, hog or chicken production facilities, or egg laying operations) often attract flocking birds, such as blackbirds, starlings, or pigeons that pose a hazard to aviation. Therefore, the FAA recommends against such facilities within the separations identified in Paragraphs 1.2 through 1.4. The airport operator should be aware of any wildlife hazards that appear to be attracted to off-site livestock operations and consider working with a Qualified Airport Wildlife Biologist to identify reasonable and feasible measures that may be proposed to landowners to reduce the attractiveness of the site to the potentially hazardous wildlife species.

2.6.1.1 In exceptional circumstances, and following FAA review and approval, livestock may be grazed on airport property as long as they are off the airfield and separated behind fencing where they cannot pose a hazard to aircraft. The livestock should be fed and watered as far away from the airfield and approach/departure space as possible because the feed and water may attract birds. The wildlife management plan should include monitoring and wildlife mitigation for any areas where the livestock and their feed/water is located in case a wildlife hazard is detected. Airports without wildlife management plans should equally consider monitoring and mitigation protocols to identify and address any wildlife hazards associated with livestock and their feeding operations.

2.6.2 Alternative Uses of Agricultural Land.

2.6.2.1 Habitat modification both on and surrounding an airfield is one of the best and most economical long term mitigation strategies to decrease risk that wildlife pose to flight safety. Alternative land uses (e.g., solar and biofuel) at airports could help mitigate many of the challenges for the airport operator, developers, and conservationists. However, careful planning must first determine that proposed alternative energy production at airports does not create wildlife attractants or other hazards.

2.6.2.2 Some airports are surrounded by vast areas of farmed land within the distances specified in Paragraphs 1.2 through 1.4. Seasonal uses of agricultural land for activities such as hunting can create a hazardous wildlife situation. In some areas, farmers will rent their land for hunting purposes. Rice farmers, among others, flood their land to attract waterfowl or for conservation efforts. This is often done during waterfowl hunting season to obtain additional revenue by renting out duck blinds.

2.6.2.3 The waterfowl hunters then use decoys and call in hundreds, if not thousands, of birds, creating a threat to aircraft safety. It is recommended that a Qualified Airport Wildlife Biologist review, in coordination with local farmers and producers, these types of seasonal land uses and incorporate mitigating measures into the wildlife management plan, when possible.

2.7 Aquaculture.

Aquaculture is the breeding, rearing, and harvesting of fish, shellfish, and plants in all types of water environments including ponds, rivers, lakes, and the ocean. Aquaculture is used to produce food fish, sport fish, bait fish, ornamental fish, and to support restoration activities. Aquacultured species are grown in a range of facilities including tanks, cages, ponds, and raceways. When an aquaculture facility is proposed within the separation criteria, the airport operator, project proponent, and local jurisdiction should discuss the proposed project location with regard to its attraction to hazardous species, location near the airport and the separation distances identified in Paragraphs 1.2 through 1.4. If a facility is identified as a possible significant attraction, a more suitable location for the proposed facility should be identified. If no other suitable location exists, it is recommended that the proposed facility plans be reviewed by a Qualified Airport Wildlife Biologist to identify measures to avoid or reduce the facility's potential to attract hazardous wildlife.

2.7.1 Freshwater Aquaculture.

2.7.1.1 Freshwater aquaculture activities (e.g., catfish, tilapia, trout or bass production) are typically conducted outside of fully enclosed buildings in constructed ponds or tanks and are inherently attractive to a wide variety of birds and therefore pose a significant risk to airport safety when within the separation distances specified in Paragraphs 1.2 through 1.4. Freshwater aquaculture should only be considered if extensive mitigation measures have been incorporated to eliminate attraction to hazardous birds. Examples of such mitigation include:

1. Netting or other material to exclude hazardous birds (e.g., eagles, osprey, gulls, cormorants);
2. Acoustic hazing including pyrotechnics, propane cannons, directional sonic/hailing devices and other similar technologies;
3. Feeding procedure cleanliness, exclusion techniques prohibiting birds from perching or accessing food; efficiency of feeding operation procedures that reduce fish food attraction to hazardous birds;
4. Operation procedure efficiency transferring live fish to and from enclosures or removal of dead fish; maintenance and upkeep of facility;
5. Monitoring, mitigation and communication protocols with nearby airports as a proactive safety feature in response to specific hazardous species in the event they are identified at the facility in unacceptable numbers.

2.7.2 Marine Aquaculture.

Marine aquaculture (Mariculture) refers to the culturing of species that live in the ocean. When appropriately managed and mitigated as necessary, mariculture facilities do not pose a significant risk to airport safety.

2.7.2.1 **Finfish Mariculture.**

2.7.2.1.1 U.S. finfish mariculture primarily produces salmon and steelhead trout as well as lesser amounts of cod, moi, yellowtail, barramundi, seabass, and seabream. Maricultures use rigid and non-rigid enclosures (e.g., cages) at the surface or submerged in the water column. These enclosures may be fully enclosed, or be open at the top or covered with netted material to negate losses from depredation by birds or other predators. Different facilities employ different designs and operational protocols.

2.7.2.1.2 While mariculture operations typically do not pose a significant attractant to hazardous birds, design and operational features can be incorporated as permit conditions to mitigate attraction and effectively reduce this risk. Examples of such mitigation include:

1. Fully enclosed cages using netting or other material to exclude hazardous birds (e.g., gulls, cormorants, pelicans) and to insure retention of fish;
2. Submerged enclosures to reduce attraction to hazardous birds;
3. Feed barge cleanliness, exclusion techniques prohibiting birds from perching or accessing food; efficiency of feeding operation procedures that reduce fish food attraction to hazardous birds;
4. Operation procedure efficiency transferring live fish to and from enclosures or removal of dead fish; maintenance and upkeep of facility;
5. Monitoring, mitigation and communication protocols with nearby airports as a proactive safety feature in response to specific hazardous species in the event they are identified at the facility in unacceptable numbers.

2.7.2.2 **Shellfish Mariculture.**

U.S. shellfish mariculture primarily produces oysters, clams, mussels, lobster and shrimp. Shellfish may be grown directly on the bottom, in submerged cages or bags, or on suspended lines. These types of mariculture operations do not typically present a significant attractant to hazardous birds. For those operations that are found to pose a significant risk, design and operation features that diminish possible attraction to hazardous bird species (e.g., reducing areas for perching or feeding) can effectively reduce this risk.

2.7.2.3 **Plant Mariculture.**

2.7.2.3.1 Microalgae, also referred to as phytoplankton, microphytes, or planktonic algae constitute the majority of cultivated algae. Macroalgae, commonly known as seaweed, also have many commercial and industrial uses.

2.7.2.3.2 While few commercial seaweed farms exist, the sector is growing. These types of mariculture operations do not typically present an attractant to hazardous birds.

2.8 Golf Courses, Landscaping, Structures and Other Land-Use Considerations.

2.8.1 Golf Courses.

The large grassy areas and open water found on most golf courses are attractive to hazardous wildlife, particularly Canada geese and some species of gulls. These species can pose a threat to aviation safety. If golf courses are located on or near airport property, airport operators should be alert to any wildlife use or habitat changes in these areas that could affect safe aircraft operations. Accordingly, airport operators should develop, at a minimum, onsite measures to minimize hazardous wildlife attraction in consultation with a Qualified Airport Wildlife Biologist. Existing golf courses located within these separations that have been documented to attract hazardous wildlife are encouraged to develop a program to reduce the attractiveness of the sites to species that are hazardous to aviation safety. The FAA recommends against construction of new golf courses within the separations identified in Paragraphs 1.2 through 1.4 if determined that the new facility would create a significant wildlife hazard attractant by a Qualified Airport Wildlife Biologist. Airport operators should ensure these golf courses are monitored on a continuing basis for the presence of hazardous wildlife. If hazardous wildlife is detected, corrective actions should be immediately implemented.

2.8.2 Landscaping and Landscape Maintenance.

2.8.2.1 Depending on its geographic location, landscaping can attract hazardous wildlife. The FAA recommends that airport operators approach landscaping with caution and confine it to airport areas not associated with aircraft movements. Vegetation that produces seeds, fruits, or berries, or that provides dense roosting or nesting cover should not be used. Airports should develop a landscape plan to include approved and prohibited plants. The landscape plan should consider the watering needs of mature plants. A Qualified Airport Wildlife Biologist should review all landscaping plans. Airport operators should also monitor all landscaped areas on a continuing basis for the presence of hazardous wildlife. If hazardous wildlife is detected, corrective actions should be immediately implemented.

2.8.2.2 Turf grass areas on airports have the potential to be highly attractive to a variety of hazardous wildlife species. Research conducted by the USDA Wildlife Services' National Wildlife Research Center has shown that no one airfield vegetation management regimen will deter all species of hazardous wildlife in all situations. The composition and height of airfield grasslands should be properly managed to reduce their attractiveness to hazardous wildlife. In many situations, an intermediate height, monoculture turf grass might be most favorable. In cooperation with a

Qualified Airport Wildlife Biologist, airport operators should develop airport turf grass management plans on a prescription basis, including cultivar selection during reseeding efforts, that is specific to the airport's geographic location, climatic conditions, and the type of hazardous wildlife likely to frequent the airport.

2.8.2.3 Airport operators should ensure that plant varieties attractive to hazardous wildlife are not used on the airport. Disturbed areas or areas in need of re-vegetating should not be planted with seed mixtures containing millet or any other large-seed producing grass. For airport property already planted with seed mixtures containing millet, rye grass, or other large-seed producing grasses, the FAA recommends disking, plowing, or another suitable agricultural practice to prevent plant maturation and seed head production. Plantings should follow the specific recommendations for grass management and seed and plant selection made by the State University Cooperative Extension Service, the local office of Wildlife Services, or a Qualified Airport Wildlife Biologist. Airport operators should also consider developing and implementing a preferred/prohibited plant species list, reviewed by a Qualified Airport Wildlife Biologist, which has been designed for the geographic location to reduce the attractiveness to hazardous wildlife for landscaping airport property.

2.8.3 Structures.

2.8.3.1 Certain structures attract birds for loafing and nesting. Flat rooftops can be attractive to many species of gulls for nesting, hangars provide roosting / nesting opportunities for rock doves, towers, light posts and navigation aids can provide loafing / hunting perches for raptors and aircraft can provide loafing / nesting sites for European starlings, blackbirds and other species. These structures should be monitored and mitigated, if located on-site. Off-site structural attractions may require additional coordination to effectively mitigate their use by hazardous species.

2.8.3.2 Cellular communications towers are becoming increasingly more attractive to large birds (e.g., osprey, eagles, herons, vultures) for nesting and rearing their young. This problem is a growing concern because once the young fledge from nests built on manmade structures they are more likely to return to these kinds of sites to reproduce in future years.

2.8.4 Other Hazardous Wildlife Attractants.

Other land uses (e.g., conservation easements, parks, wildlife management areas) or activities not addressed in this AC may have the potential to attract hazardous wildlife. Regardless of the source of the attraction, when hazardous wildlife is noted on a public-use airport, each certificate holder must take prompt remedial action(s) to protect aviation safety and all non-certificated airports should take prompt remedial action(s) to protect aviation safety.

2.9 Habitat for State and Federally Listed Species on Airports.

An airport's air operations area is an artificial environment that has been created and maintained for aircraft operations. Because an aircraft operations area can be markedly different from the surrounding native landscapes, it may attract wildlife species that do not normally occur, or that occur only in low numbers in the area. Some of the grassland species attracted to an airport's aircraft operations area are at the edge of their natural ranges, but are attracted to habitat features found in the airport environment. Also, some wildlife species may occur on the airport in higher numbers than occur naturally in the region because the airport offers habitat features the species prefer. Some of these wildlife species are Federal or state-listed threatened and endangered species or have been designated by state resource agencies as species of special concern.

2.9.1 State-Listed Species Habitat Concerns.

2.9.1.1 Many state wildlife agencies have requested that airport operators facilitate and encourage habitat on airports for state-listed threatened and endangered species or species of special concern. Airport operators should exercise caution in adopting new management techniques because they may increase wildlife hazards and be inconsistent with safe airport operations. Managing the on-airport environment to facilitate or encourage the presence of hazardous wildlife species can create conditions that are incompatible with, or pose a threat to, aviation safety.

2.9.1.2 Not all state-listed threatened and endangered species or species of concern pose a direct threat to aviation safety. However, these species may pose an indirect threat and be hazardous because they attract other wildlife species or support prey species attractive to other species that are directly hazardous. Also, the habitat management practices that benefit these state-listed threatened and endangered species and species of special concern may attract other hazardous wildlife species. On-airport habitat and wildlife management practices designed to benefit wildlife that directly or indirectly create safety hazard where none existed before are incompatible with safe airport operations.

2.9.2 Federally Listed Species Habitat Concerns.

2.9.2.1 The FAA supports efforts to protect threatened and endangered species, as a matter of principle and consistent with the Endangered Species Act of 1973. The FAA must balance these requirements with our requirements and mission to maintain a safe and efficient airport system. Requests to enhance or create habitat for threatened and endangered species often conflict with the safety of the traveling public and may place the protected species at risk of mortality by aircraft collisions. The FAA does not support the creation, conservation or enhancement of habitat or refuges to attract endangered species on airports. If endangered species are present on an airport, specific obligations may apply under the Endangered

Species Act, 16 U.S.C. § 1531 et seq. and the airport operator should contact the Airports District Office Environmental Protection Specialist.

2.9.2.2 The designation of critical habitat for listed species under the Endangered Species Act on airport lands may be an incompatible land use in conflict with the intended and dedicated purpose of airport lands and may limit or preclude the ability of the airport to develop new infrastructure and growth capacity to meet future air carrier service demand. In addition, depending on the listed species (primarily but not limited to avian species), the designation of critical habitat within the separation distances provided in paragraphs 1.2 - 1.4 can represent a hazardous wildlife attractant in conflict with 14 CFR Part 139.337.

2.10 Synergistic Effects of Surrounding Land Uses.

There may be circumstances where two or more different land uses would not, by themselves, be considered hazardous wildlife attractants or are located outside of the separations identified in Paragraphs 1.2 through 1.4 but collectively may create a wildlife corridor directly through the airport and/or surrounding airspace. An example involves a lake located outside of the separation criteria on the east side of an airport and a large hayfield on the west side of an airport. These two land uses, taken together, could create a flyway for Canada geese directly across the airspace of the airport. Airport operators must consider the entire surrounding landscape and community when developing the wildlife management plan.

Page Intentionally Blank

CHAPTER 3. PROCEDURES FOR WILDLIFE HAZARD MANAGEMENT BY OPERATORS OF PUBLIC-USE AIRPORTS AND CONDITIONS FOR NON-CERTIFICATED AIRPORTS TO CONDUCT WILDLIFE HAZARD ASSESSMENTS AND WILDLIFE HAZARD SITE VISITS

3.1 Introduction.

In recognition of the increased risk of serious aircraft damage or the loss of human life that can result from a wildlife strike, the FAA recommends all airports conduct a Wildlife Hazard Site Visit or Wildlife Hazard Assessment unless otherwise mandated after an initial triggering events defined in Part 139 Section 139.337. After the airport has completed the site visit or assessment and implemented a wildlife management plan, investigations should be conducted following subsequent triggering events to determine if the original assessment and plan adequately address the situation or if conditions have changed that would warrant an update to the plan. In this section, airports that are certificated under 14 C.F.R. § 139.337 are referred to as "certificated airports" and all others are referred to as "non-certificated airports." When a statement refers to both certificated and non-certificated airports, "airport" or "all airports" is used.

3.2 Coordination with Qualified Airport Wildlife Biologists.

Hazardous wildlife management is a complex discipline and conditions vary widely across the United States. Therefore, only airport wildlife biologists meeting the qualification requirements in Advisory Circular 150/5200-36, *Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports,* can conduct Site Visits and Assessments. Airports must maintain documentation that the Qualified Airport Wildlife Biologist meets the qualification requirements in Advisory Circular 150/5200-36.

3.3 Wildlife Hazard Management at Airports: A Manual For Airport Personnel.

3.3.1 The Wildlife Hazard Management at Airports manual, prepared by FAA and USDA Wildlife Services staff, contains a compilation of information to assist airport personnel in the development, implementation, and evaluation of wildlife management plans at airports. The manual includes specific information on the nature of wildlife strikes, legal authority, regulations, wildlife management techniques, Assessments, Plans, and sources of help and information. The manual is available in three languages: English, Spanish, and French. It can be viewed and downloaded free of charge from the FAA's wildlife hazard mitigation web site: https://www.faa.gov/airports/airport_safety/wildlife. This manual only provides a starting point for addressing wildlife hazard issues at airports. FAA recommends that airports consult with a Qualified Airport Wildlife Biologists to assist with development of a wildlife management plan and the implementation of management actions by airport personnel.

3.3.2 There are many other resources complementary to this manual for use in developing and implementing wildlife management plans. Several are listed in the manual's bibliography or on the FAA Wildlife Mitigation website: https://www.faa.gov/airports/airport_safety/wildlife

3.4 Wildlife Hazard Site Visits and Wildlife Hazard Assessments.

3.4.1 Operators of certificated airports are encouraged to conduct an initial assessment regardless of whether the airport has experienced one of the triggering events. Doing so would allow the airport to take proactive action and mitigate the wildlife risk before experiencing an incident. All other airports are encouraged to conduct an assessment or site visit (as defined in FAA Advisory Circular 150/5200-38) conducted by a Qualified Airport Wildlife Biologist (as defined in FAA Advisory Circular 150/5200-36). Part 139 certificated airports are currently required to ensure that an assessment is conducted consistent with 14 C.F.R. § 139.337.

3.4.2 The intent of a site visit is to provide an abbreviated analysis of an airport's wildlife hazards and to provide timely information that allows the airport to expedite the mitigation of these hazards. The FAA also recommends that airports conduct an assessment or site visit as soon as practicable in order to identify any immediate wildlife hazards and/or mitigation measures.

3.4.3 Non-certificated airports should submit the results of the site visit or assessment to the FAA for review. The FAA will review the submitted site visit or assessment and make a recommendation regarding the development of a wildlife management plan. A wildlife management plan can be developed based on a site visit and will be required if the non-certificated airport is going to request federal grants for the purpose of mitigating wildlife hazards.

3.5 Wildlife Hazard Management Plan.

3.5.1 The FAA will consider the results of the assessment, along with the aeronautical activity at the airport and the views of the airport operator and airport users, in determining whether a wildlife management plan is needed for certificated airports, or recommended for non-certificated airports.

3.5.2 If the FAA determines that a wildlife management plan is needed for a certificated airport, the airport operator must formulate a plan, using the assessment as its basis and submit to the FAA for approval. If the FAA recommends that a non-certificated airport develop a plan, either an assessment or a site visit can be used as the basis for the wildlife management plan. Airports should consult AC 150/5200-38, *Protocol for the Conduct and Review of Wildlife Hazard Site Visits, Wildlife Hazard Assessments, and Wildlife Hazard Management Plans,* for further information on preparation and implementation requirements for their wildlife management plan.

3.5.3 The goal of an airport's wildlife management plan is to minimize the risk to aviation safety, airport structures or equipment, or human health posed by populations of hazardous wildlife on and around the airport. For wildlife management plans to effectively reduce wildlife hazards on and near airports, accurate and consistent wildlife strike reporting is essential. Airports should consult AC 150/5200-32, *Reporting Wildlife Aircraft Strikes,* for further information on responsibilities and recommendations concerning wildlife strikes.

3.5.4 The wildlife management plan must identify hazardous wildlife attractants on or near the airport and the appropriate wildlife management techniques to minimize the wildlife hazard. It must also prioritize the management measures.

3.6 Local Coordination.

The FAA recommends establishing a Wildlife Hazards Working Group to facilitate the communication, cooperation, and coordination of the airport and its surrounding community necessary to ensure the effectiveness of the wildlife management plan. The cooperation of the airport community is essential to prevent incompatible development in the airport vicinity. Whether on or off the airport, input from all involved parties must be considered when a potentially hazardous wildlife attractant is being proposed. Based on available resources, airport operators should undertake public education activities with the local planning agencies because some activities in the vicinity of an airport, while harmless under normal conditions, can attract wildlife and present a danger to aircraft (see Paragraphs 4.5 to 4.8). For example, if public trails are planned near wetlands or in parks adjoining airport property, the public should know that feeding birds and other wildlife in the area may pose a risk to aircraft.

3.7 Operational Notifications of Wildlife Hazards.

3.7.1 Operational notifications include active correspondence addressing wildlife issues on or near an airport, notifications and alerts. If an existing land-use practice creates a wildlife hazard and the land-use practice or wildlife hazard cannot be immediately eliminated, airport operators must issue a Notice to Airmen (NOTAM) and encourage the land owner or manager to take steps to control the wildlife hazard and minimize further attraction. Permanent attractions that cannot be eliminated or mitigated may be noted in the Airport/Facility Directory. NOTAMS and Airport/Facility Directory notifications are not appropriate for short-term or immediate advisories that can be relayed via Pilot Reports, direct air traffic control voice communications, or temporary Automated Terminal Advisory System alerts. Care should be given to avoid the continual broadcast of general warnings for extended periods of time. General warnings such as "birds in the vicinity of the aerodrome" offer little timely information to aid pilots and eventually may be ignored if not updated.

3.7.2 The Automated Terminal Advisory System (ATIS) is a continuous broadcast of recorded aeronautical information for aerodromes and their immediate surroundings. ATIS broadcasts contain essential information, such as current weather information,

active runways, available approaches, wildlife hazards and any other information required by the pilots. They indicate significant (moderate or severe) wildlife activity, as reported by an approved agency that presents temporary hazards on the ATIS broadcast. Pilots take notice of available ATIS broadcasts before contacting the local control unit, which reduces the controllers' workload and relieves frequency congestion. The recording is updated in fixed intervals or when there is a significant change in the information. Although ATIS broadcasts involving wildlife should be timely and specific, pilots do not need to know species-specific information. General descriptive information detailing size and number of animals, locations and timing of occurrence provides useful, actionable information for pilots.

3.7.3 A pilot report (PIREP) is reported by a pilot to indicate encounters of hazardous weather (e.g., icing or turbulence) and hazardous wildlife. Pilot reports are short-lived warnings providing immediate information on pilot observations that are transmitted in real-time to air traffic control. Large animals near active surfaces, soaring vultures and raptors within approach/ departure corridors and waterfowl such as geese feeding in grassy areas next to runways are all examples of pilot reports generated by pilots.

3.8 Federal and State Depredation Permits.

The FAA recommends that airports maintain federal and state depredation permits to allow mitigation and/ or removal of hazardous species. All protected species require special permits for lethal mitigation or capture and relocation procedures. Similarly, endangered or threatened species mitigation also requires special permits. The FAA recommends that airports work closely with a Qualified Airport Wildlife Biologist during the U.S. Fish and Wildlife Service consultation and permitting process. The following Orders can help airports reduce risks from hazardous species by allowing private citizens to control hazardous species off airport properties without the need for a Federal depredation permit.

3.8.1 Standing Depredation Orders.

3.8.1.1 Federal law allows people to protect themselves and their property from damage caused by migratory birds. Provided no effort is made to kill or capture the birds, a depredation permit is not required to merely scare or herd depredating migratory birds other than endangered or threatened species or bald or golden eagles (50 CFR 21.41).

3.8.1.2 In addition, certain species of migratory birds may be mitigated without a federal permit under specific circumstances, many of which relate to agricultural situations. The following Standing Depredation Orders have applicability near airports:

- 50 CFR § 21.49- Control Order for Resident Canada Geese at Airports and Military Airfields.
- 50 CFR § 21.50- Depredation Order for Resident Canada Geese Nests and Eggs.

- 50 CFR § 21.43 - Depredation Order for Blackbirds, Cowbirds, Crows, Grackles, and Magpies.
- 50 CFR § 21.54 - Control Order for Muscovy Ducks in the United States.
- 50 CFR § 21.55 - Control Order for Invasive Migratory Birds in Hawaii.

Page Intentionally Blank

CHAPTER 4. RECOMMENDED PROCEDURES FOR THE FAA, AIRPORT OPERATORS AND OTHER GOVERNMENT ENTITIES REGARDING OFF-AIRPORT ATTRACTANTS

4.1 FAA Notification and Review of Proposed Land-Use Practice Changes in the Vicinity of Public-Use Airports.

4.1.1 For projects that are located within 5 miles of the airport's aircraft operations area, the FAA may review development plans, proposed land-use changes, operational changes, major federal actions or wetland mitigation plans to determine if such changes increase risk to airport safety by attracting hazardous wildlife on and around airports. The FAA is not a permitting agency for land use modifications that occur off airport properties, therefore, such reviews are typically initiated by state or federal permitting agencies seeking FAA input on new or revised permits. Each of the land uses listed in Chapter 2 of this AC has the potential to pose a risk to airport operations when they are located within the separation distances provided in Paragraphs 1.2 through 1.4.

4.1.2 Off-site land use modifications near airports may include an assessment of risk for facilities and land-use changes and, if necessary, mitigation strategies that may reduce risk to an acceptable level. However, the FAA recognizes that individual facilities or land-use modifications may present a range of attractants to different species, resulting in varying levels of risk. Therefore, the FAA considers each proposal on a case-by-case basis.

4.1.3 The FAA analyzes each land-use modification or new facility proposal prior to its establishment or any significant planned changes to design or operations that may increase the risk level. As part of a review, the FAA considers several factors that include, but are not limited to:

1. Type of attractant;
2. Size of attractant;
3. Location/distance of attractant from airport;
4. Design (e.g., construction, material, mitigation techniques employed into design);
5. Operation (e.g., cleanliness, constancy/ volume of use, seasonality, time of day);
6. Monitoring protocols (e.g., frequency, documentation, evaluation, species identification and number thresholds that trigger actions of communication or mitigation, baseline wildlife data);
7. Mitigation protocols (e.g., responsibilities, methods, intensity, pre-determined objectives, documentation, evaluation); and
8. Communication protocols to airport and/ or air traffic control tower;

4.1.4 The review of these factors may result in FAA recommended additions or modifications to a conditional use permit that allows the permitting agency to track compliance with the permittee obligations. Such conditions placed within a permit

may involve a comprehensive outline and recognition of individuals responsible for monitoring, communication, and mitigation measures if certain action thresholds are met. Action thresholds are defined in this instance as those pre-determined parameters (e.g., number, location, behavior, time of day) of specific hazardous species that would trigger a mitigation response. Additionally, baseline data should be used to determine the effect, if any, on wildlife populations at the proposed off-site location and/or at the airport.

4.1.5 Baseline data may need to be collected, depending on the existence of useful data and timeline for site modification. If, after taking into account the factors above, FAA determines that a facility poses a significant risk to airport safety, FAA will object to its establishment or renewal.

4.1.6 For projects that are located within 5 miles of the airport's aircraft operations area, the FAA Airport District Office may review development plans, proposed land-use changes, operational changes, major federal actions or wetland mitigation plans to determine if such changes present potential wildlife hazards to aircraft operations. The FAA considers sensitive airport areas as those that lie under or next to approach or departure airspace. This brief examination should indicate if further investigation is warranted.

4.1.7 Where a Qualified Airport Wildlife Biologist has conducted a further study to evaluate a site's compatibility with airport operations, the FAA may use the study results to make a determination.

4.2 Waste Management Facilities.

4.2.1 Notification of New/Expanded Project Proposal.

4.2.1.1 49 U.S.C. § 44718(d), prohibits the construction or establishment of new municipal landfills within 6 miles of certain public-use airports, when both the airport and the landfill meet specific conditions. See Paragraph 2.2 of this guidance for a more detailed discussion of these restrictions.

4.2.1.2 The Environmental Protection Agency (EPA) requires any landfill operator proposing a new or expanded waste disposal operation within 5 miles of a runway end to notify the appropriate FAA Regional Airports Division Office and the airport operator of the proposal. See 40 CFR § 258, *Criteria for Municipal Solid Waste Landfills,* Section 258.10, *Airport Safety*. The EPA also requires owners or operators of new landfill units, or lateral expansions of existing MSWLF landfill units, that are located within 10,000 feet of any airport runway end used by turbine-powered aircraft, or within 5,000 feet of any airport runway end used only by piston-type aircraft, to demonstrate successfully that such units are not hazards to aircraft. (See 4.3.2 below.)

4.2.1.3 When new or expanded municipal landfills are being proposed near airports, landfill operators must notify the airport operator and the FAA of the proposal as early as possible pursuant to 40 CFR § 258.

4.2.1.4 The FAA discourages the development of waste disposal and other facilities, discussed in Chapter 2, located within the separation criteria specified in Paragraphs 1.2 through 1.4. To show that a waste-handling facility sited within the separations identified in Paragraphs 1.2 through 1.4 does not attract hazardous wildlife and does not threaten aviation, the developer must establish the facility will not handle putrescible material other than that as outlined in 2.2.4. The FAA recommends against any facility other than those outlined in 2.2.4 (enclosed transfer stations). The FAA will use this information to determine if the facility will be a hazard to aviation.

4.3 Other Land-Use Practice Changes.

4.3.1 The FAA encourages operators of public-use airports who become aware of proposed land use practice changes that may attract hazardous wildlife within 5 miles of their airports to notify their assigned Airport Certification Safety Inspector or Airports District Office Program Manager. The FAA also encourages proponents of such land use changes to notify the FAA as early in the planning process as possible. Advanced notice affords the FAA an opportunity (1) to evaluate the effect of a particular land-use change on aviation safety and (2) to support efforts by the airport sponsor to restrict the use of land next to or near the airport to uses that are compatible with the airport.

4.3.2 The airport operator, project proponent, or land-use operator may use FAA Form 7460-1, Notice of Proposed Construction or Alteration, or other suitable documents similar to FAA Form 7460-1 to notify the appropriate FAA Regional Airports Division Office. Project proponents can contact the appropriate FAA Regional Airports Division Office for assistance with the notification process prior to submitting Form 7460-1.

4.3.3 It is helpful if the notification includes a 15-minute quadrangle map of the area identifying the location of the proposed activity. The land-use operator or project proponent should also forward specific details of the proposed land-use change or operational change or expansion. In the case of solid waste landfills, the information should include the type of waste to be handled, how the waste will be processed, and final disposal methods.

4.3.4 Airports that have Received Federal Assistance.

Airports that have received Federal assistance are required under their grant assurances to take appropriate actions to restrict the use of land next to or near the airport to uses that are compatible with normal airport operations. See Grant Assurance 21. The FAA recommends that airport operators oppose off-airport land-use changes or practices, to

the extent practicable, within the separations identified in Paragraphs 1.2 through 1.4, which may attract hazardous wildlife. Failure to do so may lead to noncompliance with applicable grant assurances. The FAA will not approve the placement of airport development projects pertaining to aircraft movement in the vicinity of hazardous wildlife attractants without appropriate mitigating measures. Increasing the intensity of wildlife control efforts is not a substitute for preventing, eliminating or reducing a proposed wildlife hazard. Airport operators should identify hazardous wildlife attractants and any associated wildlife hazards during any planning process for airport development projects.

4.4 Coordination to Prevent Creation of New Off-Airport Hazardous Wildlife Attractants.

Airport operators should work with local and regional planning and zoning boards to be aware of proposed land-use changes, or modification of existing land uses, that could create hazardous wildlife attractants within the separations identified in Paragraphs 1.2 through 1.4. Pay particular attention to proposed land uses involving creation or expansion of wastewater treatment facilities, development of wetland mitigation sites, or development or expansion of dredge spoil containment areas. At the very least, it is recommended that airport operators are on the notification list of the local planning board or equivalent review entity for all communities located within 5 miles of the airport, so they will receive notification of any proposed project and have the opportunity to review it for attractiveness to hazardous wildlife. This may be accomplished through one or more of the following:

4.4.1 Site-specific Criteria.

The airport should establish site-specific criteria for assessment of land uses attractive to hazardous wildlife and locations that would be of concern based on wildlife strikes and on wildlife abundance and activity at the airport and in the local area. These criteria may be more selective, but should not be less restrictive than this guidance.

4.4.2 Outreach.

Airports should actively seek to provide educational information and/ or provide input regarding local development, natural resource modification or wildlife-related concerns that affect wildlife hazards and safe air travel.

4.4.2.1 **External Outreach.**

Airport operators and a Qualified Airport Wildlife Biologist should consider outreach to local planning and zoning organizations on land uses of concern or to local organizations responsible for natural resource management (including wildlife, wetlands, and parks.) Airports should also consider developing and distributing position letters and educational materials on airport-specific concerns regarding wildlife hazards, wildlife activity and attraction. Finally, airports should provide formal comments on local procedures, laws, ordinances, plans, and regulatory actions such as permits related to land uses of concern.

4.4.2.2 **Internal Outreach.**

Airports should consider developing and distributing position letters and educational materials on airport-specific concerns regarding species identification and mitigation procedures, wildlife hazards, wildlife activity and attraction to employees and personnel with access to the aircraft operations area.

4.5 Coordination on Existing Off-Airport Hazardous Wildlife Attractants.

Airports are encouraged to work with landowners and managers to cooperatively develop procedures to monitor and manage hazardous wildlife attraction. If applicable, these procedures may include:

1. Conducting a wildlife hazard site visit by a wildlife biologist meeting the qualification requirements of Advisory Circular 150/5200-36, *Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports*
2. Conducting regular, standardized, wildlife monitoring surveys;[4]
3. Establishing threshold numbers of wildlife which would trigger certain actions and/or communications;
4. Establishment of procedures to deter or remove hazardous wildlife.

4.6 Prompt Remedial Action.

For attractants found on and off airport property, and with landowner or manager cooperation, Part 139 certificated airports must take immediate action in accordance with their Airport Certification Manual and the requirements of Part 139.337, to alleviate wildlife hazards whenever they are detected. It is also recommended that non-certificated airports take immediate action to alleviate wildlife hazards whenever they are detected. In addition, airports should take prompt action to identify the source of attraction and cooperatively develop procedures to mitigate and monitor the attractant. **For Part 139 Certificated airports, immediate actions are required in accordance with 139.337(a).**

4.7 FAA Assistance.

If there is a question on the implementation of any of the guidance in this section, contact the FAA Regional Airports Division for assistance.

[4] Recommended survey protocols can be found in AC 150/5200-38, *Protocol for the Conduct and Review of Wildlife Hazard Site Visits, Wildlife Hazard Assessments, and Wildlife Hazard Management Plans,* and DeVault, T.L., B.F. Blackwell, and J.L. Belant, eds. 2013. *Wildlife in Airport Environments: Preventing Animal–Aircraft Collisions through Science-Based Management.* Johns Hopkins University Press, Baltimore, MD, USA. 181 pp.

4.7.1 Airport Documentation Procedures.

Airports should document on-site and off-site wildlife attractants as part of their "Wildlife Hazard Management Plan Annual Review," "Wildlife Hazard Management Plan Review Following a Triggering Event," and the airport's Continual Monitoring Annual Report (as outlined in FAA Advisory Circular 150/5200-38). As a best management practice, airports may choose to keep a log to track contacts from landowners or managers, permitting agencies, or other entities concerning land uses near the airport.

APPENDIX A. DEFINITIONS OF TERMS USED IN THIS ADVISORY CIRCULAR

A.1 **General.**

This appendix provides definitions of terms used throughout this AC.

1. **Air operations area.** Any area of an airport used or intended to be used for landing, takeoff, or surface maneuvering of aircraft. An air operations area includes such paved areas or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiways, or apron.
2. **Airport operator.** The operator (private or public) or sponsor of a public-use airport.
3. **Approach or departure airspace.** The airspace, within 5 statute miles of an airport, through which aircraft move during landing or takeoff.
4. **Bird balls.** High-density plastic floating balls that can be used to cover ponds and prevent birds from using the sites.
5. **Certificate holder.** The holder of an Airport Operating Certificate issued under 14 C.F.R. Part 139.
6. **Construct a new municipal landfill.** To begin to excavate, grade land, or raise structures to prepare a municipal solid waste landfill as permitted by the appropriate regulatory or permitting agency.
7. **Detention ponds.** Storm water management ponds that hold storm water for short periods of time, a few hours to a few days.
8. **Establish a new municipal landfill.** When the first load of putrescible waste is received on-site for placement in a prepared municipal solid waste landfill.
9. **Fly ash.** The fine, sand-like residue resulting from the complete incineration of an organic fuel source. Fly ash typically results from the combustion of coal or waste used to operate a power generating plant.
10. **General aviation aircraft.** Any civil aviation aircraft operating under 14 CFR Part 91.
11. **Hazardous wildlife.** Species of wildlife (birds, mammals, reptiles), including feral and domesticated animals, not under control that may pose a direct hazard to aviation (i.e., strike risk to aircraft) or an indirect hazard such as an attractant to other wildlife that pose a strike hazard or are causing structural damage to airport facilities (e.g., burrowing, nesting, perching).
12. **Municipal Landfill.** A publicly or privately owned discrete area of land or an excavation that receives household waste and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 CFR § 257.2. A municipal landfill may receive other types wastes, such as commercial solid waste, non-hazardous sludge, small-quantity generator waste, and

industrial solid waste, as defined under 40 CFR § 258.2. A municipal landfill can consist of either a stand-alone unit or several cells that receive household waste.

