Torres Rojas, Genara

From: staber@taberlaw.com
Sent: Wednesday, September 14, 2011 7:01 PM
To: Duffy, Daniel
Cc: Torres Rojas, Genara; Van Duyne, Sheree
Subject: Freedom of Information Online Request Form

Information:

First Name: Steven
Last Name: Taber
Company: Taber Law Group
Mailing Address 1: P.O. Box 60036
Mailing Address 2:
City: Irvine
State: CA
Zip Code: 92602-0036
Email Address: staber@taberlaw.com
Phone: 949 735-8217
Required copies of the records: Yes

List of specific record(s):
I request a copy of the Port Authority of New York and New Jersey's PANYNJ Wildlife Hazard Assessment for LaGuardia Airport that began around October, 2009, and was scheduled to be completed around September, 2010 the "WHA" which was referred to in the 2009 USDA Monitoring Report for LaGuardia Airport and in the Port Authority's October, 2009, "Airport News," and which was performed under contract by the U.S. Dept of Agriculture's Wildlife Services "Wildlife Services". 1 A copy of the WHA, along with all attachments, exhibits, appendices and supplements 2 A copy of all correspondence between PANYNJ and the Federal Aviation Administration regarding the WHA, including all attachments, exhibits or supplementary information that accompanied the correspondence 3 A copy of all correspondence between Wildlife Services and the Federal Aviation Administration regarding the WHA, including all attachments, exhibits or supplementary information that accompanied the correspondenc

THE PORT AUTHORITY OF NY & NJ

Daniel D. Duffy
FOI Administrator

December 21, 2011

Mr. Steven M. Taber
Taber Law Group
P.O. Box 60036
Irvine, CA 92602

Re: Freedom of Information Reference No. 12622

Dear Mr. Taber:

This is a response to your September 14, 2011 request, which has been processed under the Port Authority's Freedom of Information Policy for copies of the Port Authority Wildlife Hazard Assessment for LaGuardia Airport that began around October 2009, correspondence between the Port Authority and the FAA, and correspondence between Wildlife Services and the FAA.

Material responsive to your request and available under the Policy, which consists of 90 pages, will be forwarded to your attention upon receipt of a photocopying fee of $22.5 (25¢ per page). Payment should be made in cash, certified check, company check or money order payable to "The Port Authority of New York & New Jersey" and should be sent to my attention at 225 Park Avenue South, 17th Floor, New York, NY 10003.

Certain material responsive to your request is exempt from disclosure pursuant to exemption (7) of the Policy.

Please refer to the above FOI reference number in any future correspondence relating to your request.

Sincerely,

Daniel D. Duffy
FOI Administrator

225 Park Avenue South
New York, , NY 10003
T: 212 435 3642 F: 212 435 7555

USDA UNITED STATES DEPARTMENT OF AGRICULTURE

Animal Plant Health Inspection Service

Wildlife Services

Wildlife Hazard Assessment

10/1/2009 – 9/30/2010

LaGuardia Airport
Flushing, New York

Prepared By
USDA-APHIS-Wildlife Services
(March 3, 2011)

Executive Summary

On May 14 2009, the FAA conducted a Wildlife Hazard Site Visit to LaGuardia Airport. Based on recent bird activity and considering the last Wildlife Hazard Assessment for LGA was conducted in 2000, the FAA determined that it was in the best interest of safety for LGA to conduct new WHA. FAR Part 139 requires that Wildlife Hazard Assessments be conducted over a 1-year period to capture seasonal and daily patterns of wildlife when wildlife activity or attraction results in the likely potential for wildlife strikes to occur at a given airport. The field portion of the WHA began in October 2009 and was completed in September 2010.

The objectives of this wildlife hazard assessment were to identify the species, numbers, locations, local movements, and daily and seasonal occurrences of wildlife observed; identify and locate features on and near the airport that attract wildlife; describe existing wildlife hazards to air carrier operations; review available wildlife strike records; and provide recommendations for reducing wildlife hazards at LGA.

Based on the most recent FAA National Wildlife Strike Database there were 131 wildlife-aircraft strikes at LGA during the WHA. Seventy-four (56%) of the 131 strike reports denoted whether there was damage or not. One of the 74 (1%) wildlife-aircraft strikes at LGA during the WHA was damaging to aircraft. The one strike resulted in minor damage, a dent to the nose cone of the aircraft, was caused by a gull at 4,000 ft AGL. Wildlife-aircraft strikes were highest during the approach phase of flight (73%), and runway 4/22 incurred the most strikes (53%). During the WHA runway 4/22 was the most used for arrivals (63%) and runway 13/31 was the most used for departures (67%). LGA had 3.66 strikes per 10,000 aircraft movements during the WHA. Compared to FAA National Wildlife Strike Database data for EWR (2.98 strikes/10,000 aircraft movements) LGA's strike rate is higher and compared to JFK (4.51 strikes/10,000 aircraft movements) LGA's strike rate is lower.

WS identified 59 bird species during the WHA. Five guilds—gulls, waterfowl, blackbirds and starlings, waterbirds, and columbids—comprised over 85% of all observations and individuals counted. Brant, Bufflehead, Canada Goose, Double-crested Cormorant, European Starling, Herring Gull, Laughing Gull, Lesser Scaup, Mallard, Ring-billed Gull, Rock Pigeon, and Ruddy Duck were generally the most abundant bird species observed at, near or traveling through LGA during the WHA.

Gulls were observed flying over the observation area 46% of the time and flying over the runway 31% of the time during the WHA. For all bird guilds the behavior flying over the runway was observed 18% of the time during the WHA, which is the same as the 2009 reporting period as documented in the LGA 2009 Continued Monitoring Annual Report.

The following are recommendations made by WS based on the information gathered during the WHA:

Specific Action Recommendations

1. modify perching structures,

2. purchase a green laser for use in bird dispersal,
3. continue aggressively dispersing birds at the approach ends of runways 22 and 31,
4. continue to monitor tidal flats at the approach of runway 31 for bird activity,
5. continue integrated Canada Goose management at Rikers Island,
6. remove standing water from the AOA,
7. continue gull nest and egg treatments on Rikers Island,
8. continue integrated pigeon management,
9. remove or mitigate old pier pilings from Flushing Bay,
10. remove commensal rodents from the AOA,
11. continue off-airport wildlife management,
12. continue Barn Swallow nest management,
13. continue having Port Authority Biologist review new airport development plans,

Administrative Recommendations

1. explore options to improve bird identification among operations staff,
2. continue and expand the LGA wildlife hazard management working group,
3. expedite shotgun training for new 61 staff,
4. continue monitoring wildlife abundance and behavior at LGA.

Table of Contents

List of Acronyms

ACM	Airport Certification Manual
AOA	Aeronautical Operations Area
AOU	American Ornithological Union
APHIS	Animal and Plant Health Inspection Service
BBS	Breeding Bird Surveys
CFR	Code of Federal Regulations
CTB	Central Terminal Building
DOC	Department of Corrections
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FMCP	Flushing Meadows Corona Park
FOD	Foreign Object Debris
LGA	LaGuardia Airport
LOA	Letter of Agreement
MOU	Memorandum of Understanding
MOA	Memorandum of Agreement
NOTAM	Notice to Airmen
NWSD	National Wildlife Strike Database
NWRC	National Wildlife Research Center
USFWS	U.S. Fish and Wildlife Service
USDA	United States Department of Agriculture
RPZ	Runway Protection Zone
WHA	Wildlife Hazard Assessment
WHM	Wildlife Hazard Management
WHMP	Wildlife Hazard Management Plan
WS	Wildlife Services

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Introduction

From 1990 to 2008, 89,727 wildlife-aircraft strikes in the U.S. were reported to the Federal Aviation Administration (FAA) (Dolbeer et al. 2009) with an estimated cost of more than $614 million to civil aviation annually. Of these strikes, 4,905 (5.5%) occurred in New York State (Dolbeer et al. 2008). Additionally, Dolbeer et al. (2009) estimate that around 39% of all wildlife strikes are reported. Worldwide, over 300 people have been killed from wildlife strikes (Dolbeer et al. 2000). Due to an increasing presence of wildlife at airports and to an increased awareness of the potential damage caused by wildlife, the FAA has implemented procedures to mitigate damage to aircraft by wildlife.

Federal Aviation Regulations Part 139.337(b) requires that a Wildlife Hazard Assessment be conducted when an air carrier aircraft experiences a multiple wildlife strike; an engine ingestion of wildlife; substantial damage from striking wildlife; or wildlife of a size, or in numbers, capable of causing an event described above is observed to have access to any airport flight pattern or aircraft movement area. If the airport notes wildlife hazards on or near the airport in the Airport Facility Directory (AFD), on Notice to Airman (NOTAM) or on the Automated Terminal Information Service (ATIS), the airport may be required to conduct a Wildlife Hazard Assessment. FAR Part 139 requires that Wildlife Hazard Assessments be conducted over a 1-year period to capture seasonal and daily patterns of wildlife (Cleary and Dolbeer 1999). FAA Advisory Circular 150/5200-33B "Hazardous Wildlife Attractants On or Near Airports" and the FAA manual entitled, "Wildlife Hazard Management at Airports," (Cleary and Dolbeer 2005) provides recommendations for managing wildlife hazards.

Wildlife Services History at LaGuardia Airport

In 1998 Warren Kroeppel, Manager of Airport Operations at LaGuardia Airport (LGA), contacted USDA, APHIS, New York Wildlife Services (WS) office to update LGA's Wildlife Hazard Management Plan (WHMP). Prior to updating the WHMP, WS performed a Wildlife Hazard Assessment (WHA) in 2000 to better understand LGA's wildlife management needs.

In 2002 LGA, with the help of WS, created and implemented a WHMP. Stemming from the 2002 WHMP, WS prepared a 4-year monitoring report for the period of 2004-2007. Each year thereafter WS has created an annual monitoring report to assist LGA in reducing wildlife-aircraft strikes.

Legal Authority of Wildlife Services

The United States Department of Agriculture (USDA) is directed by law to protect American agriculture and other resources from damage associated with wildlife. Animal Plant and Health Inspection Services (APHIS) WS has statutory authority under the Act of March 2, 1931 (46 Stat. 1468; 7 U.S.C. 426-426b) as amended, and the Act of December 22, 1987 (101Stat. 1329-331, 7 U.S.C. 426c), to cooperate with States, local jurisdictions, individuals, public and private agencies, organizations, and institutions while conducting a program of wildlife services involving mammal and bird species that are reservoirs for zoonotic diseases, or animal species

that are injurious and/or a nuisance to, among other things, agriculture, horticulture, forestry, animal husbandry, wildlife, and human health and safety.

WS Directive 2.305, *Wildlife Hazards to Aviation*, provides guidance for WS wildlife biologists in providing technical assistance or direct control to airport managers, State aviation agencies, the aviation industry, the FAA, and the Department of Defense regarding hazards caused by wildlife to airport safety. Wildlife Services' activities are conducted in cooperation with other federal, state and local agencies, and with private organizations and individuals.

The WS program is a non-regulatory, federal cooperative wildlife management program whose mission is to provide leadership in reducing conflicts between people and wildlife. Wildlife Services has the primary responsibility for responding to threats caused by migratory birds. A growing focus of WS is to help promote the safe operation of aircraft by working with airport management to document, asses and manage wildlife hazards at airports throughout the country.

FAA CertAlert No. 04-09, "Relationship between FAA and WS" (Appendix A), defines the respective roles of the agencies in resolving wildlife hazards on airports. It references a Memorandum of Understanding between FAA and USDA, Wildlife Services (formally Animal Damage Control) that establishes a cooperative relationship between these two agencies to resolve hazards to aviation by wildlife (Appendix B). This MOU recognizes that WS has the professional and technical knowledge to reduce wildlife hazards on or near airports, and it acknowledges that most airports do not possess this expertise. FAR Part 139.337 requires each airport operator to develop a wildlife hazard management plan. Even though the operator may work with WS to develop this plan or use a wildlife hazard assessment to support the plan, it is the responsibility of the airport operator (not WS) for the development, approval and implementation of the plan. FAA CertAlert No. 97-09, "Wildlife Hazard Management Plan Outline" (Appendix C), provides guidance on the formulation and content of a FAA-approved wildlife hazard management plan for an airport. In February 2010 FAA's Eastern Region released an Airport Certification Information Bulletin providing a WHMP review checklist (Appendix D). The checklist and review worksheet provide airports with a standard format to follow, ensuring the annual WHMP review and Airport Certification Safety Inspection are more efficient.

Legal Status of Wildlife Species

Federal, state, or municipal laws protect most forms of wildlife and their habitats. Before administering any control action at LGA, whether lethal or non lethal, the identification and legal status of the target individual should be determined. Regulatory agencies governing wildlife issue permits to trap or kill wild animals depending on the species and method of control involved. A permit is also usually required to harass species of special concern (i.e., threatened and endangered species). LGA is responsible for adhering to the current regulations regarding wildlife control and for obtaining the appropriate permits to take or harass specific types of wildlife. Potential non-target animals should be identified, as well, to aid in determining the appropriate control methods that would avoid killing or harassing these species.

Federal Regulations

The U.S. Government has passed several acts for the protection of wildlife including the Migratory Bird Treaty Act (MBTA), the Lacey Act, the Endangered Species Act, Bald Eagle Protection Act, the National Environmental Policy Act, and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). These are the basis of most wildlife regulations that have been issued in Title 50 of the Code of Federal Regulations (50 CFR). Several agencies are responsible for implementing these regulations and many of these regulations affect wildlife management at airports. Federal wildlife laws are administered by the U.S. Fish and Wildlife Service (USFWS) and primarily involve migratory birds protected under the MBTA and all species protected under the Endangered Species Act. Permits from the USFWS must be updated annually unless otherwise stated on the permit.