13. **New municipal landfill.** A municipal solid waste landfill that was established or constructed after April 5, 2001.
14. **Piston-powered aircraft.** Fixed-wing aircraft powered by piston engines.
15. **Piston-use airport.** Any airport that does not sell Jet-A fuel for fixed-wing turbine-powered aircraft, and primarily serves fixed-wing, piston-powered aircraft. Incidental use of the airport by turbine-powered, fixed-wing aircraft would not affect this designation. However, such aircraft should not be based at the airport.
16. **Public agency.** A state or political subdivision of a state, a tax-supported organization, or an Indian tribe or pueblo (49 U.S.C. § 47102(19)).
17. **Public airport.** An airport used or intended to be used for public purposes that is under the control of a public agency; and of which the area used or intended to be used for landing, taking off, or surface maneuvering of aircraft is publicly owned (49 U.S.C. § 47102(20)).
18. **Public-use airport.** An airport used or intended to be used for public purposes where the area used or intended to be used for landing, taking off, or surface maneuvering of aircraft may be under the control of a public agency or privately owned and used for public purposes (49 U.S.C. § 47102(21)).
19. **Putrescible waste.** Solid waste that contains organic matter capable of being decomposed by micro-organisms and of such a character and proportion as to be capable of attracting or providing food for birds (40 CFR §257.3-8).
20. **Putrescible-waste disposal operation.** Landfills, garbage dumps, underwater waste discharges, or similar facilities where activities include processing, burying, storing, or otherwise disposing of putrescible material, trash, and refuse.
21. **Retention ponds.** Storm water management ponds that hold water for more than 48 hours.
22. **Risk**. Risk is the relationship between the severity and probability of a threat. It is the product of hazard level and abundance in the critical airspace, and is thus defined as the probability of a damaging strike with a given species.
23. **Runway protection zone.** An area off the runway end to enhance the protection of people and property on the ground (see AC 150/5300-13). The dimensions of this zone vary with the airport design, aircraft, type of operation, and visibility minimum.
24. **Scheduled air carrier operation.** Any common carriage passenger-carrying operation for compensation or hire conducted by an air carrier or commercial operator for which the air carrier, commercial operator, or their representative offers in advance the departure location, departure time, and arrival location. It does not include any operation that is conducted as a supplemental operation under 14 CFR Part 119 or as a public charter operation under 14 CFR Part 380 (14 CFR § 119.3).

25. **Sewage sludge.** Any solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works. (40 CFR § 257.2)
26. **Sludge.** Any solid, semi-solid, or liquid waste generated form a municipal, commercial or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effect. (40 CFR § 257.2).
27. **Solid waste.** Any garbage, refuse, sludge, from a waste treatment plant, water supply treatment plant or air pollution control facility and other discarded material, including, solid liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage, or solid or dissolved material in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Clean Water Act, or source, special nuclear, or by product material as defined by the Atomic Energy Act of 1954.(40 CFR § 257.2).
28. **Turbine-powered aircraft.** Aircraft powered by turbine engines including turbojets and turboprops but excluding turbo-shaft rotary-wing aircraft.
29. **Turbine-use airport.** Any airport that sells fuel for fixed-wing turbine-powered aircraft.
30. **Wastewater treatment facility.** Any devices and/or systems used to store, treat, recycle, or reclaim municipal sewage or liquid industrial wastes, including publicly owned treatment works, as defined by Section 212 of the Clean Water Act. This definition includes any pretreatment involving the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a publicly owned treatment system. (See 40 CFR § 403.3 (q), (r), & (s)).
31. **Wildlife.** Any wild animal, including without limitation any wild mammal, bird, reptile, fish, amphibian, mollusk, crustacean, arthropod, coelenterate, or other invertebrate, including any part, product, egg, or offspring thereof. 50 CFR § 10.12. As used in this AC, wildlife includes feral animals and domestic animals out of the control of their owners (14 CFR Part 139, Certification of Airports).
32. **Wildlife attractants.** Any human-made structure, land-use practice, or human-made or natural geographic feature that can attract or sustain hazardous wildlife within the landing or departure airspace or the airport's aircraft operations area. These attractants can include architectural features, landscaping, waste disposal sites, wastewater treatment facilities, agricultural or aquaculture activities, surface mining, or wetlands.

33. **Wildlife hazard.** A potential for a damaging aircraft collision with wildlife on or near an airport.

34. **Wildlife strike.** A wildlife strike is deemed to have occurred when:

    a. A strike between wildlife and aircraft has been witnessed;

    b. Evidence or damage from a strike has been identified on an aircraft;

    c. Bird or other wildlife remains, whether in whole or in part, are found:

        i. Within 250 feet of a runway centerline or within 1,000 feet of a runway end unless another reason for the animal's death is identified or suspected, unless another reason for the animal's death is identified or;

        ii. On a taxiway or anywhere else on or off airport that there is reason to believe was the result of a strike with an aircraft.

    d. The presence of birds or other wildlife on or off the airport had a significant negative effect on a flight (i.e., aborted takeoff, aborted landing, high-speed emergency stop, aircraft left pavement area to avoid collision with animal).

APPENDIX B. ADDITIONAL RESOURCES

B.1 Regulations

- 14 CFR § 139.337, *Wildlife Hazard Management*
- 40 CFR § 258, *Criteria for Municipal Solid Waste Landfills*

B.2 Advisory Circulars

- AC 150/5200-32, *Reporting Wildlife Aircraft Strikes*
- AC 150/5200-33, *Hazard Wildlife Attractants on or Near Airports*
- AC 150/5200-34, *Construction or Establishment of New Landfills Near Public Airports*
- AC 150/5200-36, *Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports*
- AC 150/5200-38, *Protocol for the Conduct and Review of Wildlife Hazard Site Visits, Wildlife Hazard Assessments, and Wildlife Hazard Management Plans*
- AC 150/5220-25, *Airport Avian Radar Systems*
- AC 150/5210-24, *Airport Foreign Object Debris (FOD) Management*

B.3 Certification Alerts

- Certalert No. 97-09, *Wildlife Hazard Management Plan Outline* (11/17/1997)
- Certalert No. 98-05, *Grasses Attractive To Hazardous Wildlife* (9/21/1998)
- Certalert No. 06-07, *Requests by State Wildlife Agencies to Facilitate and Encourage Habitat for State Listed Threatened and Endangered Species and Species of Special Concern on Airports* (11/21/2006)
- Certalert No. 13-01, *Federal and State Depredation Permit Assistance* (1/30/2013)
- Certalert No.14-01, *Seasonal Mitigation of Hazardous Species at Airports: Attention to Snowy Owls* (2/26/2014)
- Certalert No. 16-03, *Recommended Wildlife Exclusion Fencing* (8/2016)

B.4 Airport Cooperative Research Program Reports

These, and other wildlife / aviation reports, are available from the Transportation Research Board of the National Academies (TRB) at http://www.trb.org/Publications/Publications.aspx.

- ACRP Research Report 198: Wetland Mitigation, Volume 2, A Guidebook for Airports (2019)
- ACRP Synthesis 92: Airport Waste Management and Recycling Practices (2018)
- ACRP Research Report 174: Guidebook and Primer (2018)
- ACRP Report 122: Innovative Airport Responses to Threatened / Endangered Species (2015)
- ACRP Report 125: Balancing Airport Stormwater and Bird Hazard Management (2015)
- ACRP Report 145: Applying an SMS Approach to Wildlife Hazard Management (2015)
- ACRP Synthesis 39 Report: Airport Wildlife Population Management (2013)
- ACRP Synthesis 52 Report: Habitat Management to Deter Wildlife at Airports (2014)
- ACRP Synthesis 23 Report: Bird Harassment, Repellent, and Deterrent Techniques for Use on and Near Airports (2011)
- ACRP Report 32: Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports (2010)

B.5 Manuals

- Wildlife Hazard Management at Airports - A Manual for Airport Personnel (2005)

B.6 Orders

- 50 CFR § 21.49, Control Order for Resident Canada Geese at Airports and Military Airfields
- 50 CFR § 21.50, Depredation Order for Resident Canada Geese Nests and Eggs
- 50 CFR § 21.43, Depredation Order for Blackbirds, Cowbirds, Crows, Grackles, and Magpies
- 50 CFR § 21.54, Control Order for Muscovy Ducks in the United States
- 50 CFR § 21.55, Control Order for Invasive Migratory Birds in Hawaii

Advisory Circular Feedback

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) mailing this form to Manager, Airport Safety and Operations Division, Federal Aviation Administration ATTN: AAS-300, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of AAS-300 at (202) 267-5257.

Subject: AC 150/5200-33C Date: _____

Please check all appropriate line items:

☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.

☐ Recommend paragraph _____ on page _____ be changed as follows:

_____
_____
_____

☐ In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)

_____
_____
_____

☐ Other comments:

_____
_____
_____

☐ I would like to discuss the above. Please contact me at (phone number, email address).

Submitted by: _____ Date: _____

U.S. Department
of Transportation

**Federal Aviation
Administration**

Advisory Circular

Subject: CONSTRUCTION OR ESTABLISHMENT OF LANDFILLS NEAR PUBLIC AIRPORTS

Date: January 26, 2006 **AC No:** 150/5200-34A
Initiated by: AAS-300 **Change:**

1. Purpose.

This advisory circular (AC) contains guidance on complying with Federal statutory requirements regarding the construction or establishment of landfills near public airports.

2. Application.

The guidance contained in the AC is provided by the Federal Aviation Administration (FAA) for use by persons considering the construction or establishment of a new municipal solid waste landfill (MSWLF) near a public airport. Guidance contained herein should be used to comply with MSWLF site limitations contained in 49 U.S.C. § 44718(d), as amended by section 503 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century, Pub. L. No. 106-181 (April 5, 2000), "Structures interfering with air commerce." In accordance with § 44718(d), as amended, these site limitations are not applicable in the State of Alaska.

In addition, this AC provides guidance for a state aviation agency desiring to petition the FAA for an exemption from the requirements of § 44718(d), as amended.

3. Cancellation

This AC cancels AC 150/52300-34, *Construction or Establishment of Landfills Near Public Airports*, dated August 8, 2000.

This revision contains no substantive changes to the original. Changes include revised and new website addresses, revised strike statistics, and regulation titles.

4. Related Reading Materials.

AC - 150/5200-33, *Hazardous Wildlife Attractions On or Near Airports*.

Wildlife Strikes to Civil Aircraft in the United States. FAA Wildlife Aircraft Strike Database Serial Reports.

Report to Congress: *Potential Hazards to Aircraft by Locating Waste Disposal Sites in the Vicinity of Airports,* April 1996, DOT/FAA/AS/96-1.

Title 14, Code of Federal Regulation, Part 139, Certification of Airports.

Title 40, Code of Federal Regulation, Part 258, Municipal Solid Waste Landfill Criteria.

Some of these documents and additional information on wildlife management, including guidance on landfills, are available on the FAA's Airports web site at http://www.faa.gov/airports_airtraffic/airports/ or http://wildlife-mitigation.tc.faa.gov

5. Definitions.

Definitions for the specific purpose of this AC are found in Appendix 1.

6. Background.

The FAA has the broad authority to regulate and develop civil aviation under the Federal Aviation Act of 1958, 49 U.S.C. § 40101, et. seq., and other Federal law. In section 1220 of the Federal Aviation Reauthorization Act of 1996, Pub. L. No. 104-264 (October 9, 1996), the Congress added a new provision, section (d), to 49 U.S.C. § 44718 to be enforced by the FAA and placing limitations on the construction or establishment of landfills near public airports for the purposes of enhancing aviation safety. Section 503 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR-21), Pub. L. No. 106-181 (April 5, 2000) replaced section 1220 of the 1996 Reauthorization Act, 49 U.S.C. § 44718 (d), with new language. Specifically, the new provision, § 44718(d), as amended, was enacted to further limit the construction or establishment of a municipal solid waste landfill (MSWLF) near certain smaller public airports.

In enacting this legislation, Congress expressed concern that a MSWLF sited near an airport poses a potential hazard to aircraft operations because such a waste facility attracts birds. Statistics support the fact that bird strikes pose a real danger to aircraft. An estimated 87 percent of the collisions between wildlife and civil aircraft occurred on or near airports when aircraft are below 2,000 feet above ground level (AGL). Collisions with wildlife at these altitudes are especially dangerous as aircraft pilots have minimal time to recover from such emergencies.

The FAA National Wildlife Aircraft Strike Database shows that more than 59,000 civil aircraft sustained reported strikes with wildlife from 1990 to 2004. Between 1990-2004, aircraft-wildlife strikes involving U. S. civil aircraft resulted in over $495 million/year worth of aircraft damage and associated losses and over 631,000 hours/year of aircraft down time.

From 1990 to 2004, waterfowl, gulls and raptors were involved in 77% of the 3,493 reported damaging aircraft-wildlife strikes where the bird was identified. Populations of Canada geese and many species of gulls and raptors have increased markedly over the last several years. Further, gulls and Canada geese have adapted to urban and suburban environments and, along with raptors and turkey vultures, are commonly found feeding or loafing on or near landfills.

In light of increasing bird populations and aircraft operations, the FAA believes locating landfills in proximity to airports increases the risk of collisions between birds and aircraft. To address this concern, the FAA issued AC 150/5200-33, *Hazardous Wildlife Attractions On or Near Airport*s, to provide airport operators and aviation planners with guidance on minimizing wildlife attractants. AC 150/5200-33 recommends against locating municipal solid waste landfills within five statute miles of an airport if the landfill may cause hazardous wildlife to move into or through the airport's approach or departure airspace.

7. General.

Using guidance provided in the following sections, persons considering construction or establishment of a landfill should first determine if the proposed facility meets the definition of a new MSWLF (see Appendix 1). Section 44718(d), as amended, applies only to a new MSWLF. It does not apply to the expansion or modification of an existing MSWLF, and does not apply in the State of Alaska. If the proposed landfill meets the definition of a new MSWLF, its proximity to certain public airports (meeting the criteria specified in Paragraph 8 below) should be determined. If it is determined that a new MSWLF would be located within six miles of such a public airport, then either the MSWLF should be planned for an alternate location more than 6 miles from the airport, or the MSWLF proponent should request the appropriate State aviation agency to file a petition for an exemption from the statutory restriction.

In addition to the requirements of § 44718(d), existing landfill restrictions contained in AC 150/5200-33, *Hazardous Wildlife Attractions On or Near Airports* (see Paragraph 5, Background) also may be applicable. Airport operators that have accepted Federal funds have obligations under Federal grant assurances to operate their facilities in safe manner and must comply with standards prescribed in advisory circulars, including landfill site limitations contained in AC 150/5200-33.

8. Landfills Covered by the Statute.

The limitations of § 44718(d), as amended, only apply to a new MSWLF (constructed or established after April 5, 2000). The statutory limitations are not applicable where construction or establishment of a MSWLF began on or before April 5, 2000, or to an existing MSWLF (received putrescible waste on or before April 5, 2000). Further, an existing MSWLF that is expanded or modified after April 5, 2000, would not be held to the limitations of § 44718(d), as amended.

9. Airports Covered by the Statute.

The statutory limitations restricting the location of a new MSWLF near an airport apply to only those airports that are recipients of Federal grants (under the Airport and Airway Improvement Act of 1982, as amended, 49 U.S.C. § 47101, *et se*q.) and primarily serve general aviation aircraft and scheduled air carrier operations using aircraft with less than 60 passenger seats.

While the FAA does not classify airports precisely in this manner, the FAA does categorize airports by the type of aircraft operations served and number of annual passenger enplanements. In particular, the FAA categorizes public airports that serve air carrier operations. These airports are known as commercial service airports, and receive scheduled passenger service and have 2,500 or more enplaned passengers per year.

One sub-category of commercial service airports, nonhub primary airports, closely matches the statute requirement. Nonhub primary airports are defined as commercial service airports that enplane less than 0.05 percent of all commercial passenger enplanements (0.05 percent equated to 352,748 enplanements in 2004) but more than 10,000 annual enplanements. While these enplanements consist of both large and small air carrier operations, most are conducted in aircraft with less than 60 seats. These airports also are heavily used by general aviation aircraft, with an average of 81 based aircraft per nonhub primary airport.

In addition, the FAA categorizes airports that enplane 2,500 to 10,000 passengers annually as non-primary commercial service airports, and those airports that enplane 2,500 or less passengers annually as general aviation airports. Both types of airports are mainly used by general aviation but in some instances, they have annual enplanements that consist of scheduled air carrier operations conducted in aircraft with less than 60 seats. Of the non-primary commercial service airports and general aviation airports, only those that have scheduled air carrier operations conducted in aircraft with less than 60 seats would be covered by the statute. The statute does not apply to those airports that serve only general aviation aircraft operations.

To comply with the intent of the statute, the FAA has identified those airports classified as nonhub primary, non-primary commercial service and general aviation airports that:

1. Are recipients of Federal grant under 49 U.S.C. § 47101, et. seq.;

2. Are under control of a public agency;

3. Serve scheduled air carrier operations conducted in aircraft with less than 60 seats; and

4. Have total annual enplanements consisting of at least 51% of scheduled air carrier enplanements conducted in aircraft with less than 60 passenger seats.

Persons considering construction or establishment of a new MSWLF should contact the FAA to determine if an airport within six statute miles of the new MSWLF meets these criteria (see paragraph 11 below for information on contacting the FAA). If the FAA determines the airport does meet these criteria, then § 44718(d), as amended, is applicable.

An in-depth explanation of how the FAA collects and categorizes airport data is available in the FAA's National Plan of Integrated Airport Systems (NPIAS). This report and a list of airports classified as nonhub primary, non-primary commercial service and general aviation airports (and associated enplanement data) are available on the FAA's Airports web site at http://www.faa.gov/airports_airtraffic/airports/planning_capacity/.

10. Separation distance measurements.

Section 44718(d), as amended, requires a minimum separation distance of six statute miles between a new MSWLF and a public airport. In determining this distance separation, measurements should be made from the closest point of the airport property boundary to the closest point of the MSWLF property boundary. Measurements can be made from a perimeter fence if the fence is co-located, or within close proximity to, property boundaries. It is the responsibility of the new MSWLF proponent to determine the separation distance.

11. Exemption Process.

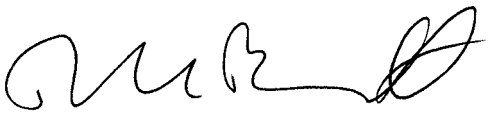
Under § 44718(d), as amended, the FAA Administrator may approve an exemption from the statute's landfill location limitations. Section 44718(d), as amended, permits the aviation agency of the state in which the airport is located to request such an exemption from the FAA Administrator. Any person desiring such an exemption should contact the aviation agency in the state in which the affected airport is located. A list of state aviation agencies and contact information is available at the National Association of State Aviation Officials (NASAO) web site at www.nasao.org or by calling NASAO at (301) 588-1286.

A state aviation agency that desires to petition the FAA for an exemption should notify the Regional Airports Division Manager, in writing, at least 60 days prior to the construction of a MSWLF. The petition should explain the nature and extent of relief sought, and contain information, documentation, views, or arguments that demonstrate that an exemption from the statute would not have an adverse impact on aviation safety. Information on contacting FAA Regional Airports Division Managers can be found on the FAA's web site at www.faa.gov.

After considering all relevant material presented, the Regional Airports Division Manager will notify the state agency within 30 days whether the request for exemption has been approved or denied. The FAA may approve a request for an exemption if it is determined that such an exemption would have no adverse impact on aviation safety.

12. Information.

For further information, please contact the FAA's Office of Airport Safety and Standards, Airport Safety and Operations Division, at (800) 842-8736, Ext. 7-3085 or via email at WebmasterARP@faa.gov. Any information, documents and reports that are available on the FAA web site also can be obtained by calling the toll-free telephone number listed above.



DAVID L. BENNETT
Director, Office of Airport Safety and Standards

APPENDIX 1. DEFINITIONS.

The following are definitions for the specific purpose of this advisory circular.

Construct a municipal solid waste landfill (MSWLF) means excavate or grade land, or raise structures, to prepare a municipal solid waste landfill as permitted by the appropriate regulatory or permitting authority.

Establish a municipal solid waste landfill (MSWLF) means receive the first load of putrescible waste on site for placement in a prepared municipal solid waste landfill.

Existing municipal solid waste landfill (MSWLF) means a municipal solid waste landfill that received putrescible waste on or before April 5, 2000.

General aviation aircraft means any civil aviation aircraft not operating under 14 CFR Part 119, Certification: Air carriers and commercial operators.

Municipal solid waste landfill (MSWLF) means publicly or privately owned discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 CFR § 257.2. A MSWLF may receive other types of RCRA subtitle D wastes, such as commercial solid waste, nonhazardous sludge, small quantity generator waste and industrial solid waste, as defined under 40 CFR § 258.2. A MSWLF may consist of either a standalone unit or several cells that receive household waste.

New municipal solid waste landfill (MSWLF) means a municipal solid waste landfill that was established or constructed after April 5, 2000.

Person(s) means an individual, firm, partnership, corporation, company, association, joint-stock association, or governmental entity. It includes a trustee, receiver, assignee, or similar representative of any of them (14 CFR Part 1).

Public agency means a State or political subdivision of a State; a tax-supported organization; or an Indian tribe or pueblo (49 U.S.C. § 47102(15)).

Public airport means an airport used or intended to be used for public purposes that is under the control of a public agency; and of which the area used or intended to be used for landing, taking off, or surface maneuvering of aircraft is publicly owned (49 U.S.C. § 47102(16)).

Putrescible waste means solid waste which contains organic matter capable of being decomposed by micro-organisms and of such a character and proportion as to be capable of attracting or providing food for birds (40 CFR § 257.3-8).

Scheduled air carrier operation means any common carriage passenger-carrying operation for compensation or hire conducted by an air carrier or commercial operator for which the air carrier, commercial operator, or their representatives offers in advance the departure location, departure time, and arrival location. It does not include any operation that is conducted as a supplemental operation under 14 CFR Part 119, or is conducted as a public charter operation under 14 CFR Part 380 (14 CFR § 119.3).

Solid waste means any garbage, or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges that are point sources subject to permit under 33 U.S.C. § 1342, or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923) (40 CFR § 258.2).

U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject: Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports

Date: 01/24/2019 **AC No:** 150/5200-36B
Initiated By: AAS-300

1 PURPOSE.

1. This Advisory Circular (AC) has two purposes. First, this AC describes the qualifications for wildlife biologists who conduct Wildlife Hazard Assessments (WHA) for airports.
2. Second, this AC addresses the minimum wildlife hazard management curriculum for the initial and recurrent training of airport personnel who implement Wildlife Hazard Management Plans (WHMPs).

2 APPLICABILITY.

The Federal Aviation Administration (FAA) recommends that public-use airport operators fulfill the standards and practices contained in this AC. The holders of Airport Operating Certificates issued under Part 139, Subpart D, may use the standards, practices, and recommendations contained in this AC to comply with the wildlife hazard management requirements of Part 139. The FAA also recommends the guidance in this AC for persons wishing to conduct Wildlife Hazard Assessments and for those who help prepare Wildlife Hazard Management Plans or conduct the requisite training.

3 CANCELLATION.

This AC cancels AC 150/5200-36A, *Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports,* dated January 31, 2012.

4 PRINCIPAL CHANGES.

The following changes have been incorporated:

1. Paragraph 2, Applicability–Language changed back to original language in AC 150/5200-36 in order to be consistent with current recommended language.
2. Paragraph 7.3 (3)–Revised the following requirement to be a qualified airport wildlife biologist: While working under the direct supervision of a qualified wildlife biologist, have conducted at least one Wildlife Hazard Assessment acceptable to the FAA Administrator (as described in §139.337(c)).
3. The revision of this requirement is necessary following the completion of all initial Wildlife Hazard Assessments at Part 139 certificated airports as per §139.337(b). The FAA recognizes that the opportunities to meet this requirement are now limited. The FAA is providing additional options to meet this requirement.

5 BACKGROUND.

Wildlife biologists conducting Wildlife Hazard Assessments or training airport personnel actively involved in implementing FAA-approved Wildlife Hazard Management Plans at certificated airports must have professional training and experience in wildlife hazard management at airports [§139.337(c) and (f)(7)]. Airport personnel actively involved in overseeing or implementing FAA-approved Wildlife Hazard Management Plans must receive initial training and recurrent training every 12 consecutive months [§139.303(c) and (e) (Personnel)].

6 RELATED READING MATERIAL.

6.1 Please review the most recent versions of the following documents:

1. FAA AC 150/5200-18, *Airport Safety Self-Inspection.*
2. FAA AC 150/5200-32, *Reporting Wildlife Aircraft Strikes.*
3. FAA AC 150/5200-33, *Hazardous Wildlife Attractions On or Near Airports.*
4. FAA AC 150/5200-34, *Construction or Establishment of Landfills Near Public Airports.*
5. FAA AC 150/5200-38, *Protocol for the Conduct and Review of Wildlife Hazard Site Visits, Wildlife Hazard Assessments and Wildlife Hazard Management Plans*.
6. FAA AC 150/5210-20, *Ground Vehicle Operations on Airports.*
7. FAA AC 150/5220-25, *Airport Avian Radar Systems.*
8. FAA AC 150/5300-13, *Airport Design.*
9. FAA AC 150/5340-1, *Standards for Airport Markings.*
10. FAA AC 150/5340-18, *Standards for Airport Sign Systems.*

11. FAA Office of Safety and Standards, CertAlert 98-05, *Grasses Attractive to Hazardous Wildlife.*

12. FAA Office of Safety and Standards, CertAlert 16-03, *Recommended Wildlife Exclusion Fencing.*

13. Cleary, E. C. and Archie Dickey. 2010. *Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports.* Airport Cooperative Research Program Report #32.

14. Cleary, E. C. and R. A. Dolbeer. 2005. *Wildlife Hazard Management at Airports: A Manual for Airport Personnel.* 2nd Ed. FAA, Office of Airport Safety and Standards, Washington, DC.

15. Dolbeer, R. A., J.R. Weller, A.A. Anderson and M.J. Begier. 2016. W*ildlife Strikes to Civil Aircraft in the United States, 1990 – 2015.* FAA National Wildlife Aircraft Strike Database Serial Report #22.

16. Dolbeer, R. A. et al. *Ranking the Hazard Level of Wildlife Species to Civil Aviation in the United States: Update #1.* Special Report for the Federal Aviation Administration, July 2, 2003.

17. *Report to Congress: Potential Hazards to Aircraft by Locating Waste Disposal Sites in the Vicinity of Airports,* April 1996, DOT/FAA/AS/96-1.

18. Title 14, Code of Federal Regulation, Part 139, Certification of Airports.

19. Title 40, Code of Federal Regulation, Part 258, Criteria for Municipal Solid Waste Landfills.

20. FAA Grant Assurance No. 34, Policies, Standards, and Specifications.

21. FAA Passenger Facility Charge (PFC) Assurance No. 9, Standards and Specifications.

22. Aeronautical Information Manual (AIM).

6.2 Some of these documents and other information on wildlife management, including FAA CertAlerts and guidance on siting hazardous wildlife attractants such as landfills, are available on the FAA website at http://www.faa.gov/airports/airport_safety/wildlife/resources/.

7 PROFESSIONAL QUALIFICATIONS OF WILDLIFE BIOLOGISTS CONDUCTING WILDLIFE HAZARD ASSESSMENTS AND WILDLIFE HAZARD MANAGEMENT TRAINING AT FAA CERTIFICATED AIRPORTS.

7.1 Wildlife biologists conducting airport Wildlife Hazard Assessments must meet certain education, training, and experience standards.

> Section 139.337(c) reads: Wildlife Hazard Assessment required in paragraph (b) of this section shall be conducted by a wildlife damage management biologist who has professional training and/or experience in wildlife hazard management

at airports or an individual working under direct supervision of such an individual.

7.2 Airports with a FAA-approved Wildlife Hazard Management Plan must provide employees the training needed to carry out the Plan.

> §139.337(f)(7) reads: A training program conducted by a qualified wildlife damage management biologist to provide airport personnel with the knowledge and skills needed to successfully carry out the Wildlife Hazard Management Plan required by paragraph (d) of this section.

7.3 To meet the requirements of §139.337(c) and (f)(7), a wildlife damage management biologist (from now on referred to as a "qualified airport wildlife biologist") must:

1. Have the necessary academic coursework from accredited institutions and work experience to meet the qualifications of a GS-0486 series wildlife biologist as defined by the U.S. Office of Personnel Management classification standards (Appendix A) **or** be designated as a Certified Wildlife Biologist by The Wildlife Society (http://www.wildlife.org) **and,**
2. Have taken and passed an airport wildlife hazard management training course acceptable to the FAA Administrator (Appendix C) **and,**
3. While working under the direct supervision of a qualified airport wildlife biologist:
   a. Have conducted at least one Wildlife Hazard Assessment acceptable to the FAA Administrator (as described in Section 139.337) or,
   b. Conducted at least one year of continual wildlife hazard monitoring at a certificated airport using FAA-approved methodology (FAA AC 150/5200-38, Ch. 4).
4. Have successfully completed at least one of the following within 5 years of their initial FAA approved airport wildlife hazard management training course, and every 5 years thereafter:
   a. An airport wildlife hazard management training course that is acceptable to the FAA Administrator (Appendix C), or
   b. Attendance, as a registered participant, at a joint Bird Strike Committee–USA/Bird Strike Committee–Canada annual meeting, or
   c. Other training acceptable to the FAA Administrator.

7.4 Individuals who work under the direct supervision of a qualified airport wildlife biologist are allowed to conduct Wildlife Hazard Assessments if the airport sponsor and the qualified airport wildlife biologist agree in writing to determine how the qualified airport wildlife biologist will:

1. Supervise how the individual(s) will conduct the Wildlife Hazard Assessment, and
2. Report progress of the Wildlife Hazard Assessment, and
3. Supervise the Wildlife Hazard Assessment report production.

7.5 Certificate Holders or Airport Sponsors must obtain documentation verifying the qualifications outlined in paragraph 7.3 (1) – (4) above of any person(s) conducting wildlife hazard assessments or providing requisite training. Documents such as training certificates, transcripts, diplomas, letters from employers, etc. are acceptable to verify professional qualifications.

7.6 Holders of Airport Operating Certificates issued under Part 139 must retain records documenting the airport wildlife biologist(s) qualifications to conduct Wildlife Hazard Assessments. These records must be retained for 2 years.

8 INITIAL AND RECURRENT TRAINING FOR AIRPORT PERSONNEL ACTIVELY INVOLVED IN MANAGING HAZARDOUS WILDLIFE ON OR NEAR AIRPORTS.

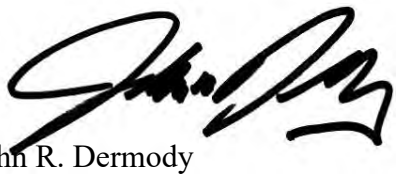
8.1 Personnel actively involved in implementing FAA-approved Wildlife Hazard Management Plans are subject to the requirements of 14 CFR Part 139.303. Section 139.303 requires a specific training regimen for all airport personnel. Section 139.303(c) and (e) require the holder of an Airport Operating Certificate issued under Part 139 to provide initial training and, every 12 months thereafter, recurrent training in wildlife hazard management to airport personnel actively involved in implementing FAA-approved Wildlife Hazard Management Plans. The required training must include "Any additional subject areas required under … §139.337" [§139.303(c)(5)] and, "As appropriate, comply with the following training requirements of this part … §139.337, Wildlife Hazard Management" [§139.303(e)(5)].

8.2 Appendix D outlines the minimum training requirements for airport personnel who carry out an airport's Wildlife Hazard Management Plan. Depending on local wildlife and environmental issues, additional topics or more in-depth coverage of listed topics might be needed.

8.3 Section 139.337(f)(1) requires the Wildlife Hazard Management Plan to include a list of the individuals having authority and responsibility for implementing each aspect of the plan. This list identifies the individuals by title or position who must complete the required training.

8.4 Section 139.337(f) does not prohibit holders of Airport Operating Certificates from using a "train-the-trainer" approach when providing the requisite training. The trainers must receive and successfully complete initial and recurrent training every 12 consecutive months, which includes a discussion of the trainer's airport wildlife hazard assessment and wildlife hazard management plan, from a qualified airport wildlife biologist. Trainers who are not qualified airport wildlife biologists are limited to providing training to their airport employees.

8.5 Holders of Airport Operating Certificates issued under Part 139 are required to make and keep records of all training for airport personnel involved in controlling wildlife hazards for at least 24 consecutive calendar months [§139.301(b)(1) and §139.303(d)].



John R. Dermody
Director, Office of Airport Safety and Standards

Appendix A. U.S. Office of Personnel Management Qualification Standards for GS-0486 Series Wildlife Biologists

A.1 To be qualified as a GS-0486 series wildlife biologist, a candidate must have the following:

1. A degree in biological science that includes—
   a. At least 9 semester hours in such wildlife subjects as mammalogy, ornithology, animal ecology, and wildlife management or research courses in the field of wildlife biology; **and**
   b. At least 12 semester hours in zoology in such subjects as general zoology, invertebrate zoology, vertebrate zoology, comparative anatomy, physiology, genetics, ecology, cellular biology, parasitology, and entomology or research courses in these subjects (excess courses in wildlife biology may be used to meet the zoology requirements where appropriate); **and**
   c. At least 9 semester hours in botany or the related plant sciences; **or**
2. A combination of education and experience equivalent to a major in biological science (i.e., at least 30 semester hours), with at least 9 semester hours in wildlife subjects, 12 semester hours in zoology, and 9 semester hours in botany or related plant science, as shown in Paragraph 1 above, plus appropriate experience or additional education; **or**
3. Be designated as a Certified Wildlife Biologist by The Wildlife Society (http://www.wildlife.org).

Appendix B. Training Resource Requirements and Instructor Qualifications

B.1 The following training resource requirements and instructor qualifications are for individuals wishing to:

- Provide an airport wildlife hazard management course acceptable to the FAA Administrator, for personnel conducting Wildlife Hazard Assessments; or
- Provide training to airport personnel actively involved in implementing FAA approved Wildlife Hazard Management Plans.

B.2 Training Resources and Requirements.

B.2.1 A list of training program providers acceptable to the FAA Administrator can be found on the FAA's wildlife strike website: https://www.faa.gov/airports/airport_safety/wildlife/resources/#training.

B.2.2 Links to the most recent versions of FAA regulations, FAA Advisory Circulars, CertAlerts, and other documents relevant to wildlife hazard management issues can be found at http://www.faa.gov/airports/airport_safety/wildlife/resources/.

B.2.3 Those proposing to establish a program to train qualified airport wildlife biologists to meet the requirements of 14 CFR §139.337 must submit a complete training syllabus and instructor resume to the FAA. The syllabus must include all lesson plans, student handouts, and graphic presentations that include at a minimum all curriculum items provided in Appendix C. Submit the materials to:

FAA National Wildlife Biologist, AAS-300
Office of Airport Safety and Standards
Federal Aviation Administration,
800 Independence Ave SW
Washington DC 20591

B.2.4 The goal of the training must be to provide the knowledge, skills, and abilities needed by a wildlife biologist to conduct Wildlife Hazard Assessments [§139.337(c)] and to conduct wildlife hazard training [§139.337(f)(7)]. To be acceptable to the FAA, the course must be at least 24 hours in length and include the curriculum items listed in Appendix C.

B.3 Instructor Qualifications.

The lead instructor for the training should:

1. Be a qualified airport wildlife biologist.
2. Have a minimum of 2 years' experience in all aspects of managing hazardous wildlife on or near airports.

Appendix C. Training Curriculum Outline for Individuals Wishing to Provide an Airport Wildlife Hazard Management Course Acceptable to the FAA Administrator, for Personnel Conducting Wildlife Hazard Assessments

C.1 Training Curriculum Outline.

The goal of the training must be to provide the knowledge, skills, and abilities needed by a wildlife biologist to conduct Wildlife Hazard Assessments [§139.337(c)] and to conduct wildlife hazard training [§139.337(f)(7)]. To be acceptable to the FAA, the course must be at least 24 hours in length and include the curriculum items listed below.