LGA is currently managing wildlife under Federal Fish and Wildlife Service Depredation Permit Number MB719627-0 (Appendix E). This permit authorizes LGA to kill "non-endangered and non-threatened species of migratory birds when they are creating or about to create a hazard to aircraft, only after non-lethal techniques have been tried." To avoid lapses in permits, LGA should "submit a written application at least 30 days prior to the expiration date of the permit." Depredation permits are also subject to the conditions stated in 50 CFR § 21.27: Special Purpose Permits (Appendix F). Under these guidelines LGA is required to document the permitted activity including type of action, species and numbers involved, and disposition of carcasses. These records should be available for inspection if necessary.

State and Local Regulations

New York State law follows the Federal regulations for migratory bird species and further regulates actions concerning mammals and game birds (Environmental Conservation Law of New York, Article 11) (Appendix G). The New York State Department of Environmental Conservation (NYSDEC) is responsible for issuing state depredation permits (permits that allow birds and mammals to be taken to protect property, agriculture, and human health and safety). The DEC publishes these regulations annually as the Environmental Conservation Law of New York. A copy of these regulations is available through DEC upon request. LGA is currently operating under a NYSDEC Depredation License Number 5 (Appendix H) that supports their Federal Fish and Wildlife Permit discussed above. LGA also maintains an Airport Air Strike Hazard Permit (number 09-2-001) issued by NYSDEC that authorized the harassment or killing of state controlled wildlife when they are creating a hazard to aircraft (Appendix I).

Table 1. A reference list of birds and mammals commonly found at LGA and the permits required for depredation control.

Category	Species	State Permit	Federal Permit
Resident game birds	Pheasants	YES	NO
Non protected birds	Starlings, house sparrows, pigeons	NO	NO
Migratory game birds[1]	Geese[3], ducks, woodcocks	YES[3]	YES
Migratory nongame birds[1]	Raptors, doves, gulls, songbirds, swallows, shorebirds, and wading birds	YES	YES
Depredation order birds[2]	Crows, red-winged blackbirds, brown-headed cowbirds, and grackles	NO	NO
Mammals	Squirrels, raccoons, possums, muskrats,	YES	NO
Unprotected species	Red squirrels, snapping turtles	NO	NO
Threatened, Endangered, and Special Concern Species (lethal & nonlethal control)	See Appendix J	YES	YES
Feral domestic mammals[4]	Dogs, cats	NO	NO

[1] For a complete list of migratory birds see 50 CFR § 10.13 (Appendix K).

[2] A federal permit is not required "when concentrated in such numbers and manner as to constitute a health hazard or other nuisance," see 50 CFR § 21.43 (Appendix L).

[3] From April 1st to September 15th Canada Geese can be taken without a permit, see 50 CFR § 21.49 (Appendix Y).

[4] PANYNJ is prohibited from shooting domestic Feral domestic mammals.

Wildlife Strikes

From 1980 to 2008 commercial aircraft movements in the U.S. increased from approximately 18 million to over 28 million movements per year (Dolbeer et al. 2009). This rise in air traffic coincides with increasing wildlife populations. In New York, the resident (non-migratory) Canada Goose population increased from about 19,000 in 1981 to an estimated 220,000 in 2005 (Swift 2006). Nationally, the resident Canada Goose population increased at a mean annual rate of 9.6% from 1980-2001; the Ring-billed Gull population increased at a mean annual rate of 2.2% (Sauer et al. 2004). The North American Breeding Bird Survey shows continued inclines in these populations since 2001 (http://www.pwrc.usgs.gov/BBS/). Increasing plane movements and increasing urban wildlife populations creates risks that are greater than ever before for wildlife-aircraft strikes (Dolbeer & Eschenfelder 2002).

Collecting and Reporting Wildlife Strike Data

The number of civilian wildlife-aircraft strikes reported annually in the United States has increased from 1,759 in 1990 to 7,516 in 2008 (Dolbeer et al. 2009). This increase could be the result of several factors: an increase in wildlife-aircraft strike issue awareness, an increase in air traffic, or an increase in populations of wildlife species.

Strike reports are used on national and local bases to determine priorities and direct resources for wildlife hazard management. Diligent collection of bird strike data is recommended for airport operations personnel. According to FAA Advisory Circular 150/5200-32A (Appendix M), a wildlife strike has occurred when:

1. a pilot reports striking 1 or more birds or other wildlife;
2. aircraft maintenance personnel identify aircraft damage as having been caused by a 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. an 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) (Transport Canada, Airports Group, *Wildlife Control Procedures Manual*, Technical Publication 11500E, 1994).

WS' Airport Wildlife Hazard Management Program manages the FAA National Wildlife Strike Database with records dating from January 1990. Pilots, tower personnel, and airport staff should be encouraged to be aware of wildlife strikes and the importance of reporting them to the FAA. It is critical for the integrity of a strike record database, both locally and nationally, to receive as much information as possible. Wildlife strikes can be submitted using the FAA Strike Report Form 5200-7 (Appendix N) or the FAA website (http://wildlife.faa.gov). Advisory Circular 150/5200-32A explains the importance of diligently reporting strikes to the database (Appendix M).

If any of the five criteria listed above is met, a Strike Report should be completed with as much information as possible and submitted to the FAA. If a carcass is found that cannot be identified, submit specified feathers or parts of these carcasses to the Smithsonian Institute Feather Lab (Appendix O). If a strike is reported but no carcass recovered, any feathers or parts remaining on the plane should also be removed and submitted to the Feather Lab for DNA identification. **Bird identification by the feather lab is provided at no expense to airports.**

The FAA and WS provide a comprehensive analysis of the national wildlife strike database each year in the annual report "Wildlife Strikes to Civil Aircraft in the United States." This document can also be downloaded at http://wildlife.faa.gov.

Delta Shuttle (MD-88) flight 1339 shortly after striking a Double-crested Cormorant on 9/29/2009. ***Photo: Port Authority Operations***

Objectives

The objectives of this wildlife hazard assessment were to:

1. identify the species, numbers, locations, local movements, and daily and seasonal occurrences of wildlife observed,
2. identify and locate features on and near the airport that attract wildlife,
3. describe existing wildlife hazards to air carrier operations,
4. review available wildlife strike records, and
5. provide recommendations for reducing wildlife hazards at LGA.

Pigeon traps located on the CTB rooftop were especially successful during the WHA. ***Photo: Eddie Owens***

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Description of Study Site

LGA and Adjacent Property

LGA is located in the New York City borough of Queens, bordering both Bowery Bay and Flushing Bay. The airport property is 680 acres, which includes 4 terminals and 10 parking areas. It has two intersecting runways, runway 4-22 (7,000 ft x 150 ft) and runway 13-31 (7,000 ft x 150 ft). LGA is positioned 3 miles from Manhattan Island, 1.5 miles from Flushing Meadows Corona Park (FMCP), and the approach end of runway 22 is less than 350 feet from Rikers Island. From 2000-2009 LGA recorded 3.8 million airplane movements carrying over 238.6 million passengers (Source: http://www.panynj.gov/airports/lga-facts-info.html).

Figure 1. LGA and the surrounding area.

Habitat Description

The AOA is a homogeneous environment comprised primarily of paved concrete surfaces, permanent buildings, and grassy medians interspersed among runways and taxiways. LGA is bordered by several tidal flat areas including both Bowery and Flushing Bays. Landside consists of parking lots, building structures, and fragmented landscape sites. Located to the west of Bowery Bay, Elmjack Park is 18 acres of land owned by LGA that is separated into several baseball fields and surrounded by a strip of deciduous trees.

Wildlife

Appendix P lists the 59 species of birds observed at LGA during the WHA. The list is a representative sample of birds common to southeastern New York. Gulls and waterfowl were the most commonly documented species. WS documented a few incidental observations of muskrats, Norway rats, raccoons, and house mice. No reptiles or amphibians were observed at LGA during the WHA.

Current Wildlife Hazard Management Plan

LGA presently has a wildlife hazard management plan in place. The WHMP is described and can be referenced in their airport certification manual.

Methods

Bird Surveys

On-Airport

WS initiated the WHA and began conducting 8 on-airport surveys a month in October 2009. The WHA was conducted for a one-year period ending in September 2010. One midday assessment was conducted each survey with a second assessment either being conducted at dawn or dusk, which alternated each survey. The bird surveys were conducted using a time-area sampling design based on a modified version of the U.S. Fish and Wildlife Service's Breeding Bird Survey. This survey is designed to capture temporal (seasonal and diurnal) and spatial use of the airport property by birds as well as behavior, abundance, and diversity of species. See appendix Q for a copy of the survey sheet used.

An assumption of this survey method is that all birds present are seen and identified. This assumption was undoubtedly violated due to the presence of small, solitary species that were unobserved. However, this violation is acceptable because the intent of this survey is to capture an index of the presence and behavior of larger-bodied or flocking birds as these birds pose a greater risk to aircraft (Dolbeer et al. 2000).

Fourteen permanent observation stations were selected to monitor all areas of the airfield, especially runways and approach and departure lanes (Appendix R). Data were collected at each station for three minutes and in 360 degrees. Binoculars were used to identify species and obtain counts, but not to search for birds.

At each station WS recorded each species observed, number of individuals observed, and the type of behavior in which that group was engaged. Bird behaviors were segregated into 9 categories: loafing on ground, loafing on water, feeding, perched on manmade structure, perched on vegetation, flying over observation area, aerial hunting, on ground in or adjacent to runway, and crossing over runway.

Off-Airport

Surveys were conducted twice a month at 9 off-airport locations including Rikers Island to monitor Canada Goose and Brant numbers and activity. One survey was conducted during midday and the second survey was conducted at either dawn or dusk, which alternated by month. For each survey the accessible areas of the locations were searched for Canada Geese and Brant. Data were recorded as to species, number of individuals and behavior of the birds observed. Binoculars were used for identification of species and counts. The surveys required approximately 1 hour per site.

Analysis of Bird Survey Data

WS used descriptive statistics to analyze the data from the surveys and to represent the situation at LGA relevant to the time the surveys were made. To analyze the bird survey data, bird species are categorized into guilds. Guilds are grouping of birds based on similar behavior (loafing, feeding) and not necessarily on species relatedness. Tracking birds of similar behavioral characteristics is important in determining which species of birds are most likely to be involved in a bird strike. Birds of similar behavior tend to respond to the same control methods such as habitat modification, hazing, or types of exclusion.

WS observed the temporal, spatial, and behavioral use of the airport for all species combined and the 5 most abundant guilds observed during the WHA. The five guilds analyzed comprised 96% of individuals observed and 88% of total observations. All other guilds were not considered to be an imminent threat to aviation at LGA because of their low number of observations and individuals counted.

When analyzing data from all species combined, WS presented species diversity in each month; frequency of each guild observed; bird species observations by month and behavior categories (*an "observation" means that a species was observed and does not imply group size, whereas "individuals counted" is the actual number of individual birds recorded*) and individuals counted by month and behavior categories. When examining the top 5 most abundant guilds, WS used graphs to show average number of both observations and individuals counted per survey for each month and behavior as a percent of the total observations and individuals counted. Observations by location and percent of total were presented using a map for all species combined and the 5 most abundant guilds.

Wildlife-strike Analysis

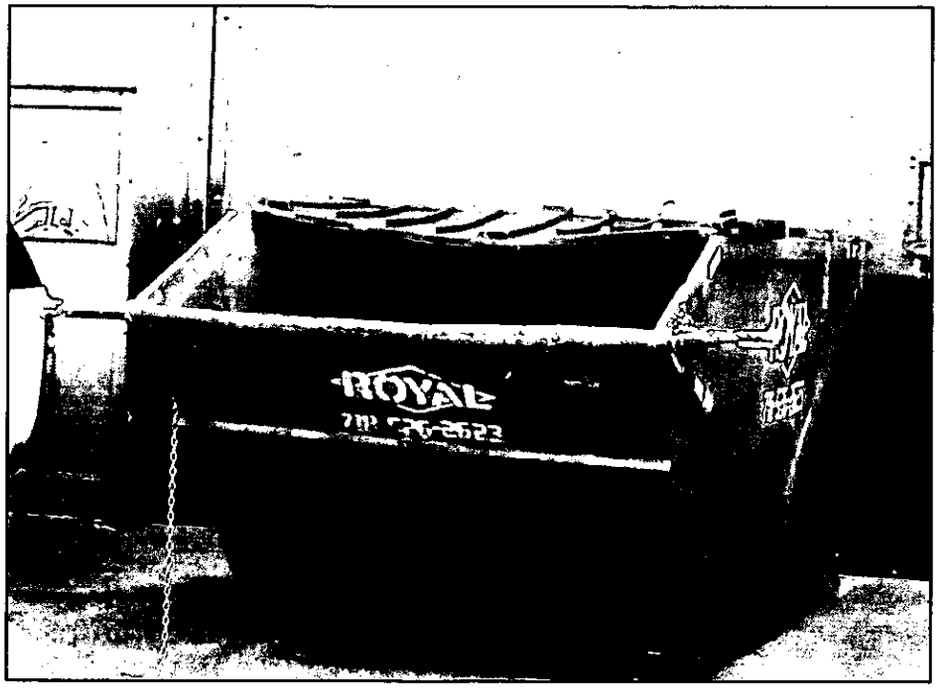
Bird strike data were examined using strike reports from the FAA National Wildlife Strike Database. WS analyzed bird strikes based on seasonal occurrences, runway and phase of flight, and the guilds involved. Traffic statistics from the Port Authority of New York and New Jersey website (http://www.panynj.gov/airports/general-information.html) were used to compute the strike rate for LGA as well as EWR and JFK for comparison.