1. Training goals and process
2. Airport familiarization
    a. Introduction to the National Plan of Integrated Airport Systems
    b. Airport design and layout (AC 150/5300-13, *Airport Design*)
    c. Navigation Aids and Air Traffic Control (Aeronautical Information Manual [AIM])
    d. Airport operations and safety (AIM)
    e. Signs, marking, and lighting (AC 150/5340-1, *Standards for Airport Markings,* and AC 150/5340-18, *Standards for Airport Sign Systems*)
    f. Ground vehicle operator communication (AC 150/5210-20, *Ground Vehicle Operations on Airports*)
3. Aircraft familiarization
    a. Physics of a strike
    b. Aircraft nomenclature
    c. Civil aviation aircraft categories
    d. Aircraft engines
        i. Reciprocating
        ii. Turbo
    e. Aircraft certification standards
4. Preview of wildlife hazards to aviation
    a. History of major strikes
    b. Aviation losses
        i. Worldwide
        ii. United States
5. Applicable laws, regulations, and policies
    a. Migratory Bird Treaty Act of 1918, as amended

b. Animal Damage Control Act of 1931, as amended

c. Bald Eagle Protection Act of 1940, as amended

d. Federal Insecticide, Fungicide, and Rodenticide Act of 1948, as amended

e. National Environmental Policy Act of 1969, as amended

f. Endangered Species Act of 1973, as amended

g. Title 14, Code of Federal Regulations, Part 139, Certification of Airports

h. Title 40, Code of Federal Regulations, Part 258, Criteria for Municipal Solid Waste Landfills

i. Title 50, Code of Federal Regulations, Parts 1–199, Wildlife Management

j. Wendell H. Ford Aviation Investment and Reform Act for the 21st Century, Pub. L. No. 106–181 (April 5, 2000), "Structures Interfering with Air Commerce," section 503

k. Applicable FAA ACs in the 150/5200 series about Airport Wildlife Hazard Management

l. Applicable FAA Airport CertAlerts

m. Applicable state and local laws, regulations, and ordinances

6. Department of Defense requirements and perspective on military/civilian joint-use airports

7. Other Federal and State agency roles and responsibilities

   a. U.S. Department of Interior, Fish and Wildlife Service

      i. Role and responsibilities related to managing problem wildlife

      ii. Migratory Bird Depredation Permits

      iii. Salvage Permits

      iv. Bald and Golden Eagle Protection Act Permits: 50 CFR§ 22.26 *(Permits for eagle take that is associated with, but not the purpose of, the activity)* and 50 CFR § 22.27 *(Removal of Eagle Nests)*

   b. U.S. Department of Agriculture, Wildlife Services

      i. Role and responsibilities related to managing problem wildlife

   c. Other agencies

      i. U.S. Environmental Protection Agency

         (1) Siting landfills

         (2) Pesticide registration and use

      ii. U.S. Army Corps of Engineers

         (1) Wetlands mitigation

   d. Multi-Federal Agency Memorandum of Agreement

e. Applicable State wildlife regulations

8. FAA National Wildlife Strike Database
   a. Strike reporting
   b. Species identification and feather identification
   c. Database access
9. Environmental issues—working with Federal and State agencies
   a. National Environmental Policy Act
   b. Endangered Species Act (threatened and endangered species consultation)
   c. U.S. Army Corps of Engineers (wetland loss and wetland mitigation)
10. Initial consultations and Wildlife Hazard Assessments (WHAs)
   a. Triggering events for WHAs
   b. Duration and contents of WHAs
   c. Wildlife surveys at airports to assess wildlife hazards
   d. Data analysis and presentation of results
   e. Writing a WHA
11. FAA review of a WHA and determination of need for a Wildlife Hazard Management Plan (WHMP)
12. Drafting and carrying out integrated WHMPs
   a. Contents of WHMPs
   b. FAA review of WHMPs
   c. National Environmental Policy Act review
   d. Compliance with the Endangered Species Act, and other special purpose environmental laws and regulations
13. Integrated wildlife hazard management for airports; survey of basic control strategies and tactics
   a. Flight schedule modification
   b. Habitat modification and exclusion
   c. Wildlife dispersal techniques
   d. Wildlife population management
14. Addressing off-airport attractants and community planning and involvement
15. Outline of field trip (to conduct a “mini” WHA)
16. Field trip/site visit
17. Final exam

18. Post exam review
19. Course evaluation
20. Presentation of certificates

C.2 **Recommendations.**

1. Exams or tests may be oral, written, practical demonstrations, or a combination of each.
2. Passing grade/evaluation should be recorded and retained as instructor's records.
3. Instructors should retain course attendance records for a period of 2 years.

Appendix D. Training Curriculum Outline for Airport Personnel Actively Involved in Implementing FAA-Approved Wildlife Hazard Management Plans.

D.1 Training Curriculum Outline.

The goal of the training course must be to provide the knowledge, skills, and abilities needed by airport personnel to safely, accurately, and effectively implement relevant portions of an FAA-approved Wildlife Hazard Management Plan. To be acceptable to the FAA, initial and recurrent training must include the following agenda items:

1. General survey of wildlife hazards to aviation based on the most recent annual FAA National Wildlife Strike Database Serial Report.
2. Review of wildlife strikes, control actions, and observations at the airport over at least the past 12 months.
3. Review of the airport's Wildlife Hazard Assessment is to include—
   a. Existing wildlife hazards and trends in wildlife abundance.
   b. Status of any open or unresolved recommended action items for reducing identified wildlife hazards to air carrier operations within the past 12 months.
4. Review of the airport's Wildlife Hazard Management Plan, to include the following:
   a. Airport-specific wildlife attractants, including man-made and natural features and habitat management practices of the last 12 months.
   b. Review of the airport's wildlife permits (local, State, and Federal).
   c. Review of other airport-specific items:
      i. Wildlife hazard management strategies, techniques, and tools:
         (1) Flight schedule modification
         (2) Habitat modification, exclusion
         (3) Repelling methods
         (4) Wildlife population management
      ii. Responsibilities of airport personnel for—
         (1) Reporting wildlife strikes, control actions, and wildlife observations
         (2) Communicating with personnel who conduct wildlife control actions or who see wildlife hazards and air traffic control tower personnel and others who may require notification, such as airport operations or maintenance departments
         (3) Documenting and reporting wildlife hazards seen during patrols and inspections and follow-up control efforts
         (4) Documenting and reporting when no hazards are seen during patrols and inspections

5. Basic bird and mammal identification, stressing local hazardous and rare or endangered species of concern.
6. For any airport personnel using pyrotechnic launchers or firearms, training on the following topics from a qualified individual[1]:
   a. Safety, parts, and operation of pyrotechnic launchers.
   b. Fundamentals of using pyrotechnics to safely and effectively disperse wildlife.
   c. Personnel protective equipment.
   d. Cleaning, storage, and transport of firearms and pyrotechnic launchers.
   e. Applicable local, State, and Federal regulations on firearms, pyrotechnic launchers, and pyrotechnics.[2]
   f. Live fire training with pyrotechnic launchers including strategies for dispersing wildlife away from runways and aircraft movement corridors.
   g. For any airport personnel using firearms, live fire training. This training is highly recommended from a qualified individual but not a requirement for this training program.[3]
7. Any other training required by local, State, or Federal regulations.

D.2 **Recommendations.**

1. Exams or tests may be oral, written, practical demonstrations, or a combination of all three.
2. The Trainer should retain passing grades/evaluations records.
3. The Trainer should retain course attendance records for a period of 2 years.
4. Airport personnel responsible for the airport's wildlife hazard management program should retain records of those to whom instruction in airport wildlife hazard management has been given for the period of time during which the employees conduct hazardous wildlife management activity on the airport and for 6 months after termination of employment.

---

[1] State Certificated Hunter Safety Instructors, police officers, firearms instructors, and other personnel who have been professionally trained in firearms safety should be qualified to teach firearm safety and possibly the safe use of pyrotechnic launchers. Pyrotechnics are classified as high explosives by the Bureau of Alcohol Tobacco and Firearms (ATF) and as Division 1.4 explosives by the U.S. Department of Transportation. There are numerous regulations, security considerations, and ATF licensing requirements that apply to pyrotechnics.

[2] Bureau of Alcohol, Tobacco and Firearms provides information on Federal explosive requirements for explosive pest control devices at: https://www.atf.gov/explosives/explosives-pest-control-device-requirements.

[3] Airport personnel actively involved with the use of firearms for the mitigation of wildlife hazards should receive and maintain current firearms training from either a Certified National Rifle Association (NRA) instructor or other qualified individual. This training should include type and caliber of weapon used at the airport.

Advisory Circular Feedback

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) mailing this form to Manager, Airport Engineering Division, Federal Aviation Administration ATTN: AAS-300, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of the Office of Airport Safety and Standards at (202) 267-5257.

Subject: AC 150/5200-36B Date: _____

Please check all appropriate line items:

☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.

☐ Recommend paragraph _____ on page _____ be changed as follows:

_____
_____
_____

☐ In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)

_____
_____
_____

☐ Other comments:

_____
_____
_____

☐ I would like to discuss the above. Please contact me at (phone number, email address).

_____

Submitted by: _____ Date: _____

Appendix C FEDERAL AVIATION ADMINISTRATION CERTALERTS

No. 13-01, Federal and State Depredation Permit Assistance, January 30, 2013

No. 14-01, Seasonal Mitigation of Hazardous Species at Airports: Attention to Snowy Owls, February 26, 2014

No. 16-03, Recommended Wildlife Exclusion Fencing, August 3, 2016

Federal Aviation Administration

National Part 139 CertAlert

AdvisoryCautionary**Non-Directive**Advisory**Cautionary**Non-Directive**Advisory**Cautionary**Non-Directive**

Date: **01/30/2013** **No. 13-01**

To: **Part 139 Airport Operators**

Subject: **Federal and State Depredation Permit Assistance**

Point of Contact: John R Weller, AAS-300, 202-267-3778
Email: john.weller@faa.gov

1. Purpose. This CertAlert provides assistance to airport operators with the acquisition of Federal or State depredation permits.

2. Background. Airports should maintain Federal and State depredation permits when lethal or other permitted techniques to reduce wildlife threats are necessary. Most wildlife under the purview of Federal or State agencies require special permits if an airport operator has decided to lethally control, take, possess, or transport the hazardous wildlife for depredation control. Nonlethal, non-injurious methods of exclusion, harassment, or dispersal may be used without a depredation permit to reduce or eliminate threats from wildlife[1].

To aid airport operators in the acquisition of depredation permits, the FAA has provided contact information for each State wildlife or natural resource agency web site (Attachment 1) and applicable information to acquire Federal depredation permits (Attachments 2, 3, and 4). Requirements for a State depredation permit vary from state to state. Some states may require fees or the acquisition of other permits or licenses (i.e., hunting licenses) when procuring a depredation permit.

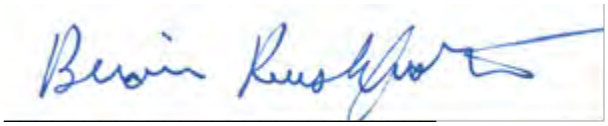
Federally protected species require consultation and permitting through the U.S. Fish and Wildlife Service (USFWS). The regulations governing migratory bird permits can be found in 50 CFR part 13 (General Permit Procedures) and 50 CFR part 21 (Migratory Bird Permits). Generally, no permit is required to harass or disperse depredating migratory birds other than endangered or threatened species, species of special concern, and bald or golden eagles. Also, the USFWS requires a Migratory Bird Damage Project Report (WS Form 37) prepared by the

[1] The taking (the definition of which includes harassment and lethal removal) of game (including birds) in Alaska is regulated by Alaska Statute 16.05.920 *Prohibited Conduct Generally* and Title 5 Alaska Administrative Code 92.033 *Permit For Scientific, Educational, Propagative, Or Public Safety Purposes.*

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services. Wildlife Services provides their recommendation for depredation problems on WS Form 37. Separately, endangered or threatened species, species of special concern, and bald or golden eagle mitigation also requires special permits.

The amount of time necessary to acquire a depredation permit depends on several factors. These may include the type of permit (Federal or State), time of year the permit application is submitted, and proper completion of the application forms (i.e., inclusion of WS Form 37 for Migratory Bird Permits). Associated requirements of certain State wildlife permit offices may involve prior acquisition of a Migratory Bird Permit, hunting license, Federal Duck Stamp, and Upland Gamebird, Migratory Gamebird, and Sandhill Crane permits. Airports that have an urgent need to expedite the procurement of a depredation permit should communicate this to the permitting office(s). If it is necessary in the interim, airports should maintain mitigation techniques that do not require a permit and/or acquire assistance from professionals who have the proper authority.

3. Actions. If an airport experiences delays or requires assistance to expedite the permitting process, they are advised to notify their regional FAA office. FAA Airport Certification Safety Inspectors will verify, when applicable, that airports have obtained proper local, State, and Federal wildlife control permits.



January 30, 2013

Brian Rushforth, Manager
Airport Safety and Operations Division, AAS-300

DATE

ATTACHMENT 1 - STATE FISH, WILDLIFE AND NATURAL RESOURCE AGENCY WEB SITES

Alabama – http://www.dcnr.state.al.us/agfd	Alaska – http://www.state.ak.us/adfg
Arizona – http://www.gf.state.az.us/	Arkansas – http://www.agfc.com/
California – http://www.dfg.ca.gov/	Colorado – http://wildlife.state.co.us/
Connecticut – http://www.ct.gov/dep/site/	Delaware – http://www.dnrec.delaware.gov/fw/
Florida – http://myfwc.com/	Georgia – http://www.gadnr.org/
Hawaii – http://www.hawaii.gov/dlnr/	Idaho – http://fishandgame.idaho.gov/
Illinois – http://www.dnr.illinois.gov	Indiana – http://www.in.gov/dnr/fishwild/
Iowa – http://www.iowadnr.com/index.html	Kansas – http://www.kdwpt.state.ks.us/
Kentucky – http://www.kdfwr.state.ky.us/	Louisiana – http://www.wlf.louisiana.gov/
Maine – http://www.maine.gov/ifw/	Maryland – http://www.dnr.state.md.us/
Massachusetts – http://www.mass.gov/dfwele/dfw/	Michigan – http://www.michigan.gov/dnr
Minnesota – http://www.dnr.state.mn.us/index.html	Mississippi – http://mdwfp.com/
Missouri – http://mdc.mo.gov/	Montana – http://fwp.mt.gov/
Nebraska – http://outdoornebraska.ne.gov/	Nevada – http://ndow.org/
New Hampshire – http://www.wildlife.state.nh.us/	New Jersey – http://www.state.nj.us/dep/fgw
New Mexico – http://www.wildlife.state.nm.us/	New York – http://www.dec.ny.gov/
North Carolina – http://www.ncwildlife.org/	North Dakota – http://gf.nd.gov/
Ohio – http://www.dnr.state.oh.us/wildlife/	Oklahoma – http://www.wildlifedepartment.com/
Oregon – http://www.dfw.state.or.us/	Pennsylvania - http://www.pgc.state.pa.us/portal/server.pt/community/pgc/9106
Rhode Island - http://www.dem.ri.gov/	South Carolina – http://www.dnr.sc.gov/
South Dakota – http://gfp.sd.gov/	Tennessee – http://www.state.tn.us/twra/
Texas – http://www.tpwd.state.tx.us/	Utah – http://wildlife.utah.gov/dwr/
Vermont – http://www.anr.state.vt.us/	Virginia – http://www.dgif.state.va.us/
Washington – http://wdfw.wa.gov/	West Virginia – http://www.wvdnr.gov/
Wisconsin – http://www.dnr.state.wi.us/	Wyoming – http://wgfd.wyo.gov/web2011/home.aspx

ATTACHMENT 2 - UNITED STATES FISH AND WILDLIFE SERVICE MIGRATORY BIRD PERMITS REGULATION 50 CFR § 21.41

Title 50: Wildlife and Fisheries

CHAPTER I: UNITED STATES FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR

SUBCHAPTER B: TAKING, POSSESSION, TRANSPORTATION, SALE, PURCHASE, BARTER, EXPORTATION, AND IMPORTATION OF WILDLIFE AND PLANTS

PART 21: MIGRATORY BIRD PERMITS

Subpart D: Control of Depredating and Otherwise Injurious Birds

21.41 - Depredation permits.

(a) Permit requirement. Except as provided in §§ 21.42 through 21.46, a depredation permit is required before any person may take, possess, or transport migratory birds for depredation control purposes. No permit is required merely to scare or herd depredating migratory birds other than endangered or threatened species or bald or golden eagles.

(b) Application procedures. Submit application for depredation permits to the appropriate Regional Director (Attention: Migratory bird permit office). You can find addresses for the Regional Directors in 50 CFR 2.2. Each application must contain the general information and certification required in § 13.12(a) of this subchapter, and the following additional information:

(1) A description of the area where depredations are occurring;

(2) The nature of the crops or other interests being injured;

(3) The extent of such injury; and

(4) The particular species of migratory birds committing the injury.

(c) Additional permit conditions. In addition to the general conditions set forth in part 13 of this subchapter B, depredation permits shall be subject to requires, in this section:

(1) Permittees may not kill migratory birds unless specifically authorized on the permit.

(2) Unless otherwise specifically authorized, when permittees are authorized to kill migratory birds they may do so only with a shotgun not larger than No. 10 gauge fired from the shoulder, and only on or over the threatened area or area described on the permit.

(3) Permittees may not use blinds, pits, or other means of concealment, decoys, duck calls, or other devices to lure or entice birds within gun range.

(4) All migratory birds killed shall be retrieved by the permittee and turned over to a Bureau representative or his designee for disposition to charitable or other worthy institutions for use as food, or otherwise disposed of as provided by law.

(5) Only persons named on the permit are authorized to act as agents of the permittee under authority of the permit.

(d) Tenure of permits. The tenure of depredation permits shall be limited to the dates which appear on its face, but in no case shall be longer than one year.

[39 FR 1178, Jan. 4, 1974, as amended at 42 FR 17122, Mar. 31, 1977; 63 FR 52637, Oct. 1, 1998]

ATTACHMENT 3 – APPLICATION FOR USFWS MIGRATORY BIRD DEPREDATION PERMIT

Department of the Interior
U.S. Fish and Wildlife Service

OMB Control No. 1018 - 0022
Expires 02/28/2014

Federal Fish and Wildlife Permit Application Form

Click here for addresses.

Return to: U.S. Fish and Wildlife Service (USFWS)

Type of Activity: Migratory Bird Depredation Permit

_____ New Application
_____ Requesting Renewal or Amendment of Permit #_____

Complete Sections A or B, and C, D, and E of this application. U.S. address may be required in Section C, see instructions for details.
See attached instruction pages for information on how to make your application complete and help avoid unnecessary delays.

A.	**Complete if applying as an individual**		
1.a. Last name	1.b. First name	1.c. Middle name or initial	1.d. Suffix
2. Date of birth (mm/dd/yyyy)	3. Social Security No.	4. Occupation	5. Affiliation/ Doing business as (see instructions)
6.a. Telephone number	6.b. Alternate telephone number	6.c. Fax number	6.d. E-mail address

B.	**Complete if applying on behalf of a business, corporation, public agency, tribe, or institution**		
1.a. Name of business, agency, tribe, or institution	1.b. Doing business as (dba)		
2. Tax identification no.	3. Description of business, agency, or institution		
4.a. Principal officer Last name	4.b. Principal officer First name	4.c. Principal officer Middle name/ initial	4.d. Suffix
5. Principal officer title	6. Primary contact		
7.a. Business telephone number	7.b. Alternate telephone number	7.c. Business fax number	7.d. Business e-mail address

C.	**All applicants complete address information**			
1.a. Physical address (Street address; Apartment #, Suite #, or Room #; no P.O. Boxes)				
1.b. City	1.c. State	1.d. Zip code/Postal code:	1.e. County/Province	1.f. Country
2.a. Mailing Address (include if different than physical address; include name of contact person if applicable)				
2.b. City	2.c. State	2.d. Zip code/Postal code:	2.e. County/Province	2.f. Country

D. All applicants MUST complete

1. Attach check or money order payable to the U.S. FISH AND WILDLIFE SERVICE **in the amount of $100.00 if you are applying for a new permit or $50.00 if you are requesting a substantaive amendment to your existing permit. If you are a homeowner requesting a permit for damage to your personal residence or property, attach $50.00.** Federal, tribal, State, and local government agencies, and those acting on behalf of such agencies, are exempt from the processing fee – ***attach documentation of fee exempt status as outlined in instructions.*** (50 CFR 13.11(d))

2. Do you currently have or have you ever had any Federal Fish and Wildlife permits?
Yes ☐ If yes, list the number of the most current permit you have held or that you are applying to renew/re-issue: _____ No ☐

3. Certification: I hereby certify that I have read and am familiar with the regulations contained in ***Title 50, Part 13 of the Code of Federal Regulations*** and the other ***applicable parts in subchapter B of Chapter I of Title 50***, and I certify that the information submitted in this application for a permit is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. 1001.

_____
Signature (**in blue ink**) of applicant/person responsible for permit (No photocopied or stamped signatures) Date of signature (mm/dd/yyyy)

Please continue to next page

Form 3-200-13 Rev. 9/2010 Page 1of 6

E. MIGRATORY BIRD DEPREDATION PERMIT
(Migratory Bird Treaty Act, 50 CFR 21.41)

A Federal Migratory Bird Depredation Permit is required to capture or kill migratory birds for depredation control purposes. The permit authorizes certain management and control activities necessary to provide for human health and safety, protect personal property, or allow resolution of other injury to people or property. No permit is required merely to scare or herd depredating migratory birds other than endangered or threatened species and bald or golden eagles. You should apply for a depredation permit only after non-lethal management proves unsuccessful. If a permit is issued, you will be expected to continue to integrate non-lethal techniques when implementing any lethal measures. You must be at least 18 years of age to apply.

Protected Species: The species listed in the Code of Federal Regulations at 50 CFR 10.13 are protected under the Migratory Bird Treaty Act. A list of species in the U.S. and their status under the MBTA is available at the following website: http://www.fws.gov/migratorybirds/issues/nonnative/MBTA-protected&NonprotectedSpecies.htm.

Resident Canada goose nests & eggs: If you are only destroying or addling resident Canada goose eggs and your state is one that accepts Federal registration, you may register for free on-line at https://epermits.fws.gov/eRCGR in lieu of obtaining a depredation permit.

Note: Your application for a depredation permit must include a recommendation from the U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services, for addressing your depredation problem. You may contact Wildlife Services at (866) 487-3297. If Wildlife Services recommends that a permit be issued to capture or kill birds, they will complete a Wildlife Services Permit Review Form (Form 37). This form and a copy of any required State permits must accompany your application. (This form is not required for resident Canada goose egg addling/destruction/OvoControl™G.)

Please provide the following information numbered according to the questions below on a separate sheet of paper. You should be as specific as possible in your responses. You should submit your application at least 60 days prior to the date that you need your permit (50 CFR 13.11(c)).

1. List the species of migratory birds causing the depredation problem and estimate the number of each involved.

2. Provide the exact location of the property or properties where the control activity would be conducted (State, county, and physical address of the specific site).

3. Description of damage.
   (a) Describe the specific migratory bird damage or injury you are experiencing.
   (b) How long has it been occurring (e.g., the number of years)?
   (c) What times or seasons of the year does it occur?
   (d) Describe any human health and safety hazards involved.
   (e) Provide details such as types of crops destroyed, human injuries sustained, property damage incurred, and health and safety hazards created.

4. Describe the extent of the damage and estimate the economic loss suffered as a result, such as percentage of acres of crop and dollar loss, cost to replace damaged property, or cost of injuries.

5. Describe the nonlethal measures you have taken to control or eliminate the problem, including how long (e.g., a week, month, year(s)) and how often they have been conducted. List the techniques you have tried, such as harassment (e.g., horns, pyrotechnics, propane cannons), habitat management (e.g., vegetative barriers, longer grass management, fencing), cultural practices (e.g., crop selection and placement, management of pets and feeding schedules), or no feeding policies.

6. Proposed actions.
   (a) What actions are you proposing to take to alleviate the problem (e.g., kill, eliminate nesting, trap and relocate)?
   (b) Describe the method you propose (e.g., shoot; addle, oil, destroy eggs; trap and relocate; trap and donate birds to a food processing center).
   (c) If you propose to trap birds, describe the method that will be used and your (or your agent's) experience with the method.

7. What long-term measures do you plan to take to eliminate the problem?

8. If you are applying on behalf of an airport for a permit to control birds in flight zones, indicate whether you are operating under an approved Wildlife Hazard Management Plan.

9. Anyone who will be acting as your agent or assisting you with the activities authorized by your permit must be authorized as a subpermittee under your permit. As the primary permittee, you will be legally responsible for ensuring that your subpermittees comply with the terms of your permit. List the name of anyone who will be directly involved in doing the work to resolve your problems. Include any commercial company that may be contracted to conduct the work.

10. You must retain records relating to the activities conducted under your permit for at least 5 years from the date of expiration of your permit. Is the physical address you provided in Section C on page 1 of this application the address where your records will be kept?

____ Yes ____ No If "no", provide the physical address:

_____

11. **Any permit issued as a result of this application is not valid unless you also have any required State or tribal permits or approvals associated with the activity.** Have you obtained all required State or tribal permits or approvals to conduct this activity?

____Yes If "yes", attach a copy of the approval(s). ____ Have applied **(Send copy when issued)** ____ None required

12. Attach a copy of the completed Wildlife Services Permit Review Form (Form 37) prepared by USDA, APHIS, Wildlife Services providing their recommendation regarding your depredation problem.

PERMIT APPLICATION FORM INSTRUCTIONS

The following instructions pertain to an application for a U.S. Fish and Wildlife Service or CITES permit. The General Permit Procedures in 50 CFR 13 address the permitting process. For simplicity, all licenses, permits, registrations, and certificates are referred to as a permit.

GENERAL INSTRUCTIONS:

- Complete all blocks/lines/questions in Sections A or B, and in C, D, and E.
- **An incomplete application may cause delays in processing or may be returned to the applicant. Be sure you are filling in the appropriate application form for the proposed activity.**
- Print clearly or type in the information. Illegible applications may cause delays.
- Sign the application in blue ink. Faxes or copies of the original signature will not be accepted.
- Mail the original application to the address at the top of page one of the application or if applicable on the attached address list.
- **Keep a copy of your completed application.**
- **Please plan ahead. Allow at least 60 days for your application to be processed. Some applications may take longer than 90 days to process. (50 CFR 13.11)**
- Applications are processed in the order they are received.
- Additional forms and instructions are available from http://permits.fws.gov.

COMPLETE EITHER SECTION A OR SECTION B:

Section A. **Complete if applying as an individual:**

- Enter the complete name of the responsible individual who will be the permittee if a permit is issued. Enter personal information that identifies the applicant. ***Fax and e-mail are not required if not available.***
- If you are applying on behalf of a client, the personal information must pertain to the client, and a document evidencing power of attorney must be included with the application.
- **Affiliation/ Doing business as (dba)**: business, agency, organizational, or institutional affiliation *directly* related to the activity requested in the application (e.g., a taxidermist is an individual whose business can *directly* relate to the requested activity). The Division of Management Authority (DMA) will **not** accept *doing business as* affiliations for individuals.

Section B. **Complete if applying as a business, corporation, public agency, tribe, or institution:**

- Enter the complete name of the business, agency, tribe, or institution that will be the permittee if a permit is issued. Give a brief description of the type of business the applicant is engaged in. Provide contact phone number(s) of the business.
- **Principal Officer** is the person in charge of the listed business, corporation, public agency, tribe, or institution. The principal officer is the person responsible for the application and any permitted activities. Often the principal officer is a Director or President. **Primary Contact** is the person at the business, corporation, public agency, tribe, or institution who will be available to answer questions about the application or permitted activities. Often this is the preparer of the application.

ALL APPLICANTS COMPLETE SECTION C:

- For all applications submitted to the Division of Management Authority (DMA) a physical U.S. address is **required**. Province and Country blocks are provided for those USFWS programs which use foreign addresses and are not required by DMA.
- **Mailing address** is address where communications from USFWS should be mailed if different than applicant's physical address.

ALL APPLICANTS COMPLETE SECTION D:

Section D.1 **Application processing fee:**

- An application processing fee is required at the time of application; unless exempted under 50 CFR13.11(d)(3). The application processing fee is assessed to partially cover the cost of processing a request. **The fee does not guarantee the issuance of a permit. Fees will not be refunded for applications that are approved, abandoned, or denied**. We may return fees for withdrawn applications prior to any significant processing occurring.
- **Documentation of fee exempt status is not required for Federal, tribal, State, or local government agencies; but must be supplied by those applicants acting on behalf of such agencies**. Those applicants acting on behalf of such agencies must submit a letter on agency letterhead and signed by the head of the unit of government for which the applicant is acting on behalf, confirming that the applicant will be carrying out the permitted activity for the agency.

Section D.2 **Federal Fish and Wildlife permits:**

- List the number(s) of your most current FWS or CITES permit or the number of the most recent permit if none are currently valid. If applying for re-issuance of a CITES permit, the original permit must be returned with this application.

Section D.3 **CERTIFICATION:**

- **The individual identified in Section A, the principal officer named in Section B, or person with a valid power of attorney (documentation must be included in the application) must sign and date the application in blue ink.** This signature binds the applicant to the statement of certification. This means that you certify that you have read and understand the regulations that apply to the permit. You also certify that everything included in the application is true to the best of your knowledge. Be sure to read the statement and re-read the application and your answers before signing.

ALL APPLICANTS COMPLETE SECTION E.

Please continue to next page

APPLICATION FOR A FEDERAL FISH AND WILDLIFE PERMIT
Paperwork Reduction Act, Privacy Act, and Freedom of Information Act – Notices

In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. 3501, *et seq.*) and the Privacy Act of 1974 (5 U.S.C. 552a), please be advised:

1. The gathering of information on fish and wildlife is authorized by:
(Authorizing statutes can be found at: http://www.gpoaccess.gov/cfr/index.html and http://www.fws.gov/permits/ltr/ltr.html.)

   a. Bald and Golden Eagle Protection Act (16 U.S.C. 668), 50 CFR 22;
   b. Endangered Species Act of 1973 (16 U.S.C. 1531-1544), 50CFR 17;
   c. Migratory Bird Treaty Act (16 U.S.C. 703-712), 50 CFR 21;
   d. Marine Mammal Protection Act of 1972 (16 U.S.C. 1361, *et. seq.*), 50 CFR 18;
   e. Wild Bird Conservation Act (16 U.S.C. 4901-4916), 50 CFR 15;
   f. Lacey Act: Injurious Wildlife (18 U.S.C. 42), 50 CFR 16;
   g. Convention on International Trade in Endangered Species of Wild Fauna and Flora (TIAS 8249), http://www.cites.org , 50 CFR 23;
   h. General Provisions, 50 CFR 10;
   i. General Permit Procedures, 50 CFR 13; and
   j. Wildlife Provisions (Import/export/transport), 50 CFR 14.

2. Information requested in this form is purely voluntary. However, submission of requested information is required in order to process applications for permits authorized under the above laws. Failure to provide all requested information may be sufficient cause for the U.S. Fish and Wildlife Service to deny the request. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.

3. Certain applications for permits authorized under the Endangered Species Act of 1973 (16 U.S.C. 1539) and the Marine Mammal Protection Act of 1972 (16 U.S.C. 1374) will be published in the **Federal Register** as required by the two laws.

4. Disclosures outside the Department of the Interior may be made without the consent of an individual under the routine uses listed below, if the disclosure is compatible with the purposes for which the record was collected. (Ref. 68 FR 52611, September 4, 2003)

   a. Routine disclosure to subject matter experts, and Federal, tribal, State, local, and foreign agencies, for the purpose of obtaining advice relevant to making a decision on an application for a permit or when necessary to accomplish a FWS function related to this system of records.
   b. Routine disclosure to the public as a result of publishing **Federal Register** notices announcing the receipt of permit applications for public comment or notice of the decision on a permit application.
   c. Routine disclosure to Federal, tribal, State, local, or foreign wildlife and plant agencies for the exchange of information on permits granted or denied to assure compliance with all applicable permitting requirements.
   d. Routine disclosure to Captive-bred Wildlife registrants under the Endangered Species Act for the exchange of authorized species, and to share information on the captive breeding of these species.
   e. Routine disclosure to Federal, tribal, State, and local authorities who need to know who is permitted to receive and rehabilitate sick, orphaned, and injured birds under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act; federally permitted rehabilitators; individuals seeking a permitted rehabilitator with whom to place a bird in need of care; and licensed veterinarians who receive, treat, or diagnose sick, orphaned, and injured birds.
   f. Routine disclosure to the Department of Justice, or a court, adjudicative, or other administrative body or to a party in litigation before a court or adjudicative or administrative body, under certain circumstances.
   g. Routine disclosure to the appropriate Federal, tribal, State, local, or foreign governmental agency responsible for investigating, prosecuting, enforcing, or implementing statutes, rules, or licenses, when we become aware of a violation or potential violation of such statutes, rules, or licenses, or when we need to monitor activities associated with a permit or regulated use.
   h. Routine disclosure to a congressional office in response to an inquiry to the office by the individual to whom the record pertains.
   i. Routine disclosure to the General Accounting Office or Congress when the information is required for the evaluation of the permit programs.
   j. Routine disclosure to provide addresses obtained from the Internal Revenue Service to debt collection agencies for purposes of locating a debtor to collect or compromise a Federal claim against the debtor or to consumer reporting agencies to prepare a commercial credit report for use by the FWS.

5. For individuals, personal information such as home address and telephone number, financial data, and personal identifiers (social security number, birth date, etc.) will be removed prior to any release of the application.

6. The public reporting burden on the applicant for information collection varies depending on the activity for which a permit is requested. The relevant burden for a Migratory Bird Depredation permit application varies from 1.5 hours for individuals to 3 hours for businesses. The burden for recordkeeping varies from 15 minutes for individuals to 30 minutes for businesses. This burden estimate includes time for reviewing instructions, gathering and maintaining data and completing and reviewing the form. You may direct comments regarding the burden estimate or any other aspect of the form to the Service Information Clearance Officer, U.S. Fish and Wildlife Service, Mail Stop 222, Arlington Square, U.S. Department of the Interior, 1849 C Street, NW, Washington D.C. 20240.

Freedom of Information Act – Notice

For organizations, businesses, or individuals operating as a business (i.e., permittees not covered by the Privacy Act), we request that you identify any information that should be considered privileged and confidential business information to allow the Service to meet its responsibilities under FOIA. Confidential business information must be clearly marked "Business Confidential" at the top of the letter or page and each succeeding page and must be accompanied by a non-confidential summary of the confidential information. The non-confidential summary and remaining documents may be made available to the public under FOIA [43 CFR 2.13(c)(4), 43 CFR 2.15(d)(1)(i)].

U.S. Fish & Wildlife Service

Migratory Bird Regional Permit Offices

FWS REGION	AREA OF RESPONSIBILITY	MAILING ADDRESS	CONTACT INFORMATION
Region 1	**Hawaii, Idaho, Oregon, Washington**	911 N.E. 11th Avenue Portland, OR 97232-4181	Tel. (503) 872-2715 Fax (503) 231-2019 Email *permitsR1MB@fws.gov*
Region 2	**Arizona, New Mexico, Oklahoma, Texas**	P.O. Box 709 Albuquerque, NM 87103	Tel. (505) 248-7882 Fax (505) 248-7885 Email *permitsR2MB@fws.gov*
Region 3	**Iowa, Illinois, Indiana, Minnesota, Missouri, Michigan, Ohio, Wisconsin**	5600 America Blvd. West Suite 990 Bloomington, MN 55437-1458 (Effective 5/31/2011)	Tel. (612) 713-5436 Fax (612) 713-5393 Email *permitsR3MB@fws.gov*
Region 4	**Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virgin Islands, Puerto Rico**	P.O. Box 49208 Atlanta, GA 30359	Tel. (404) 679-7070 Fax (404) 679-4180 Email *permitsR4MB@fws.gov*
Region 5	**Connecticut, District of Columbia, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Virginia, Vermont, West Virginia**	P.O. Box 779 Hadley, MA 01035-0779	Tel. (413) 253-8643 Fax (413) 253-8424 Email *permitsR5MB@fws.gov*
Region 6	**Colorado, Kansas, Montana, North Dakota, Nebraska, South Dakota, Utah, Wyoming**	P.O. Box 25486 DFC(60154) Denver, CO 80225-0486	Tel. (303) 236-8171 Fax (303) 236-8017 Email *permitsR6MB@fws.gov*
Region 7	**Alaska**	1011 E. Tudor Road (MS-201) Anchorage, AK 99503	Tel. (907) 786-3693 Fax (907) 786-3641 Email *permitsR7MB@fws.gov*
Region 8	**California, Nevada**	2800 Cottage Way Sacramento, CA 95825	Tel. (916) 978-6183 Fax (916) 414-6486 Email*permitsR8MB@fws.gov*

ATTACHMENT 4 – USDA / APHIS / WILDLIFE SERVICES CONTACT INFORMATION FOR WS FORM 37 *MIGRATORY BIRD DAMAGE PROJECT REPORT* (REQUIRED FOR COMPLETION OF USFWS MIGRATORY BIRD DEPREDATION PERMIT SECTION D-10)

Office	Director	Phone
Alabama, Virgin Islands, Puerto Rico	Frank Boyd	(334) 844-5670
Arkansas	Thurman Booth	(501) 835-2318
Florida	Edwin Hartin	(352) 377-5556
Georgia	Steve Smith	(706) 546-5637
Illinois	Scott Beckerman	(217) 241-6700
Indiana	Judy Loven	(765) 494-6229
Louisiana	Dwight LeBlanc	(225) 389-0229
Maine	John Forbes	(207) 629-5181
Maryland, Delaware, D.C.	Kevin Sullivan	(410) 349-8055
Massachusetts, Connecticut, Rhode Island	Monte Chandler	(413) 253-2403
Michigan	Peter Butchko	(517) 336-1928
Minnesota	Gary Nohrenberg	(651) 224-6027
Mississippi	Kris Godwin	(662) 325-3014
Missouri, Iowa	Seth Swafford	(573) 449-3033
New Hampshire, Vermont	Parker Hall	(603) 223-6832
New Jersey	Wendy Anderson	(908) 735-5654
New York	Martin Lowney	(518) 477-4837
North Carolina	Jon Heisterberg	(919) 786-4480
Ohio	Andy Montoney	(614) 861-6087
Pennsylvania	Harris Glass	(717) 236-9451
South Carolina	Noel Myers	(803) 786-9455
Tennessee, Kentucky	Brett Dunlap	(615) 736-5506
Virginia	Scott Barras	(804) 739-7739
West Virginia	Chris Croson	(304) 636-1785
Wisconsin	Jason Suckow	(608) 837-2727
Arizona	David Bergman	(602) 870-2081
California	Dennis Orthmeyer	(916) 979-2675
Colorado	Mike Yeary	(303) 236-5810
Hawaii, Pacfic Islands	Mike Pitzler	(808) 838-2840
Idaho	Todd Grimm	(208) 378-5077
Kansas	Tom Halstead	(785) 537-6855
Montana	John Steuber	(406) 657-6464
Nebraska	Tim Veenendaal	(402) 434-2340
Nevada	Mark Jensen	(775) 851-4848
New Mexico	Alan May	(505) 346-2640
North Dakota, South Dakota	Phil Mastrangelo	(701) 250-4405
Oklahoma	Kevin Grant	(405) 521-4039
Oregon	Dave Williams	(503) 326-2346
South Dakota	N/A	(605) 224-8692
Texas	Mike Bodenchuk	(210) 472-5451
Utah	Mike Linnell	(801) 975-3315
Washington, Alaska	Roger Woodruff	(360) 753-9884
Wyoming	Rod Krischke	(307) 261-5336

Federal Aviation Administration

National Part 139 CertAlert

AdvisoryCautionary**Non-Directive**Advisory**Cautionary**Non-Directive**Advisory**Cautionary**Non-Directive**

Date:	**February 26, 2014**	**No. 14-01**
To:	**Airport Operators, FAA Airport Certification Safety Inspectors**	
Subject:	**Seasonal Mitigation of Hazardous Species at Airports: Attention to Snowy Owls**	
Points of Contact:	John Weller, AAS-300, (202) 267-3778, John.Weller@FAA.gov Amy Anderson, AAS-300, (202) 267-7205, Amy.Anderson@FAA.gov	

1. **Purpose.** This CertAlert aims to heighten awareness of transient hazardous wildlife such as snowy owls (Bubo scandiacus). Although snowy owls at an airport may be a unique event, they should be prevented or discouraged from using airport environments because they pose a serious risk to aviation.

2. **Background.** Seasonal changes in wildlife populations directly impact safety at airports. These changes can include seasonal migrations, brood rearing and fledging, fawning, calving, and other cyclical events. These variations in wildlife populations often require airports to look for and potentially alter how they mitigate hazardous species to reduce the risk of strikes.

   Snowy owls periodically leave their northern breeding grounds en masse in movements called *irruptions* or *invasions*. These movements differ from seasonal migrations because they are unpredictable and not repeated annually. These irruptive migrations can greatly expand the winter distribution of the species. They represent a serious strike risk due to their size, flight characteristics, and behavior.

   Snowy owls are rarely observed in the contiguous United States and attract exceptional attention when they arrive. They are large, slow-flying birds that hunt close to the ground. They prefer open, expansive habitats. Snowy owls easily tolerate human activities. Many of their daily movements occur in the same airspace as an aircraft's take-offs and landings.

3. **Description.** The snowy owl stands almost 2 feet tall. Its wingspan exceeds 5 feet, and it weighs between 3 and 4 pounds. It is North America's heaviest owl and is commonly spotted during daylight hours. The plumage is largely white, with variable amounts of brown barring and spots.

Their diet is predominantly lemmings, when available. In the contiguous United States, their diet includes other small mammals and birds, including rodents, rabbits, squirrels, songbirds, waterfowl, and wading birds.

Snowy Owl (*Bubo scandiacus*). Photo credit: Christopher Castillo.

4. **Actions.** The snowy owl is protected by the Migratory Bird Treaty Act (MBTA) and as such may be harassed or dispersed from airport environments using non-injurious methods. If federally permitted actions are necessary, such as capture and relocation, then airports must apply for a U.S. Fish and Wildlife Service Depredation Permit. If possible, the snowy owls should be released far from any airport.

   Airports should not support the presence of snowy owls even though it may be an uncommon, short-lived event. Airports should not encourage snowy owls to remain on-site through purposeful inaction, or create attractive habitats or feeding opportunities. At no time should anyone feed snowy owls in an airport environment. Such actions can result in hazards to aviation.

Brian Rushforth, Manager
Airport Safety and Operations Division, AAS-300

Federal Aviation Administration

National Part 139 CertAlert

AdvisoryCautionary**Non-Directive**Advisory**Cautionary**Non-Directive**Advisory**Cautionary**Non-Directive**

Date: **08/03/2016** **No. 16-03**

To: **Airport Operators and FAA Airport Certification Safety Inspectors (ACSIs)**

Subject: **Recommended Wildlife Exclusion Fencing**

Point of Contact: Amy Anderson, AAS-300, (202) 267-7205
Email: amy.anderson@faa.gov

1. Purpose.

This CertAlert contains airfield exclusion methods for deer and other large mammals.

2. Cancellation.

This CertAlert cancels Certalert 01-01, Deer Aircraft Hazard, dated February 1, 2001; CertAlert 02-09, Alternative Deer Fencing, dated December 12, 2002; and CertAlert 04-16, Deer Hazard to Aircraft and Deer Fencing, dated December 13, 2004.

3. Background.

Elevated deer and coyote populations in the United States represent an increasingly serious threat to both Commercial and General Aviation Aircraft. According to the National Wildlife Strike Database, deer and coyote are the most frequently struck terrestrial mammals (37 and 34 percent, respectively). Deer are responsible for 92 percent of the mammal strikes that resulted in damage. From 1990 to 2015, over 1,107 deer-aircraft collisions and 487 coyote-aircraft collisions were reported to the Federal Aviation Administration (FAA). Of these reports, 932 of the deer strikes (84%) and 43 of the coyote strikes (9%) indicated the aircraft was damaged as a result of the collision.

The FAA reminds airport operators that controlling deer and other medium to large terrestrial mammals on and around airfields is very important. Two recent incidents include a Cessna 195B sustaining significant damage on landing as a result of veering off the runway to avoid striking white-tailed deer in Virginia and a Cessna 310 that was destroyed on approach to an airport in Michigan when it collided with a white-tailed deer.

4. Recommendations.

Proper fencing is the best way of keeping deer and coyotes off aircraft movement areas. In some cases, deer have been observed jumping over 8-foot fencing and coyotes have been observed scaling 6-foot fencing. Deer and coyotes can fit through very small gaps between

gates and under fencing. Deer have been observed squeezing through a 7.5-inch gap at the bottom of a fence. Coyotes can fit through 6 inch x 4 inch gaps under a fence and they will also dig under the fence to access the airfield.

The FAA recommends a 10-foot fence[1] with 3-strand barbed wire outriggers. In some cases, an airport may be able to use an 8-foot fence with 3-strand barbed-wire outriggers, depending on the amount of deer activity in a local area.

A 4- to 5-foot skirt of fencing material, attached to the bottom of the fence and buried at a 45-degree angle on the outside of the fence, is ideal to prevent animals from digging under the fence and reduce the chance of washouts. If the fence skirting cannot be installed at a 45-degree angle, then it is acceptable to install it horizontally underground several inches beneath the surface. This type of fencing also greatly increases airport security and safety. A concrete base[2] along the bottom of the fence is also an option to prevent burrowing or digging under the fence. Airport Operators should keep the fence line right-of-way free of excess vegetation. The fence line should be inspected daily, and a fence inspection schedule should be included in an airport's Wildlife Hazard Management Plan (WHMP). If the proposed inspection schedule is less than daily, it should be approved by an ACSI for Part 139 certificated airports. Washouts, breaks, or other holes in the fence need to be repaired as soon as they are discovered.

Gates should close with less than 6-inch gaps to prevent entry by deer or coyotes. If the gates have gaps along the bottom, installation of concrete "speed bumps" under the gate can be a solution. If the gaps are between the gates or the poles, a heavy brush material or interlocking metal bars can also be installed to preclude entry by deer or coyote. In some cases, a single strand of barbed wire strung between the bottom of the fence and the ground where there are gaps will minimize the potential for wildlife access.

Chain link fencing is a type of wire-mesh fencing. Other types of wire-mesh fencing that are suitable for exclusion of wildlife at airports include woven-wire and v-mesh fencing. Also, high tensile welded-wire fencing has been used successfully at different airports to exclude deer and coyotes. However, these types of fencing must be researched thoroughly when choosing an adequate fencing material for an airport due to the variability in durability, life span, and the spacing of mesh and welded wire.

In some cases, electric fencing or matting may offer a suitable alternative. Recent improvements in fencing components and design have greatly increased the effectiveness and ease of installation of electric fences. Tests by the U.S. Department of Agriculture (USDA), National Wildlife Research Center, have shown that some 4- to 6-foot, 5- to 9-strand electric fences designs can be 99% effective at stopping deer. Installation of some of the newer electric fences requires neither specialized equipment nor training; however, they may require more maintenance than other types of fence and must be consistently electrified. Airport sponsors must contact their local Airport District Office (ADO) to

[1] AC No: 150/5370-10G, *Standards for Specifying Construction of Airports* (Part 8 – Fencing), provides details on different fencing and post materials (e.g., chain link, welded and woven wire mesh, galvanized or pvc coating, etc.).

[2] Additional information regarding underground skirting, fence base materials, vegetation clearance recommendations, and installation procedures can be found in AC 150/5370-10G.

discuss eligibility for AIP funding or requirements for a Modification to Standards (MOS).

In limited situations, the use of non-conductive, composite, frangible electric fence posts and fence conductors may allow the installation of electric fence closer to the aircraft movement area than would normally be allowed with standard link fencing material. Please note that electric fencing may produce radio frequency interference that could be disruptive to NAVAIDS and airport communications and should be considered when determining types of fencing.

The key for excluding deer and coyotes is the proper installation and maintenance of a fence that is:

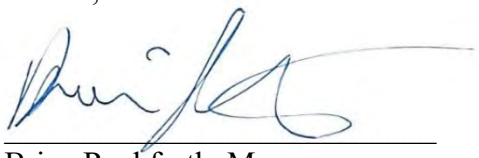
- Of sufficient height to deter jumping and scaling
- Constructed of a material that is difficult to penetrate
- Constructed fully around the airfield without gaps below the fence or at the gates or that mitigates the gaps with other exclusionary materials
- Constructed to deter digging or burrowing under the fence

The most suitable fence for an airport depends on many factors, including the observed wildlife hazards, the potential impacts of certain types of fencing, seasonality of hazards, costs (both for construction and maintenance), and adjacent habitat types. Airport sponsors must contact their local ADO to discuss what types of fencing are eligible for AIP funding.

For proposed fencing that will intersect wetlands or surface waters (streams, rivers, etc.), the airport sponsor should determine what state and federal permits will be required prior to installation. Fencing that is located in wetlands or over surface waters typically requires additional maintenance and/or cleaning due to debris getting caught and potentially damaging the fence. If a culvert is located along the perimeter fence, grates or some other barrier should be placed over the culvert to ensure wildlife cannot access the airfield through the culvert. The barrier should allow for water movement and should be inspected and cleared of debris regularly to ensure water is flowing efficiently.

Airport sponsors should include new and/or improved wildlife fencing in their WHMP as a prioritized action item. If deer are observed on or near the aircraft movement area, immediate action must be taken to remove them.

Airport operators can contact the State Wildlife Management Agency or the nearest USDA, Wildlife Services Office for assistance with deer problems.



Brian Rushforth, Manager
Airport Safety and Operations Division, AAS-300

Appendix D MULT-AGENCY WILDLIFE MOA

December 2002

Memorandum of Agreement Between
the Federal Aviation Administration,
the U.S. Air Force,
the U.S. Army,
the U.S. Environmental Protection Agency,
the U.S. Fish and Wildlife Service, and
the U.S. Department of Agriculture
to Address Aircraft-Wildlife Strikes

PURPOSE

The signatory agencies know the risks that aircraft-wildlife strikes pose to safe aviation.

This Memorandum of Agreement (MOA) acknowledges each signatory agency's respective missions. Through this MOA, the agencies establish procedures necessary to coordinate their missions to more effectively address existing and future environmental conditions contributing to aircraft-wildlife strikes throughout the United States. These efforts are intended to minimize wildlife risks to aviation and human safety, while protecting the Nation's valuable environmental resources.

BACKGROUND

Aircraft-wildlife strikes are the second leading causes of aviation-related fatalities. Globally, these strikes have killed over 400 people and destroyed more than 420 aircraft. While these extreme events are rare when compared to the millions of annual aircraft operations, the potential for catastrophic loss of human life resulting from one incident is substantial. The most recent accident demonstrating the grievous nature of these strikes occurred in September 1995, when a U.S. Air Force reconnaissance jet struck a flock of Canada geese during takeoff, killing all 24 people aboard.

The Federal Aviation Administration (FAA) and the United States Air Force (USAF) databases contain information on more than 54,000 United States civilian and military aircraft-wildlife strikes reported to them between 1990 and 1999[1]. During that decade, the FAA received reports indicating that aircraft-wildlife strikes, damaged 4,500 civilian U.S. aircraft (1,500 substantially), destroyed 19 aircraft, injured 91 people, and killed 6 people. Additionally, there were 216 incidents where birds struck two or more engines on civilian aircraft, with damage occurring to 26 percent of the 449 engines involved in these incidents. The FAA estimates that during the same decade, civilian U.S. aircraft sustained $4 billion worth of damages and associated losses and 4.7 million hours of aircraft downtime due to aircraft-wildlife strikes. For the same period,

[1] FAA estimates that the 28,150 aircraft-wildlife strike reports it received represent less than 20% of the actual number of strikes that occurred during the decade.

USAF planes colliding with wildlife resulted in 10 Class A Mishaps[2], 26 airmen deaths, and over $217 million in damages.

Approximately 97 percent of the reported civilian aircraft-wildlife strikes involved common, large-bodied birds or large flocks of small birds. Almost 70 percent of these events involved gulls, waterfowl, and raptors (Table 1).

About 90 percent of aircraft-wildlife strikes occur on or near airports, when aircraft are below altitudes of 2,000 feet. Aircraft-wildlife strikes at these elevations are especially dangerous because aircraft are moving at high speeds and are close to or on the ground. Aircrews are intently focused on complex take-off or landing procedures and monitoring the movements of other aircraft in the airport vicinity. Aircrew attention to these activities while at low altitudes often compromises their ability to successfully recover from unexpected collisions with wildlife and to deal with rapidly changing flight procedures. As a result, crews have minimal time and space to recover from aircraft-wildlife strikes.

Increasing bird and wildlife populations in urban and suburban areas near airports contribute to escalating aircraft-wildlife strike rates. FAA, USAF, and Wildlife Services (WS) experts expect the risks, frequencies, and potential severities of aircraft-wildlife strikes to increase during the next decade as the numbers of civilian and military aircraft operations grow to meet expanding transportation and military demands.

SECTION I.

SCOPE OF COOPERATION AND COORDINATION

Based on the preceding information and to achieve this MOA's purpose, the signatory agencies:

A. Agree to strongly encourage their respective regional and local offices, as appropriate, to develop interagency coordination procedures necessary to effectively and efficiently implement this MOA. Local procedures should clarify time frames and other general coordination guidelines.

B. Agree that the term "airport" applies only to those facilities as defined in the attached glossary.

C. Agree that the three major activities of most concern include, but are not limited to:

1. airport siting and expansion;

[2] See glossary for the definition of a Class A Mishap and similar terms.

2. development of conservation/mitigation habitats or other land uses that could attract hazardous wildlife to airports or nearby areas; and

3. responses to known wildlife hazards or aircraft-wildlife strikes.

D. Agree that "hazardous wildlife" are those animals, identified to species and listed in FAA and USAF databases, that are most often involved in aircraft-wildlife strikes. Many of the species frequently inhabit areas on or near airports, cause structural damage to airport facilities, or attract other wildlife that pose an aircraft-wildlife strike hazard. Table 1 lists many of these species. It is included solely to provide information on identified wildlife species that have been involved in aircraft-wildlife strikes. It is <u>not</u> intended to represent the universe of species concerning the signatory agencies, since more than 50 percent of the aircraft-wildlife strikes reported to FAA or the USAF did not identify the species involved.

E. Agree to focus on habitats attractive to the species noted in Table 1, but the signatory agencies realize that it is imperative to recognize that wildlife hazard determinations discussed in Paragraph L of this section may involve other animals.

F. Agree that not all habitat types attract hazardous wildlife. The signatory agencies, during their consultative or decisionmaking activities, will inform regional and local land use authorities of this MOA's purpose. The signatory agencies will consider regional, local, and site-specific factors (e.g., geographic setting and/or ecological concerns) when conducting these activities and will work cooperatively with the authorities as they develop and implement local land use programs under their respective jurisdictions. The signatory agencies will encourage these stakeholders to develop land uses within the siting criteria noted in Section 1-3 of FAA Advisory Circular (AC) 150.5200-33 (Attachment A) that do not attract hazardous wildlife. Conversely, the agencies will promote the establishment of land uses attractive to hazardous wildlife outside those siting criteria. Exceptions to the above siting criteria, as described in Section 2.4.b of the AC, will be considered because they typically involve habitats that provide unique ecological functions or values (e.g., critical habitat for federally-listed endangered or threatened species, ground water recharge).

G. Agree that wetlands provide many important ecological functions and values, including fish and wildlife habitats; flood protection; shoreline erosion control; water quality improvement; and recreational, educational, and research opportunities. To protect jurisdictional wetlands, Section 404 of the Clean Water Act (CWA) establishes a program to regulate dredge and/or fill activities in these wetlands and navigable waters. In recognizing Section 404 requirements and the Clean Water Action Plan's goal to annually increase the Nation's net wetland acreage by 100,000 acres through 2005, the signatory agencies agree to resolve aircraft-wildlife conflicts. They will do so by

avoiding and minimizing wetland impacts to the maximum extent practicable, and will work to compensate for all associated unavoidable wetland impacts. The agencies agree to work with landowners and communities to encourage and support wetland restoration or enhancement efforts that do not increase aircraft-wildlife strike potentials.

H. Agree that the: U.S. Army Corps of Engineers (ACOE) has expertise in protecting and managing jurisdictional wetlands and their associated wildlife; U.S. Environmental Protection Agency (EPA) has expertise in protecting environmental resources; and the U.S. Fish and Wildlife Service (USFWS) has expertise in protecting and managing wildlife and their habitats, including migratory birds and wetlands. Appropriate signatory agencies will cooperatively review proposals to develop or expand wetland mitigation sites, or wildlife refuges that may attract hazardous wildlife. When planning these sites or refuges, the signatory agencies will diligently consider the siting criteria and land use practice recommendations stated in FAA AC 150/5200-33. The agencies will make every effort to undertake actions that are consistent with those criteria and recommendations, but recognize that exceptions to the siting criteria may be appropriate (see Paragraph F of this section).

I. Agree to consult with airport proponents during initial airport planning efforts. As appropriate, the FAA or USAF will initiate signatory agency participation in these efforts. When evaluating proposals to build new civilian or military aviation facilities or to expand existing ones, the FAA or the USAF, will work with appropriate signatory agencies to diligently evaluate alternatives that may avoid adverse effects on wetlands, other aquatic resources, and Federal wildlife refuges. If these or other habitats support hazardous wildlife, and there is no practicable alternative location for the proposed aviation project, the appropriate signatory agencies, consistent with applicable laws, regulations, and policies, will develop mutually acceptable measures, to protect aviation safety and mitigate any unavoidable wildlife impacts.

J. Agree that a variety of other land uses (e.g., storm water management facilities, wastewater treatment systems, landfills, golf courses, parks, agricultural or aquacultural facilities, and landscapes) attract hazardous wildlife and are, therefore, normally incompatible with airports. Accordingly, new, federally-funded airport construction or airport expansion projects near habitats or other land uses that may attract hazardous wildlife must conform to the siting criteria established in the FAA Advisory Circular (AC) 150/5200-33, Section 1-3.

K. Agree to encourage and advise owners and/or operators of non-airport facilities that are known hazardous wildlife attractants (See Paragraph J) to follow the siting criteria in Section 1-3 of AC 150/5200-33. As appropriate, each signatory agency will inform proponents of these or other land uses about the land use's potential to attract hazardous species to airport areas.

The signatory agencies will urge facility owners and/or operators about the critical need to consider the land uses' effects on aviation safety.

L. Agree that FAA, USAF, and WS personnel have the expertise necessary to determine the aircraft-wildlife strike potentials of various land uses. When there is disagreement among signatory agencies about a particular land use and its potential to attract hazardous wildlife, the FAA, USAF, or WS will prepare a wildlife hazard assessment. Then, the appropriate signatory agencies will meet at the local level to review the assessment. At a minimum, that assessment will:

1. identify each species causing the aviation hazard, its seasonal and daily populations, and the population's local movements;

2. discuss locations and features on and near the airport or land use attractive to hazardous wildlife; and

3. evaluate the extent of the wildlife hazard to aviation.

M. Agree to cooperate with the airport operator to develop a specific, wildlife hazard management plan for a given location, when a potential wildlife hazard is identified. The plan will meet applicable FAA, USAF, and other relevant requirements. In developing the plan, the appropriate agencies will use their expertise and attempt to integrate their respective programmatic responsibilities, while complying with existing laws, regulations, and policies. The plan should avoid adverse impacts to wildlife populations, wetlands, or other sensitive habitats to the maximum extent practical. Unavoidable impacts resulting from implementing the plan will be fully compensated pursuant to all applicable Federal laws, regulations, and policies.

N. Agree that whenever a significant aircraft-wildlife strike occurs or a potential for one is identified, any signatory agency may initiate actions with other appropriate signatory agencies to evaluate the situation and develop mutually acceptable solutions to reduce the identified strike probability. The agencies will work cooperatively, preferably at the local level, to determine the causes of the strike and what can and should be done at the airport or in its vicinity to reduce potential strikes involving that species.

O. Agree that information and analyses relating to mitigation that could cause or contribute to aircraft-wildlife strikes should, whenever possible, be included in documents prepared to satisfy the National Environmental Policy Act (NEPA). This should be done in coordination with appropriate signatory agencies to inform the public and Federal decision makers about important ecological factors that may affect aviation. This concurrent review of environmental issues will promote the streamlining of the NEPA review process.

P. Agree to cooperatively develop mutually acceptable and consistent guidance, manuals, or procedures addressing the management of habitats attractive to

hazardous wildlife, when those habitats are or will be within the siting criteria noted in Section 1-3 of FAA AC 5200-33. As appropriate, the signatory agencies will also consult each other when they propose revisions to any regulations or guidance relevant to the purpose of this MOA, and agree to modify this MOA accordingly.

SECTION II.
GENERAL RULES AND INFORMATION

A. Development of this MOA fulfills the National Transportation Safety Board's recommendation of November 19, 1999, to form an inter-departmental task force to address aircraft-wildlife strike issues.

B. This MOA does not nullify any obligations of the signatory agencies to enter into separate MOAs with the USFWS addressing the conservation of migratory birds, as outlined in Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, dated January 10, 2001 (66 *Federal Register*, No. 11, pg. 3853).

C. This MOA in no way restricts a signatory agency's participation in similar activities or arrangements with other public or private agencies, organizations, or individuals.

D. This MOA does not alter or modify compliance with any Federal law, regulation or guidance (e.g., Clean Water Act; Endangered Species Act; Migratory Bird Treaty Act; National Environmental Policy Act; North American Wetlands Conservation Act; Safe Drinking Water Act; or the "no-net loss" policy for wetland protection). The signatory agencies will employ this MOA in concert with the Federal guidance addressing wetland mitigation banking dated March 6, 1995 (60 *Federal Register*, No. 43, pg. 12286).

E. The statutory provisions and regulations mentioned above contain legally binding requirements. However, this MOA does not substitute for those provisions or regulations, nor is it a regulation itself. This MOA does not impose legally binding requirements on the signatory agencies or any other party, and may not apply to a particular situation in certain circumstances. The signatory agencies retain the discretion to adopt approaches on a case-by-case basis that differ from this MOA when they determine it is appropriate to do so. Such decisions will be based on the facts of a particular case and applicable legal requirements. Therefore, interested parties are free to raise questions and objections about the substance of this MOA and the appropriateness of its application to a particular situation.

F. This MOA is based on evolving information and may be revised periodically without public notice. The signatory agencies welcome public comments on this MOA at any time and will consider those comments in any future revision of this MOA.

G. This MOA is intended to improve the internal management of the Executive Branch to address conflicts between aviation safety and wildlife. This MOA does not create any right, benefit, or trust responsibility, either substantively or procedurally. No party, by law or equity, may enforce this MOA against the United States, its agencies, its officers, or any person.

H. This MOA does not obligate any signatory agency to allocate or spend appropriations or enter into any contract or other obligations.

I. This MOA does not reduce or affect the authority of Federal, State, or local agencies regarding land uses under their respective purviews. When requested, the signatory agencies will provide technical expertise to agencies making decisions regarding land uses within the siting criteria in Section 1-3 of FAA AC 150/5200-33 to minimize or prevent attracting hazardous wildlife to airport areas.

J. Any signatory agency may request changes to this MOA by submitting a written request to any other signatory agency and subsequently obtaining the written concurrence of all signatory agencies.

K. Any signatory agency may terminate its participation in this MOA within 60 days of providing written notice to the other agencies. This MOA will remain in effect until all signatory agencies terminate their participation in it.

SECTION III. PRINCIPAL SIGNATORY AGENCY CONTACTS

The following list identifies contact offices for each signatory agency.

Federal Aviation Administration
Office Airport Safety and Standards
Airport Safety and
Compliance Branch (AAS-310)
800 Independence Ave., S.W.
Washington, D.C. 20591
V: 202-267-1799
F: 202-267-7546

U.S. Air Force
HQ AFSC/SEFW
9700 Ave., G. SE, Bldg. 24499
Kirtland AFB, NM 87117
V: 505-846-5679
F: 505-846-0684

U.S. Army
Directorate of Civil Works
Regulatory Branch (CECW-OR)
441 G St., N.W.
Washington, D.C. 20314
V: 202-761-4750
F: 202-761-4150

U.S. Environmental Protection Agy.
Office of Water
Wetlands Division
Ariel Rios Building, MC 4502F
1200 Pennsylvania Ave., SW
Washington, D.C. 20460
V: 202-260-1799
F: 202-260-7546

U.S. Fish and Wildlife Service
Division of Migratory Bird Management
4401 North Fairfax Drive, Room 634
Arlington, VA 22203
V: 703-358-1714
F: 703-358-2272

U.S. Department of Agriculture
Animal and Plant Inspection Service
Wildlife Services
Operational Support Staff
4700 River Road, Unit 87
Riverdale, MD 20737
V: 301-734-7921
F: 301-734-5157

Signature Page

Associate Administrator for Airports,
Federal Aviation Administration

12/17/02
Date

Chief of Safety,
U. S. Air Force

27 May 2003
Date

Acting Assistant Secretary of the Army
(Civil Works)
Department of the Army

December 9, 2002
Date

Assistant Administrator, Office of Water,
U.S. Environmental Protection Agency

1/17/03

Assistant Director, Migratory Birds
and State Programs,
U.S. Fish and Wildlife Service

7/29/03
Date

Acting Deputy Administrator, Wildlife Services
U.S. Department of Agriculture

09 January 2003
Date

GLOSSARY

This glossary defines terms used in this MOA.

Airport. All USAF airfields or all public use airports in the FAA's National Plan of Integrated Airport Systems (NPIAS). Note: There are over 18,000 civil-use airports in the U.S., but only 3,344 of them are in the NPIAS and, therefore, under FAA's jurisdiction.

Aircraft-wildlife strike. An aircraft-wildlife strike is deemed to have occurred when:

1. a pilot reports that an aircraft struck 1 or more birds or other wildlife;
2. aircraft maintenance personnel identify aircraft damage as having been caused by an aircraft-wildlife strike;
3. personnel on the ground report seeing an aircraft strike 1 or more birds or other wildlife;
4. bird or other wildlife remains, whether in whole or in part, are found within 200 feet of a runway centerline, unless another reason for the animal's death is identified; or
5. the animal's presence on the airport had a significant, negative effect on a flight (i.e., aborted takeoff, aborted landing, high-speed emergency stop, aircraft left pavement area to avoid collision with animal)

(Source: *Wildlife Control Procedures Manual*, Technical Publication 11500E, 1994).

Aircraft-wildlife strike hazard. A potential for a damaging aircraft collision with wildlife on or near an airport (14 CFR 139.3).

Bird Sizes. Title 40, Code of Federal Regulations, Part 33.76 classifies birds according to weight:

small birds weigh less than 3 ounces (oz).
medium birds weigh more than 3 oz and less than 2.5 lbs.
large birds weigh greater than 2.5 lbs.

Civil aircraft damage classifications. The following damage descriptions are based on the *Manual on the International Civil Aviation Organization Bird Strike Information System*:

Minor: The aircraft is deemed airworthy upon completing simple repairs or replacing minor parts and an extensive inspection is not necessary.

Substantial: Damage or structural failure adversely affects an aircraft's structural integrity, performance, or flight characteristics. The damage normally requires major repairs or the replacement of the entire affected component. Bent fairings or cowlings; small dents; skin punctures; damage to wing tips, antenna, tires or brakes, or engine blade damage not requiring blade replacement are specifically excluded.

Destroyed: The damage sustained makes it inadvisable to restore the aircraft to an airworthy condition.

Significant Aircraft-Wildlife Strikes. A significant aircraft-wildlife strike is deemed to have occurred when any of the following applies:

1. a civilian, U.S. air carrier aircraft experiences a multiple aircraft-bird strike or engine ingestion;
2. a civilian, U.S. air carrier aircraft experiences a damaging collision with wildlife other than birds; or
3. a USAF aircraft experiences a Class A, B, or C mishap as described below:

    A. **Class A Mishap:** Occurs when at least one of the following applies:
        1. total mishap cost is $1,000,000 or more;
        2. a fatality or permanent total disability occurs; and/or
        3. an Air Force aircraft is destroyed.
    B. **Class B Mishap:** Occurs when at least one of the following applies:
        1. total mishap cost is $200,000 or more and less than $1,000,000; and/or
        2. a permanent partial disability occurs and/or 3 or more people are hospitalized;
    C. **Class C Mishap:** Occurs when at least one of the following applies:
        1. cost of reported damage is between $20,000 and $200,000;
        2. an injury causes a lost workday (i.e., duration of absence is at least 8 hours beyond the day or shift during which mishap occurred); and/or
        3. an occupational illness causing absence from work at any time.

Wetlands. An ecosystem requiring constant or recurrent, shallow inundation or saturation at or near the surface of the substrate. The minimum essential characteristics of a wetland are recurrent, sustained inundation or saturation at or

near the surface and the presence of physical, chemical, and biological features indicating recurrent, sustained inundation, or saturation. Common diagnostic wetland features are hydric soils and hydrophytic vegetation. These features will be present, except where specific physiochemical, biotic, or anthropogenic factors have removed them or prevented their development.

(Source the 1987 Delineation Manual; 40 CFR 230.3(t)).

Wildlife. Any wild animal, including without limitation any wild mammal, bird, reptile, fish, amphibian, mollusk, crustacean, arthropod, coelenterate, or other invertebrate, including any part, product, egg, or offspring there of (50 CFR 10.12, *Taking, Possession, Transportation, Sale, Purchase, Barter, Exportation, and Importation of Wildlife and Plants*). As used in this MOA, "wildlife" includes feral animals and domestic animals while out of their owner's control (14 CFR 139.3, *Certification and Operations: Land Airports Serving CAB-Certificated Scheduled Air Carriers Operating Large Aircraft (Other Than Helicopters)*)

Table 1. Identified wildlife species, or groups, that were involved in two or more aircraft-wildlife strikes, that caused damage to one or more aircraft components, or that had an adverse effect on an aircraft's flight. Data are for 1990-1999 and involve only civilian, U.S. aircraft.

Birds	No. reported strikes
Gulls (all spp.)	874
Geese (primarily, Canada geese)	458
Hawks (primarily, Red-tailed hawks)	182
Ducks (primarily Mallards.)	166
Vultures (primarily, Turkey vulture)	142
Rock doves	122
Doves (primarily, mourning doves)	109
Blackbirds	81
European starlings	55
Sparrows	52
Egrets	41
Shore birds (primarily, Killdeer & Sandpipers)	40
Crows	31
Owls	24
Sandhill cranes	22
American kestrels	15
Great blue herons	15
Pelicans	14
Swallows	14
Eagles (Bald and Golden)	14
Ospreys	13
Ring-necked pheasants	11
Herons	11
Barn-owls	9
American robins	8
Meadowlarks	8
Buntings (snow)	7
Cormorants	6
Snow buntings	6
Brants	5
Terns (all spp.)	5
Great horned owls	5
Horned larks	4
Turkeys	4
Swans	3
Mockingbirds	3
Quails	3
Homing pigeons	3
Snowy owls	3
Anhingas	2

Ravens	2
Kites	2
Falcons	2
Peregrine falcons	2
Merlins	2
Grouse	2
Hungarian partridges	2
Spotted doves	2
Thrushes	2
Mynas	2
Finches	2
Total known birds	2,612

Mammals	**No. reported strikes**
Deer (primarily, White-tailed deer)	285
Coyotes	16
Dogs	10
Elk	6
Cattle	5
Bats	4
Horses	3
Pronghorn antelopes	3
Foxes	2
Raccoons	2
Rabbits	2
Moose	2
Total known mammals	340

Ring-billed gulls were the most commonly struck gulls. The U.S. ring-billed gull population increased steadily at about 6% annually from 1966-1988. Canada geese were involved in about 90% of the aircraft-goose strikes involving civilian, U.S. aircraft from 1990-1998. Resident (non-migratory) Canada goose populations increased annually at 13% from 1966-1998. Red-tailed hawks accounted for 90% of the identified aircraft-hawk strikes for the 10-year period. Red-tailed hawk populations increased annually at 3% from 1966 to 1998. Turkey vultures were involved in 93% of he identified aircraft-vulture strikes. The U.S. Turkey vulture populations increased at annually at 1% between 1966 and 1998. Deer, primarily white-tailed deer, have also adapted to urban and airport areas and their populations have increased dramatically. In the early 1900's, there were about 100,000 white-tailed deer in the U.S. Current estimates are that the U.S. population is about 24 million.