Wildlife Attractants

Wildlife is attracted by four basic life needs: food, water, cover and loafing (resting) areas. Removing these elements on an airport is the first defense against wildlife strikes. Even when these elements of wildlife management are carefully considered, events occur which cause the attractiveness of the airport to certain species to increase. Seldom used areas may revert to brush and tall grass, paved areas may settle creating collection points for water, and piled materials such as construction remnants or soil can serve as shelter for wildlife. Land adjacent to airports may become developed, causing wildlife to seek habitats at an airport that supplements their needs.

Food sources for wildlife may include overflowing dumpsters, handouts from people, vegetation, mast, seeds (including grass seeds), berries, insects, rodents, and earthworms. Water sources include streams, impoundments, puddles, sprinklers, dripping faucets, lakes, ponds, and rivers. Cover and nesting habitat may include hangars for doves and pigeons; brushy or grassy areas in ditches, fields, and along fences; towers and signs; urban structures; trees; or abandoned machinery and materials. Fields at airports also provide shelter for burrowing animals.

Modifying or managing airport habitat is an effective and economical deterrent to wildlife because these methods tend to be longer lasting than short term methods that remove individual animals. The goal is to render LGA property as unattractive to hazardous wildlife species as possible. The best way to accomplish this goal is to limit food, water, and cover for wildlife by creating a monotypic (uniform) environment throughout the airport. During the WHA, WS documented several of the above attractants and potential attractants to wildlife which are addressed in this document.



Uncovered trash bins on the AOA and landside can be an attractant to birds.
Photo: Eddie Owens

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Results of Surveys and Risk Analyses

WS identified 59 bird species and 4 species of mammals during the WHA (Appendix P). Five guilds comprised over 85% of all observations and individuals counted during the WHA. WS conducted a risk analysis on all species combined and for the 5 most abundant guilds. All other guilds, because of their relatively low number of observations and individuals counted, were not addressed in this section. There were several random observations of commensal rodents and small mammals during the WHA. No risk analyses were performed for mammals because there were no formal surveys conducted specifically for mammals.

Bird Survey (On-Airport)

All Species Combined

Fifty-nine bird species were documented during 98 surveys on the AOA at LGA during the WHA (Appendix P). WS documented the greatest diversity of bird species during the month of May (34) and the least diversity in January (22) (Figure 2).

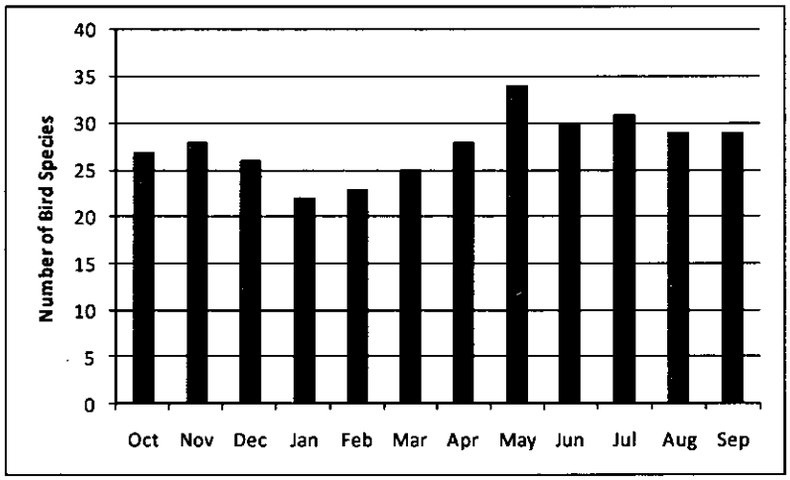

Figure 2. Number of species observed by month during the WHA.

WS recorded each guild as a proportion of total individuals counted and total observations during the WHA. Five guilds comprised over 85% of all individuals counted and total observations. When the guilds were analyzed as a proportion of total individuals counted waterfowl (38%) accounted for the largest percentage followed by gulls (36%), blackbirds and starlings (13%), waterbirds (6%), and columbids (4%) (Figure 3). When the guilds were analyzed as a proportion of total observations gulls (43%) accounted for the largest percentage followed by waterfowl (22%), blackbirds and starlings (9%), columbids (7%), and waterbirds (7%) (Figure 4).

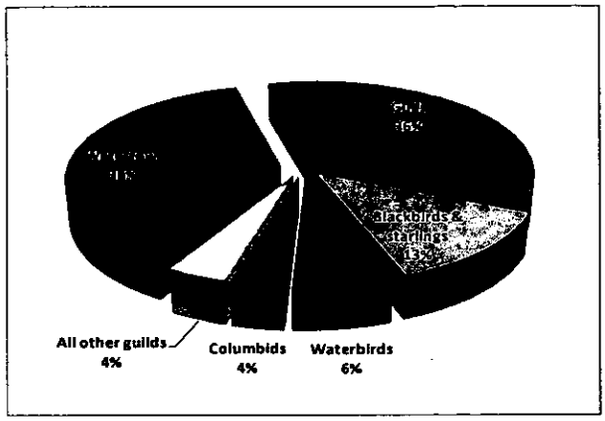

Figure 3. The observed bird guilds as a proportion of total individuals counted during the WHA.

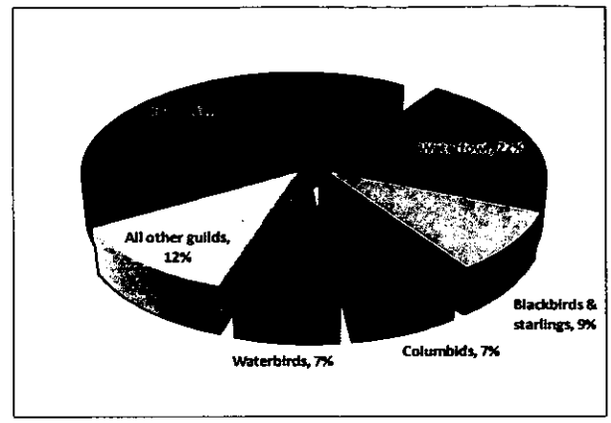

Figure 4. The observed bird guilds as a proportion of total observations documented during the WHA.

Knowing the time of year and location with the greatest bird activity can help airport operations staff plan wildlife management strategies more effectively. During the WHA, February had the highest monthly average number of individuals counted (554) and number of observations (55) (Figure 5). The lowest monthly average number of individuals counted occurred during June (124) and September accounted for the lowest average number of observations (36). Late spring and early summer months displayed lower average individuals counted while the average number of observations stayed similar to the rest of the year. During those months the observations were of smaller groups of birds. In August there was a noticeable increase in the average number of individuals counted, this may be due to juvenile birds leaving the nest after the summer nesting season. Not only are juveniles slightly awkward in flight but there are also more individuals out competing for food resources, increasing the likelihood of a strike.

WS documented 5 locations on the AOA that accounted for over 80% of all observations, displayed as red areas in figure 6. The approach of runway 22 had the highest percentage (20%) followed by the approach of runway 13 (19%), Bowery Bay (16%), the approach of runway 31 (15%), and Flushing Bay (14%). The approach ends of runway 13, 22, and 31 accounted for 54% of total observations. Birds flying at the approach ends of the runway are in the flight path of departing and landing planes, putting them at a higher risk of being struck.

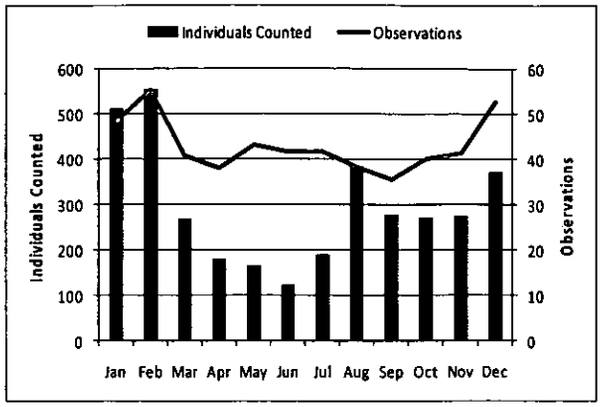

Figure 5. Average monthly bird observations and individuals counted during the WHA.

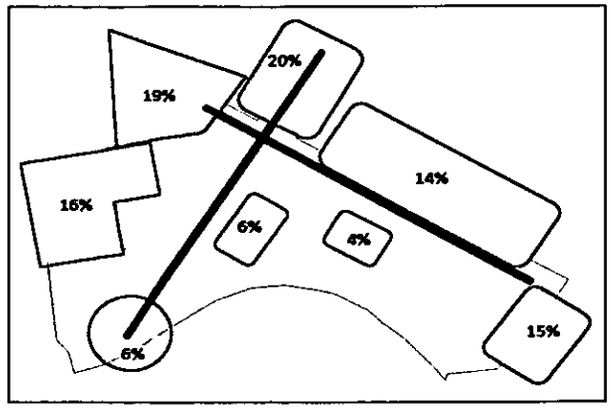

Figure 6. Observations of combined bird species by location and percent of total.

Behavior is an important because certain behaviors, such as flocking, pose a greater threat to aircraft than other behaviors. Eight behavior categories were documented during the WHA (Figure 7). Flying over the observation area accounted for the highest percentage (38%) of all observed behaviors followed by loafing on the water (20%). The most dangerous behavior flying over the runway comprised 18% of total observations. Flying over the runway is the most hazardous behavior because it is the behavior most likely to result in a bird strike. Thirty-four percent of individuals observed exhibited the behavior of loafing on the water.

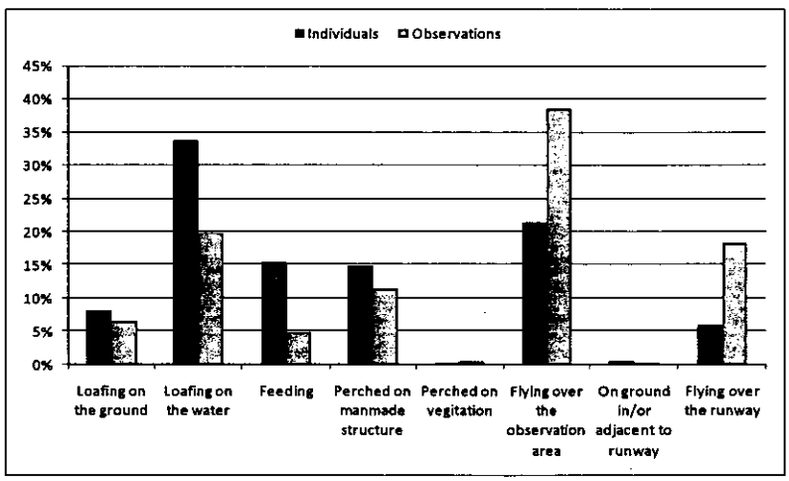

Figure 7. All bird species combined behavior as a total number of individuals counted and total number of observations.

Bird Guilds

Gulls

Risk Analysis

WS documented an average of 18 gull observations and 106 individual gulls per survey during the WHA. Known species observed were Ring-billed Gull (58% of total observations), Herring Gull (27%), Laughing Gull (14%), and Great Black-backed Gull (1%). February had the highest average number of observations (32) and individuals counted (242) per survey (Figure 8).

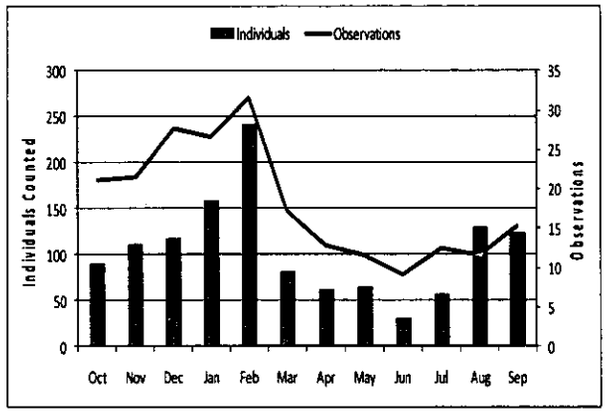

Figure 8. Average number of gull observations and individuals counted per survey each month during the WHA.

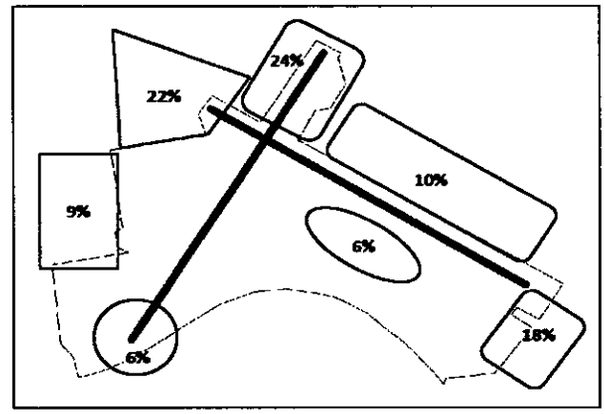

Figure 9. Gull observations by location and percent of total.

Forty-six percent of gull observations occurred at the approach ends of runways 13 and 22 (Figure 9). Rikers Island, situated transversely from both runways 13 and 22, was heavily used by Ring-billed Gulls and Herring Gulls. During the WHA gulls were regularly seen flying across the runway 22 deck, going to and from Rikers Island. The approach of runway 13 lighting system extends 0.55 miles beyond the 13 deck and provides a roosting area for both gulls and waterbirds. During the early fall month's gulls, specifically, Ring-billed Gulls were observed loafing on the runway 13 lighting system in large flocks of over 50 or more birds. Eighteen percent of gull observations were from the approach end of runway 31. During low tide, at the approach of 31, tidal flats are exposed providing an abundance of food. Gulls were observed flying from the direction of Rikers Island, across the runway, to the tidal flats to feed.