Appendix E PHOTOGRAPHS

Representative photographs taken during the Wildlife Hazard Assessment taken by Airport Biologists and from the trail camera locations at Turners Falls Airport

Whitetail deer run across the RW34 end safety area at 3:21PM

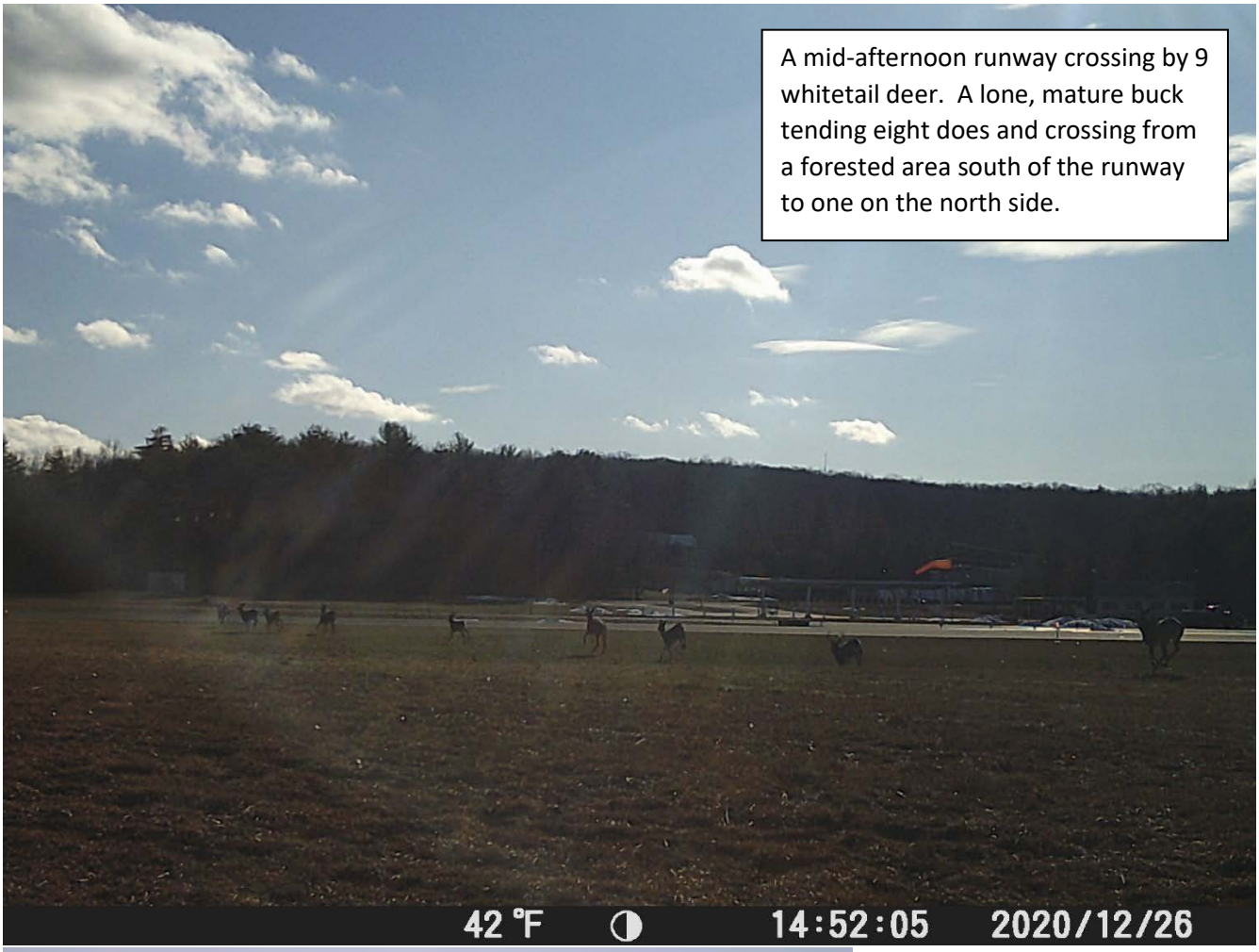
Multiple whitetail deer feeding in the RW34 end safety area at midnight with the lighted REILs clearly visible in the background indicating the end of the runway pavement.

A large whitetail buck in the grass adjacent to the runway at 8:30AM during the peak of the rutting season. October through December is the peak rut period in the Airport vicinity where daytime deer activity beyond heavy cover is common.

Pre-dawn deer activity adjacent to the runway during the rut. The terminal area is visible in the background.

Early evening feeding activity adjacent to the runway in September. Late-afternoon, low-light condition feeding in the grass is common in the Fall and Spring months.

Late-morning feeding of a doe and fawn in July. Runway edge lighting is visible in the background.



A mid-afternoon runway crossing by 9 whitetail deer. A lone, mature buck tending eight does and crossing from a forested area south of the runway to one on the north side.

A mature doe in late-summer feeding along the north side of the runway during the late morning hours.

Late-night fox activity, likely feeding on the abundant rodent population identified within the on-site native grasslands.

Coyote are abundant in the vicinity of OB5. Frequent runway crossings by coyote were documented by tracking during fresh snow conditions.

Top: Canada goose droppings on the runway pavement after night-time feeding along the pavement edge.

Bottom: Early morning flock lift-off from Barton Cove; a frequent occurrence during the Spring and Fall migration periods.

Kestrel perched on navigational aid equipment along the runway edge. Kestrel activity peaks during the height of the grasshopper life cycle in the late summer.

Exposed sandy soil area in the native grasslands north of the runway showing abundant deer and coyote tracks. This area was swept clean of tracks on a regular basis during this Assessment to determine frequency of usage by large mammals.

Appendix F WILDLIFE SPECIES RECORDED DURING THE WILDLIFE HAZARD ASSESSMENT AND POINT COUNT DATA

Table F-1. Bird species observed at Turners Falls Municipal Airport during the Wildlife Hazard Assessment – 4-Letter Code and Common Name

AMBL	American Bluebird	GRCA	Gray Catbird
AMCR	American Crow	GRSP	Grasshopper Sparrow
AMGO	American Goldfinch	HOWR	House Wren
AMKE	American Kestrel	KILL	Killdeer
AMRO	American Robin	MALL	Mallard Duck
BAEA	Bald Eagle	MODO	Mourning Dove
BARS	Barn Swallow	NOCA	Northern Cardinal
BASW	Bank Swallow	NOFL	Northern Flicker
BCCH	Black-capped Chickadee	NOMO	Northern Mockingbird
BRTH	Brown Thrasher	NRWS	Northern Rough-wing Swallow
CANG	Canada Goose	PIWO	Pileated Woodpecker
CHSP	Chipping Sparrow	PRAW	Prairie Warbler
DOWO	Downy Woodpecker	RBGU	Ring-billed Gull
EABL	Eastern Bluebird	RBWO	Red-bellied Woodpecker
EAKI	Eastern Kingbird	RTHA	Red-tailed Hawk
EAPH	Eastern Phoebe	SAVS	Savannah Sparrow
EATO	Eastern Towhee	SOSP	Song Sparrow
EAWP	Eastern Wood Peewee	TRES	Tree Swallow
EUST	European Starling	TUITI	Tufted Titmouse
FISP	Field Sparrow	TUVU	Turkey Vulture
GBHE	Great Blue Heron	VEER	Veery
		WBNU	White-breasted Nuthatch
		WITU	Wild Turkey
		WOTH	Wood Thrush
		YRWA	Yellow-rumped Warbler

Table F-2. Bird species observed only at off-airport sites during the Turners Falls Airport Wildlife Hazard Assessment

Common Name	Species Name	Observation Location
Mute swan	*Cygnus olor*	Barton Cove – Connecticut River
Snow goose	*Anser caerulescens*	Barton Cove – Connecticut River
Belted kingfisher	*Megaceryle alcyon*	Barton Cove – Connecticut River Lake Pleasant and Green Pond
Double-crested cormorant	*Phalacrocorax auritus*	Barton Cove – Connecticut River
Hooded merganser	*Lophodytes cucullatus*	Barton Cove – Connecticut River Millers River
American black duck	*Anas rubripes*	Barton Cove – Connecticut River Lake Pleasant and Millers River Oxbow
Greater scaup	*Aythya marila*	Barton Cove – Connecticut River
Black scoter	*Melanitta americana*	Barton Cove – Connecticut River
Osprey	*Pandion haliaetus*	Barton Cove – Connecticut River
Ring-billed gull	*Larus delawarensis*	Barton Cove – Connecticut River Millers River
Greater black-backed gull	*Larus marinus*	Barton Cove – Connecticut River
Herring gull	*Larus argentatus*	Barton Cove – Connecticut River
Red-breasted merganser	*Mergus serrator*	Barton Cove – Connecticut River Millers River
Wood duck	*Aix sponsa*	Green Pond Millers River Oxbow

Table F-3. Mammal species detected at Turners Falls Airport during the Wildlife Hazard Assessment

Common Name	Scientific Name
American black bear	*Ursus americanus*
Eastern chipmunk	*Eutamias striatus*
Eastern cottontail	*Sylvilagus floridanus*
Eastern coyote	*Canis latrans*
Fox	*Vulpes, Urocyon cinereoargenteus*
Gray squirrel	*Sciurus carolinensis*
North American deermouse	*Peromyscus maniculatus*
Raccoon	*Procyon lotor*
Short-tailed shrew	*Blarina brevicauda*
Striped skunk	*Mephitis*
Virginia opossum	*Didelphis virginiana*
White-footed mouse	*Peromyscus leucopus*
White-tailed deer	*Odocoileus virginiana*
Woodchuck	*Marmota monax*

Key to 4-Letter Bird Alpha Codes

4-Letter Alpha Code	Common Name	Species Name
ABDU	Snow Goose	Anser caerulescens
ABMH	Canada Goose	Branta canadensis
AMBI	Unidentified Goose	Anserinae (gen. sp.)
AMCO	Mute Swan	Cygnus olor
AMCR	Trumpeter Swan	Cygnus buccinator
AMGO	Wood Duck	Aix sponsa
AMGP	Blue-winged Teal	Spatula discors
AMOY	Blue-winged/Cinnamon Teal	Spatula discors/cyanoptera
AMRE	Cinnamon Teal	Spatula cyanoptera
AMRO	Northern Shoveler	Spatula clypeata
AMWI	Gadwall	Mareca strepera
AMWO	Eurasian Wigeon	Mareca penelope
ARTE	American Wigeon	Mareca americana
ATGR	Mallard	Anas platyrhynchos
ATTW	American Black Duck	Anas rubripes
BADO	Northern Pintail	Anas acuta
BAEA	Green-winged Teal	Anas crecca
BAGO	American Green-winged Teal	Anas crecca carolinensis
BANO	Canvasback	Aythya valisineria
BANS	Redhead	Aythya americana
BAOR	Ring-necked Duck	Aythya collaris
BARS	Greater Scaup	Aythya marila
BAWA	Lesser Scaup	Aythya affinis
BAWW	King Eider	Somateria spectabilis
BBCU	Common Eider	Somateria mollissima
BBIS	Harlequin Duck	Histrionicus histrionicus
BBOR	Surf Scoter	Melanitta perspicillata
BBPL	White-winged Scoter	Melanitta deglandi
BCCH	Common Scoter	Melanitta nigra
BCFL	Black Scoter	Melanitta americana
BCNH	Long-tailed Duck	Clangula hyemalis
BCSI	Bufflehead	Bucephala albeola
BCTE	Common Goldeneye	Bucephala clangula
BCVI	Barrow's Goldeneye	Bucephala islandica
BEKI	Hooded Merganser	Lophodytes cucullatus
BHCO	Common Merganser	Mergus merganser
BHGU	Red-breasted Merganser	Mergus serrator
BHSI	Ruddy Duck	Oxyura jamaicensis
BLBW	Unidentified Duck	Anatinae (gen, sp)
BLJA	Wild Turkey	Meleagris gallopavo
BLPW	Ruffed Grouse	Bonasa umbellus
BLSC	Ring-necked Pheasant	Phasianus colchicus
BLSK	Least Grebe	Tachybaptus dominicus
BLTU	Pied-billed Grebe	Podilymbus podiceps
BLVU	Atitlan Grebe	Podilymbus gigas
BOBO	Horned Grebe	Podiceps auritus
BOGU	Red-necked Grebe	Podiceps grisegena
BRBL	Eared Grebe	Podiceps nigricollis
BRCR	Rock Pigeon	Columba livia
BRSP	Mourning Dove	Zenaida macroura
BRTH	Common Cuckoo	Cuculus canorus
BTBW	Yellow-billed Cuckoo	Coccyzus americanus
BTGR	Black-billed Cuckoo	Coccyzus erythropthalmus

Key to 4-Letter Bird Alpha Codes

4-Letter Alpha Code	Common Name	Species Name
BTNW	Common Nighthawk	Chordeiles minor
BUFF	Chuck-will's-widow	Antrostomus carolinensis
BUOW	Eastern Whip-poor-will	Antrostomus vociferus
BWTE	Chimney Swift	Chaetura pelagica
BWWA	Common Swift	Apus apus
CAEG	Ruby-throated Hummingbird	Archilochus colubris
CANG	Clapper Rail	Rallus crepitans
CANV	King Rail	Rallus elegans
CARW	Virginia Rail	Rallus limicola
CATE	Sora	Porzana carolina
CEDW	Common Gallinule	Gallinula galeata
CERW	Common Moorhen	Gallinula chloropus
CHRE	American Coot	Fulica americana
CHSP	Purple Gallinule	Porphyrio martinicus
CHSW	Limpkin	Aramus guarauna
CITE	American Avocet	Recurvirostra americana
CLRA	American Oystercatcher	Haematopus palliatus
CLSW	Black-bellied Plover	Pluvialis squatarola
CMWA	American Golden-Plover	Pluvialis dominica
COCU	Killdeer	Charadrius vociferus
COEI	Semipalmated Plover	Charadrius semipalmatus
COGA	Piping Plover	Charadrius melodus
COGO	Wilson's Plover	Charadrius wilsonia
COGR	Upland Sandpiper	Bartramia longicauda
COGU	Whimbrel	Numenius phaeopus
COHA	Long-billed Curlew	Numenius americanus
COLO	Hudsonian Godwit	Limosa haemastica
COME	Marbled Godwit	Limosa fedoa
COMO	Ruddy Turnstone	Arenaria interpres
CONI	Black Turnstone	Arenaria melanocephala
CORA	Great Knot	Calidris tenuirostris
CORE	Red Knot	Calidris canutus
COSA	Ruff	Calidris pugnax
COSC	Broad-billed Sandpiper	Calidris falcinellus
COSW	Red-necked Stint	Calidris ruficollis
COTE	Sanderling	Calidris alba
COYE	Dunlin	Calidris alpina
CREH	Semipalmated Sandpiper	Calidris pusilla
CRET	Short-billed Dowitcher	Limnodromus griseus
CSWA	Long-billed Dowitcher	Limnodromus scolopaceus
CWWI	Unidentified Dowitcher	Limnodromus sp.
DCCO	American Woodcock	Scolopax minor
DEJU	Common Sandpiper	Actitis hypoleucos
DOVE	Spotted Sandpiper	Actitis macularius
DUNL	Solitary Sandpiper	Tringa solitaria
EABL	Lesser Yellowlegs	Tringa flavipes
EAGR	Willet	Tringa semipalmata
EAKI	Greater Yellowlegs	Tringa melanoleuca
EAME	Common Redshank	Tringa totanus
EAPH	Wood Sandpiper	Tringa glareola
EASO	Marsh Sandpiper	Tringa stagnatilis
EATO	Wilson's Phalarope	Phalaropus tricolor
EAWP	Red-necked Phalarope	Phalaropus lobatus

Key to 4-Letter Bird Alpha Codes

4-Letter Alpha Code	Common Name	Species Name
EUST	Red Phalarope	Phalaropus fulicarius
EUWI	Dovekie	Alle alle
EVGR	Bonaparte's Gull	Chroicocephalus philadelphia
EWCS	Gray-hooded Gull	Chroicocephalus cirrocephalus
EWPW	Black-headed Gull	Chroicocephalus ridibundus
FICR	Little Gull	Hydrocoloeus minutus
FISP	Laughing Gull	Leucophaeus atricilla
FOSP	Franklin's Gull	Leucophaeus pipixcan
FOTE	Common Gull	Larus canus
FRGU	Ring-billed Gull	Larus delawarensis
GADW	Herring Gull	Larus argentatus
GBHE	Yellow-legged Gull	Larus michahellis
GCFL	Iceland Gull	Larus glaucoides
GCKI	Thayer's Gull	Larus glaucoides thayeri
GCTH	Lesser Black-backed Gull	Larus fuscus
GGOW	Slaty-backed Gull	Larus schistisagus
GHGU	Glaucous-winged Gull	Larus glaucescens
GHJU	Glaucous Gull	Larus hyperboreus
GHOW	Little Tern	Sternula albifrons
GICO	Least Tern	Sternula antillarum
GLGU	Caspian Tern	Hydroprogne caspia
GLIB	Roseate Tern	Sterna dougallii
GRAK	Common Tern	Sterna hirundo
GRCA	Arctic Tern	Sterna paradisaea
GREG	Forster's Tern	Sterna forsteri
GRHE	Royal Tern	Thalasseus maximus
GRKN	Black Skimmer	Rynchops niger
GRSC	Common Loon	Gavia immer
GRSP	Double-crested Cormorant	Nannopterum auritum
GRYE	American Bittern	Botaurus lentiginosus
GWGU	Least Bittern	Ixobrychus exilis
GWTE	Great Blue Heron	Ardea herodias
GWWA	Great Egret	Ardea alba
HADU	Little Egret	Egretta garzetta
HAWO	Snowy Egret	Egretta thula
HERG	Little Blue Heron	Egretta caerulea
HESP	Cattle Egret	Bubulcus ibis
HETH	Green Heron	Butorides virescens
HOFI	Black-crowned Night-Heron	Nycticorax nycticorax
HOGR	Yellow-crowned Night-Heron	Nyctanassa violacea
HOLA	Glossy Ibis	Plegadis falcinellus
HOME	Black Vulture	Coragyps atratus
HORE	Turkey Vulture	Cathartes aura
HOSP	Osprey	Pandion haliaetus
HOWR	Sharp-shinned Hawk	Accipiter striatus
HUGO	Cooper's Hawk	Accipiter cooperii
ICGU	Bald Eagle	Haliaeetus leucocephalus
INBU	Red-shouldered Hawk	Buteo lineatus
KEWA	Short-tailed Hawk	Buteo brachyurus
KIEI	Swainson's Hawk	Buteo swainsoni
KILL	Red-tailed Hawk	Buteo jamaicensis
KIRA	Rough-legged Hawk	Buteo lagopus
LAGU	Unidentified Hawk	Accipitridae (gen, sp)

Key to 4-Letter Bird Alpha Codes

4-Letter Alpha Code	Common Name	Species Name
LBBG	Barn Owl	Tyto alba
LBCU	Eastern Screech-Owl	Megascops asio
LBDO	Great Horned Owl	Bubo virginianus
LBHE	Snowy Owl	Bubo scandiacus
LCGO	Northern Pygmy-Owl	Glaucidium gnoma
LCSP	Burrowing Owl	Athene cunicularia
LEBI	Barred Owl	Strix varia
LEGR	Great Gray Owl	Strix nebulosa
LEOW	Long-eared Owl	Asio otus
LERE	Short-eared Owl	Asio flammeus
LESC	Northern Saw-whet Owl	Aegolius acadicus
LETE	Belted Kingfisher	Megaceryle alcyon
LEYE	Red-headed Woodpecker	Melanerpes erythrocephalus
LIEG	Red-bellied Woodpecker	Melanerpes carolinus
LIGU	Yellow-bellied Sapsucker	Sphyrapicus varius
LIMP	American Three-toed Woodpecker	Picoides dorsalis
LISP	Hairy Woodpecker	Dryobates villosus
LITE	Northern Flicker	Colaptes auratus
LOWA	Yellow-shafted Flicker	Colaptes auratus auratus
LTDU	Red-shafted Flicker	Colaptes auratus cafer
MAGO	Pileated Woodpecker	Dryocopus pileatus
MALL	Unidentified Woodpecker	Picinae (gen, sp)
MASA	Merlin	Falco columbarius
MAWR	Peregrine Falcon	Falco peregrinus
MERL	Great Crested Flycatcher	Myiarchus crinitus
MODO	Brown-crested Flycatcher	Myiarchus tyrannulus
MOWA	Eastern Kingbird	Tyrannus tyrannus
MUSW	Gray Kingbird	Tyrannus dominicensis
NAWA	Scissor-tailed Flycatcher	Tyrannus forficatus
NOCA	Olive-sided Flycatcher	Contopus cooperi
NOFL	Eastern Wood-Pewee	Contopus virens
NOMO	Eastern Phoebe	Sayornis phoebe
NOPA	Vermilion Flycatcher	Pyrocephalus rubinus
NOPI	Black-capped Vireo	Vireo atricapilla
NOPO	White-eyed Vireo	Vireo griseus
NOWA	Red-eyed Vireo	Vireo olivaceus
NRWS	Northern Shrike	Lanius borealis
NSHO	Blue Jay	Cyanocitta cristata
NSHR	American Crow	Corvus brachyrhynchos
NSWO	Fish Crow	Corvus ossifragus
ORORO	Common Raven	Corvus corax
OSFL	Black-capped Chickadee	Poecile atricapillus
OSPR	Tufted Titmouse	Baeolophus bicolor
OVEN	Horned Lark	Eremophila alpestris
PBGR	Bank Swallow	Riparia riparia
PEFA	Tree Swallow	Tachycineta bicolor
PIPL	Northern Rough-winged Swallow	Stelgidopteryx serripennis
PISI	Purple Martin	Progne subis
PIWA	Barn Swallow	Hirundo rustica
PIWO	Cliff Swallow	Petrochelidon pyrrhonota
PRAW	Unidentified Swallow	Hirundinidae (gen, sp)
PROW	Golden-crowned Kinglet	Regulus satrapa
PUFI	Ruby-crowned Kinglet	Corthylio calendula

Key to 4-Letter Bird Alpha Codes

4-Letter Alpha Code	Common Name	Species Name
PUGA	Cedar Waxwing	Bombycilla cedrorum
PUMA	Red-breasted Nuthatch	Sitta canadensis
RBGR	White-breasted Nuthatch	Sitta carolinensis
RBGU	Brown Creeper	Certhia americana
RBJU	House Wren	Troglodytes aedon
RBME	Marsh Wren	Cistothorus palustris
RBNU	Carolina Wren	Thryothorus ludovicianus
RBWO	Unidentified Wren	Troglodytidae (gen, sp)
RCKI	Gray Catbird	Dumetella carolinensis
RECR	Brown Thrasher	Toxostoma rufum
REDH	Northern Mockingbird	Mimus polyglottos
REKN	European Starling	Sturnus vulgaris
REPH	Eastern Bluebird	Sialia sialis
RESI	Veery	Catharus fuscescens
REVI	Gray-cheeked Thrush	Catharus minimus
RHWO	Swainson's Thrush	Catharus ustulatus
RLHA	Hermit Thrush	Catharus guttatus
RNDU	Wood Thrush	Hylocichla mustelina
RNEP	American Robin	Turdus migratorius
RNGR	Common Redstart	Phoenicurus phoenicurus
RNPH	House Sparrow	Passer domesticus
RNST	Evening Grosbeak	Coccothraustes vespertinus
ROPI	House Finch	Haemorhous mexicanus
ROST	Purple Finch	Haemorhous purpureus
ROYT	Common Redpoll	Acanthis flammea
RSFL	Common/Hoary Redpoll	Acanthis flammea/hornemanni
RSHA	Lesser Redpoll	Acanthis cabaret
RSTO	Hoary Redpoll	Acanthis hornemanni
RTHA	Red Crossbill	Loxia curvirostra
RTHU	Pine Siskin	Spinus pinus
RUDU	Black-capped Siskin	Spinus atriceps
RUFF	Black-headed Siskin	Spinus notatus
RUGR	Yellow-bellied Siskin	Spinus xanthogastrus
RUTU	Red Siskin	Spinus cucullatus
RWBL	American Goldfinch	Spinus tristis
SAND	Snow Bunting	Plectrophenax nivalis
SAVS	Grasshopper Sparrow	Ammodramus savannarum
SBAG	Chipping Sparrow	Spizella passerina
SBDO	Field Sparrow	Spizella pusilla
SCGO	Brewer's Sparrow	Spizella breweri
SCJU	Fox Sparrow	Passerella iliaca
SCTA	American Tree Sparrow	Spizelloides arborea
SEOW	Dark-eyed Junco	Junco hyemalis
SEPL	Slate-colored Junco	Junco hyemalis hyemalis
SESA	Gray-headed Junco	Junco hyemalis caniceps
SNBU	Red-backed Junco	Junco hyemalis dorsalis
SNEG	Yellow-eyed Junco	Junco phaeonotus
SNGO	White-crowned Sparrow	Zonotrichia leucophrys
SNOW	Eastern White-crowned Sparrow	Zonotrichia leucophrys leucophrys
SORA	White-throated Sparrow	Zonotrichia albicollis
SOSA	Vesper Sparrow	Pooecetes gramineus
SOSP	LeConte's Sparrow	Ammospiza leconteii
SPSA	Henslow's Sparrow	Centronyx henslowii

Key to 4-Letter Bird Alpha Codes

4-Letter Alpha Code	Common Name	Species Name
SSHA	Savannah Sparrow	Passerculus sandwichensis
STFL	Song Sparrow	Melospiza melodia
STHA	Lincoln's Sparrow	Melospiza lincolnii
SUSC	Rufous-sided Towhee	Pipilo maculatus/erythrophthalmus
SWHA	Eastern Towhee	Pipilo erythrophthalmus
SWTH	Unidentified Sparrow	Passerellidae (gen, sp)
TEWA	Yellow-headed Warbler	Teretistris fernandinae
THGU	Yellow-headed Blackbird	Xanthocephalus xanthocephalus
TRES	Bobolink	Dolichonyx oryzivorus
TRUS	Eastern Meadowlark	Sturnella magna
TUTI	Orchard Oriole	Icterus spurius
TUVU	Baltimore Oriole	Icterus galbula
UNDO	Black-backed Oriole	Icterus abeillei
UNDU	Red-winged Blackbird	Agelaius phoeniceus
UNGO	Brown-headed Cowbird	Molothrus ater
UNHA	Giant Cowbird	Molothrus oryzivorus
UNSP	Brewer's Blackbird	Euphagus cyanocephalus
UNSW	Common Grackle	Quiscalus quiscula
UNWO	Boat-tailed Grackle	Quiscalus major
UNWR	Ovenbird	Seiurus aurocapilla
UPSA	Worm-eating Warbler	Helmitheros vermivorum
VEER	Louisiana Waterthrush	Parkesia motacilla
VEFL	Northern Waterthrush	Parkesia noveboracensis
VESP	Bachman's Warbler	Vermivora bachmanii
VIRA	Golden-winged Warbler	Vermivora chrysoptera
WBNU	Blue-winged Warbler	Vermivora cyanoptera
WCSP	Black-and-white Warbler	Mniotilta varia
WEVI	Prothonotary Warbler	Protonotaria citrea
WEWA	Tennessee Warbler	Leiothlypis peregrina
WHIM	Nashville Warbler	Leiothlypis ruficapilla
WILL	Mourning Warbler	Geothlypis philadelphia
WIPH	Kentucky Warbler	Geothlypis formosa
WIPL	Common Yellowthroat	Geothlypis trichas
WITU	American Redstart	Setophaga ruticilla
WODU	Cape May Warbler	Setophaga tigrina
WOSA	Cerulean Warbler	Setophaga cerulea
WOTH	Northern Parula	Setophaga americana
WTSP	Blackburnian Warbler	Setophaga fusca
WWSC	Yellow Warbler	Setophaga petechia
YBCU	Chestnut-sided Warbler	Setophaga pensylvanica
YBSA	Blackpoll Warbler	Setophaga striata
YBSI	Black-throated Blue Warbler	Setophaga caerulescens
YCNH	Pine Warbler	Setophaga pinus
YEJU	Yellow-rumped Warbler	Setophaga coronata
YEWA	Yellow-throated Warbler	Setophaga dominica
YHBL	Prairie Warbler	Setophaga discolor
YHWA	Black-throated Green Warbler	Setophaga virens
YLGU	Scarlet Tanager	Piranga olivacea
YRWA	Northern Cardinal	Cardinalis cardinalis
YSFL	Rose-breasted Grosbeak	Pheucticus ludovicianus
YTWA	Indigo Bunting	Passerina cyanea

Bird Point Count Data
Sorted By: **OBSERVATION DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
2	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	6:52	6:59	1	AMCR	2	P		GLG		
3	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	6:52	6:59	1	BLJA	1	VO	P	GLG		
4	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	6:52	6:59	1	MALL	1	FP			S	Off runway end
5	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	6:52	6:59	1	SOSP	2	VO	P	GLG		
6	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:21	7:28	2	AMCR	2	FD		GSH		
7	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:21	7:28	2	AMKE	2	P		GSH		
8	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:21	7:28	2	AMRO	18	FD		GSH		
9	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:21	7:28	2	BLJA	6	P		SHB		
10	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:21	7:28	2	BRTH	2	VO	P	SHB		Brown thrashers
11	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:21	7:28	2	NOCA	2	VO	P	SHB		
12	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:21	7:28	2	RTHA	1	FP			S	
13	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:35	7:42	3	AMCR	2	FL		GSH		
14	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:35	7:42	3	BLJA	1	P	VO	GLG		
15	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:35	7:42	3	BLJA	4	FP			N	
16	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:35	7:42	3	SOSP	3	P	VO	GLG		
17	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	8:31	8:38	3	AMCR	4	P		WDL		
18	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	8:31	8:38	3	AMGO	4	FD		GLG		
19	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	8:31	8:38	3	BRTH	2	VO		SHB		Brown thrasher
20	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	8:31	8:38	3	EAPO	1	VO		SHB		
21	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	8:31	8:38	3	MODO	2	VO		GLG		
22	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	8:31	8:38	3	MODO	4	VO		SHB		
23	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	8:31	8:38	3	SOSP	2	VO		SHB		
24	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:00	10:07	1	AMCR	2	P		WDL		
25	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:00	10:07	1	AMCR	4	FD		GSH		
26	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:00	10:07	1	AMKE	1	FD		GSH		
27	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:00	10:07	1	BAEA	2	FP			N	Off runway end @ 300'
28	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:14	10:21	2	AMCR	1	FD		GSH		
29	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:14	10:21	2	AMRO	5	FD		GSH		
30	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:14	10:21	2	EUST	2	FD		GSH		
31	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:14	10:21	2	SOSP	2	VO		SHB		
32	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:34	10:41	3	AMRO	7	FD		GLG		
33	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:34	10:41	3	BCCH	4	FD		SHB		
34	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:34	10:41	3	NOCA	2	VO	P	SHB		
35	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:34	10:41	3	SOSP	1	FD		SHB		
36	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	6:50	6:57	1	AMCR	2	FD		GSH		
37	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	6:50	6:57	1	AMKE	1	P		RWY		
38	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	6:50	6:57	1	AMRO	2	FD		GLG		
39	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	6:50	6:57	1	BCCH	1	VO		WDL		
40	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	6:50	6:57	1	BLJA	2	VO		WDL		
41	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	6:50	6:57	1	SOSP	2	VO		GLG		
42	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:17	7:24	2	AMKE	1	FD		GSH		
43	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:17	7:24	2	AMRO	9	FD		GSH		
44	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:17	7:24	2	BCCH	8	VO		WDL		
45	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:17	7:24	2	BLJA	5	VO		WDL		
46	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:17	7:24	2	CHSP	10	VO	P	SHB		
47	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:38	7:45	3	AMRO	25	FD		GLG		
48	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:38	7:45	3	BLJA	4	VO		WDL		
49	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:38	7:45	3	CANG	4	FD		SHB		
50	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:38	7:45	3	MODO	1	FL		GLG		
51	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:38	7:45	3	NOCA	1	VO		WDL		
52	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:38	7:45	3	NOFL	1	VO		WDL		
53	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:38	7:45	3	RBGU	1	FP			E	@500'
54	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:38	7:45	3	SAVS	12	FD		GLG		
55	OBS	RPC	4/29/2020	38		Calm	Mostly sunny	8:15	8:22	2	AMCR	1	FD		GSH		
56	OBS	RPC	4/29/2020	38		Calm	Mostly sunny	8:15	8:22	2	AMRO	15	FD		GSH		
57	OBS	RPC	4/29/2020	38		Calm	Mostly sunny	8:15	8:22	2	BLJA	2	VO		WDL		

Bird Point Count Data
Sorted By: **OBSERVATION DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
58	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	8:15	8:22	2	NOCA	1	VO		WDL		
59	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	8:15	8:22	2	SAVS	6	FD		GSH		
60	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	8:39	8:46	1	AMCR	1	FD		GSH		
61	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	8:39	8:46	1	EUST	2	FD		GSH		
62	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	8:39	8:46	1	FISP	6	VO		SHB		
63	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	8:39	8:46	1	KILL	2	LF		RWY		
64	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	8:39	8:46	1	RTHA	2	P		WDL		
65	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	8:39	8:46	1	SAVS	2	VO		GLG		
66	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	9:52	9:59	3	AMRO	10	FD		GLG		
67	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	9:52	9:59	3	BLJA	2	FD		WDL		
68	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	9:52	9:59	3	EUST	4	VO	P	SHB		
69	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	9:52	9:59	3	MODO	1	FL		GLG		
70	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	9:52	9:59	3	NOFL	1	FD		WDL		
71	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	9:52	9:59	3	SAVS	2	VO		GLG		
72	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	9:52	9:59	3	SOSP	1	VO		SHB		
73	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	9:52	9:59	3	TRES	1	FL		GLG		
74	OB5	RPC	4/29/2020	48		Calm	Mostly sunny	10:39	10:46	2	AMKE	2	P		GLG		
75	OB5	RPC	4/29/2020	48		Calm	Mostly sunny	10:39	10:46	2	AMRO	5	FD		GSH		
76	OB5	RPC	4/29/2020	48		Calm	Mostly sunny	10:39	10:46	2	BCCH	2	VO		WDL		
77	OB5	RPC	4/29/2020	48		Calm	Mostly sunny	10:39	10:46	2	CHSP	1	VO		SHB		
78	OB5	RPC	4/29/2020	48		Calm	Mostly sunny	10:39	10:46	2	FISP	1	VO		GLG		
79	OB5	RPC	4/29/2020	48		Calm	Mostly sunny	10:39	10:46	2	TUVU	1	FL		WDL		
80	OB5	RPC	4/29/2020	48		Calm	Mostly sunny	11:06	11:13	1	FISP	1	VO		SHB		
81	OB5	RPC	4/29/2020	48		Calm	Mostly sunny	11:06	11:13	1	KILL	1	FL		GSH		
82	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:29	6:36	3	BASW	4	VO		SHB		
83	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:29	6:36	3	CHSP	2	VO		GLG		
84	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:29	6:36	3	EATO	2	VO		SHB		
85	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:29	6:36	3	MODO	2	FL		GLG		
86	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:29	6:36	3	NOCA	3	VO		SHB		
87	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:59	7:06	1	BCCH	4	VO		SHB		
88	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:59	7:06	1	GRSP	1	VO		GLG		
89	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:59	7:06	1	KILL	2	FD		GLG		
90	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:59	7:06	1	SAVS	1	VO		GLG		
91	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:59	7:06	1	YRWA	6	FD		SHB		
92	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	7:30	7:37	2	AMCR	1	P		WDL		
93	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	7:30	7:37	2	AMCR	4	VO		SHB		
94	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	7:30	7:37	2	AMRO	5	FD		GSH		
95	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	7:30	7:37	2	BCCH	5	VO		SHB		
96	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	7:30	7:37	2	CHSP	3	VO		GLG		
97	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	7:30	7:37	2	GRSP	1	VO		GLG		
98	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	7:30	7:37	2	MODO	1	FL		GLG		
99	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	7:30	7:37	2	NOCA	2	VO		SHB		
100	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	7:56	8:01	1	AMCR	1	FL		GLG		
101	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	7:56	8:01	1	BASW	7	FD		GLG		
102	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	7:56	8:01	1	EATO	1	VO		WDL		
103	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	7:56	8:01	1	EUST	24	FD		GSH		
104	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	7:56	8:01	1	GRSP	1	VO		GLG		
105	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	7:56	8:01	1	YRWA	4	FD		SHB		
106	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	8:28	8:35	3	AMRO	2	FD		GSH		
107	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	8:28	8:35	3	BLJA	4	FD		SHB		
108	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	8:28	8:35	3	BRTH	1	P		SHB		
109	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	8:28	8:35	3	CHSP	2	FD		GSH		
110	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	8:28	8:35	3	NOCA	1	VO		WDL		
111	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	AMCR	2	FD		GLG		
112	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	AMKE	1	FD		GLG		
113	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	AMRO	11	FD		GSH		

Bird Point Count Data
Sorted By: **OBSERVATION DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
114	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	BARS	9	FD		GLG		
115	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	BLJA	2	VO		SHB		
116	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	EABL	2	NS		SHB		
117	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	EAKI	1	FD		GSH		
118	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	EATO	1	VO		SHB		
119	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	GRSP	1	VO		GLG		
120	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	KILL	6	FD	LF	GLG		
121	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	NOFL	2	FD		GLG		
122	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	WTSP	15	FD		GSH		
123	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	YRWA	1	VO		SHB		Yellow rump warbler
124	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:52	6:59	2	AMCR	2	FD		GSH		
125	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:52	6:59	2	AMRO	8	FD		GSH		
126	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:52	6:59	2	GRSP	1	VO		GLG		
127	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:52	6:59	2	TRES	6	FD	FL	GLG		
128	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:52	6:59	2	TUVV	1	FP			E	
129	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	AMCR	3	FD		GLG		
130	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	AMGO	3	VO		SHB		
131	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	AMRO	8	FD		GLG		
132	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	BARS	3	FD		GLG		
133	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	EAPH	2	VO		SHB		
134	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	EUST	16	FD		GLG		
135	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	GBHE	1	FP			NE	
136	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	GRSP	1	VO		GLG		
137	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	KILL	6	LF	FD	GLG		
138	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	PRWA	1	VO		SHB		Prairie warbler
139	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	TRES	5	FD		GLG		
140	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	TUTI	1	VO		SHB		
141	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	BLJA	2	VO	FD	SHB		
142	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	CHSP	4	VO	FD	GLG		
143	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	EAPH	2	VO		SHB		
144	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	EATO	2	VO		SHB		
145	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	MODO	2	P		GLG		
146	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	NOCA	4	VO	FD	SHB		
147	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	PRWA	2	VO		SHB		Prairie warbler
148	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	RTHA	2	FL		WDL		
149	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	TUVU	1	FP		WDL		
150	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:59	9:06	1	CHSP	4	FD		GLG		
151	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:59	9:06	1	EABL	4	FD		GLG		
152	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:59	9:06	1	EAPH	1	VO		SHB		
153	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:59	9:06	1	EUST	8	FD		GLG		
154	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:59	9:06	1	GRSP	2	VO		GLG		
155	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:59	9:06	1	GRSP	4	LF	FD	GLG		
156	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	9:21	9:28	2	AMRO	6	FD		GSH		
157	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	9:21	9:28	2	BARS	2	FL	FD	GLG		
158	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	9:21	9:28	2	GRSP	2	VO		SHB		
159	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	9:21	9:28	2	NOCA	1	VO		SHB		
160	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	9:21	9:28	2	PRWA	1	VO		SHB		Prairie warbler
161	OB5	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	9:21	9:28	2	TRES	2	FL	FD	GLG		
162	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:34	6:41	1	AMCR	2	P		GLG		
163	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:34	6:41	1	AMRO	4	P		SHB		
164	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:34	6:41	1	BLJA	1	VO		WDL		
165	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:34	6:41	1	CHSP	2	VO	P	SHB		
166	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:34	6:41	1	GRCA	4	VO	FD	GLG		
167	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:34	6:41	1	SAVS	1	VO	P	GLG		
168	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:34	6:41	1	TUTI	2	VO	P	WDL		
169	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:51	6:58	2	AMCR	1	FL		WDL		

Bird Point Count Data
Sorted By: **OBSERVATION DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
170	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:51	6:58	2	BCCH	1	VO		WDL		
171	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:51	6:58	2	BLJA	1	VO		WDL		
172	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:51	6:58	2	EAKI	2	FD		SHB		
173	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:51	6:58	2	EAPH	1	VO		WDL		
174	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:51	6:58	2	NOCA	1	VO		WDL		
175	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:51	6:58	2	VEER	1	VO		WDL		
176	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	7:08	7:15	1	AMRO	1	VO		SHB		
177	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	7:08	7:15	1	EAKI	2	FD		GLG		
178	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	7:08	7:15	1	EAPH	1	VO		SHB		
179	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	7:08	7:15	1	GRSP	3	VO	FD	GLG		
180	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	7:08	7:15	1	KILL	2	VO		RWY		
181	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	7:08	7:15	1	NOMO	1	VO		RWY		
182	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	7:08	7:15	1	RTHA	1	P		STR		
183	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:26	7:33	3	AMRO	2	FD	VO	GLG		
184	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:26	7:33	3	BLJA	2	VO	P	WDL		
185	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:26	7:33	3	EAKI	2	FD		G		
186	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:26	7:33	3	SAVS	4	FD		GLG		
187	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:26	7:33	3	TUTI	1	VO		WDL		
188	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:26	7:33	3	WITU	2	FD		GSH		
189	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:48	7:55	1	AMCR	2	VO		WDL		
190	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:48	7:55	1	BLJA	2	VO		WDL		
191	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:48	7:55	1	EABL	2	NS		GLG		Bird box
192	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:48	7:55	1	EAKI	2	FD		GLG		
193	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:48	7:55	1	EUST	18	FD		GLG		
194	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:48	7:55	1	GRSP	2	VO		GLG		
195	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:48	7:55	1	KILL	2	LF		RWY		
196	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:48	7:55	1	TRES	3	FD		GLG		
197	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	8:14	8:21	2	AMRO	1	FD		GSH		
198	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	8:14	8:21	2	BLJA	2	VO		WDL		
199	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	8:14	8:21	2	EABL	2	FD		GLG		Set 2 game cameras at RW34 end
200	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	8:14	8:21	2	SAVS	2	NS		GLG		
201	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	8:14	8:21	2	WOTH	1	VO		WDL		
202	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	8:41	8:48	3	BCCH	1	VO		WDL		
203	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	8:41	8:48	3	BLJA	2	VO		WDL		
204	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	8:41	8:48	3	EAKI	2	FD		GLG		
205	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	8:41	8:48	3	TRES	4	FD		GLG		
206	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	9:02	9:09	1	BLJA	2	VO		WDL		
207	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	9:02	9:09	1	EABL	2	ND		GLG		
208	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	9:02	9:09	1	GRSP	2	VO	NS	GLG		
209	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	9:02	9:09	1	KILL	2	VO	LF	RWY		
210	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	9:02	9:09	1	RTHA	1	FD		GLG		
211	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	9:02	9:09	1	SAVS	1	VO		GLG		
212	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	9:02	9:09	1	TRES	4	FD		GLG		
213	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:22	6:29	1	AMCR	2	FD		GSH		
214	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:22	6:29	1	AMCR	5	P		STR		Hangar
215	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:22	6:29	1	AMRO	2	FD		GLG		
216	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:22	6:29	1	AMRO	4	P		STR		Fence at school
217	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:22	6:29	1	CHSP	2	FL		GLG		
218	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:22	6:29	1	EAKI	1	FD		SHB		
219	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:22	6:29	1	EAPH	4	P		STR		Fence at school
220	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:38	6:45	2	BLJA	2	VO		WDL		
221	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:38	6:45	2	CHSP	4	FD		SHB		
222	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:38	6:45	2	GRSP	2	VO		GSH		
223	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:38	6:45	2	KILL	14	FD		GSH		
224	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:38	6:45	2	MODO	2	FL		SHB		
225	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:38	6:45	2	RTHA	1	P		SHB		

Bird Point Count Data
Sorted By: **OBSERVATION DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
226	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	7:04	7:11	1	AMCR	3	FD		GLG		
227	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	7:04	7:11	1	AMKE	1	P		SHB		
228	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	7:04	7:11	1	AMRO	4	FD		GSH		
229	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	7:04	7:11	1	EUST	31	FD		GLG		
230	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	7:04	7:11	1	GRSP	2	VO		GLG		
231	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	7:04	7:11	1	NOMO	2	P		SHB		
232	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:26	7:33	3	BLJA	6	FL	VO	WDL		
233	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:26	7:33	3	FISP	2	P		SHB		
234	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:26	7:33	3	GRCA	2	VO		GLG		
235	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:26	7:33	3	NOMO	1	VO		SHB		
236	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:26	7:33	3	VEER	1	VO		WDL		
237	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:26	7:33	3	WDTH	2	VO		WDL		
238	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:43	7:50	3	AMRO	3	FD		SHB		
239	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:43	7:50	3	BLJA	2	VO	FD	SHB		
240	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:43	7:50	3	GRCA	1	VO		WDL		
241	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:43	7:50	3	MODO	1	FD		GLG		
242	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:43	7:50	3	TUITI	1	VO		WDL		
243	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:43	7:50	3	WDTH	1	VO		WDL		
244	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:58	8:05	1	AMCR	7	FD		GLG		
245	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:58	8:05	1	AMRO	3	FD		GLG		
246	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:58	8:05	1	BASW	2	FD		GLG		
247	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:58	8:05	1	CHSP	2	FD		GLG		
248	OBS	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:58	8:05	1	NOMO	1	P	VO	SHB		
249	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:12	8:19	2	AMRO	4	FD		GSH		
250	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:12	8:19	2	BASW	2	FD		GSH		
251	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:12	8:19	2	EABL	2	FD		GSH		
252	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:12	8:19	2	EUST	18	FD		GSH		
253	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:12	8:19	2	FISP	2	VO		GLG		
254	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:12	8:19	2	GRSP	2	VO		GSH		
255	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:30	8:37	1	AMCR	4	FD		GLG		
256	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:30	8:37	1	AMKE	1	P		GLG		
257	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:30	8:37	1	AMRO	5	FD		GLG		
258	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:30	8:37	1	EAPH	1	VO		SHB		
259	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:30	8:37	1	MODO	3	P		STR		Fence
260	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:30	8:37	1	NOMO	2	P		SHB		
261	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:44	8:51	3	AMRO	4	FD		SHB		
262	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:44	8:51	3	BASW	2	FD		GLG		
263	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:44	8:51	3	FISP	4	VO	FD	GLG		
264	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:44	8:51	3	KILL	4	FD		GLG		
265	OBS	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:44	8:51	3	RTHA	1	P		WDL		
266	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:14	7:21	1	AMCR	1	LF		PVT		Apron
267	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:14	7:21	1	AMCR	1	P	VO	WDL		
268	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:14	7:21	1	AMKE	1	FL		GLG		
269	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:14	7:21	1	BASW	14	FD		GSH		
270	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:14	7:21	1	BLJA	2	P	VO	WDL		
271	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:14	7:21	1	RTHA	1	P		PVT		Parking lot light tower
272	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:27	7:34	2	AMCR	1	P		PVT		
273	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:27	7:34	2	EAKI	1	FD		GSH		
274	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:27	7:34	2	NOMO	1	P		SHB		
275	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:27	7:34	2	NRWS	10	FD		GLG		Northern rough-wing swallow
276	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:27	7:34	2	RTHA	1	P		WDL		Model airplane club
277	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:45	7:52	3	AMRO	1	P		WDL		
278	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:45	7:52	3	EATO	1	P	VO	SHB		
279	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:45	7:52	3	FISP	3	P		SHB		
280	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:45	7:52	3	NOMO	1	P		WDL		
281	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:45	7:52	3	NRWS	8	FD		GSH		Northern rough-wing swallow

Bird Point Count Data
Sorted By: **OBSERVATION DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
282	OBS	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:45	7:52	3	SOSP	1	VO		SHB		
283	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	7:54		2	BCCH	8	FD		WDL		
284	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	7:54		2	CHSP	4	FD		SHB		
285	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	7:54		2	EAPH	2	P		SHB		
286	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	7:54		2	FTSP	1	P		GLG		
287	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	7:54		2	MODO	1	P		SHB		
288	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	7:54		2	RTHA	1	P		WDL		
289	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	7:54		2	TRES	4	FD		GSH		
290	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:33	8:40	3	BLJA	1	VO		WDL		
291	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:33	8:40	3	FISP	2	P	VO	GLG		
292	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:33	8:40	3	GRCA	2	VO		SHB		
293	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:33	8:40	3	MODO	1	FL		GLG		
294	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:33	8:40	3	NOMO	1	VO		SHB		
295	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:56	9:03	1	AMGO	6	FD		SHB		
296	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:56	9:03	1	BLJA	1	VO		WDL		
297	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:56	9:03	1	EAKI	2	FD		GLG		
298	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:56	9:03	1	FISP	1	VO		SHG		
299	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:56	9:03	1	MODO	1	P		PVT		
300	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:56	9:03	1	NRWS	10	FD		GLG		Northern rough-wing swallow
301	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:56	9:03	1	RTHA	1	P		PVT		Runway
302	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:21	9:28	2	EAPH	2	FD		GLG		
303	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:21	9:28	2	FISP	1	VO		SHB		
304	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:21	9:28	2	KILL	4	LF		PVT		
305	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:21	9:28	2	KILL	12	FD		GSH		
306	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:36	9:43	1	AMCR	5	LF		GSH		
307	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:36	9:43	1	BCCH	2	VO		WDL		
308	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:36	9:43	1	BLJA	1	VO		WDL		
309	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:36	9:43	1	EAKI	6	FD		SHB		
310	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:36	9:43	1	GRSP	3	P		GSH		
311	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:36	9:43	1	MODO	1	P		WDL		
312	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:36	9:43	1	NRWS	6	FD		GLG		Northern rough-wing swallow
313	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	10:01	10:08	3	AMRO	2	FD		SHB		
314	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	10:01	10:08	3	FISP	2	VO		SHB		
315	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	10:01	10:08	3	MODO	2	P		SHB		
316	OBS	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	10:01	10:08	3	RTHA	1	P		WDL		
317	OBS	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:14	7:21	1	AMCR	2	FD		GSH		
318	OBS	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:14	7:21	1	AMRO	2	FD		GSH		
319	OBS	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:14	7:21	1	BCCH	5	FD	VO	SHB		
320	OBS	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:14	7:21	1	BLJA	2	VO		SHB		
321	OBS	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:14	7:21	1	FISP	4	VO		SHB		
322	OBS	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:14	7:21	1	KILL	5	LF		PVT		
323	OBS	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:14	7:21	1	RTHA	1	P		WDL		
324	OBS	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	AMCR	1	VO		WDL		
325	OBS	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	AMKE	1	P		GLG		Grass height at 12" in the airport infield.
326	OBS	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	AMRO	5	FL		GLG		
327	OBS	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	BLJA	2	VO		WDL		
328	OBS	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	FISP	1	BD		GSH		
329	OBS	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	KILL	3	FD		GSH		
330	OBS	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	KILL	4	LF		PVT		
331	OBS	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	MODO	3	VO		SHB		RSA grass height at 2"
332	OBS	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	NOMO	1	P	VO	SHB		
333	OBS	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	AMRO	2	FD		GLG		
334	OBS	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	BCCH	5	FD		SHB		
335	OBS	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	EAKI	4	FD		SHB		
336	OBS	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	EUST	8	FD		GSH		

Bird Point Count Data
Sorted By: **OBSERVATION DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
337	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	FISP	2	FD		SHB		
338	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	KILL	4	LF		PVT		
339	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	KILL	6	FD		GSH		
340	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	PRAW	7	FD		SHB		Prairie warbler
341	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	SOSP	3	FD		SHB		
342	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:14	8:21	3	AMRO	6	FD		SHB		
343	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:14	8:21	3	EAPH	4	FD		SHB		
344	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:14	8:21	3	EAWP	2	FD		SHB		Eastern wood peewee
345	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:14	8:21	3	GRCA	2	VO		SHB		
346	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:14	8:21	3	MODO	7	FL		GLG		
347	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:37	8:44	1	AMCR	2	VO		WDL		
348	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:37	8:44	1	BCCH	5	FD		SBH		
349	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:37	8:44	1	KILL	8	FD		GSH		
350	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:37	8:44	1	NOCA	1	FD		SHB		
351	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:37	8:44	1	NRWS	7	FD		GSH		Northern rough swallow
352	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:37	8:44	1	RTHA	1	P		SHB		
353	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	8:49	8:56	2	AMCR	2	VO		WDL		
354	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	8:49	8:56	2	AMKE	1	FL		SHB		
355	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	8:49	8:56	2	BLJA	2	VO		WDL		
356	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	8:49	8:56	2	FISP	2	BD		GLG		
357	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	8:49	8:56	2	KILL	6	FL		GSH		
358	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	8:49	8:56	2	MODO	4	FD		GLG		
359	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:01	9:08	3	AMCR	2	VO		WDL		
360	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:01	9:08	3	BLJA	1	VO		SHB		
361	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:01	9:08	3	FISP	6	FD		GLG		
362	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:01	9:08	3	HOWR	2	FD		SHB		House wren
363	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:01	9:08	3	NOMO	1	VO		WDL		
364	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:15	9:22	2	AMCR	1	VO		WDL		
365	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:15	9:22	2	AMKE	1	P		GSH		On edge light
366	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:15	9:22	2	EUST	15	FD		GSH		Northern rough swallow
367	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:15	9:22	2	FISP	2	BD		GSH		
368	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:15	9:22	2	KILL	6	FD		GSH		
369	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:27	9:34	1	BLJA	1	VO		WDL		
370	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:27	9:34	1	EAPH	2	FD		SHB		
371	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:27	9:34	1	FISP	2	VO		GLG		
372	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:27	9:34	1	NRWS	27	FD		GSH		Northern rough swallow
373	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:27	9:34	1	PRAW	2	FD		SHB		Prarie warbler
374	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:14	14:21	3	BCCH	2	FD		SHB		
375	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:14	14:21	3	BLJA	1	VO		WDL		
376	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:14	14:21	3	EAWP	1	VO		WDL		Small mammal trap sets today. 24 total at 4 locations.
377	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:14	14:21	3	MODO	3	FD		GLG		
378	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:27	13:34	2	FISP	2	FD		GSH		
379	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:27	13:34	2	KILL	8	FD		GSH		*Noticable increase in grasshopper and cricket activity in the grass areas.
380	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:36	13:43	1	AMCR	6	FD		GSH		
381	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:36	13:43	1	AMKE	1	P		SHB		
382	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:36	13:43	1	EUST	2	FD		GSH		
383	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:47	13:54	2	FISP	1	FL		GLG		
384	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:47	13:54	2	KILL	5	FD		GSH		
385	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:57	14:04	3	BCCH	4	FD		SHB		
386	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:57	14:04	3	BLJA	2	VO		WDL		
387	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:57	14:04	3	EAPH	1	FD		SHB		
388	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	14:08	14:15	1	AMCR	8	FD		GSH		
389	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	14:08	14:15	1	AMKE	1	P		SHB		

Bird Point Count Data
Sorted By: **OBSERVATION DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
390	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	14:08	14:15	1	FISP	4	FD		SHB		
391	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	14:08	14:15	1	KILL	12	FD		GSH		
392	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:12	7:19	1	AMCR	8	FD		GLG		
393	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:12	7:19	1	AMKE	1	P		GSH		
394	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:12	7:19	1	BLJA	5	VO		WDL		
395	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:12	7:19	1	CHSP	4	FD		SHB		
396	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:12	7:19	1	NOCA	2	VO		WDL		
397	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:12	7:19	1	SOSP	1	VO		GLG		
398	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:41	7:48	2	AMCR	7	FD		GSH		
399	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:41	7:48	2	BCCH	9	FD		SHB		
400	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:41	7:48	2	BLJA	2	VO		WDL		
401	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:41	7:48	2	CANG	36	FD		GSH		Departed at 08:04 am
402	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:41	7:48	2	DOWO	1	VO		WDL		
403	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:41	7:48	2	KILL	8	FD		GSH		
404	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:12	8:19	3	BLJA	3	VO		WDL		
405	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:12	8:19	3	EAWP	1	P		SHB		
406	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:12	8:19	3	MODO	1	VO		GLG		
407	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:12	8:19	3	NOMO	1	VO		WDL		
408	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:12	8:19	3	RTHA	1	FL		WDL		
409	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:12	8:19	3	TUITI	1	VO		SHB		
410	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:39	8:46	2	BCCH	2	VO		WDL		
411	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:39	8:46	2	BLJA	2	VO		WDL		
412	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:39	8:46	2	CHSP	4	FD		GSH		
413	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:39	8:46	2	KILL	11	FD		GSH		
414	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	9:01	9:08	1	AMCR	2	FP			N	
415	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	9:01	9:08	1	AMKE	1	P		GSH		
416	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	9:01	9:08	1	BLJA	1	VO		WDL		
417	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	9:01	9:08	1	KILL	6	FD		GSH		
418	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	9:36	9:43	3	BLJA	2	FD		WDL		
419	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	9:36	9:43	3	EAPH	1	FL		GLG		
420	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	9:36	9:43	3	GRCA	2	VO		SHB		
421	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	9:36	9:43	3	NRWS	9	FL		GLG		
422	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	10:31	10:38	1	AMKE	1	P		GSH		
423	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	10:31	10:38	1	KILL	10	FD		GSH		
424	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	10:31	10:38	1	NRWS	21	FD		GSH		
425	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	10:31	10:38	1	SOSP	1	VO		SHB		
426	OB5	RPC	9/2/2020	61		Calm	Clear	8:04	8:11	1	AMCR	2	VO		WDL		
427	OB5	RPC	9/2/2020	61		Calm	Clear	8:04	8:11	1	AMKE	1	FL		SHB		
428	OB5	RPC	9/2/2020	61		Calm	Clear	8:44	8:51	2	FISP	1	FL		GSH		
429	OB5	RPC	9/2/2020	61		Calm	Clear	8:44	8:51	2	KILL	10	FD		GSH		
430	OB5	RPC	9/2/2020	61		Calm	Clear	9:01	9:08	3	FISP	1	FL		SHB		
431	OB5	RPC	9/2/2020	61		Calm	Clear	9:14	9:21	2	AMCR	2	FD		GSH		
432	OB5	RPC	9/2/2020	61		Calm	Clear	9:14	9:21	2	KILL	14	FD		GSH		
433	OB5	RPC	9/2/2020	61		Calm	Clear	9:28	9:35	1	AMCR	5	FD		GSH		
434	OB5	RPC	9/2/2020	61		Calm	Clear	9:28	9:35	1	AMKE	1	P		SHB		
435	OB5	RPC	9/2/2020	61		Calm	Clear	10:56	11:03	3	BLJA	1	VO		WDL		
436	OB5	RPC	9/2/2020	61		Calm	Clear	10:56	11:03	3	FISP	4	VO		WDL		
437	OB5	RPC	9/2/2020	61		Calm	Clear	10:56	11:03	3	NRWS	6	FD		GLG		
438	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:13	17:20	1	AMCR	2	FL		WDL		
439	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:13	17:20	1	AMKE	1	FD		GSH		
440	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:13	17:20	1	NOCA	4	FD		GSH		
441	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:24	17:31	2	AMCR	2	FD		GSH		
442	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:24	17:31	2	KILL	9	FD		GSH		
443	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:34	17:41	3	AMCR	2	FD		GSH		
444	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:34	17:41	3	KILL	4	FD		GSH		
445	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:34	17:41	3	SAVS	2	FD		GLG		

Bird Point Count Data
Sorted By: **OBSERVATION DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
446	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:48	17:55	1	BLJA	1	VO		WDL		
447	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:48	17:55	1	CANG	11	FL		PND		Landing @ Bartons Cove
448	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:57	18:04	2	BLJA	1	VO		WDL		
449	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:57	18:04	2	KILL	14	FD		GSH		
450	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:57	18:04	2	RTHA	2	FP			E	
451	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	18:07	18:11	3	SAVS	2	FD		GLG		
452	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:02	7:09	1	AMCR	8	P	VO	WDL		
453	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:02	7:09	1	BLJA	14	FP			S	
454	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:02	7:09	1	CANG	6	FP			S	
455	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:02	7:09	1	NOFL	1	VO		WDL		
456	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:02	7:09	1	WTSP	40	FL		GLG		
457	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:21	7:28	2	AMCR	2	VO		WDL		
458	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:21	7:28	2	AMRO	1	FD		GSH		
459	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:21	7:28	2	BLJA	8	VO		WDL		
460	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:21	7:28	2	WTSP	6	FD		GSH		
461	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:42	7:49	3	AMCR	24	FP			S	
462	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:42	7:49	3	BLJA	7	VO		WDL		
463	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:42	7:49	3	FISP	4	FD		GLG		
464	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:59	8:06	1	AMCR	2	P		WDL		
465	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:59	8:06	1	BCCH	1	VO		SHB		
466	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:59	8:06	1	BLJA	2	VO		WDL		
467	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:59	8:06	1	EUST	2	P		SHB		
468	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:59	8:06	1	NRWS	15	FD		GLG		
469	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:31	8:38	2	AMCR	7	FP			S	
470	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:31	8:38	2	AMRO	1	P		SHB		
471	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:31	8:38	2	BCCH	12	VO		SHB		
472	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:31	8:38	2	BLJA	2	VO		WDL		
473	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:31	8:38	2	WBNU	2	VO		SHB		
474	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:41	8:48	3	BLJA	2	VO		WDL		
475	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:41	8:48	3	EAPH	1	VO		WDL		
476	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:41	8:48	3	FISP	4	FD		GLG		
477	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:41	8:48	3	GRCA	1	VO		SHB		
478	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:02	9:09	1	AMCR	9	P		WDL		
479	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:02	9:09	1	BCCH	12	FD		SHB		
480	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:02	9:09	1	BLJA	7	VO		WDL		
481	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:02	9:09	1	EUST	4	FD		GSH		
482	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:02	9:09	1	RTHA	2	P		WDL		
483	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:02	9:09	1	SAVS	4	FD		GLG		
484	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:02	9:09	1	WTSP	9	FD		GSH		
485	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:19	9:26	2	AMCR	7	P	VO	WDL		
486	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:19	9:26	2	AMKE	2	P		SHB		
487	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:19	9:26	2	AMRO	2	FD		GSH		
488	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:19	9:26	2	BCCH	14	FD		SHB		
489	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:19	9:26	2	BLJA	5	VO		WDL		
490	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:19	9:26	2	SAVS	6	FP		GSH		
491	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:42	9:49	3	AMCR	3	P	VO	WDL		
492	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:42	9:49	3	AMRO	1	FD		GLG		
493	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:42	9:49	3	BCCH	2	FD		GLG		
494	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:42	9:49	3	BLJA	7	P	VO	WDL		
495	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:42	9:49	3	RTHA	1	P		WDL		
496	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:42	9:49	3	SAVS	2	FD		GLG		
497	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:32	10:39	2	AMCR	10	FL		WDL		
498	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:32	10:39	2	AMKE	1	FL		GSH		
499	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:32	10:39	2	BCCH	4	FD		SHB		
500	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:32	10:39	2	BLJA	3	P	VO	WDL		
501	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:32	10:39	2	NOFL	1	FL		SHB		

Bird Point Count Data
Sorted By: **OBSERVATION DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	AIRPORT	OBS	DATE	TEMP	WIND_DIR	SPEED	WEATHER	START TIME	END TIME	PT	BIRD SPP	NUMBER	BEHAVIOR	BEHAVIOR 2	COVER_1	DIR	COMMENTS
502	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:32	10:39	2	SOSP	3	FD		SHB		
503	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:45	10:52	1	AMCR	1	FD		GSH		
504	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:45	10:52	1	AMKE	1	FD		GSH		
505	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:45	10:52	1	BLSA	2	VO		WDL		
506	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:45	10:52	1	CANG	6	FL		RIV		
507	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:45	10:52	1	RTHA	1	FD		GSH		
508	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:45	10:52	1	SAVS	5	FD		GLG		
509	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	11:10	11:17	3	AMGO	2	FO		SHB		
510	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	11:10	11:17	3	AMRO	5	FL		GLG		
511	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	11:10	11:17	3	BLJA	4	VO		WDL		
512	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	11:10	11:17	3	CHSP	2	VO		SHB		
513	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	7:20	7:27	1	AMCR	2	FD		GSH		
514	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	7:20	7:27	1	AMCR	3	P	VO	WDL		
515	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	7:20	7:27	1	AMCR	4	FL		GSH		
516	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	7:20	7:27	1	CANG	12	FL		GSH		Lift-off from airport
517	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:09	8:16	2	AMCR	4	FD		GSH		
518	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:09	8:16	2	BCCH	3	FD		SHB		
519	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:09	8:16	2	BLJA	4	VO		WDL		
520	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:09	8:16	2	CANG	11	FP			N	@ 500'
521	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:09	8:16	2	WTSP	12	FD		SHB		
522	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:48	8:55	3	AMCR	2	FD		GLG		
523	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:48	8:55	3	BCCH	3	FD		SHB		
524	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:48	8:55	3	BLJA	2	VO		WDL		
525	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:48	8:55	3	BLJA	8	FL		SHB		
526	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:48	8:55	3	WTSP	9	FL		GLG		
527	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:38	9:45	2	AMCR	4	FL		GLG		
528	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:38	9:45	2	BLJA	2	FL		WDL		
529	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:38	9:45	2	BLJA	7	VO		WDL		
530	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:38	9:45	2	CANG	45	FP			S	@ 1500' ±
531	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:38	9:45	2	WTSP	9	FD		SHB		
532	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:51	9:58	1	AMCR	2	FD		GSH		
533	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:51	9:58	1	AMKE	1	FL		GSH		
534	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:51	9:58	1	CANG	84	FP			S	3 flocks @ 1000 - 1500'
535	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:51	9:58	1	WTSP	6	FD		SHB		
536	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	10:05	10:12	3	BCCH	2	FD		SHB		
537	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	10:05	10:12	3	BLJA	2	VO		WDL		
538	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	10:05	10:12	3	CANG	24	FP			S	@ 1000' ±
539	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	10:05	10:12	3	TUTI	1	FD		SHB		
540	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	6:51	6:58	1	AMCR	6	FL		GSH		
541	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	6:51	6:58	1	RTHA	2	FL		GSH		
542	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	7:32	7:39	2	AMCR	1	VO		WDL		
543	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	7:32	7:39	2	BLJA	2	VO		WDL		
544	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	7:55	8:02	3	AMCR	1	VO		WDL		
545	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	7:55	8:02	3	AMKE	1	VO		SHB		
546	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	7:55	8:02	3	BLJA	1	VO		SHB		
547	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	8:08	8:15	2	BCCH	1	FD		SHB		
548	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	8:08	8:15	2	BLJA	2	VO		WDL		
549	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:19	8:26	1	AMCR	1	VO		WDL		
550	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:19	8:26	1	BLJA	2	VO		WDL		
551	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:19	8:26	1	BLJA	6	FL		GSH		
552	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:19	8:26	1	WTSP	5	FD		GSH		
553	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:44	8:51	3	AMCR	7	FD		GLG		
554	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:44	8:51	3	BCCH	4	VO		WDL		
555	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:44	8:51	3	BLJA	2	VO		WDL		
556	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:44	8:51	3	TUTI	2	VO		WDL		
557	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:44	8:51	3	WTSP	11	FD		GLG		

Bird Point Count Data
Sorted By: **OBSERVATION DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
558	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:16	9:23	3	AMCR	1	VO		WDL		
559	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:16	9:23	3	BCCH	5	FD		WDL		
560	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:16	9:23	3	BLJA	3	VO		WDL		
561	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:16	9:23	3	MODO	3	FD		GLG		
562	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:16	9:23	3	WBNU	2	FD		WDL		
563	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:26	9:33	2	AMCR	1	VO		WDL		
564	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:26	9:33	2	BLJA	1	VO		WDL		
565	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:36	9:43	1	AMCR	2	VO		WDL		
566	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:36	9:43	1	BLJA	2	VO		WDL		
567	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:36	9:43	1	CANG	8	FP			S	
568	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:36	9:43	1	EUST	11	FL		GSH		
569	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:36	9:43	1	MODO	4	FD		GSH		
570	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	7:40	7:47	1	AMCR	2	P		WDL		
571	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	7:40	7:47	1	BLJA	8	FL		WDL		
572	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	7:40	7:47	1	NOCA	1	P		WDL		
573	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	7:50	7:57	2	AMCR	2	P		WDL		
574	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	7:50	7:57	2	BLJA	3	FL		SHB		
575	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	7:50	7:57	2	NOCA	1	P		WDL		
576	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	8:03	8:10	3	BLJA	3	VO		WDL		
577	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	8:03	8:10	3	MODO	1	FD		GSH		
578	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	8:46	8:53	3	BCCH	2	VO		WDL		
579	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	8:46	8:53	3	BLJA	2	VO		WDL		
580	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	8:46	8:53	3	RBWO	1	VO		WDL		
581	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	8:46	8:53	3	TUTI	1	VO		WDL		
582	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	8:51	8:58	2	AMCR	2	FD		GSH		
583	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	8:51	8:58	2	DOWO	1	VO		WDL		
584	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	9:00	9:07	1	AMCR	2	FD		GSH		
585	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	9:00	9:07	1	AMCR	2	FL		GSH		
586	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	9:00	9:07	1	BLJA	4	VO		WDL		
587	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	9:00	9:07	1	EABL	1	VO		SHB		
588	OBS	RPC	11/30/2020	31		Calm	Clear, no snow cover yet, rain later	7:02	7:09	1	AMCR	1	P		WDL		
589	OBS	RPC	11/30/2020	31		Calm	Clear, no snow cover yet, rain later	7:15	7:22	2	BLJA	2	P		WDL		
590	OBS	RPC	11/30/2020	31		Calm	Clear, no snow cover yet, rain later	7:15	7:22	2	MODO	2	FL		GSH		
591	OBS	RPC	11/30/2020	31		Calm	Clear, no snow cover yet, rain later	7:15	7:22	2	WTSP	2	FL		GSH		
592	OBS	RPC	11/30/2020	31		Calm	Clear, no snow cover yet, rain later	7:37	7:43	3	BCCH	3	VO		SHB		
593	OBS	RPC	11/30/2020	31		Calm	Clear, no snow cover yet, rain later	7:37	7:43	3	WTSP	3	FL		SHB		
594	OBS	RPC	11/30/2020	31		Calm	Clear, no snow cover yet, rain later	9:31	9:38	3	BCCH	3	VO		WDL		
595	OBS	RPC	11/30/2020	31		Calm	Cloudy	9:51	9:58	2	AMCR	1	FD		GSH		
596	OBS	RPC	11/30/2020	31		Calm	Cloudy	9:51	9:58	2	BLJA	2	VO		WDL		
597	OBS	RPC	11/30/2020	31		Calm	Cloudy	10:05	10:12	1	None						No birds.
598	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	8:35	8:42	1	AMCR	3	FD		GSH		No snow cover yet. Ground not frozen yet.
599	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	8:35	8:42	1	BLJA	1	P		WDL		
600	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	8:35	8:42	1	WTSP	3	FL		GSH		
601	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	8:47	8:52	2	AMCR	2	FD		GSH		
602	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	8:47	8:52	2	BAEA	2	FP			W	Over CT river in the approach of RW 16 end.
603	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	8:59	9:06	3	AMCR	1	FD		GSH		
604	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	8:59	9:06	3	WTSP	3	FL		GSH		

Bird Point Count Data
Sorted By: **OBSERVATION DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
605	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	9:30	9:37	3	None						No birds.
606	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	9:42	9:49	2	WTSP	5	FL		GSH		
607	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny	9:58	10:05	1	None						No birds.
608	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny	10:51	10:58	3	BLJA	1	P		WDL		
609	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny	11:01	11:08	2	None						No birds.
610	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny	11:10	11:17	1	RTHA	2	FL		WDL		
611	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny	11:10	11:17	1	WTSP	3	FL		GSH		
612	OBS	RPC	12/31/2020	38		Calm	Foggy, cloudy, no snow cover	7:59	8:06	1	AMCR	2	P	VO	WDL		*Collected the game cameras today. End of game camera effort.
613	OBS	RPC	12/31/2020	38		Calm	Foggy, cloudy, no snow cover	8:11	8:18	2	None						No activity.
614	OBS	RPC	12/31/2020	38		Calm	Foggy, cloudy, no snow cover	8:21	8:28	3	AMCR	2	FL		WDL		
615	OBS	RPC	12/31/2020	38		Calm	Foggy, cloudy, no snow cover	8:31	8:38	2	AMCR	1	FL		GSH		
616	OBS	RPC	12/31/2020	38		Calm	Foggy, cloudy, no snow cover	8:41	8:48	1	AMCR	2	FD		GSH		
617	OBS	RPC	12/31/2020	38		Calm	Foggy, cloudy, no snow cover	8:41	8:48	1	AMCR	2	P	VO	WDL		
618	OBS	RPC	12/31/2020	38		Calm	Cloudy, foggy	8:49	9:06	2	AMCR	1	FD		GSH		
619	OBS	RPC	12/31/2020	38		Calm	Cloudy, foggy	8:49	9:06	2	AMCR	2	P	VO	WDL		
620	OBS	RPC	12/31/2020	38		Calm	Cloudy, foggy	8:49	9:06	2	BLJA	1	P	VO	WDL		
621	OBS	RPC	12/31/2020	38		Calm	Cloudy, foggy	8:49	9:06	2	WTSP	2	FD		GSH		
622	OBS	RPC	12/31/2020	38		Calm	Cloudy, foggy	9:08	9:16	3	AMCR	1	P	VO	WDL		
623	OBS	RPC	12/31/2020	38		Calm	Cloudy, foggy	9:08	9:16	3	BLJA	1	P	VO	WDL		
624	OBS	RPC	12/31/2020	38		Calm	Cloudy, foggy	9:08	9:16	3	PIWO	1	FL		WDL		
625	OBS	RPC	12/31/2020	38		Calm	Cloudy, foggy	9:08	9:16	3	WTSP	2	FD		GSH		
626	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:07	8:14	1	AMCR	3	P		WDL		
627	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:07	8:14	1	BCCH	7	VO		SHB		
628	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:07	8:14	1	BLJA	6	VO		WDL		No snow cover.
629	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:18	8:25	2	AMCR	1	VO		WDL		
630	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:18	8:25	2	BLJA	1	VO		WDL		
631	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:37	8:44	3	BCCH	3	FD		SHB		
632	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:37	8:44	3	TUTI	1	VO		SHB		
633	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:49	8:56	3	BCCH	1	VO		WDL		
634	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:49	8:56	3	BLJA	1	VO		WDL		
635	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:58	9:05	2	AMCR	1	P		WDL		
636	OBS	RPC	1/19/2021	30		Calm	Partly cloudy	9:07	9:14	1	BLJA	2	VO		WDL		
637	OBS	RPC	1/19/2021	30		Calm	Partly cloudy	9:07	9:14	1	EABL	2	FD		GLG		
638	OBS	RPC	1/19/2021	30		Calm	Partly cloudy	10:17	10:24	3	BLJA	1	VO		WDL		
639	OBS	RPC	1/19/2021	30		Calm	Partly cloudy	10:17	10:24	3	EABL	5	FD		GSH		
640	OBS	RPC	1/19/2021	30		Calm	Partly cloudy	10:27	10:34	2	AMCR	3	P		WDL		
641	OBS	RPC	1/19/2021	30		Calm	Partly cloudy	10:27	10:34	2	BLJA	1	VO		WDL		
642	OBS	RPC	1/19/2021	30		Calm	Partly cloudy	10:37	10:44	1	AMCR	1	P		WDL		
643	OBS	RPC	2/10/2021	14		Calm	Sunny, complete 12" snow cover	8:26	8:33	1	AMCR	2	FL		WDL		
644	OBS	RPC	2/10/2021	14		Calm	Sunny, complete 12" snow cover	8:26	8:33	1	BLJA	1	P	VO	WDL		
645	OBS	RPC	2/10/2021	14		Calm	Sunny, complete 12" snow cover	8:36	8:43	2	BCCH	2	VO		WDL		
646	OBS	RPC	2/10/2021	14		Calm	Sunny, complete 12" snow cover	8:47	8:54	3	None						N/A - No birds.
647	OBS	RPC	2/10/2021	14		Calm	Sunny, complete 12" snow cover	8:57	9:04	2	None						N/A - No birds.
648	OBS	RPC	2/10/2021	14		Calm	Sunny, complete 12" snow cover	9:07	9:14	1	None						N/A - No birds.
649	OBS	RPC	2/10/2021	14		Calm	Sunny	9:17	9:24	1	BCCH	1	VO		WDL		
650	OBS	RPC	2/10/2021	14		Calm	Sunny	9:17	9:24	2	BLJA	2	FL		WDL		
651	OBS	RPC	2/11/2021	28		Calm	Cloudy	11:02	11:09	3	None						N/A
652	OBS	RPC	2/11/2021	28		Calm	Cloudy	11:12	11:19	2	AMCR	2	VO		WDL		
653	OBS	RPC	2/11/2021	28		Calm	Cloudy	11:21	11:28	3	None						N/A See track counts.
654	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy, 100% snow cover	8:41	8:48	1	AMCR	5	FL		GSH		
655	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy, 100% snow cover	8:41	8:48	1	BAEA	2	FL		GSH		
656	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy, 100% snow cover	8:41	8:48	1	KILL	2	LF		GSH		Bad acoustics today due to wind.
657	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy, 100% snow cover	8:58	9:05	2	YRWA	4	WDL		WDL		South of airport.