Forty-six percent of gull observations and 25% of individual gulls observed were flying over the observation area (Figure 10). One of the most hazardous behaviors is flying over the runway, and gulls were observed exhibiting this behavior 31% of the time during the WHA.

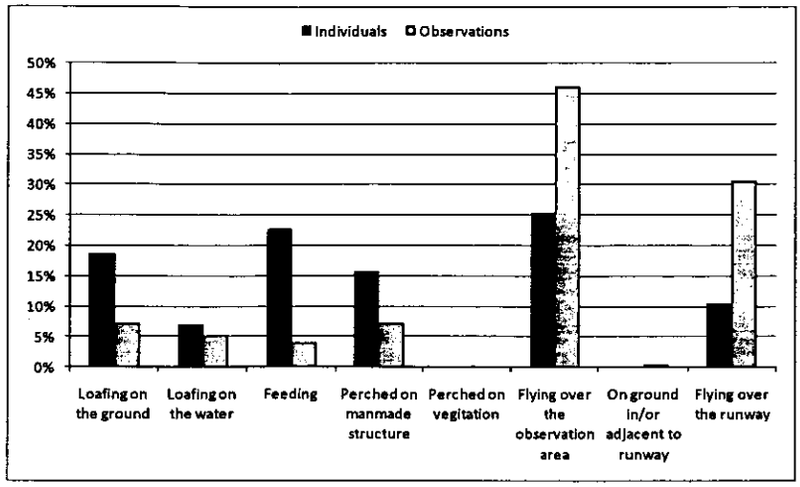

Figure 10. Gull behavior as a total number of individuals counted and total number of observations.

Waterfowl

Risk Analysis

WS documented an average of 9 waterfowl observations and 112 individuals per survey during the WHA (Figure 11). Known species observed included Ruddy Duck (32% of total observations), Canada Geese (15%), Lesser Scaup (15%), Brant (13%), Mallard (8%), Bufflehead (8%), and 10 other waterfowl species that combined for 10% of the total observations. During the colder months of December, January, and February there was an increase in observations and individuals counted. This may be due to waterfowl migrating from the north for the winter.

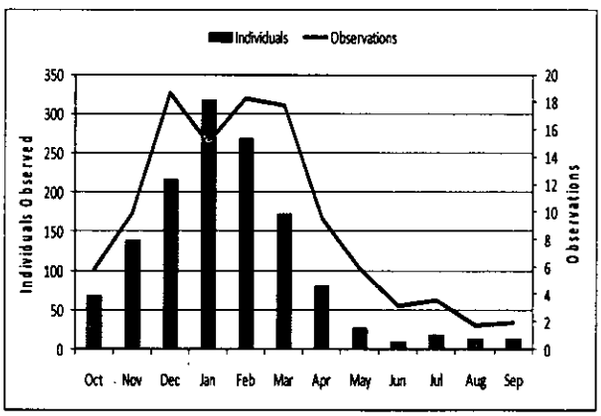

Figure 11. Average number of waterfowl observations and individuals counted per survey each month during the WHA.

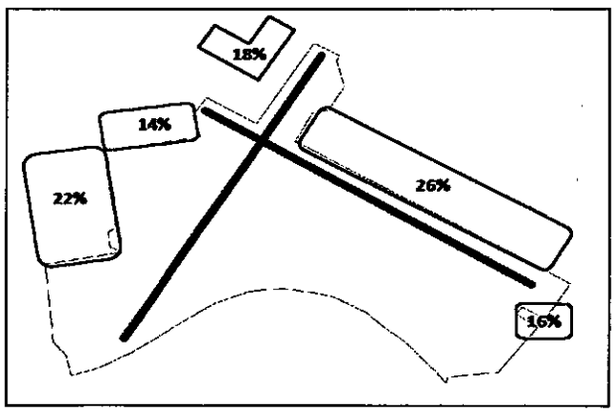

Figure 12. Waterfowl observations by location and percent of total.

The north shore of LGA, between the approach of runways 22 and 31, had the highest percentage (26%) of waterfowl observations (Figure 12). Bowery Bay accounted for 22% of total waterfowl

observations and the south shore of Rikers Island for 18%. The Bowery Bay area is a cove that provides protection from high winds and inclement weather, making it an ideal loafing area for waterfowl and gulls.

Eighty-two percent of individuals counted and 73% of observations were of waterfowl loafing on the water (Figure 13). The second most observed activity was feeding. Ruddy Ducks were the most observed species from the waterfowl guild and they are a diving duck. Ruddy Ducks will loaf on the water and occasionally dive under water to feed. Not all waterfowl species specialize in diving for food; some are grazers and must fly to gain access to feeding areas. Species that do not dive include Canada Geese and Brant, the 2nd and 4th most observed species, respectively, from the waterfowl guild.

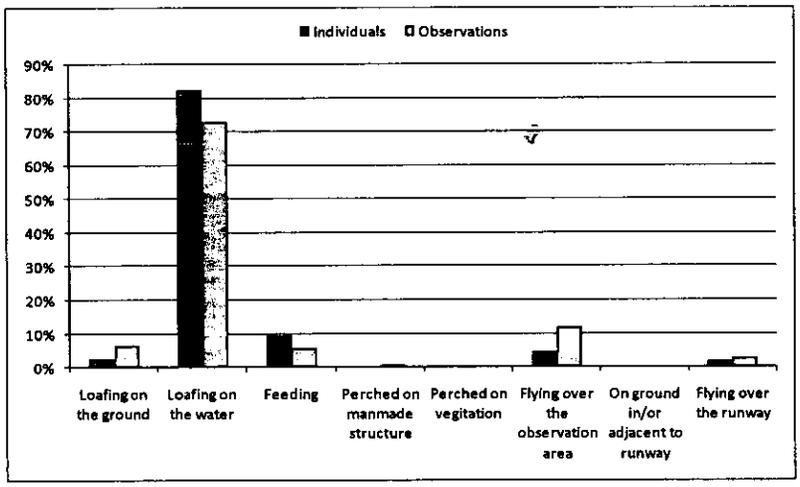

Figure 13. Waterfowl behavior as a total number of individuals counted and total number of observations.

Blackbirds and Starlings

Risk Analysis

WS documented an average of 4 blackbird and starling observations and 38 individuals per survey during the WHA. Known species observed were European Starling (99% of total observations), Common Grackle (<1%), and Red-winged Blackbird (<1%). August had the highest average number of individuals counted (143) per survey and June had the highest average number of observations (9) per survey during the WHA (Figure 14). The high number of observations and individuals counted during the summer months may be associated with the nesting season. During early summer (May and June) adult birds participated in solitary foraging, building energy to reproduce and feed their young. When the fledglings left the nest in the late summer (August) juvenile and adult birds fed communally in large flocks.

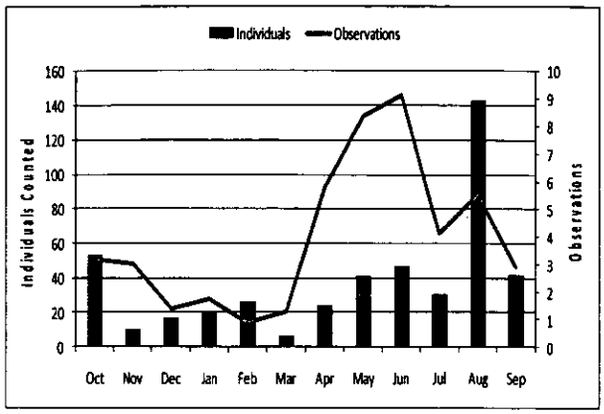

Figure 14. Average number of blackbird and starling observations and individuals counted per survey each month during the WHA.

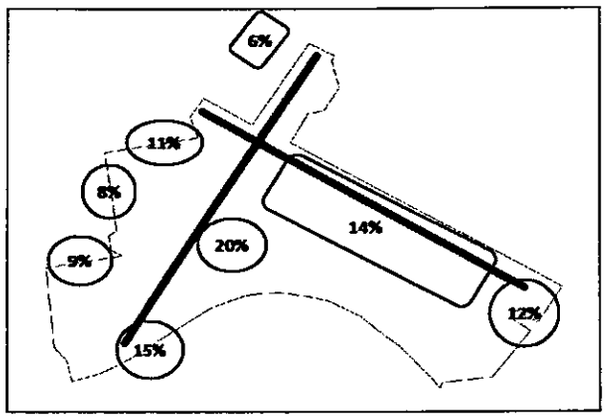

Figure 15. Blackbird and starling observations by location and percent of total.

Twenty percent of blackbird and starling observations were in the area of hangars 1, 3, and 5 (Figure 15). The hangars provide plenty of perching sites, one of the most used being the signage above the hangar doors. The approach of runway 4 accounted for 15% of total observations and the runway safety area on the north side of runway 13/31 accounted for 14%. The north safety area is a large body of grass and was frequently used for feeding during the summer months.

Forty-six percent of individuals counted and 45% of blackbird and starling observations were of the birds flying over the observation area (Figure 16). This behavior can be hazardous due to the flocking behavior of blackbirds and starlings. Twenty-four percent of individual blackbird and starlings observed were feeding and 20% were perched on manmade structures. The most commonly used manmade structures by blackbirds and starlings were the signs attached to hangars 1, 3, and 5.

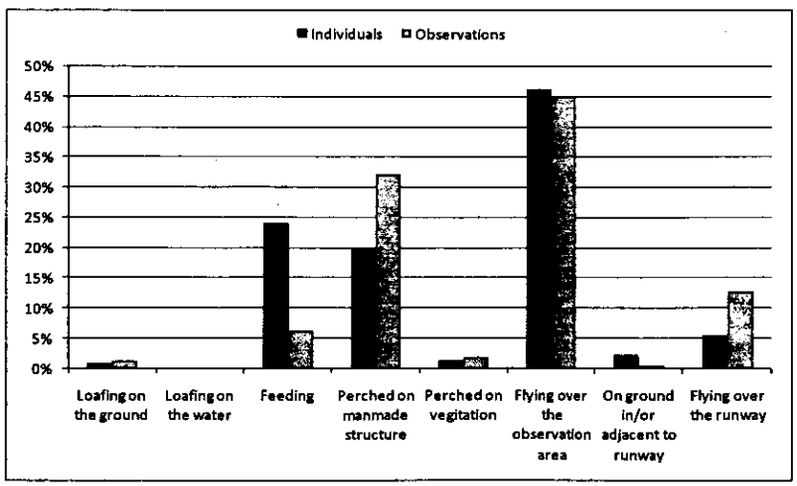

Figure 16. Blackbird and starling behavior as a percent of total number of individuals counted and total number of observations.

Columbids

Risk Analysis

WS documented an average of 3 columbid observations and 10 individuals per survey during the WHA. Known species observed were Rock Pigeon (94% of total observations) and Mourning Dove (6%). Columbid observations varied little during the WHA with July having the highest average number of observations (5) per survey and December having the lowest (1) (Figure 17). September had the highest average number of individuals counted per survey (20) and November had the lowest (5).

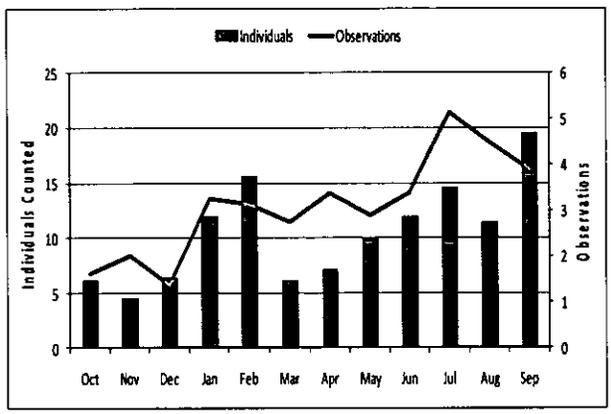

Figure 17. Average number of columbid observations and individuals counted per survey each month during the WHA.

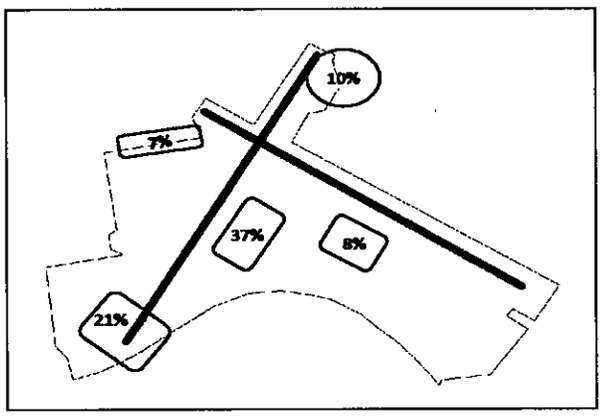

Figure 18. Columbid observations by location and percent of total.

Thirty-seven percent of columbid observations were made in the area of hangars 1, 3, and 5 and 21% were made at the approach of runway 4 (Figure 18). Hangars 1, 3, and 5 provide ample amount of perching area and shelter for pigeons. At the approach of runway 4 pigeons were generally observed using the areas within and around the car rental lots.

Fifty-one percent of individual columbids counted and 49% of columbid observations were of the birds flying over the observation area (Figure 19). Twelve percent of columbids observed and 7% of individuals counted were flying over the runway.