Bird Point Count Data
Sorted By: **OBSERVATION DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
658	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy, 100% snow cover	9:11	9:18	3	None						No birds.
659	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy, 100% snow cover	9:20	9:27	2	AMCR	2	FD		TWY		
660	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy, 100% snow cover	9:20	9:27	2	AMCR	2	FL		GSH		
661	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy, 100% snow cover	9:20	9:27	2	KILL	2	LF		TWY		
662	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	9:33	9:40	1	AMCR	4	FL		GSH		
663	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	9:33	9:40	1	BLSA	1	P		WDL		
664	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	9:33	9:40	1	KILL	2	LF		TWY		
665	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	9:33	9:40	1	RBGU	1	FL		WDL		
666	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	9:44	9:51	3	None						No birds.
667	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	10:07	10:14	1	AMCR	1	FL		WDL		
668	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	10:07	10:14	1	AMCR	3	LF		RWY		
669	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	10:07	10:14	1	RTHA	1	P		WDL		
670	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	10:18	10:25	3	None						No birds.
671	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	10:27	10:34	2	AMCR	2	FL		GSH		
672	OBS	RPC	3/12/2021	57	WSW	5-10 MPH	Mostly sunny	9:15	9:22	3	AMCR	3	FD		GSH		
673	OBS	RPC	3/12/2021	57	WSW	5-10 MPH	Mostly sunny	9:28	9:35	2	KILL	4	FD		GSH		
674	OBS	RPC	3/12/2021	57	WSW	5-10 MPH	Mostly sunny	9:35	9:42	1	AMCR	5	FD		GSH		
675	OBS	RPC	3/12/2021	57	WSW	5-10 MPH	Mostly sunny	9:35	9:42	1	BAEA	1	FP				
676	OBS	RPC	3/12/2021	57	WSW	5-10 MPH	Mostly sunny	9:35	9:42	1	RTHA	1	FP				
677	OBS	RPC	3/12/2021	57	WSW	5-10 MPH	Mostly sunny	9:47	9:54	2	AMCR	3	FD		GSH		
678	OBS	RPC	3/12/2021	57	WSW	5-10 MPH	Mostly sunny	9:47	9:54	2	BAEA	2	FP				
679	OBS	RPC	3/12/2021	57	WSW	5-10 MPH	Mostly sunny	9:47	9:54	2	BCCH	6	P	VO	SHB		
680	OBS	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:00	10:07	3	KILL	2	FD		GSH		
681	OBS	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:00	10:07	3	NOCA	1	P	VO	WDL		
682	OBS	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:15	10:22	2	None						No birds.
683	OBS	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:27	10:34	1	AMCR	3	FL		WDL		
684	OBS	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:27	10:34	1	AMCR	8	FD		GSH		
685	OBS	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:27	10:34	1	AMRO	9	FD		GLG		
686	OBS	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:27	10:34	1	BAEA	1	FL		OW		
687	OBS	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:27	10:34	1	CANG	16	FL		OW		
688	OBS	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:27	10:34	1	CANG	65	FP				@ 1500' N -> S
689	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:20	11:27	1	AMCR	2	FL		GLG		
690	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:20	11:27	1	BCCH	2	VO		SHB		
691	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:20	11:27	1	BLJA	2	VO		WDL		
692	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:20	11:27	1	KILL	2	LF		RWY		
693	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:20	11:27	1	KILL	13	FD		GSH		Fog lifed at approximately 8:30 am. Started this am at Unity Park.
694	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:20	11:27	1	MALL	2	FP			S	@ 500'
695	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:41	11:48	1	AMCR	5	LF		RWY		
696	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:41	11:48	1	AMCR	6	FD		GSH		
697	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:41	11:48	1	BCCH	2	VO		SHB		
698	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:41	11:48	1	KILL	12	FD		GSH		
699	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:41	11:48	1	PIWO	1	FD		WDL		
700	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:51	11:58	2	BCCH	2	VO		WDL		
701	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:51	11:58	2	KILL	2	FD		GSH		
702	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:51	11:58	2	NOCA	1	VO		WDL		
703	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:51	11:58	2	TUVU	3	FP			E	
704	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	12:03	12:10	3	AMRO	2	FD		GSH		
705	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	12:03	12:10	3	BCCH	4	VO		WDL		
706	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	12:03	12:10	3	EABL	2	P		SHB		
707	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	12:03	12:10	3	TUTI	2	VO		WDL		
708	OBS	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	12:03	12:10	3	TUVU	8	FP			E	
709	OBS	RPC	3/25/2021	60		Calm	Mostly cloudy	12:15	12:22	2	AMCR	1	VO		WDL		
710	OBS	RPC	3/25/2021	60		Calm	Mostly cloudy	12:15	12:22	2	BCCH	2	VO		WDL		
711	OBS	RPC	3/25/2021	60		Calm	Mostly cloudy	12:15	12:22	2	BLJA	1	VO		WDL		

Bird Point Count Data
Sorted By: **OBSERVATION DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
712	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:15	12:22	2	EABL	2	VO		SHB		
713	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:15	12:22	2	KILL	5	FD		GSH		
714	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:26	12:33	1	AMCR	1	VO		WDL		
715	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:26	12:33	1	AMRO	1	FD		GSH		
716	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:26	12:33	1	BLJA	1	VO		WDL		
717	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:26	12:33	1	CANG	17	FL		OW		
718	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:26	12:33	1	KILL	7	FD		GSH		
719	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:41	12:48	2	AMCR	5	FD		GSH		
720	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:41	12:48	2	EABL	2	VO		SHB		
721	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:41	12:48	2	KILL	5	FD		GSH		
722	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:41	12:48	2	SOSP	1	VO		SHB		
723	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:51	12:58	3	AMRO	8	FD		GSH		
724	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:51	12:58	3	KILL	2	FD		SGH		
725								12:51	12:58	3	EABL	2	VO		SHB		

Key to Bird Species 4-Letter Codes

AMBL	American Bluebird	GRCA	Gray Catbird
AMCR	American Crow	GRSP	Grasshopper Sparrow
AMGO	American Goldfinch	HOWR	House Wren
AMKE	American Kestrel	KILL	Killdeer
AMRO	American Robin	MALL	Mallard Duck
BAEA	Bald Eagle	MODO	Mourning Dove
BARS	Barn Swallow	NOCA	Northern Cardinal
BASW	Bank Swallow	NOFL	Northern Flicker
BCCH	Black-capped Chickadee	NOMO	Northern Mockingbird
BRTH	Brown Thrasher	NRWS	Northern Rough-wing Swallow
CANG	Canada Goose	PIWO	Pileated Woodpecker
CHSP	Chipping Sparrow	PRAW	Prairie Warbler
DOWO	Downy Woodpecker	RBGU	Ring-billed Gull
EABL	Eastern Bluebird	RBWO	Red-bellied Woodpecker
EAKI	Eastern Kingbird	RTHA	Red-tailed Hawk
EAPH	Eastern Phoebe	SAVS	Savannah Sparrow
EATO	Eastern Towhee	SOSP	Song Sparrow
EAWP	Eastern Wood Peewee	TRES	Tree Swallow
EUST	European Starling	TUITI	Tufted Titmouse
FISP	Field Sparrow	TUVU	Turkey Vulture
GBHE	Great Blue Heron	VEER	Veery
		WBNU	White-breasted Nuthatch
		WITU	Wild Turkey
		WOTH	Wood Thrush
		YRWA	Yellow-rumped Warbler

Key to Habitat Cover Types

RWY - runway
TWY - taxiway
RMP - ramp
ASP - asphalt
UNP - unpaved road
STR - structure
DTC - ditch
PND - pond
RES - reservoir
RIV - river
WDL – woodland
MAR - marsh/wetland
CRK - creek/stream
TSW - temp standing water
GSH grass, short
GLG - grass, long
SHB - shrubs
GRV - gravel
AGF - ag field
SHR - shoreline
TR - single/sm group of trees

Key to Weather Conditions

SU - sunny
PS - partly sunny
CL - cloudy
RN - rain
SN - snow/sleet
FG - fog
PC - partly cloudy

Key to Behavior

FD - feeding
LF - loafing
RS- roosting
NS - nesting
VO - vocalizing
FL - flying local
FP - flying passing
RN – running
BD - bedded
P – perched
ST – standing
TW- towering
HW - hawking
SW- swimming

Bird Point Count Data
Sorted By: **BIRD SPECIES AND DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
2	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	6:52	6:59	1	AMCR	2	P		GLG		
3	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	6:52	6:59	1	AMCR	1	VO	P	GLG		
4	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	6:52	6:59	1	AMCR	1	FP			S	Off runway end
5	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	6:52	6:59	1	AMCR	2	VO	P	GLG		
6	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:21	7:28	2	AMCR	2	FD		GSH		
7	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:21	7:28	2	AMCR	2	P		GSH		
8	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:21	7:28	2	AMCR	18	FD		GSH		
9	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:21	7:28	2	AMCR	6	P		SHB		
10	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:21	7:28	2	AMCR	2	VO	P	SHB		Brown thrashers
11	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:21	7:28	2	AMCR	2	VO	P	SHB		
12	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:21	7:28	2	AMCR	1	FP			S	
13	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:35	7:42	3	AMCR	2	FL		GSH		
14	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:35	7:42	3	AMCR	1	P	VO	GLG		
15	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:35	7:42	3	AMCR	4	FP			N	
16	OBS	RPC	4/16/2020	32	W	10-15 MPH	Partly sunny, light snow	7:35	7:42	3	AMCR	3	P	VO	GLG		
17	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	8:31	8:38	3	AMCR	4	P		WDL		
18	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	8:31	8:38	3	AMCR	4	FD		GLG		
19	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	8:31	8:38	3	AMCR	2	VO		SHB		Brown thrasher
20	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	8:31	8:38	3	AMCR	1	VO		SHB		
21	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	8:31	8:38	3	AMCR	2	VO		GLG		
22	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	8:31	8:38	3	AMCR	4	VO		SHB		
23	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	8:31	8:38	3	AMCR	2	VO		SHB		
24	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:00	10:07	1	AMCR	2	P		WDL		
25	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:00	10:07	1	AMCR	4	FD		GSH		
26	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:00	10:07	1	AMCR	1	FD		GSH		
27	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:00	10:07	1	AMCR	2	FP			N	Off runway end @ 300'
28	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:14	10:21	2	AMCR	1	FD		GSH		
29	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:14	10:21	2	AMCR	5	FD		GSH		
30	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:14	10:21	2	AMCR	2	FD		GSH		
31	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:14	10:21	2	AMCR	2	VO		SHB		
32	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:34	10:41	3	AMCR	7	FD		GLG		
33	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:34	10:41	3	AMCR	4	FD		SHB		
34	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:34	10:41	3	AMCR	2	VO	P	SHB		
35	OBS	RPC	4/16/2020	32	W	10-25 MPH	Partly sunny, light snow	10:34	10:41	3	AMCR	1	FD		SHB		
36	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	6:50	6:57	1	AMCR	2	FD		GSH		
37	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	6:50	6:57	1	AMCR	1	P		RWY		
38	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	6:50	6:57	1	AMCR	2	FD		GLG		
39	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	6:50	6:57	1	AMCR	1	VO		WDL		
40	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	6:50	6:57	1	AMCR	2	VO		WDL		
41	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	6:50	6:57	1	AMCR	2	VO		GLG		
42	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:17	7:24	2	AMCR	1	FD		GSH		
43	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:17	7:24	2	AMCR	9	FD		GSH		
44	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:17	7:24	2	AMCR	8	VO		WDL		
45	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:17	7:24	2	AMCR	5	VO		WDL		
46	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:17	7:24	2	AMCR	10	VO	P	SHB		
47	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:38	7:45	3	AMCR	25	FD		GLG		
48	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:38	7:45	3	AMCR	4	VO		WDL		
49	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:38	7:45	3	AMCR	4	FD		SHB		
50	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:38	7:45	3	AMCR	1	FL		GLG		
51	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:38	7:45	3	AMCR	1	VO		WDL		
52	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:38	7:45	3	AMCR	1	VO		WDL		
53	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:38	7:45	3	AMCR	1	FP			E	@500'
54	OBS	RPC	4/29/2020	35		Calm	Mostly sunny	7:38	7:45	3	AMCR	12	FD		GLG		
55	OBS	RPC	4/29/2020	38		Calm	Mostly sunny	8:15	8:22	2	AMCR	1	FD		GSH		
56	OBS	RPC	4/29/2020	38		Calm	Mostly sunny	8:15	8:22	2	AMCR	15	FD		GSH		
57	OBS	RPC	4/29/2020	38		Calm	Mostly sunny	8:15	8:22	2	AMCR	2	VO		WDL		

Bird Point Count Data
Sorted By: **BIRD SPECIES AND DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
58	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	8:15	8:22	2	AMCR	1	VO		WDL		
59	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	8:15	8:22	2	AMCR	6	FD		GSH		
60	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	8:39	8:46	1	AMCR	1	FD		GSH		
61	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	8:39	8:46	1	AMCR	2	FD		GSH		
62	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	8:39	8:46	1	AMCR	6	VO		SHB		
63	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	8:39	8:46	1	AMCR	2	LF		RWY		
64	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	8:39	8:46	1	AMCR	2	P		WDL		
65	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	8:39	8:46	1	AMCR	2	VO		GLG		
66	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	9:52	9:59	3	AMCR	10	FD		GLG		
67	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	9:52	9:59	3	AMCR	2	FD		WDL		
68	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	9:52	9:59	3	AMCR	4	VO	P	SHB		
69	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	9:52	9:59	3	AMCR	1	FL		GLG		
70	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	9:52	9:59	3	AMCR	1	FD		WDL		
71	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	9:52	9:59	3	AMCR	2	VO		GLG		
72	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	9:52	9:59	3	AMCR	1	VO		SHB		
73	OB5	RPC	4/29/2020	38		Calm	Mostly sunny	9:52	9:59	3	AMCR	1	FL		GLG		
74	OB5	RPC	4/29/2020	48		Calm	Mostly sunny	10:39	10:46	2	AMCR	2	P		GLG		
75	OB5	RPC	4/29/2020	48		Calm	Mostly sunny	10:39	10:46	2	AMCR	5	FD		GSH		
76	OB5	RPC	4/29/2020	48		Calm	Mostly sunny	10:39	10:46	2	AMCR	2	VO		WDL		
77	OB5	RPC	4/29/2020	48		Calm	Mostly sunny	10:39	10:46	2	AMCR	1	VO		SHB		
78	OB5	RPC	4/29/2020	48		Calm	Mostly sunny	10:39	10:46	2	AMCR	1	VO		GLG		
79	OB5	RPC	4/29/2020	48		Calm	Mostly sunny	10:39	10:46	2	AMCR	1	FL		WDL		
80	OB5	RPC	4/29/2020	48		Calm	Mostly sunny	11:06	11:13	1	AMCR	1	VO		SHB		
81	OB5	RPC	4/29/2020	48		Calm	Mostly sunny	11:06	11:13	1	AMCR	1	FL		GSH		
82	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:29	6:36	3	AMCR	4	VO		SHB		
83	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:29	6:36	3	AMCR	2	VO		GLG		
84	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:29	6:36	3	AMCR	2	VO		SHB		
85	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:29	6:36	3	AMCR	2	FL		GLG		
86	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:29	6:36	3	AMCR	3	VO		SHB		
87	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:59	7:06	1	AMCR	4	VO		SHB		
88	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:59	7:06	1	AMCR	1	VO		GLG		
89	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:59	7:06	1	AMCR	2	FD		GLG		
90	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:59	7:06	1	AMCR	1	VO		GLG		
91	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	6:59	7:06	1	AMCR	6	FD		SHB		
92	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	7:30	7:37	2	AMCR	1	P		WDL		
93	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	7:30	7:37	2	AMCR	4	VO		SHB		
94	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	7:30	7:37	2	AMCR	5	FD		GSH		
95	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	7:30	7:37	2	AMCR	5	VO		SHB		
96	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	7:30	7:37	2	AMCR	3	VO		GLG		
97	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	7:30	7:37	2	AMCR	1	VO		GLG		
98	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	7:30	7:37	2	AMCR	1	FL		GLG		
99	OB5	RPC	5/13/2020	36		Calm	Mostly sunny	7:30	7:37	2	AMCR	2	VO		SHB		
100	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	7:56	8:01	1	AMCR	1	FL		GLG		
101	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	7:56	8:01	1	AMCR	7	FD		GLG		
102	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	7:56	8:01	1	AMCR	1	VO		WDL		
103	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	7:56	8:01	1	AMCR	24	FD		GSH		
104	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	7:56	8:01	1	AMCR	1	VO		GLG		
105	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	7:56	8:01	1	AMCR	4	FD		SHB		
106	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	8:28	8:35	3	AMCR	2	FD		GSH		
107	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	8:28	8:35	3	AMCR	4	FD		SHB		
108	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	8:28	8:35	3	AMCR	1	P		SHB		
109	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	8:28	8:35	3	AMCR	2	FD		GSH		
110	OB5	RPC	5/13/2020	37		Calm	Mostly sunny	8:28	8:35	3	AMCR	1	VO		WDL		
111	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	AMCR	2	FD		GLG		
112	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	AMCR	1	FD		GLG		
113	OB5	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	AMCR	11	FD		GSH		

Bird Point Count Data
Sorted By: **BIRD SPECIES AND DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
114	OBS	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	AMCR	9	FD		GLG		
115	OBS	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	AMGO	2	VO		SHB		
116	OBS	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	AMGO	2	NS		SHB		
117	OBS	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	AMGO	1	FD		GSH		
118	OBS	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	AMGO	1	VO		SHB		
119	OBS	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	AMKE	1	VO		GLG		
120	OBS	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	AMKE	6	FD	LF	GLG		
121	OBS	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	AMKE	2	FD		GLG		
122	OBS	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	AMKE	15	FD		GSH		
123	OBS	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:28	6:35	1	AMKE	1	VO		SHB		Yellow rump warbler
124	OBS	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:52	6:59	2	AMKE	2	FD		GSH		
125	OBS	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:52	6:59	2	AMKE	8	FD		GSH		
126	OBS	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:52	6:59	2	AMKE	1	VO		GLG		
127	OBS	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:52	6:59	2	AMKE	6	FD	FL	GLG		
128	OBS	RPC	5/28/2020	66	SW	10-12 MPH	Mostly sunny	6:52	6:59	2	AMKE	1	FP			E	
129	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	AMKE	3	FD		GLG		
130	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	AMKE	3	VO		SHB		
131	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	AMKE	8	FD		GLG		
132	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	AMKE	3	FD		GLG		
133	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	AMKE	2	VO		SHB		
134	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	AMKE	16	FD		GLG		
135	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	AMKE	1	FP			NE	
136	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	AMKE	1	VO		GLG		
137	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	AMKE	6	LF	FD	GLG		
138	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	AMKE	1	VO		SHB		Prairie warbler
139	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	AMKE	5	FD		GLG		
140	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	7:40	7:47	1	AMKE	1	VO		SHB		
141	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	AMKE	2	VO	FD	SHB		
142	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	AMKE	4	VO	FD	GLG		
143	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	AMKE	2	VO		SHB		
144	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	AMRO	2	VO		SHB		
145	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	AMRO	2	P		GLG		
146	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	AMRO	4	VO	FD	SHB		
147	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	AMRO	2	VO		SHB		Prairie warbler
148	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	AMRO	2	FL		WDL		
149	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:21	8:28	3	AMRO	1	FP		WDL		
150	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:59	9:06	1	AMRO	4	FD		GLG		
151	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:59	9:06	1	AMRO	4	FD		GLG		
152	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:59	9:06	1	AMRO	1	VO		SHB		
153	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:59	9:06	1	AMRO	8	FD		GLG		
154	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:59	9:06	1	AMRO	2	VO		GLG		
155	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	8:59	9:06	1	AMRO	4	LF	FD	GLG		
156	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	9:21	9:28	2	AMRO	6	FD		GSH		
157	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	9:21	9:28	2	AMRO	2	FL	FD	GLG		
158	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	9:21	9:28	2	AMRO	2	VO		SHB		
159	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	9:21	9:28	2	AMRO	1	VO		SHB		
160	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	9:21	9:28	2	AMRO	1	VO		SHB		Prairie warbler
161	OBS	RPC	5/28/2020	66	SW	5-10 MPH	Mostly sunny	9:21	9:28	2	AMRO	2	FL	FD	GLG		
162	OBS	RPC	6/26/2020	66		Calm	Sunny, very dry	6:34	6:41	1	AMRO	2	P		GLG		
163	OBS	RPC	6/26/2020	66		Calm	Sunny, very dry	6:34	6:41	1	AMRO	4	P		SHB		
164	OBS	RPC	6/26/2020	66		Calm	Sunny, very dry	6:34	6:41	1	AMRO	1	VO		WDL		
165	OBS	RPC	6/26/2020	66		Calm	Sunny, very dry	6:34	6:41	1	AMRO	2	VO	P	SHB		
166	OBS	RPC	6/26/2020	66		Calm	Sunny, very dry	6:34	6:41	1	AMRO	4	VO	FD	GLG		
167	OBS	RPC	6/26/2020	66		Calm	Sunny, very dry	6:34	6:41	1	AMRO	1	VO	P	GLG		
168	OBS	RPC	6/26/2020	66		Calm	Sunny, very dry	6:34	6:41	1	AMRO	2	VO	P	WDL		
169	OBS	RPC	6/26/2020	66		Calm	Sunny, very dry	6:51	6:58	2	AMRO	1	FL		WDL		

Bird Point Count Data
Sorted By: **BIRD SPECIES AND DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
170	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:51	6:58	2	AMRO	1	VO		WDL		
171	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:51	6:58	2	AMRO	1	VO		WDL		
172	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:51	6:58	2	AMRO	2	FD		SHB		
173	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:51	6:58	2	AMRO	1	VO		WDL		
174	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:51	6:58	2	AMRO	1	VO		WDL		
175	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	6:51	6:58	2	AMRO	1	VO		WDL		
176	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	7:08	7:15	1	AMRO	1	VO		SHB		
177	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	7:08	7:15	1	AMRO	2	FD		GLG		
178	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	7:08	7:15	1	AMRO	1	VO		SHB		
179	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	7:08	7:15	1	AMRO	3	VO	FD	GLG		
180	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	7:08	7:15	1	AMRO	2	VO		RWY		
181	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	7:08	7:15	1	AMRO	1	VO		RWY		
182	OB5	RPC	6/26/2020	66		Calm	Sunny, very dry	7:08	7:15	1	AMRO	1	P		STR		
183	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:26	7:33	3	AMRO	2	FD	VO	GLG		
184	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:26	7:33	3	AMRO	2	VO	P	WDL		
185	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:26	7:33	3	AMRO	2	FD		G		
186	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:26	7:33	3	BAEA	4	FD		GLG		
187	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:26	7:33	3	BAEA	1	VO		WDL		
188	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:26	7:33	3	BAEA	2	FD		GSH		
189	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:48	7:55	1	BAEA	2	VO		WDL		
190	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:48	7:55	1	BAEA	2	VO		WDL		
191	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:48	7:55	1	BAEA	2	NS		GLG		Bird box
192	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:48	7:55	1	BARS	2	FD		GLG		
193	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:48	7:55	1	BARS	18	FD		GLG		
194	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:48	7:55	1	BARS	2	VO		GLG		
195	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:48	7:55	1	BASW	2	LF		RWY		
196	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	7:48	7:55	1	BASW	3	FD		GLG		
197	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	8:14	8:21	2	BASW	1	FD		GSH		
198	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	8:14	8:21	2	BASW	2	VO		WDL		
199	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	8:14	8:21	2	BASW	2	FD		GLG		Set 2 game cameras at RW34 end
200	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	8:14	8:21	2	BASW	2	NS		GLG		
201	OB5	RPC	6/26/2020	66		Calm	Mostly sunny, very dry	8:14	8:21	2	BCCH	1	VO		WDL		
202	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	8:41	8:48	3	BCCH	1	VO		WDL		
203	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	8:41	8:48	3	BCCH	2	VO		WDL		
204	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	8:41	8:48	3	BCCH	2	FD		GLG		
205	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	8:41	8:48	3	BCCH	4	FD		GLG		
206	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	9:02	9:09	1	BCCH	2	VO		WDL		
207	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	9:02	9:09	1	BCCH	2	ND		GLG		
208	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	9:02	9:09	1	BCCH	2	VO	NS	GLG		
209	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	9:02	9:09	1	BCCH	2	VO	LF	RWY		
210	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	9:02	9:09	1	BCCH	1	FD		GLG		
211	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	9:02	9:09	1	BCCH	1	VO		GLG		
212	OB5	RPC	6/26/2020	69		Calm	Mostly sunny, very dry	9:02	9:09	1	BCCH	4	FD		GLG		
213	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:22	6:29	1	BCCH	2	FD		GSH		
214	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:22	6:29	1	BCCH	5	P		STR		Hangar
215	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:22	6:29	1	BCCH	2	FD		GLG		
216	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:22	6:29	1	BCCH	4	P		STR		Fence at school
217	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:22	6:29	1	BCCH	2	FL		GLG		
218	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:22	6:29	1	BCCH	1	FD		SHB		
219	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:22	6:29	1	BCCH	4	P		STR		Fence at school
220	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:38	6:45	2	BCCH	2	VO		WDL		
221	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:38	6:45	2	BCCH	4	FD		SHB		
222	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:38	6:45	2	BCCH	2	VO		GSH		
223	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:38	6:45	2	BCCH	14	FD		GSH		
224	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:38	6:45	2	BCCH	2	FL		SHB		
225	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	6:38	6:45	2	BCCH	1	P		SHB		

Bird Point Count Data
Sorted By: **BIRD SPECIES AND DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
226	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	7:04	7:11	1	BCCH	3	FD		GLG		
227	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	7:04	7:11	1	BCCH	1	P		SHB		
228	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	7:04	7:11	1	BCCH	4	FD		GSH		
229	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	7:04	7:11	1	BCCH	31	FD		GLG		
230	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	7:04	7:11	1	BCCH	2	VO		GLG		
231	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry, fog	7:04	7:11	1	BCCH	2	P		SHB		
232	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:26	7:33	3	BCCH	6	FL	VO	WDL		
233	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:26	7:33	3	BCCH	2	P		SHB		
234	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:26	7:33	3	BCCH	2	VO		GLG		
235	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:26	7:33	3	BCCH	1	VO		SHB		
236	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:26	7:33	3	BCCH	1	VO		WDL		
237	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:26	7:33	3	BCCH	2	VO		WDL		
238	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:43	7:50	3	BCCH	3	FD		SHB		
239	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:43	7:50	3	BCCH	2	VO	FD	SHB		
240	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:43	7:50	3	BCCH	1	VO		WDL		
241	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:43	7:50	3	BCCH	1	FD		GLG		
242	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:43	7:50	3	BCCH	1	VO		WDL		
243	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:43	7:50	3	BCCH	1	VO		WDL		
244	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:58	8:05	1	BLJA	7	FD		GLG		
245	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:58	8:05	1	BLJA	3	FD		GLG		
246	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:58	8:05	1	BLJA	2	FD		GLG		
247	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:58	8:05	1	BLJA	2	FD		GLG		
248	OB5	RPC	7/8/2020	70	E	5-7 MPH	Mostly cloudy, dry	7:58	8:05	1	BLJA	1	P	VO	SHB		
249	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:12	8:19	2	BLJA	4	FD		GSH		
250	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:12	8:19	2	BLJA	2	FD		GSH		
251	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:12	8:19	2	BLJA	2	FD		GSH		
252	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:12	8:19	2	BLJA	18	FD		GSH		
253	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:12	8:19	2	BLJA	2	VO		GLG		
254	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:12	8:19	2	BLJA	2	VO		GSH		
255	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:30	8:37	1	BLJA	4	FD		GLG		
256	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:30	8:37	1	BLJA	1	P		GLG		
257	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:30	8:37	1	BLJA	5	FD		GLG		
258	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:30	8:37	1	BLJA	1	VO		SHB		
259	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:30	8:37	1	BLJA	3	P		STR		Fence
260	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:30	8:37	1	BLJA	2	P		SHB		
261	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:44	8:51	3	BLJA	4	FD		SHB		
262	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:44	8:51	3	BLJA	2	FD		GLG		
263	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:44	8:51	3	BLJA	4	VO	FD	GLG		
264	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:44	8:51	3	BLJA	4	FD		GLG		
265	OB5	RPC	7/8/2020	70	ENE	5 MPH	Mostly cloudy, dry	8:44	8:51	3	BLJA	1	P		WDL		
266	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:14	7:21	1	BLJA	1	LF		PVT		Apron
267	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:14	7:21	1	BLJA	1	P	VO	WDL		
268	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:14	7:21	1	BLJA	1	FL		GLG		
269	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:14	7:21	1	BLJA	14	FD		GSH		
270	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:14	7:21	1	BLJA	2	P	VO	WDL		
271	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:14	7:21	1	BLJA	1	P		PVT		Parking lot light tower
272	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:27	7:34	2	BLJA	1	P		PVT		
273	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:27	7:34	2	BLJA	1	FD		GSH		
274	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:27	7:34	2	BLJA	1	P		SHB		
275	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:27	7:34	2	BLJA	10	FD		GLG		Northern rough-wing swallow
276	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:27	7:34	2	BLJA	1	P		WDL		Model airplane club
277	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:45	7:52	3	BLJA	1	P		WDL		
278	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:45	7:52	3	BLJA	1	P	VO	SHB		
279	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:45	7:52	3	BLJA	3	P		SHB		
280	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:45	7:52	3	BLJA	1	P		WDL		
281	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:45	7:52	3	BLJA	8	FD		GSH		Northern rough-wing swallow

Bird Point Count Data
Sorted By: **BIRD SPECIES AND DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
282	OB5	RPC	7/30/2020	69		Calm	Partly cloudy early am, light rain	7:45	7:52	3	BLJA	1	VO		SHB		
283	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	7:54		2	BLJA	8	FD		WDL		
284	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	7:54		2	BLJA	4	FD		SHB		
285	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	7:54		2	BLJA	2	P		SHB		
286	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	7:54		2	BLJA	1	P		GLG		
287	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	7:54		2	BLJA	1	P		SHB		
288	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	7:54		2	BLJA	1	P		WDL		
289	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	7:54		2	BLJA	4	FD		GSH		
290	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:33	8:40	3	BLJA	1	VO		WDL		
291	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:33	8:40	3	BLJA	2	P	VO	GLG		
292	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:33	8:40	3	BLJA	2	VO		SHB		
293	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:33	8:40	3	BLJA	1	FL		GLG		
294	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:33	8:40	3	BLJA	1	VO		SHB		
295	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:56	9:03	1	BLJA	6	FD		SHB		
296	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:56	9:03	1	BLJA	1	VO		WDL		
297	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:56	9:03	1	BLJA	2	FD		GLG		
298	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:56	9:03	1	BLJA	1	VO		SHG		
299	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:56	9:03	1	BLJA	1	P		PVT		
300	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:56	9:03	1	BLJA	10	FD		GLG		Northern rough-wing swallow
301	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	8:56	9:03	1	BLJA	1	P		PVT		Runway
302	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:21	9:28	2	BLJA	2	FD		GLG		
303	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:21	9:28	2	BLJA	1	VO		SHB		
304	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:21	9:28	2	BLJA	4	LF		PVT		
305	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:21	9:28	2	BLJA	12	FD		GSH		
306	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:36	9:43	1	BLJA	5	LF		GSH		
307	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:36	9:43	1	BLJA	2	VO		WDL		
308	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:36	9:43	1	BLJA	1	VO		WDL		
309	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:36	9:43	1	BLJA	6	FD		SHB		
310	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:36	9:43	1	BLJA	3	P		GSH		
311	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:36	9:43	1	BLJA	1	P		WDL		
312	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	9:36	9:43	1	BLJA	6	FD		GLG		Northern rough-wing swallow
313	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	10:01	10:08	3	BLJA	2	FD		SHB		
314	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	10:01	10:08	3	BLJA	2	VO		SHB		
315	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	10:01	10:08	3	BLJA	2	P		SHB		
316	OB5	RPC	7/30/2020	72		Calm	Partly cloudy early am, light rain	10:01	10:08	3	BLJA	1	P		WDL		
317	OB5	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:14	7:21	1	BLJA	2	FD		GSH		
318	OB5	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:14	7:21	1	BLJA	2	FD		GSH		
319	OB5	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:14	7:21	1	BLJA	5	FD	VO	SHB		
320	OB5	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:14	7:21	1	BLJA	2	VO		SHB		
321	OB5	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:14	7:21	1	BLJA	4	VO		SHB		
322	OB5	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:14	7:21	1	BLJA	5	LF		PVT		
323	OB5	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:14	7:21	1	BLJA	1	P		WDL		
324	OB5	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	BLJA	1	VO		WDL		
325	OB5	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	BLJA	1	P		GLG		Grass height at 12" in the airport infield.
326	OB5	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	BLJA	5	FL		GLG		
327	OB5	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	BLJA	2	VO		WDL		
328	OB5	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	BLJA	1	BD		GSH		
329	OB5	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	BLJA	3	FD		GSH		
330	OB5	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	BLJA	4	LF		PVT		
331	OB5	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	BLJA	3	VO		SHB		RSA grass height at 2"
332	OB5	RPC	8/14/2020	68		Calm	Mostly sunny, dry	7:32	7:39	2	BLJA	1	P	VO	SHB		
333	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	BLJA	2	FD		GLG		
334	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	BLSA	5	FD		SHB		
335	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	BLSA	4	FD		SHB		
336	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	BRTH	8	FD		GSH		

Bird Point Count Data
Sorted By: **BIRD SPECIES AND DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
337	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	BRTH	2	FD		SHB		
338	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	BRTH	4	LF		PVT		
339	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	CANG	6	FD		GSH		
340	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	CANG	7	FD		SHB		Prairie warbler
341	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	7:48	7:55	1	CANG	3	FD		SHB		
342	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:14	8:21	3	CANG	6	FD		SHB		
343	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:14	8:21	3	CANG	4	FD		SHB		
344	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:14	8:21	3	CANG	2	FD		SHB		Eastern wood peewee
345	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:14	8:21	3	CANG	2	VO		SHB		
346	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:14	8:21	3	CANG	7	FL		GLG		
347	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:37	8:44	1	CANG	2	VO		WDL		
348	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:37	8:44	1	CANG	5	FD		SBH		
349	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:37	8:44	1	CANG	8	FD		GSH		
350	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:37	8:44	1	CANG	1	FD		SHB		
351	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:37	8:44	1	CANG	7	FD		GSH		Northern rough swallow
352	OB5	RPC	8/14/2020	74		Calm	Mostly sunny, dry	8:37	8:44	1	CANG	1	P		SHB		
353	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	8:49	8:56	2	CHSP	2	VO		WDL		
354	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	8:49	8:56	2	CHSP	1	FL		SHB		
355	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	8:49	8:56	2	CHSP	2	VO		WDL		
356	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	8:49	8:56	2	CHSP	2	BD		GLG		
357	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	8:49	8:56	2	CHSP	6	FL		GSH		
358	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	8:49	8:56	2	CHSP	4	FD		GLG		
359	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:01	9:08	3	CHSP	2	VO		WDL		
360	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:01	9:08	3	CHSP	1	VO		SHB		
361	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:01	9:08	3	CHSP	6	FD		GLG		
362	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:01	9:08	3	CHSP	2	FD		SHB		House wren
363	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:01	9:08	3	CHSP	1	VO		WDL		
364	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:15	9:22	2	CHSP	1	VO		WDL		
365	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:15	9:22	2	CHSP	1	P		GSH		On edge light
366	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:15	9:22	2	CHSP	15	FD		GSH		Northern rough swallow
367	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:15	9:22	2	CHSP	2	BD		GSH		
368	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:15	9:22	2	DOWO	6	FD		GSH		
369	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:27	9:34	1	DOWO	1	VO		WDL		
370	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:27	9:34	1	EABL	2	FD		SHB		
371	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:27	9:34	1	EABL	2	VO		GLG		
372	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:27	9:34	1	EABL	27	FD		GSH		Northern rough swallow
373	OB5	RPC	8/14/2020	74	NW	5 MPH	Mostly sunny, dry	9:27	9:34	1	EABL	2	FD		SHB		Prarie warbler
374	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:14	14:21	3	EABL	2	FD		SHB		
375	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:14	14:21	3	EABL	1	VO		WDL		
376	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:14	14:21	3	EABL	1	VO		WDL		Small mammal trap sets today. 24 total at 4 locations.
377	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:14	14:21	3	EABL	3	FD		GLG		
378	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:27	13:34	2	EABL	2	FD		GSH		
379	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:27	13:34	2	EABL	8	FD		GSH		*Noticable increase in grasshopper and cricket activity in the grass areas.
380	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:36	13:43	1	EABL	6	FD		GSH		
381	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:36	13:43	1	EABL	1	P		SHB		
382	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:36	13:43	1	EABL	2	FD		GSH		
383	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:47	13:54	2	EAKI	1	FL		GLG		
384	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:47	13:54	2	EAKI	5	FD		GSH		
385	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:57	14:04	3	EAKI	4	FD		SHB		
386	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:57	14:04	3	EAKI	2	VO		WDL		
387	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	13:57	14:04	3	EAKI	1	FD		SHB		
388	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	14:08	14:15	1	EAKI	8	FD		GSH		
389	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	14:08	14:15	1	EAKI	1	P		SHB		

Bird Point Count Data
Sorted By: **BIRD SPECIES AND DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
390	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	14:08	14:15	1	EAKI	4	FD		SHB		
391	OB5	RPC	8/31/2020	75		Calm	Sunny, partly cloudy	14:08	14:15	1	EAKI	12	FD		GSH		
392	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:12	7:19	1	EAKI	8	FD		GLG		
393	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:12	7:19	1	EAKI	1	P		GSH		
394	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:12	7:19	1	EAPH	5	VO		WDL		
395	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:12	7:19	1	EAPH	4	FD		SHB		
396	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:12	7:19	1	EAPH	2	VO		WDL		
397	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:12	7:19	1	EAPH	1	VO		GLG		
398	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:41	7:48	2	EAPH	7	FD		GSH		
399	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:41	7:48	2	EAPH	9	FD		SHB		
400	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:41	7:48	2	EAPH	2	VO		WDL		
401	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:41	7:48	2	EAPH	36	FD		GSH		Departed at 08:04 am
402	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:41	7:48	2	EAPH	1	VO		WDL		
403	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	7:41	7:48	2	EAPH	8	FD		GSH		
404	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:12	8:19	3	EAPH	3	VO		WDL		
405	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:12	8:19	3	EAPH	1	P		SHB		
406	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:12	8:19	3	EAPH	1	VO		GLG		
407	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:12	8:19	3	EAPH	1	VO		WDL		
408	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:12	8:19	3	EAPO	1	FL		WDL		
409	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:12	8:19	3	EATO	1	VO		SHB		
410	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:39	8:46	2	EATO	2	VO		WDL		
411	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:39	8:46	2	EATO	2	VO		WDL		
412	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:39	8:46	2	EATO	4	FD		GSH		
413	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	8:39	8:46	2	EATO	11	FD		GSH		
414	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	9:01	9:08	1	EAWP	2	FP			N	
415	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	9:01	9:08	1	EAWP	1	P		GSH		
416	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	9:01	9:08	1	EAWP	1	VO		WDL		
417	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	9:01	9:08	1	EUST	6	FD		GSH		
418	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	9:36	9:43	3	EUST	2	FD		WDL		
419	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	9:36	9:43	3	EUST	1	FL		GLG		
420	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	9:36	9:43	3	EUST	2	VO		SHB		
421	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	9:36	9:43	3	EUST	9	FL		GLG		
422	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	10:31	10:38	1	EUST	1	P		GSH		
423	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	10:31	10:38	1	EUST	10	FD		GSH		
424	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	10:31	10:38	1	EUST	21	FD		GSH		
425	OB5	RPC	9/1/2020	66		Calm	Foggy, partly cloudy	10:31	10:38	1	EUST	1	VO		SHB		
426	OB5	RPC	9/2/2020	61		Calm	Clear	8:04	8:11	1	EUST	2	VO		WDL		
427	OB5	RPC	9/2/2020	61		Calm	Clear	8:04	8:11	1	EUST	1	FL		SHB		
428	OB5	RPC	9/2/2020	61		Calm	Clear	8:44	8:51	2	EUST	1	FL		GSH		
429	OB5	RPC	9/2/2020	61		Calm	Clear	8:44	8:51	2	EUST	10	FD		GSH		
430	OB5	RPC	9/2/2020	61		Calm	Clear	9:01	9:08	3	EUST	1	FL		SHB		
431	OB5	RPC	9/2/2020	61		Calm	Clear	9:14	9:21	2	EUST	2	FD		GSH		
432	OB5	RPC	9/2/2020	61		Calm	Clear	9:14	9:21	2	FISP	14	FD		GSH		
433	OB5	RPC	9/2/2020	61		Calm	Clear	9:28	9:35	1	FISP	5	FD		GSH		
434	OB5	RPC	9/2/2020	61		Calm	Clear	9:28	9:35	1	FISP	1	P		SHB		
435	OB5	RPC	9/2/2020	61		Calm	Clear	10:56	11:03	3	FISP	1	VO		WDL		
436	OB5	RPC	9/2/2020	61		Calm	Clear	10:56	11:03	3	FISP	4	VO		WDL		
437	OB5	RPC	9/2/2020	61		Calm	Clear	10:56	11:03	3	FISP	6	FD		GLG		
438	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:13	17:20	1	FISP	2	FL		WDL		
439	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:13	17:20	1	FISP	1	FD		GSH		
440	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:13	17:20	1	FISP	4	FD		GSH		
441	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:24	17:31	2	FISP	2	FD		GSH		
442	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:24	17:31	2	FISP	9	FD		GSH		
443	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:34	17:41	3	FISP	2	FD		GSH		
444	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:34	17:41	3	FISP	4	FD		GSH		
445	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:34	17:41	3	FISP	2	FD		GLG		

Bird Point Count Data
Sorted By: **BIRD SPECIES AND DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
446	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:48	17:55	1	FISP	1	VO		WDL		
447	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:48	17:55	1	FISP	11	FL		PND		Landing @ Bartons Cove
448	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:57	18:04	2	FISP	1	VO		WDL		
449	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:57	18:04	2	FISP	14	FD		GSH		
450	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	17:57	18:04	2	FISP	2	FP			E	
451	OB5	RPC	9/16/2020	72	SSW	10-12 MPH	Mostly sunny, breezy, dry	18:07	18:11	3	FISP	2	FD		GLG		
452	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:02	7:09	1	FISP	8	P	VO	WDL		
453	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:02	7:09	1	FISP	14	FP			S	
454	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:02	7:09	1	FISP	6	FP			S	
455	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:02	7:09	1	FISP	1	VO		WDL		
456	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:02	7:09	1	FISP	40	FL		GLG		
457	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:21	7:28	2	FISP	2	VO		WDL		
458	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:21	7:28	2	FTSP	1	FD		GSH		
459	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:21	7:28	2	GBHE	8	VO		WDL		
460	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:21	7:28	2	GRCA	6	FD		GSH		
461	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:42	7:49	3	GRCA	24	FP			S	
462	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:42	7:49	3	GRCA	7	VO		WDL		
463	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:42	7:49	3	GRCA	4	FD		GLG		
464	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:59	8:06	1	GRCA	2	P		WDL		
465	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:59	8:06	1	GRCA	1	VO		SHB		
466	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:59	8:06	1	GRCA	2	VO		WDL		
467	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:59	8:06	1	GRSP	2	P		SHB		
468	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	7:59	8:06	1	GRSP	15	FD		GLG		
469	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:31	8:38	2	GRSP	7	FP			S	
470	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:31	8:38	2	GRSP	1	P		SHB		
471	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:31	8:38	2	GRSP	12	VO		SHB		
472	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:31	8:38	2	GRSP	2	VO		WDL		
473	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:31	8:38	2	GRSP	2	VO		SHB		
474	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:41	8:48	3	GRSP	2	VO		WDL		
475	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:41	8:48	3	GRSP	1	VO		WDL		
476	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:41	8:48	3	GRSP	4	FD		GLG		
477	OB5	RPC	9/29/2020	66	NE	5-7 MPH	Mostly cloudy	8:41	8:48	3	GRSP	1	VO		SHB		
478	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:02	9:09	1	GRSP	9	P		WDL		
479	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:02	9:09	1	GRSP	12	FD		SHB		
480	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:02	9:09	1	GRSP	7	VO		WDL		
481	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:02	9:09	1	GRSP	4	FD		GSH		
482	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:02	9:09	1	GRSP	2	P		WDL		
483	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:02	9:09	1	HOWR	4	FD		GLG		
484	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:02	9:09	1	KILL	9	FD		GSH		
485	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:19	9:26	2	KILL	7	P	VO	WDL		
486	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:19	9:26	2	KILL	2	P		SHB		
487	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:19	9:26	2	KILL	2	FD		GSH		
488	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:19	9:26	2	KILL	14	FD		SHB		
489	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:19	9:26	2	KILL	5	VO		WDL		
490	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:19	9:26	2	KILL	6	FP		GSH		
491	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:42	9:49	3	KILL	3	P	VO	WDL		
492	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:42	9:49	3	KILL	1	FD		GLG		
493	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:42	9:49	3	KILL	2	FD		GLG		
494	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:42	9:49	3	KILL	7	P	VO	WDL		
495	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:42	9:49	3	KILL	1	P		WDL		
496	OB5	RPC	10/12/2020	49		Calm	Mostly cloudy, light rain	9:42	9:49	3	KILL	2	FD		GLG		
497	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:32	10:39	2	KILL	10	FL		WDL		
498	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:32	10:39	2	KILL	1	FL		GSH		
499	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:32	10:39	2	KILL	4	FD		SHB		
500	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:32	10:39	2	KILL	3	P	VO	WDL		
501	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:32	10:39	2	KILL	1	FL		SHB		

Bird Point Count Data
Sorted By: **BIRD SPECIES AND DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
502	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:32	10:39	2	KILL	3	FD		SHB		
503	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:45	10:52	1	KILL	1	FD		GSH		
504	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:45	10:52	1	KILL	1	FD		GSH		
505	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:45	10:52	1	KILL	2	VO		WDL		
506	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:45	10:52	1	KILL	6	FL		RIV		
507	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:45	10:52	1	KILL	1	FD		GSH		
508	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	10:45	10:52	1	KILL	5	FD		GLG		
509	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	11:10	11:17	3	KILL	2	FO		SHB		
510	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	11:10	11:17	3	KILL	5	FL		GLG		
511	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	11:10	11:17	3	KILL	4	VO		WDL		
512	OB5	RPC	10/12/2020	47		Calm	Mostly cloudy, drizzle	11:10	11:17	3	KILL	2	VO		SHB		
513	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	7:20	7:27	1	KILL	2	FD		GSH		
514	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	7:20	7:27	1	KILL	3	P	VO	WDL		
515	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	7:20	7:27	1	KILL	4	FL		GSH		
516	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	7:20	7:27	1	KILL	12	FL		GSH		Lift-off from airport
517	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:09	8:16	2	KILL	4	FD		GSH		
518	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:09	8:16	2	KILL	3	FD		SHB		
519	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:09	8:16	2	KILL	4	VO		WDL		
520	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:09	8:16	2	KILL	11	FP			N	@ 500'
521	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:09	8:16	2	KILL	12	FD		SHB		
522	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:48	8:55	3	KILL	2	FD		GLG		
523	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:48	8:55	3	KILL	3	FD		SHB		
524	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:48	8:55	3	KILL	2	VO		WDL		
525	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:48	8:55	3	KILL	8	FL		SHB		
526	OB5	RPC	10/27/2020	47	WNW	5-7 MPH	Mostly cloudy, damp, fog	8:48	8:55	3	KILL	9	FL		GLG		
527	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:38	9:45	2	KILL	4	FL		GLG		
528	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:38	9:45	2	KILL	2	FL		WDL		
529	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:38	9:45	2	MALL	7	VO		WDL		
530	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:38	9:45	2	MALL	45	FP			S	@ 1500' ±
531	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:38	9:45	2	MODO	9	FD		SHB		
532	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:51	9:58	1	MODO	2	FD		GSH		
533	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:51	9:58	1	MODO	1	FL		GSH		
534	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:51	9:58	1	MODO	84	FP			S	3 flocks @ 1000 - 1500'
535	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	9:51	9:58	1	MODO	6	FD		SHB		
536	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	10:05	10:12	3	MODO	2	FD		SHB		
537	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	10:05	10:12	3	MODO	2	VO		WDL		
538	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	10:05	10:12	3	MODO	24	FP			S	@ 1000' ±
539	OB5	RPC	10/27/2020	48	WNW	5-7 MPH	Mostly cloudy	10:05	10:12	3	MODO	1	FD		SHB		
540	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	6:51	6:58	1	MODO	6	FL		GSH		
541	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	6:51	6:58	1	MODO	2	FL		GSH		
542	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	7:32	7:39	2	MODO	1	VO		WDL		
543	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	7:32	7:39	2	MODO	2	VO		WDL		
544	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	7:55	8:02	3	MODO	1	VO		WDL		
545	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	7:55	8:02	3	MODO	1	VO		SHB		
546	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	7:55	8:02	3	MODO	1	VO		SHB		
547	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	8:08	8:15	2	MODO	1	FD		SHB		
548	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy, low visibility	8:08	8:15	2	MODO	2	VO		WDL		
549	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:19	8:26	1	MODO	1	VO		WDL		
550	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:19	8:26	1	MODO	2	VO		WDL		
551	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:19	8:26	1	MODO	6	FL		GSH		
552	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:19	8:26	1	MODO	5	FD		GSH		
553	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:44	8:51	3	MODO	7	FD		GLG		
554	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:44	8:51	3	MODO	4	VO		WDL		
555	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:44	8:51	3	NOCA	2	VO		WDL		
556	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:44	8:51	3	NOCA	2	VO		WDL		
557	OB5	RPC	10/28/2020	42		Calm	Rain, fog, cloudy	8:44	8:51	3	NOCA	11	FD		GLG		

Bird Point Count Data
Sorted By: **BIRD SPECIES AND DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
558	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:16	9:23	3	NOCA	1	VO		WDL		
559	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:16	9:23	3	NOCA	5	FD		WDL		
560	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:16	9:23	3	NOCA	3	VO		WDL		
561	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:16	9:23	3	NOCA	3	FD		GLG		
562	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:16	9:23	3	NOCA	2	FD		WDL		
563	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:26	9:33	2	NOCA	1	VO		WDL		
564	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:26	9:33	2	NOCA	1	VO		WDL		
565	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:36	9:43	1	NOCA	2	VO		WDL		
566	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:36	9:43	1	NOCA	2	VO		WDL		
567	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:36	9:43	1	NOCA	8	FP			S	
568	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:36	9:43	1	NOCA	11	FL		GSH		
569	OBS	RPC	10/29/2020	43		Calm	Heavy fog until 9am	9:36	9:43	1	NOCA	4	FD		GSH		
570	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	7:40	7:47	1	NOCA	2	P		WDL		
571	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	7:40	7:47	1	NOCA	8	FL		WDL		
572	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	7:40	7:47	1	NOFL	1	P		WDL		
573	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	7:50	7:57	2	NOFL	2	P		WDL		
574	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	7:50	7:57	2	NOFL	3	FL		SHB		
575	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	7:50	7:57	2	NOFL	1	P		WDL		
576	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	8:03	8:10	3	NOFL	3	VO		WDL		
577	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	8:03	8:10	3	NOMO	1	FD		GSH		
578	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	8:46	8:53	3	NOMO	2	VO		WDL		
579	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	8:46	8:53	3	NOMO	2	VO		WDL		
580	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	8:46	8:53	3	NOMO	1	VO		WDL		
581	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	8:46	8:53	3	NOMO	1	VO		WDL		
582	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	8:51	8:58	2	NOMO	2	FD		GSH		
583	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	8:51	8:58	2	NOMO	1	VO		WDL		
584	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	9:00	9:07	1	NOMO	2	FD		GSH		
585	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	9:00	9:07	1	NOMO	2	FL		GSH		
586	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	9:00	9:07	1	NOMO	4	VO		WDL		
587	OBS	RPC	11/17/2020	31		Calm	Mostly sunny, dry, no snow cover	9:00	9:07	1	NOMO	1	VO		SHB		
588	OBS	RPC	11/30/2020	31		Calm	Clear, no snow cover yet, rain later	7:02	7:09	1	None	1	P		WDL		
589	OBS	RPC	11/30/2020	31		Calm	Clear, no snow cover yet, rain later	7:15	7:22	2	None	2	P		WDL		
590	OBS	RPC	11/30/2020	31		Calm	Clear, no snow cover yet, rain later	7:15	7:22	2	None	2	FL		GSH		
591	OBS	RPC	11/30/2020	31		Calm	Clear, no snow cover yet, rain later	7:15	7:22	2	None	2	FL		GSH		
592	OBS	RPC	11/30/2020	31		Calm	Clear, no snow cover yet, rain later	7:37	7:43	3	None	3	VO		SHB		
593	OBS	RPC	11/30/2020	31		Calm	Clear, no snow cover yet, rain later	7:37	7:43	3	None	3	FL		SHB		
594	OBS	RPC	11/30/2020	31		Calm	Clear, no snow cover yet, rain later	9:31	9:38	3	None	3	VO		WDL		
595	OBS	RPC	11/30/2020	31		Calm	Cloudy	9:51	9:58	2	None	1	FD		GSH		
596	OBS	RPC	11/30/2020	31		Calm	Cloudy	9:51	9:58	2	None	2	VO		WDL		
597	OBS	RPC	11/30/2020	31		Calm	Cloudy	10:05	10:12	1	None						No birds.
598	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	8:35	8:42	1	None	3	FD		GSH		No snow cover yet. Ground not frozen yet.
599	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	8:35	8:42	1	None	1	P		WDL		
600	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	8:35	8:42	1	None	3	FL		GSH		
601	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	8:47	8:52	2	None	2	FD		GSH		
602	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	8:47	8:52	2	NRWS	2	FP			W	Over CT river in the approach of RW 16 end.
603	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	8:59	9:06	3	NRWS	1	FD		GSH		
604	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	8:59	9:06	3	NRWS	3	FL		GSH		

Bird Point Count Data
Sorted By: **BIRD SPECIES AND DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
605	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	9:30	9:37	3	NRWS						No birds.
606	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny, breezy	9:42	9:49	2	NRWS	5	FL		GSH		
607	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny	9:58	10:05	1	NRWS						No birds.
608	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny	10:51	10:58	3	NRWS	1	P		WDL		
609	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny	11:01	11:08	2	NRWS						No birds.
610	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny	11:10	11:17	1	NRWS	2	FL		WDL		
611	OBS	RPC	12/15/2020	29	W	10-15 MPH	Sunny	11:10	11:17	1	NRWS	3	FL		GSH		
612	OBS	RPC	12/31/2020	38		Calm	Foggy, cloudy, no snow cover	7:59	8:06	1	PIWO	2	P	VO	WDL		*Collected the game cameras today. End of game camera effort.
613	OBS	RPC	12/31/2020	38		Calm	Foggy, cloudy, no snow cover	8:11	8:18	2	PIWO						No activity.
614	OBS	RPC	12/31/2020	38		Calm	Foggy, cloudy, no snow cover	8:21	8:28	3	PRAW	2	FL		WDL		
615	OBS	RPC	12/31/2020	38		Calm	Foggy, cloudy, no snow cover	8:31	8:38	2	PRAW	1	FL		GSH		
616	OBS	RPC	12/31/2020	38		Calm	Foggy, cloudy, no snow cover	8:41	8:48	1	PRWA	2	FD		GSH		
617	OBS	RPC	12/31/2020	38		Calm	Foggy, cloudy, no snow cover	8:41	8:48	1	PRWA	2	P	VO	WDL		
618	OBS	RPC	12/31/2020	38		Calm	Cloudy, foggy	8:49	9:06	2	PRWA	1	FD		GSH		
619	OBS	RPC	12/31/2020	38		Calm	Cloudy, foggy	8:49	9:06	2	RBGU	2	P	VO	WDL		
620	OBS	RPC	12/31/2020	38		Calm	Cloudy, foggy	8:49	9:06	2	RBGU	1	P	VO	WDL		
621	OBS	RPC	12/31/2020	38		Calm	Cloudy, foggy	8:49	9:06	2	RBWO	2	FD		GSH		
622	OBS	RPC	12/31/2020	38		Calm	Cloudy, foggy	9:08	9:16	3	RTHA	1	P	VO	WDL		
623	OBS	RPC	12/31/2020	38		Calm	Cloudy, foggy	9:08	9:16	3	RTHA	1	P	VO	WDL		
624	OBS	RPC	12/31/2020	38		Calm	Cloudy, foggy	9:08	9:16	3	RTHA	1	FL		WDL		
625	OBS	RPC	12/31/2020	38		Calm	Cloudy, foggy	9:08	9:16	3	RTHA	2	FD		GSH		
626	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:07	8:14	1	RTHA	3	P		WDL		
627	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:07	8:14	1	RTHA	7	VO		SHB		
628	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:07	8:14	1	RTHA	6	VO		WDL		No snow cover.
629	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:18	8:25	2	RTHA	1	VO		WDL		
630	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:18	8:25	2	RTHA	1	VO		WDL		
631	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:37	8:44	3	RTHA	3	FD		SHB		
632	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:37	8:44	3	RTHA	1	VO		SHB		
633	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:49	8:56	3	RTHA	1	VO		WDL		
634	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:49	8:56	3	RTHA	1	VO		WDL		
635	OBS	RPC	1/19/2021	30		Calm	Mostly cloudy	8:58	9:05	2	RTHA	1	P		WDL		
636	OBS	RPC	1/19/2021	30		Calm	Partly cloudy	9:07	9:14	1	RTHA	2	VO		WDL		
637	OBS	RPC	1/19/2021	30		Calm	Partly cloudy	9:07	9:14	1	RTHA	2	FD		GLG		
638	OBS	RPC	1/19/2021	30		Calm	Partly cloudy	10:17	10:24	3	RTHA	1	VO		WDL		
639	OBS	RPC	1/19/2021	30		Calm	Partly cloudy	10:17	10:24	3	RTHA	5	FD		GSH		
640	OBS	RPC	1/19/2021	30		Calm	Partly cloudy	10:27	10:34	2	RTHA	3	P		WDL		
641	OBS	RPC	1/19/2021	30		Calm	Partly cloudy	10:27	10:34	2	RTHA	1	VO		WDL		
642	OBS	RPC	1/19/2021	30		Calm	Partly cloudy	10:37	10:44	1	RTHA	1	P		WDL		
643	OBS	RPC	2/10/2021	14		Calm	Sunny, complete 12" snow cover	8:26	8:33	1	RTHA	2	FL		WDL		
644	OBS	RPC	2/10/2021	14		Calm	Sunny, complete 12" snow cover	8:26	8:33	1	RTHA	1	P	VO	WDL		
645	OBS	RPC	2/10/2021	14		Calm	Sunny, complete 12" snow cover	8:36	8:43	2	SAVS	2	VO		WDL		
646	OBS	RPC	2/10/2021	14		Calm	Sunny, complete 12" snow cover	8:47	8:54	3	SAVS						N/A - No birds.
647	OBS	RPC	2/10/2021	14		Calm	Sunny, complete 12" snow cover	8:57	9:04	2	SAVS						N/A - No birds.
648	OBS	RPC	2/10/2021	14		Calm	Sunny, complete 12" snow cover	9:07	9:14	1	SAVS						N/A - No birds.
649	OBS	RPC	2/10/2021	14		Calm	Sunny	9:17	9:24	1	SAVS	1	VO		WDL		
650	OBS	RPC	2/10/2021	14		Calm	Sunny	9:17	9:24	2	SAVS	2	FL		WDL		
651	OBS	RPC	2/11/2021	28		Calm	Cloudy	11:02	11:09	3	SAVS						N/A
652	OBS	RPC	2/11/2021	28		Calm	Cloudy	11:12	11:19	2	SAVS	2	VO		WDL		
653	OBS	RPC	2/11/2021	28		Calm	Cloudy	11:21	11:28	3	SAVS						N/A See track counts.
654	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy, 100% snow cover	8:41	8:48	1	SAVS	5	FL		GSH		
655	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy, 100% snow cover	8:41	8:48	1	SAVS	2	FL		GSH		
656	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy, 100% snow cover	8:41	8:48	1	SAVS	2	LF		GSH		Bad acoustics today due to wind.
657	OBS	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy, 100% snow cover	8:58	9:05	2	SAVS	4	WDL		WDL		South of airport.

Bird Point Count Data
Sorted By: **BIRD SPECIES AND DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
658	OB5	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy, 100% snow cover	9:11	9:18	3	SAVS						No birds.
659	OB5	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy, 100% snow cover	9:20	9:27	2	SAVS	2	FD		TWY		
660	OB5	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy, 100% snow cover	9:20	9:27	2	SOSP	2	FL		GSH		
661	OB5	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy, 100% snow cover	9:20	9:27	2	SOSP	2	LF		TWY		
662	OB5	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	9:33	9:40	1	SOSP	4	FL		GSH		
663	OB5	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	9:33	9:40	1	SOSP	1	P		WDL		
664	OB5	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	9:33	9:40	1	SOSP	2	LF		TWY		
665	OB5	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	9:33	9:40	1	SOSP	1	FL		WDL		
666	OB5	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	9:44	9:51	3	SOSP						No birds.
667	OB5	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	10:07	10:14	1	SOSP	1	FL		WDL		
668	OB5	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	10:07	10:14	1	SOSP	3	LF		RWY		
669	OB5	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	10:07	10:14	1	SOSP	1	P		WDL		
670	OB5	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	10:18	10:25	3	SOSP						No birds.
671	OB5	RPC	2/25/2021	41	WNW	15-20 MPH	Sunny, breezy	10:27	10:34	2	SOSP	2	FL		GSH		
672	OB5	RPC	3/12/2021	57	WSW	5-10 MPH	Mostly sunny	9:15	9:22	3	SOSP	3	FD		GSH		
673	OB5	RPC	3/12/2021	57	WSW	5-10 MPH	Mostly sunny	9:28	9:35	2	TRES	4	FD		GSH		
674	OB5	RPC	3/12/2021	57	WSW	5-10 MPH	Mostly sunny	9:35	9:42	1	TRES	5	FD		GSH		
675	OB5	RPC	3/12/2021	57	WSW	5-10 MPH	Mostly sunny	9:35	9:42	1	TRES	1	FP				
676	OB5	RPC	3/12/2021	57	WSW	5-10 MPH	Mostly sunny	9:35	9:42	1	TRES	1	FP				
677	OB5	RPC	3/12/2021	57	WSW	5-10 MPH	Mostly sunny	9:47	9:54	2	TRES	3	FD		GSH		
678	OB5	RPC	3/12/2021	57	WSW	5-10 MPH	Mostly sunny	9:47	9:54	2	TRES	2	FP				
679	OB5	RPC	3/12/2021	57	WSW	5-10 MPH	Mostly sunny	9:47	9:54	2	TRES	6	P	VO	SHB		
680	OB5	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:00	10:07	3	TRES	2	FD		GSH		
681	OB5	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:00	10:07	3	TUITI	1	P	VO	WDL		
682	OB5	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:15	10:22	2	TUITI						No birds.
683	OB5	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:27	10:34	1	TUTI	3	FL		WDL		
684	OB5	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:27	10:34	1	TUTI	8	FD		GSH		
685	OB5	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:27	10:34	1	TUTI	9	FD		GLG		
686	OB5	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:27	10:34	1	TUTI	1	FL		OW		
687	OB5	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:27	10:34	1	TUTI	16	FL		OW		
688	OB5	RPC	3/12/2021	57	WSW	15-20 MPH	Mostly sunny	10:27	10:34	1	TUTI	65	FP				@ 1500' N -> S
689	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:20	11:27	1	TUTI	2	FL		GLG		
690	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:20	11:27	1	TUTI	2	VO		SHB		
691	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:20	11:27	1	TUVU	2	VO		WDL		
692	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:20	11:27	1	TUVU	2	LF		RWY		
693	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:20	11:27	1	TUVU	13	FD		GSH		Fog lifed at approximately 8:30 am. Started this am at Unity Park.
694	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:20	11:27	1	TUVU	2	FP			S	@ 500'
695	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:41	11:48	1	TUVV	5	LF		RWY		
696	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:41	11:48	1	VEER	6	FD		GSH		
697	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:41	11:48	1	VEER	2	VO		SHB		
698	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:41	11:48	1	WBNU	12	FD		GSH		
699	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:41	11:48	1	WBNU	1	FD		WDL		
700	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:51	11:58	2	WDTH	2	VO		WDL		
701	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:51	11:58	2	WDTH	2	FD		GSH		
702	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:51	11:58	2	WITU	1	VO		WDL		
703	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	11:51	11:58	2	WOTH	3	FP			E	
704	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	12:03	12:10	3	WTSP	2	FD		GSH		
705	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	12:03	12:10	3	WTSP	4	VO		WDL		
706	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	12:03	12:10	3	WTSP	2	P		SHB		
707	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	12:03	12:10	3	WTSP	2	VO		WDL		
708	OB5	RPC	3/25/2021	50		Calm	Fog, mostly cloudy, rain last night	12:03	12:10	3	WTSP	8	FP			E	
709	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:15	12:22	2	WTSP	1	VO		WDL		
710	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:15	12:22	2	WTSP	2	VO		WDL		
711	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:15	12:22	2	WTSP	1	VO		WDL		

Bird Point Count Data
Sorted By: **BIRD SPECIES AND DATE**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	**AIRPORT**	**OBS**	**DATE**	**TEMP**	**WIND_DIR**	**SPEED**	**WEATHER**	**START TIME**	**END TIME**	**PT**	**BIRD SPP**	**NUMBER**	**BEHAVIOR**	**BEHAVIOR 2**	**COVER_1**	**DIR**	**COMMENTS**
712	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:15	12:22	2	WTSP	2	VO		SHB		
713	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:15	12:22	2	WTSP	5	FD		GSH		
714	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:26	12:33	1	WTSP	1	VO		WDL		
715	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:26	12:33	1	WTSP	1	FD		GSH		
716	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:26	12:33	1	WTSP	1	VO		WDL		
717	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:26	12:33	1	WTSP	17	FL		OW		
718	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:26	12:33	1	WTSP	7	FD		GSH		
719	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:41	12:48	2	WTSP	5	FD		GSH		
720	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:41	12:48	2	WTSP	2	VO		SHB		
721	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:41	12:48	2	WTSP	5	FD		GSH		
722	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:41	12:48	2	YRWA	1	VO		SHB		
723	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:51	12:58	3	YRWA	8	FD		GSH		
724	OB5	RPC	3/25/2021	60		Calm	Mostly cloudy	12:51	12:58	3	YRWA	2	FD		SGH		
725								12:51	12:58	3	YRWA	2	VO		SHB		

Key to Bird Species 4-Letter Codes

AMBL	American Bluebird	GRCA	Gray Catbird
AMCR	American Crow	GRSP	Grasshopper Sparrow
AMGO	American Goldfinch	HOWR	House Wren
AMKE	American Kestrel	KILL	Killdeer
AMRO	American Robin	MALL	Mallard Duck
BAEA	Bald Eagle	MODO	Mourning Dove
BARS	Barn Swallow	NOCA	Northern Cardinal
BASW	Bank Swallow	NOFL	Northern Flicker
BCCH	Black-capped Chickadee	NOMO	Northern Mockingbird
BRTH	Brown Thrasher	NRWS	Northern Rough-wing Swallow
CANG	Canada Goose	PIWO	Pileated Woodpecker
CHSP	Chipping Sparrow	PRAW	Prairie Warbler
DOWO	Downy Woodpecker	RBGU	Ring-billed Gull
EABL	Eastern Bluebird	RBWO	Red-bellied Woodpecker
EAKI	Eastern Kingbird	RTHA	Red-tailed Hawk
EAPH	Eastern Phoebe	SAVS	Savannah Sparrow
EATO	Eastern Towhee	SOSP	Song Sparrow
EAWP	Eastern Wood Peewee	TRES	Tree Swallow
EUST	European Starling	TUITI	Tufted Titmouse
FISP	Field Sparrow	TUVU	Turkey Vulture
GBHE	Great Blue Heron	VEER	Veery
		WBNU	White-breasted Nuthatch
		WITU	Wild Turkey
		WOTH	Wood Thrush
		YRWA	Yellow-rumped Warbler

Key to Habitat Cover Types

RWY - runway
TWY - taxiway
RMP - ramp
ASP - asphalt
UNP - unpaved road
STR - structure
DTC - ditch
PND - pond
RES - reservoir
RIV - river
WDL – woodland
MAR - marsh/wetland
CRK - creek/stream
TSW - temp standing water
GSH grass, short
GLG - grass, long
SHB - shrubs
GRV - gravel
AGF - ag field
SHR - shoreline
TR - single/sm group of trees

Key to Weather Conditions

SU - sunny
PS - partly sunny
CL - cloudy
RN - rain
SN - snow/sleet
FG - fog
PC - partly cloudy

Key to Behavior

FD - feeding
LF - loafing
RS- roosting
NS - nesting
VO - vocalizing
FL - flying local
FP - flying passing
RN – running
BD - bedded
P – perched
ST – standing
TW- towering
HW - hawking
SW- swimming

Appendix G PREPARERS OF THE WILDLIFE HAZARD ASSESSMENT

Stantec Consulting Services Inc.

Randall Christensen, Associate

Randy's experience working at airports in the northeast spans more than 30 years, and he is recognized as a leader in environmental issues associated with airports. He specializes in all facets of wetland science including state/federal wetland delineation and assessment, plant species identification, soil surveys, wildlife habitat assessments, wetland impact mitigation, wetland replication, and restoration design. He is experienced with local, state, and federal environmental permitting pursuant to Section 401/404 Federal Clean Water Act, Coastal Zone Management Act, NPDES Stormwater Permits, and state wetlands regulations.

Randy worked with the FAA to produce the FAA Advisory Circular 150/5200-33A—H*azardous Wildlife Attractants on or Near Airports*. Randy has conducted Wildlife Hazard Assessments and prepared Management Plans that have been accepted by the FAA. Further, he has attended Wildlife Hazard Management Training workshops with Embry-Riddle Aeronautical University and regularly attends the North American Bird Strike Conferences.