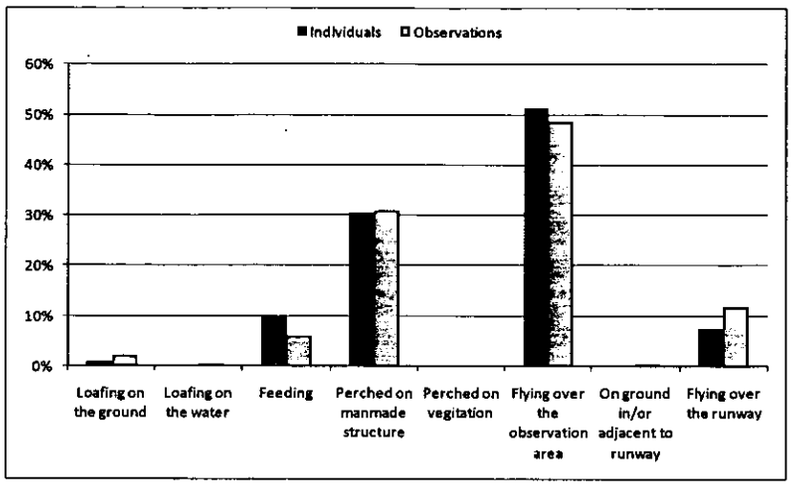

Figure 19. Columbid behavior as a total number of individuals counted and total number of observations.

Waterbirds

Risk Analysis

WS documented an average of 3 waterbird observations and 19 individuals per survey during the WHA. Known species observed were Double-crested Cormorant (99% of total observations), Red-throated Loon (<1%), Common Tern (<1%), and Black Skimmer (<1%). Waterbirds were observed primarily in the late summer and early fall months. September had the highest average number of individuals counted (71) per survey, followed by October (51), August (48), and July (37) (Figure 20).

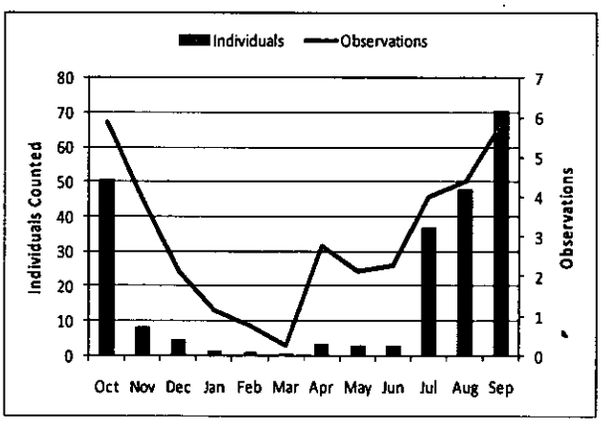

Figure 20. Average number of waterbird observations and individuals counted per survey each month during the WHA.

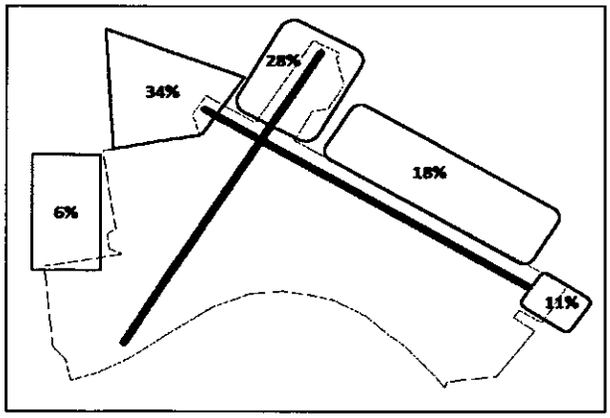

Figure 21. Waterbird observations by location and percent of total.

Thirty-four percent of waterbird observations were made at the approach of runway 13 (Figure 21). The approach of runway 13 lighting system extends 0.55 miles beyond the 13 deck and provides a roosting area for both waterbirds and gulls. During the early fall months of

September and October Double-crested Cormorants were observed loafing on the runway 13 lighting system in large flocks of over 50 or more birds. Twenty-eight percent of waterbird observations were made from the approach of runway 22. During late summer and early fall flocks of 10 or more waterbirds were routinely observed flying over the runway 22 deck, either going toward or coming from the approach end of 31. The north shore of LGA accounted for 18% of the total waterbird observations. The waterbirds observed from this area were flying in or from the direction of Flushing Meadows Corona Park.

Eighty-two percent of individual waterbirds counted were perched on a manmade structure (Figure 22). The majority of waterbirds observed perched on a manmade structure were either perched on the old pier pilings in the water north of runway 13/31 or the approach of runway 13 lighting system. Four behaviors exhibited by waterbirds comprised 96% of the total observations made during the WHA; perched on a manmade structure (25%), loafing on the water (24%), flying over the observation area (24%), and flying over the runway (23%).

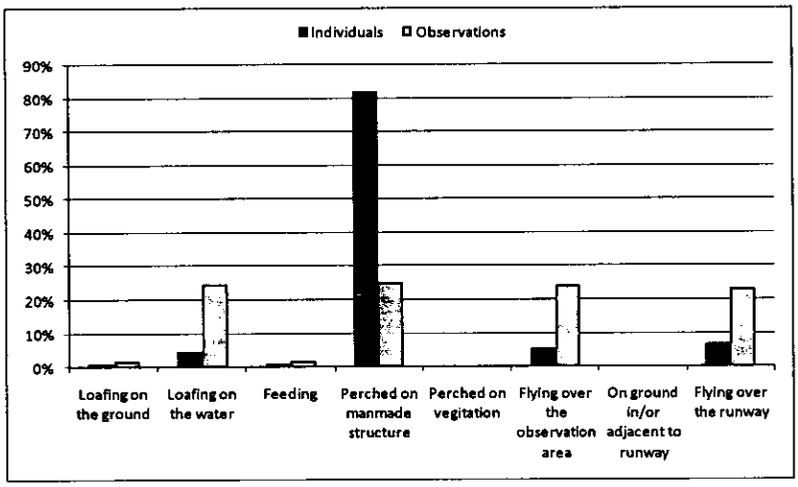

Figure 22. Waterbird behavior as a total number of individuals counted and total number of observations.

Bird Surveys (Off-Airport)

FAA Advisory Circular 150/5200-33B, "Hazardous Wildlife Attractants On or Near Airports" (Appendix S) provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public use airports. Section 1 (1-3) recommends a separation distance of 10,000 feet from any hazardous wildlife attractant (section 2-4 and 2-7) for airports serving turbine-powered aircraft and section 1 (1-4) recommends a distance of 5 statute miles for the protection of approach, departure, and circling airspace. WS chose 9 off-airport locations within 7 miles of LGA to monitor during the WHA. Resident Canada Geese have been documented traveling 1 to 2 miles a day; therefore locations located within a 7 miles radius of the AOA were monitored.

Rikers Island

Goose Management

Rikers Island is located within 100 yards of LGA and is considered an off-airport attractant for Canada Geese to feed, nest, and molt. Since 2001 WS has worked with Rikers Island staff to reduce the conflict between resident Canada Geese moving to and from Rikers Island and the air traffic at LGA. Beginning in the spring of 2001 Canada goose reproduction and recruitment at Rikers Island was reduced through nest and egg treatments and has continued each year through 2010 (Figure 23). During the 2009-2010 WHA 9 nests and 43 eggs were treated compared to 41 nests and 223 eggs treated in 2001. Canada Geese do show strong nest site fidelity; nest treatments are conducted to reduce reproduction recruitment, not to reduce number of adults. In 2004 the first goose removal occurred during the summer molt and has continued each year through 2010 (Figure 24). Goose removals have significantly reduced the number of geese using Rikers Island as a nesting and molting area with only 32 geese being removed in 2010 compared to the 2004 removal of 518 geese.

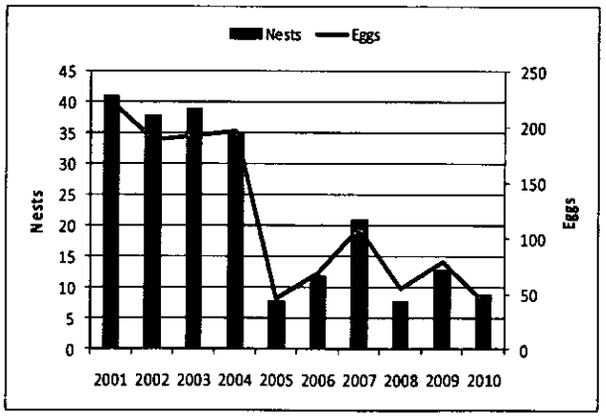

Figure 23. Total number of Canada Goose nests and eggs treated at Rikers Island from 2001 to 2010.

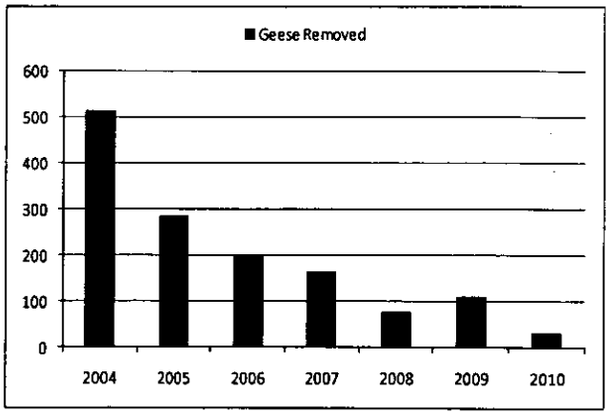

Figure 24. Total number of Canada Geese removed from Rikers Island each year from 2004 to 2010.

Monitoring

WS documented that the number of individual Canada Geese varied among months from 11 in June to 262 in February (Figure 25). The greatest number of individual geese was observed during the late fall and winter months. During this time period migratory Canada Geese join the local resident Canada Goose population, increasing the number of Canada Geese in the area.

The number of individual Brant varied among months from 0 to 143 individuals observed. April accounted for the largest number of Brant observed (143) while no Brant were observed during the summer and early fall months (Figure 25). Compared to the 2009 reporting period the numbers of individual Brant observed during the winter and spring months were noticeably lower.

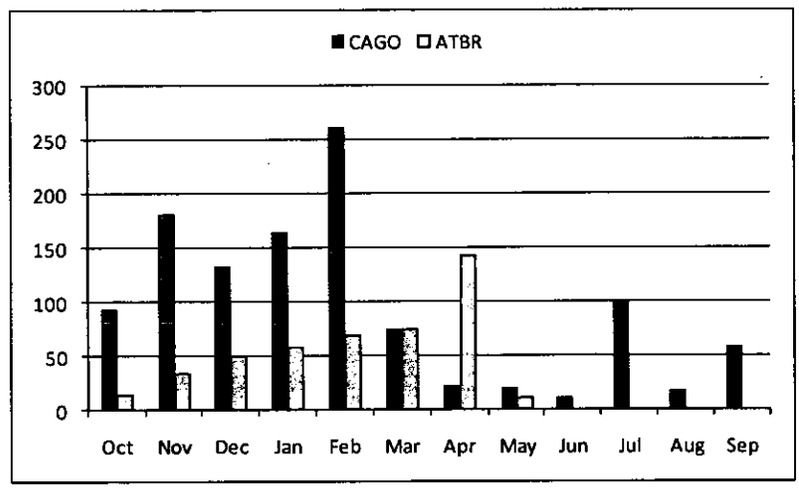

Figure 25. Number of Canada Geese and Brant observed at Rikers Island during the WHA.

Gull Management

The presence of a large-bodied gull nesting colony on the rooftops of buildings at Rikers Island Correctional Facility presents an opportunity to reduce local wildlife aviation hazards by eliminating the local gull population. In the spring of 2009 WS initiated gull egg oiling treatments at Rikers Island. An additional round of treatments was conducted during the WHA in the spring of 2010. Over a four week period WS treated a total of 395 nests containing 944 eggs during the WHA (Figure 26). Specifically, there were 390 Herring Gull nests with 935 eggs and 5 Great Black-backed Gull nests containing 9 eggs. The increase in nests and eggs treated from 2009 to 2010 is due to increased access to additional rooftops. There are 11 detention facilities in addition to administrative buildings on the island, all with multiple roofs.

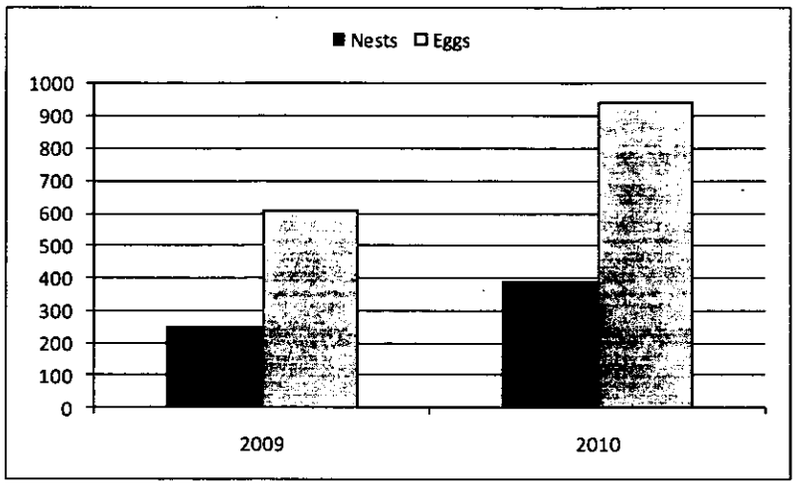

Figure 26. Total number of gull nests and eggs treated at Rikers Island in 2009 and 2010.

All Other Off-Airport Locations

In addition to Rikers Island, 8 off-airport locations were identified as potential bird attractants, specifically to waterfowl. The sites are located within 7 miles of the airport and provide an abundance of food, water, and shelter, all of which are significant wildlife attractants. The 8 off-airport locations monitored were Flushing Meadows Corona Park, Kissena Park, Alley Pond Park, Ferry Point Park, Randall's/Ward's Island, Fort Totten, Clearview Golf Course and Elmjack (Appendix T). Each location was surveyed twice a month during the WHA.

Monitoring

WS examined the monthly average number of Canada Geese and Brant per survey each month at off-airport locations during the WHA. January accounted for the highest monthly average with 1,837 individual Canada Geese (Table 2) and 537 individual Brant counted (Table 3). July was the least active month for Canada Geese while June, July, and August had no Brant activity. Flushing Meadow Corona Park was the most utilized area by Brant and Canada Goose. Alley Pond, Clearview Golf Course, Elmjack and Kissena were the least used parks by Brant and Clearview Golf Course was the least used park by Canada Geese.

Table 2. Average number of Canada Geese counted per survey each month at LGA off-airport locations during the WHA.

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alley Pond	0	17	19	269	186	8	8	12	0	0	0	0
Clearview GC	0	10	0	0	0	4	2	2	0	0	0	0
Elmjack	0	0	0	77	1	0	0	0	0	0	0	0
Ferry Point	75	4	77	0	34	19	1	0	0	0	62	45
Flushing	406	333	532	645	241	41	9	23	35	14	108	188
Fort Totten	203	233	208	404	303	133	7	19	26	8	0	31
Kissena	20	12	34	180	75	7	2	0	0	0	0	0
Randalls/Wards	0	18	13	263	142	52	12	11	15	0	28	49
Total	**702**	**625**	**881**	**1,837**	**981**	**262**	**40**	**66**	**76**	**22**	**197**	**313**

Table 3. Average number of Brant counted per survey each month at LGA off-airport locations during the WHA.

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Alley Pond	0	0	0	0	0	0	0	0	0	0	0	0
Clearview GC	0	0	0	0	0	0	0	0	0	0	0	0
Elmjack	0	0	0	0	0	0	0	0	0	0	0	0
Ferry Point	0	0	0	0	0	19	6	0	0	0	0	0
Flushing	374	361	170	287	150	544	122	29	0	0	0	0
Fort Totten	0	3	20	125	144	23	0	75	0	0	0	0
Kissena	0	0	0	0	0	0	0	0	0	0	0	0
Randalls/Wards	0	0	88	125	106	9	0	7	0	0	0	0
Total	**374**	**364**	**277**	**537**	**399**	**595**	**128**	**111**	**0**	**0**	**0**	**0**

LaGuardia Airport's Strike Record

The number of strikes per 10,000 aircraft movements is used as the standard metric to assess the severity of wildlife hazards at an airport and to evaluate current wildlife management plans. From October 2009 through September 2010, 131 bird strikes were reported to the FAA National Wildlife Strike Database, or 3.66 strikes/10,000 aircraft movements, greater than the previous 2009 reporting period (2.91/10,000).The increase may be attributed to greater bird strike awareness, and although the strike rate has risen the number of "damaging" strikes decreased compared to previous reporting periods. While an airport's strike rate is a measure of frequency, it is not an indication of the effectiveness of an airport's wildlife hazard management program.

Seasonal Occurrence of Strikes

Knowing which season incurs the most wildlife strikes helps airport operations managers know when they need to increase their wildlife vigilance and management efforts. Twenty-one percent of strikes incurred during the WHA were in October, followed by September (17%), and August (14%) (Figure 27). February and April accounted for the lowest percentage of strikes (2% each).

Seasonally, 62% of all strikes occurred from July through October. This increase in the number of strikes during the late summer and early fall months coincides with fledglings leaving the nest and the annual, fall migration of birds. This trend is seen in the national strike record and LGA's 9-year strike average. Birds first leaving the nest are younger and less experienced, making them more vulnerable to being struck. Also seen in the national average is an increase in bird strikes during May, representing the spring migration. While there was a slight increase in the number of strikes in January compared to the previous 9-year average, seasonally there was no difference.

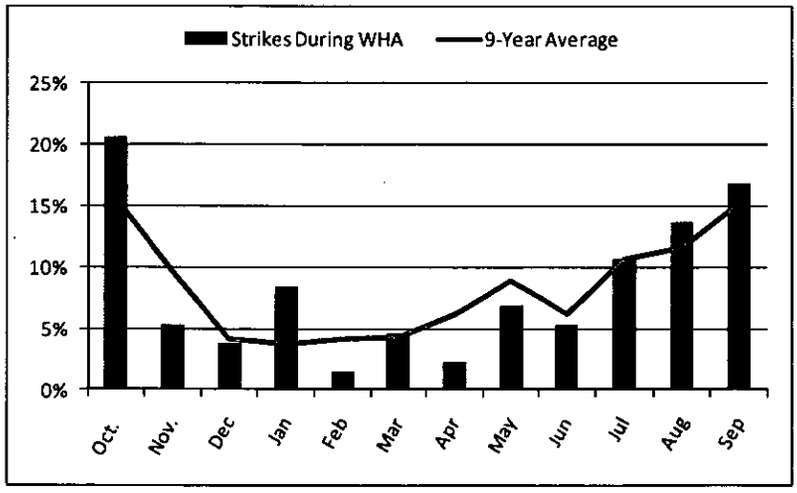

Figure 27. Percentage of LGA bird strikes by month recorded during the WHA and the 9-year average.

Runway and Phase of Flight

Of the 131 strike reports only 74 (56%) of them contained the phase of flight information. Of the bird strikes with a known phase of flight, the highest percentage (73%) occurred during the approach, followed by climb (15%), take-off run (5%), landing roll (4%), and decent (3%) (Figure 28). Runway 4/22 accounted for the most strikes (53%), followed by runway 13/31 (42%), and Taxiway B (1%) (Figure 29). The runway location was unknown for 5% of all reported bird strikes at LGA during the WHA. Runway usage statistics coupled with bird strike data can provide airport supervisors with an understanding of what conditions generate a greater chance of a bird strikes. During the WHA 67% of all departures were from runway 13/31 and 63% of all arrivals were on runway 4/22.

Analyzing runway and phase of flight information for bird strikes aids airport operations managers by indicating where to focus wildlife control measures, what type of methods to use, how and when to best disseminate wildlife hazard information to pilots, where to expect to locate bird carcasses, etc. These data also assist managers and researchers in understanding conditions unique to each runway and additional factors contributing to bird strikes. An analysis of phase of flight for airports across the United States indicates that more strikes occur during approach and landing, while more damaging strikes occur during departure and take-off (Dolbeer et al. 2009).

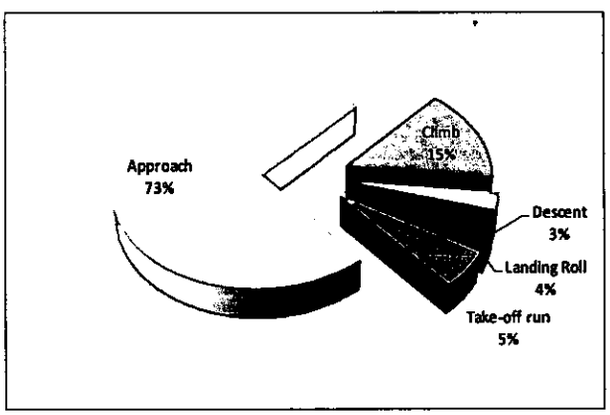

Figure 28. Phase of flight observed as a percentage of bird strikes with a known phase of flight at LGA during the WHA.

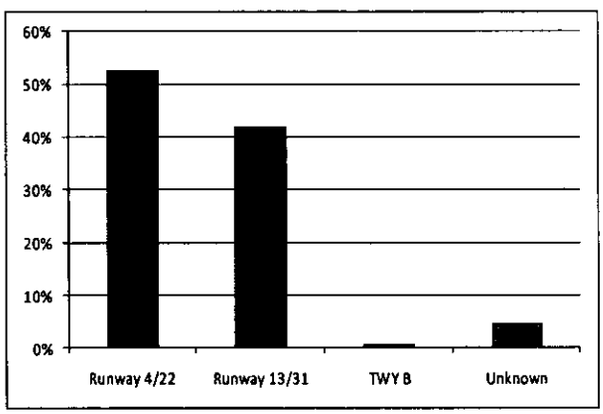

Figure 29. Percent of strikes incurred by runway or taxiway during the WHA.

Guilds Involved

Knowing the species involved in wildlife strikes helps airports prioritize the species that need to be managed for. Of the 131 strikes that occurred during the current reporting period 99 (76%) strike reports identified the species involved. Of these 99 identified strikes, 17 (17%) were of the guild other flocking birds (Figure 30). Species belonging to the guild other flocking birds were Barn Swallow, which was the most struck bird species during the WHA, Ceder Waxwing, and Horned Lark. Among other strikes where the species was identified, 16 (16%) involved gulls, 16

(16%) involved small perching birds, 13 (13%) involved wading and shorebirds, 11 (11%) involved columbids, 7 (7%) involved blackbirds and starlings, 7 (7%) involved raptors, 6 (6%) involved waterfowl, and 2 (2%) involved waterbirds. There were 2 strikes (2%) involving bats (flying mammals) and one strike (1%) involving a domesticated species of parrot. Thirty-two (24%) of all strikes were of unknown species.

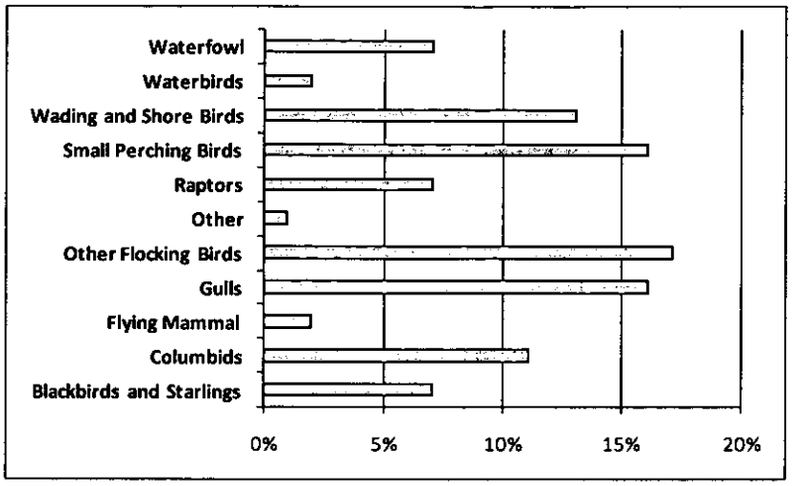

Figure 30. Percentage of each guild struck at LGA during the WHA.

Seventy-four (56%) of the 131 strike reports denoted whether there was damage or not, only one of which was actually damaging. This one strike resulted in "minor damage," a dent to the nose of the aircraft, and was caused by a gull. There were no strikes with "substantial damage" reported during the WHA. Substantial damage is described as "damage or structural failure that adversely affects the structure strength, performance, or flight characteristics of the aircraft and that would normally require major repair or replacement of the affected component" (Dolbeer et al. 2009).

Wildlife Attractants at LGA

The following attractants were identified during the WHA at LGA. Both airport environments and wildlife are dynamic entities, and attractants as well as wildlife presence change over time. Therefore, this section is a report of the situation at LGA during the time of the WHA and not a permanent identification of the wildlife situation at LGA. Future modifications to airport property or property surrounding the airport should take into consideration ramifications they may have on wildlife.

Tidal Flats

Tidal flats are found in the Bowery Bay area adjoining Elmjack Park and near the approach of runway 31. They have a rich diversity of microorganisms, fish, and plants that are attractants to birds. During low tides various species of waterfowl, gulls, and wading birds use the tidal flat areas to forage. The tidal flat located at the approach end of runway 31 is located within the RPZ

(runway protection zone). Birds going to and from the runway 31 tidal flat were observed flying over the runway and through the RPZ, putting them at a greater risk of being struck.

Runway Safety Areas (Grass)

The majority of grass surfaces on the AOA are located within the runway and taxiway safety areas. Grass can be a major attractant to several bird species, and grass height, density, and composition will determine which species will use a given area. Short manicured grass attracts geese, European Starlings and blackbirds. Tall grass, and weedy plants allowed to come to seed provide cover and forage for small perching birds, and rodent populations. During the WHA European Starlings were the most observed species using the grass areas.

Taxi Lots

There are several taxi hold areas at LGA. These large paved areas are sometimes at full capacity with taxi's waiting to pick up a fare. The taxi lots are equipped with trash receptacles and a general area for taxi drivers to eat and relax. Many taxi drivers fail to realize the consequences of feeding birds and are non-compliant to "Do not feed the birds" signs. WS documented several incidents of overflowing trash receptacles and taxi drivers feeding birds.

Hangars

Hangars can be enticing to birds because they provide cover for both nesting and loafing. Many times standing water and open trash bins can add to the attraction. Hangars 1, 3, and 5 have protruding signs that provide a perching site. WS regularly documented pigeons and starlings perched on the signs in addition to flying in and out of the hangars during the WHA.

Perching Sites

A variety of natural and man-made structures are found at LGA, landside and airside, which are attractive to birds for perching. The approach lighting for runway 13 is one example; during the WHA hundreds of Ring-billed Gulls and Double-crested Cormorants were observed perched on the lighting system. European Starlings, pigeons, gulls, and Double-crested Cormorants were the most abundant species observed perched on structures throughout the airport, landside and airside.

Ephemeral Water

Ephemeral water sources are typically shallow depressions that temporarily collect and hold water. These areas of fresh water are attractive to birds and should be eliminated. During the WHA WS identified the following ephemeral water areas on the AOA: within the deceptive area north of taxiway Y on the east side of runway 4, the east side of the runway 22 deck, and several locations along the north vehicle service road.

Bowery Bay

Bowery Bay is particularly attractive to waterfowl and gull species because of its relatively calm water and protection from the wind. Located within the Bowery Bay is a tidal flat that attracts waterfowl, gulls, and wading birds. Trees situated along the shoreline provide ideal roosting areas for European Starlings. Bowery Bay is most active during winter months when large flocks of waterfowl loaf on the water during the day.

Recommendations for Managing Wildlife Hazards at LGA

The USDA, Wildlife Services Program promotes an Integrated Wildlife Damage Management (IWDM) approach (sometimes referred to as "Integrated Pest Management" or IPM) in which a series of methods may be used or recommended to reduce wildlife damage. IWDM is described in Chapter 1, 1-7 of the ADC Program Final Environmental Impact Statement. These methods include altering cultural practices as well as habitat and behavioral modification to prevent damage. However, controlling wildlife damage may require that the offending animal(s) be killed or that populations of the species be reduced.

The following recommendations are presented as a means to continue the process of reducing or eliminating wildlife hazards observed at LGA during the WHA. The recommendations are intended to be incorporated into the current WHMP. If followed, these recommendations should result in a reduction of current wildlife hazards at LGA, **but they do not replace the need to continue to monitor for new hazards**. Following these recommendations are administrative recommendations that complement the specific-action recommendations.

Specific-action Recommendations

1. Modify Perching Structures

Birds use many structures on LGA for perching. While it's not feasible or advisable to treat every structure, there are some structures that are strong attractants and need to be treated. Light poles located throughout the parking lots are common perching sites for gulls. Other common perching sites were the runway 13 approach lighting system and the signage attached to hangars 1, 3, and 5. WS recommends that LGA install anti-perching devices in the areas most commonly used by birds. Location and situation will dictate what anti-perching devices to implement. "Daddi Long Legs" and porcupine-wire attachments are common anti-perching devices used by airports throughout the Nation.

2. Procure a Green Laser

During the WHA WS tested a green laser to disperse the Ring-billed Gulls and Double-crested Cormorants perched on the runway 13 approach lighting system. During low light conditions such as pre-dawn and post-dusk, the laser effectively dispersed the birds. WS recommends LGA procure a green laser and train operations staff to use it to disperse birds perched on the lighting system during low light conditions.

3. Continue Aggressively Dispersing Birds at the Approach Ends of Runways 22 and 31

Forty-two percent of gulls observed were at the approach ends of runways 22 and 31. Both of these areas are most active during the dawn and dusk hours. Because gulls were the second most struck guild during the WHA WS recommends LGA staff focus on these 2 areas during dawn and dusk hours, aggressively hazing gulls and incorporating lethal reinforcement. During periods of heavy gull activity and when it is feasible, monitor both locations simultaneously.

4. Continue to Monitor Tidal Flats at the Approach of Runway 31

During low tides, waterfowl and wading birds are attracted to the tidal flats. Direct the 61 staff member on duty to monitor the tidal flat area adjacent to runway 31 for loafing and feeding birds. Aggressively haze birds in this area and incorporate lethal reinforcement. Continue working with WS to investigate management strategies, such as focusing shooting on the shore near the gate 5 outflow, to deter birds from using the area.

5. Continue Integrated Canada Goose Management at Rikers Island

Integrated Canada Goose management at Rikers Island has proven to be very effective. In 2001 WS began Canada Goose egg oiling and treated 41 nests containing 223 eggs. The egg oiling has continued every year with 9 nests containing 43 eggs being treated during the WHA. In 2004 WS began conducting Canada Goose roundups removing 514 geese from the island. Goose roundups have been conducted every year with 32 geese being removed during the WHA. WS recommends continued integrated Canada Goose management at Rikers Island as well as continued goose removals at other off-airport properties in New York City, such as those identified in appendix T, along with a strong harassment and lethal control program at LGA to reduce Canada Goose observations at LGA.

6. Remove Temporary Standing Water

Whenever possible, eliminate all standing water from the airport environment. Water is an attractant to wildlife for drinking, bathing, feeding, and loafing. During the WHA there were several ephemeral water locations identified on the AOA. Most of these areas hold water for up to 2 days after a heavy rain or snow. For efficient drainage, fill in and grade grassy areas where temporary standing water occurs. Sweep temporary standing water on paved surfaces as soon as feasible. In instances where repairs or drainage improvements are not possible, harassment, depredation, exclusion, or the use of repellents may be warranted.

7. Continue Gull Nest and Egg Treatments at Rikers Island

Gulls, LGA's greatest wildlife hazard, was the second most reported guild struck and accounted for 36% of all individual birds observed during the WHA. The presence of a large-bodied gull nesting colony on the rooftops of buildings at Rikers Island is of great concern. The ability to reduce this local gull population by conducting nest and egg treatments on Rikers Island will help to reduce the local gull population. The long term goal of the egg and nest treatments on Rikers Island is to eliminate the breeding colony and lower the strike risk.

8. Continue Integrated Pigeon Management

During the WHA WS began successfully trapping pigeons at various locations around the airport. During a 3 month period of the WHA 360 pigeons were captured and euthanized. Continue to expand the trapping and shooting program, investigate anti-perching devices for pigeon loafing and roosting sites such as hangars, building ledges, and roofs.

9. Remove Old Pier Pilings from Flushing Bay

During the WHA, gulls and cormorants were regularly seen perched on the old pier pilings in Flushing Bay (Appendix Z). The pilings are partially exposed for most of the day and only at high tide are they completely submerged. If the pier pilings serve no operational purpose to LGA they need to be removed at the next best opportunity.

10. Remove Commensal Rodents from the AOA

Several random observations of raptors foraging on commensal rodents were made by WS and LGA operations staff near the end of the WHA. Work with WS to identify where the rodent populations are located on the AOA and implement a plan to remove them.

11. Continue Off-airport Wildlife Management

There are several locations within a 5-mile radius of the airport that are attractive to wildlife. Geese, gulls, and cormorants can be found at most of these areas and pose a great risk to aviation. WS recommends that LGA continue to work with New York City's Parks Department to identify management strategies, such as resident Canada Goose removals, that will minimize the dangers associated with these species. Continue to monitor all off-airport attractants to better understand the activity associated with each location near the airport. Specificially, WS recommends continued monitoring of Ferry Point Park and the North Shore Marine Transfer Station as these development projects approach their end use.

12. Continue Barn Swallow Nest Management

Barn Swallows were the most struck species of bird at LGA during the WHA. WS identified the deck structures for runways 13 and 22 as Barn Swallow nesting sites. On June 15, 2010 WS located and removed 15 Barn Swallow nests. The nest removals were conducted late in the nesting season and due to time constraints could not be replicated during the WHA. WS recommends that Barn Swallow nest management continue with increased effort.

13. Continue Having Port Authority Biologist Review New Airport Development Plans

Many times construction, landscaping, and engineering projects are executed without the consultation of a qualified wildlife biologist and wildlife attractants are inadvertently created. Continue having Port Authority Biologist review new airport development plans to prevent wildlife attractants from being created.

Administrative Recommendations

1. Continue to Improve Bird Identification

Of paramount importance to furthering our knowledge and understanding of bird strikes is correct species identification. Whenever possible (carcass reporting, strike reporting, etc.) it is important to determine and report the correct species of bird. Continue to undergo Airport Wildlife Hazards and Bird Identification training. This will help ensure that all carcasses are

correctly identified using a field identification manual. If a collected specimen is unidentifiable, send appropriate tissue samples to the Smithsonian Institution Feather Lab for proper identification (Appendix O).

2. Continue and Expand the LGA Wildlife Hazard Management Working Group

In the 2009 annual monitoring report WS recommended that LGA form a working group with the individual airlines and facilitate semi-annual meetings to ensure that the air carriers are informed of the latest information pertaining to LGA wildlife hazards. As a joint effort between WS and LGA a working group was formed (LGA Wildlife Hazard Management Working Group) and the first meeting was held on November 16, 2010. WS recommends that LGA continue and expand the working group to include other tenants at the airport that directly or indirectly influence wildlife hazards at LGA. The working group is an appropriate forum to recommend that airlines occupying hangars located on the AOA work to resolve any conflicts with wildlife pigeons and starlings.

3. Expedite Shotgun Training for New Staff

WS recommends that LGA qualify additional staff members to teach firearms training. This increase in available teachers will ensure that new 61 staff members are properly trained in a timely manner. If the 61 staff member on patrol is not shotgun trained, then another member of the operations staff, who is on the AOA and shotgun trained, should have a shotgun in their vehicle and be able to respond if the 61 calls for assistance.

4. Continue Monitoring Wildlife Abundance and Behavior at LGA

It is important to recognize that the presence and behavior of wildlife on airports is influenced by many variables that may change from year to year or season to season. Conclusions based on wildlife populations during this study are meant to be a guide and may, or may not, be consistent with subsequent years. Data from this assessment will provide a baseline for comparison in the following years.

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Appendix A: FAA Cert Alert 04-09, Relationship between FAA and USDA

C E R T A L E R T

ADVISORY * CAUTIONARY * NON-DIRECTIVE

FOR INFORMATION, CONTACT ED CLEARY, AAS-317 (202) 267-3389

DATE:	**August 30, 2004**	**No. 04-09**
TO:	**Airport Certification Program Inspectors**	
TOPIC:	**Relationship Between FAA and WS**	

CANCELLATION

Certalert 97-02, Relationship Between FAA And WS, Dated April 25, 1997, is cancelled.

PURPOSE

This Certalert clarifies the roles of, and relationship between the Federal Aviation Administration (FAA) and the United States Department of Agriculture/Animal and Plant Health Inspection Service/Wildlife Services (WS) with regards to wildlife hazards on or near airports.

FEDERAL AVIATION ADMINISTRATION

The FAA issues airport operating certificates for airports serving certain air carrier aircraft under Title 14, Code of Federal Regulations, Part 139. Section 139.337 requires certificated airports having a wildlife hazard problem to develop and implement a Wildlife Hazard Management Plan to manage and control wildlife, which present a risk to public safety, caused by aircraft collisions with wildlife. The FAA relies heavily on the assistance of WS to review and contribute to such plans.

ANIMAL DAMAGE CONTROL

The Animal Damage Control Act of March 2, 1931, (7 USC 426-426c, as amended), charges the Secretary of Agriculture with management of wildlife injurious to agricultural interests, other wildlife, or human health and safety. Further, the Secretary is authorized to cooperate with States, individuals, public and private agencies, organizations, and institutions in the control of nuisance mammals and birds, including wildlife hazards to aviation. Because of the experience, training, and background of its personnel, WS is recognized throughout the world as an expert in dealing with wildlife damage management issues. WS has an active presence in all U.S. states and territories.

MEMORANDUM OF UNDERSTANDING

A Memorandum of Understanding (MOU) between the FAA and WS (No. 12-4-71-0003-MOU) establishes a cooperative relationship between these agencies for resolving wildlife hazards to aviation.

AGENCY FUNDING

Both agencies are funded by congressional appropriations. The majority of funding for the FAA comes from the Aviation Trust Fund with the remainder coming from the general funds of the U.S. Treasury. Any revenues generated by the FAA are returned to the U.S. Treasury. WS receives a limited amount of funds from the general fund of the U.S. Treasury that allows it to perform some services for the public good. However, WS's funding is also based upon its ability to enter into contracts to provide services and receive reimbursement for the cost of the services. Legislation allows WS to collect this money and return it to the program rather than the general funds of the U.S. Treasury. Consequently, WS may enter

1

into a cooperative service agreement with an airport operator for reimbursement of services to perform a wildlife hazard assessment on an airport.

WILDLIFE HAZARD MANAGEMENT

14 CFR 139.337(b) requires the certificate holder conduct a wildlife hazard assessment, acceptable to the FAA Administrator, when any of the following events occur on or near the airport:

(b) (1) An air carrier aircraft experiences multiple wildlife strikes:

(b) (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;

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

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

The wildlife hazard assessment shall contain at least the following (14CFR 139.337(c)):

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

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

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

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

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

The certificate holder may look to WS or to private consultants to conduct the required wildlife hazard assessment. The FAA uses the wildlife hazard assessment in determining if a wildlife hazard management plan is needed for the airport. Therefore, persons having the education, training, and experience necessary to adequately assess any wildlife hazards should conduct the assessment.

Depending on the availability of resources, WS may conduct a preliminary hazard assessments at no charge to the certificate holder. The certificate holder should determine in advance if WS will charge to conduct the preliminary hazard assessment. More detailed assessments may require the certificate holder to enter into a cooperative service agreement with WS.

OSB

Benedict D. Castellano

Manager, Airport Safety and Operations

August 30, 2004

Date

Appendix B: Memorandum of Understanding between FAA and USDA

No. 12-34-71-0003-MOU

Memorandum of Understanding
between the
United States Department of Transportation
Federal Aviation Administration
and the
United States Department of Agriculture
Animal and Plant Health Inspection Service
Wildlife Services

ARTICLE 1

This Memorandum of Understanding (MOU) continues the cooperation between the Federal Aviation Administration and Wildlife Services (WS) for mitigating wildlife hazards to aviation.

ARTICLE 2

The FAA has the broad authority to regulate and develop civil aviation in the United States[1]. The FAA may issue Airport Operating Certificates to airports serving certain air carrier aircraft. Issuance of an Airport Operating Certificate indicates that the airport meets the requirements of Title 14, Code of Federal Regulations, part 139 (14 CFR 139) for conducting certain air carrier operations.

The WS has the authority to enter agreements with States, local jurisdictions, individuals, public and private agencies, organizations, and institutions for the control of nuisance wildlife[2]. The WS also has the authority to charge for services provided under such agreements and to deposit the funds collected into the accounts that incur the costs[3].

[1] Federal Aviation Act of 1958, 49 U.S.C. § 40101, et. seq.

[2] The Animal Damage Control Act of March 2, 1931, as amended, 46 Stat. 1468; 7 U.S.C. 426 – 426b.

[3] The Rural Development, Agriculture, and Related Agencies Appropriations Act of 1988, as amended, 426c to U.S.C. 426 – 426b.

14 CFR 139.337 requires the holder of an Airport Operating Certificate (certificate holder) to conduct a wildlife hazard assessment (WHA) when specific events occur on or near the airport. A wildlife management biologist who has professional training and/or experience in wildlife hazard management at airports, or someone working under the direct supervision of such an individual, must conduct the WHA required by 14 CFR 139.337. The FAA reviews all WHAs to determine if the certificate holder must develop and implement a wildlife hazard management plan (WHMP) designed to mitigate wildlife hazards to aviation on or near the airport. These regulations also require airport personnel implementing an FAA-approved WHMP to receive training conducted by a qualified wildlife damage management biologist.

ARTICLE 3

The FAA and the WS agree to the following.

a. The WS has the professional expertise, airport experience, and training to provide support to assess and reduce wildlife hazards to aviation on and near airports. The WS can also provide the necessary training to airport personnel.

b. Most airports lack the technical expertise to identify underlying causes of wildlife hazard problems. They can control many of their wildlife problems following proper instruction in control techniques and wildlife species identification from qualified wildlife management biologists.

c. Situations arise where control of hazardous wildlife is necessary on and off airport property (i.e., roost relocations, reductions in nesting populations, and removal of wildlife). This often requires the specialized technical support of WS personnel.

d. The FAA or the certificate holder may seek technical support from WS to lessen wildlife hazards. This help may include, but is not limited to, conducting site visits and WHAs to identify hazardous wildlife, their daily

and seasonal movement patterns and habitat requirements. WS personnel may also provide:

i. support with developing WHMPs including recommendations on control and habitat management methods designed to minimize the presence of hazardous wildlife on or near the airport;

ii. training in wildlife species identification and the use of control devices;

iii. support with managing hazardous wildlife and associated habitats; and

iv. recommendations on the scope of further studies necessary to identify and minimize wildlife hazards.

e. Unless specifically requested by the certificate holder, WS is not liable or responsible for development, approval, or implementation of a WHMP required by 14 CFR 139.337. Development of a WHMP is the responsibility of the certificate holder. The certificate holder will use the information developed by WS from site visits and/or conducting WHA in the preparation of a WHMP.

f. The FAA and WS agree to meet at least yearly to review this agreement, identify problems, exchange information on new control methods, identify research needs, and prioritize program needs.

ARTICLE 4

The WS personnel will advise the certificate holder of their responsibilities to secure necessary permits and/or licenses for control of wildlife. This will ensure all wildlife damage control activities are conducted under applicable Federal, State, and local laws and regulations.

ARTICLE 5

This MOU defines in general terms, the basis on which the parties will cooperate and does not constitute a financial obligation to serve as a basis for expenditures. Request for technical, operational, or research assistance that requires cooperative or reimbursable funding will be completed under a separate agreement.

ARTICLE 6

This MOU will supersede all existing MOUs, supplements, and amendments about the conduct of wildlife hazard control programs between WS and the FAA.

ARTICLE 7

Under Section 22, Title 41, U.S.C., no member of or delegate to Congress will be admitted to any share or part of this MOU or to any benefit to arise from it.

ARTICLE 8

This MOU will become effective on the date of final signature and will continue indefinitely. This MOU may be amended by agreement of the parties in writing. Either party, on 60 days advance written notice to the other party, may end the agreement.

_____ OSB Woodie Woodward _____ Date ___ June 20, 2005 _____
Associate Administrator for Airports
Federal Aviation Administration

_____ OSB William H Clay _____ Date ___ June 27, 2005 _____
Deputy Administrator for Wildlife Services
Animal and Plant Health Inspection Service

Appendix C: FAA Cert Alert 97-09, Wildlife Hazard Management Plan Outline

CERTALERT

ADVISORY * CAUTIONARY * NON-DIRECTIVE

FOR INFORMATION, CONTACT AIRPORT WILDLIFE SPECIALIST, AAS-317 (202) 267.3389

DATE: **17 November, 1997** **No. 97-09**

TO: **AIRPORT CERTIFICATION SAFETY INSPECTORS**

TOPIC: **WILDLIFE HAZARD MANAGEMENT PLAN OUTLINE**

An increasing number of questions are being received concerning the preparation and content of a FAA approved airport wildlife hazard management plan. Title 14 Code of Federal Regulations, part 139.337, *Wildlife Hazard Management*, prescribes the specific issues that a wildlife hazard management plan must address for FAA approval and inclusion in the ACM.

A wildlife hazard assessment, defined as an ecological study in part 139.337 (a), conducted by a wildlife damage management biologist, provides the scientific basis for the development , implementation, and refinement of a wildlife hazard management plan. Though parts of the wildlife hazard assessment may be incorporated directly in the wildlife hazard management plan, they are two separate documents. Part of the wildlife hazard management plan can be prepared by the biologist(s) who conducts the wildlife hazard assessment. However, some parts can be prepared only by the airport. For example, airport management assigns airport personnel responsibilities, commits airport funds, and purchases equipment and supplies. Airport management may request the wildlife biologist to review the finished plan.

The wildlife damage management biologist's primary responsibilities are:

- to provide information on the wildlife attractants that have been identified on or near the airport,
- to identify wildlife management techniques,
- to prioritize appropriate mitigation measures,
- to recommend necessary equipment and supplies, and
- to identify training requirements for the airport personnel who will implement the wildlife hazard management plan.

It is often helpful for the airport manager to appoint a Wildlife Hazard Management Group that has responsibility for the airport's wildlife management program. The biologist should assist the Wildlife Hazard Management Group with periodic evaluations of the plan and make recommendations for further refinements or modifications.

The following details the requirements of part 139.337 (e) and (f) and how those requirements should be addressed in a FAA approved wildlife hazard management plan.

1

FAR 139.337 REQUIREMENTS	WILDLIFE HAZARD MANAGEMENT PLAN CONTENTS
139.337(e). The (wildlife hazard management) plan shall include at least the following :	The wildlife hazard management plan must include, and/or identify the responsibility of, and/or actions to be taken, –
139.337(e)(1). The persons who have authority and responsibility for implementing the plan.	Specific responsibilities for various sections of the wildlife hazard management plan must be assigned or delegated to various airport departments such as: Airport Director Operations Dept. Maintenance Dept. Security Dept. Planning Dept. Finance Dept. Wildlife Coordinator Wildlife Hazard Group Local law enforcement authorities that provide wildlife law enforcement and other support also have a role to play: State Fish and Game U. S. Fish and Wildlife Service City police County Sheriff
139.337(e)(2). Priorities for needed habitat modification and changes in land use identified in the ecological study with target dates for completion.	Attractants (food, cover, and water) identified in wildlife hazard assessment, with priorities for mitigation and completion dates. Attractants can be grouped by areas and ownership. (A list of completed habitat modification or other projects designed to reduce the wildlife/aircraft strike potential can be included, and provides a history of work already accomplished.) Airport property: Aircraft Operations Area (AOA). Within 2 miles of aircraft movement areas. Within 5 miles of aircraft movement areas. Airport structures Non-airport property Within 2 miles of aircraft movement areas. Within 5 miles of aircraft movement areas. Structures

FAR 139.337 REQUIREMENTS	WILDLIFE HAZARD MANAGEMENT PLAN CONTENTS
Habitat/population management recommendations	Management plans for specific areas, attractants, species, or situations, as identified in ecological study (wildlife hazard assessment). This section may include any or all of the following: Food/Prey-base Management Rodents Earthworms Insects Other prey Trash and debris - handling, storage. Handouts Species specific population management i.e. deer, gulls, geese, coyotes Repelling Exclusion Removal Habitat Management Vegetation Management AOA vegetation Drainage ditch(s) vegetation Landscaping Agriculture Water Management Permanent Water Wetlands Canals/drainage ditches Detention/retention ponds Sewage (glycol) treatment ponds Other water areas Ephemeral water Runways, taxiways, & aprons. Other wet areas Airport Buildings Airfield structures Abandoned structures Terminal Airport construction Resource Protection Exclusion Repelling Chemical Auditory Visual

FAR 139.337 REQUIREMENTS	WILDLIFE HAZARD MANAGEMENT PLAN CONTENTS
139.337(e)(3). Requirements for and, where applicable, copies of local, state and Federal wildlife control permits.	Wildlife can be protected at all levels of government – city, county, state, federal, or may not be protected at all, depending on location and species. Therefore the section should address the specific species involved and their legal status. Wildlife management permitting requirements and procedures (spelled out) Federal - 50 CFR parts 1 to 199. State - Fish and Game Code (or equivalent) City, county - ordinances If pesticides are to be used, then the following are also needed. Pesticide use regulations Federal- [Federal Insecticide, Fungicide, and Rodenticide Act, as amended (FIFRA)] State (varies by state) City/county (if applicable) Pesticide use licensing requirements State regulations
139.337(e)(4). Identification of resources to be provided by the certificate holder for implementation of the plan.	Lists identifying what the airport will supply in terms of: Personnel Time Equipment, (i.e. radios, vehicle(s), guns, traps). Supplies (i.e. shellcrackers, mylar tape) Wildlife Patrol Personnel Vehicle(s) Equipment Supplies Pesticides Restricted/non-restricted Application equipment Sources of Supply
139.337(e)(5). Procedures to be followed during air carries operations, including at least...	
139.337(e)(5)(i). Assignment of personnel responsibilities for implementing the procedures;	Who, when, what circumstances Wildlife Patrol Wildlife Coordinator Operations Dept. Maintenance Dept. Security Dept. Air Traffic Control
139.337(e)(5)(ii). Conduct of physical inspections of the movement areas and other areas critical to wildlife hazard management sufficiently in advance of air carrier operations to allow time for wildlife controls to be effective;	Who, when, how, what circumstances -- Runway(s), taxiway(s), and ramp(s) sweeps, AOA monitoring Un-mitigated attractants

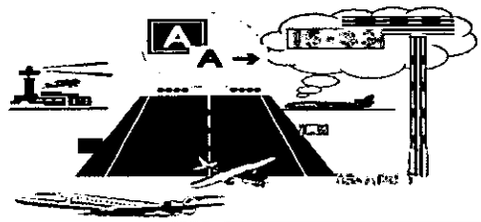
FAR 139.337 REQUIREMENTS	WILDLIFE HAZARD MANAGEMENT PLAN CONTENTS
139.337(e)(5(iii). Wildlife control measures;	Who, what circumstances, when, how is the Wildlife Patrol contacted. Wildlife Patrol Bird Control repel capture kill Mammal control repel capture kill
139.337(e)(5)(iv). Communication between wildlife control personnel and any air traffic control tower in operation at the airport.	Communication procedures Training in communication procedures Equipment needed Radios, mobile phones, etc. Lights
139.337(e)(6). Periodic evaluation and review of the wildlife hazard management plan for:	At a minimum the airport operator should hold annual meetings, or after an event described in 139.337(a)(1 to 3), with representatives from all airport departments involved in the airport's wildlife hazard management efforts and the wildlife damage management biologist who did the original ecological study (wildlife hazard assessment).
139.337(e)(6)(i). Effectiveness in dealing with the wildlife hazard;	Input from all airport departments, ATC, wildlife biologist, as to effectiveness of plan. Good records are a must for evaluating the effectiveness of a program. Therefore need to know what records are kept, by whom, how, where, and when.
139.337(e)(6(ii). Indications that the existence of the wildlife hazard, as previously described in the ecological study, should be reevaluated.	Wildlife seen on AOA Request for wildlife dispersal from Tower, pilots, or others Wildlife strike database and other records. Good records are a must.
139.337(e)(7). A training program to provide airport personnel with the knowledge and skills needed to carry out the wildlife hazard management plan required by paragraph (d) of this section.	Wildlife Patrol personnel training All airport personnel - wildlife hazard awareness training Pesticide use training and certification

FAR 139.337 REQUIREMENTS	WILDLIFE HAZARD MANAGEMENT PLAN CONTENTS
139.337(f). Notwithstanding the other requirements of this section, each certificate holder shall take immediate measures to alleviate wildlife hazards whenever they are detected.	Although not required as part of wildlife hazard management plan, this information should be included to fulfill part 139 requirements. Procedures and personnel responsibilities for notification regarding new or immediate hazards by and to: Wildlife Patrol Operations NOTAM issuance/cancellation criteria and procedures Maintenance Security Air Traffic Control Others Rapid response procedures for new or immediate hazards by: Wildlife Patrol Operations Maintenance Security Air Traffic Control Others
139.337(g). FAA Advisory Circulars in the 150 series contain standards and procedures for wildlife hazard management at airports which are acceptable to the Administrator.	AC 150/5200--33 Hazardous Wildlife Attractants on or Near Airports.

OSB
Benedict D. Castellano, Manager
Airport Safety and Compliance Branch

Appendix D: Bulliten 2010-03, WHMP Review Checklist and Review Worksheet

AIRPORT CERTIFICATION INFORMATION BULLETIN



Eastern Region
Federal Aviation Administration
Airports Division, AEA-620
Safety & Standards Branch
1 Aviation Plaza,
Jamaica NY 11434

AEA-03-10
2/24/2010

Bulletin: 2010-03
Subject: Wildlife Hazard Management Plan (WHMP) Review Checklist
Issue Date: February 24, 2010
Revised Date:

Prepared by: Jayme Patrick, Airport Certification Safety Inspector/Wildlife Biologist
Phone: 718-553-3091

Contact: Jayme Patrick
Phone: 718-553-3091

Application: This bulletin is being sent to all Part 139 Certificated Airports required to implement a WHMP or who currently have a WHMP approved as part of their Airport Certification Manual (ACM).

Background: 14 CFR Part 139 section 337 (e) requires a Wildlife Hazard Management Plan when needed. The certificate holder must formulate and implement a plan using the wildlife hazard assessment as a basis to demonstrate effective airport mitigation and management of wildlife hazards to aviation. The checklist provides a standard format to ensure efficient and effective inspection of each subsection of the 139.337 regulation through the airport's required annual review of the WHMP and the annual Airport Certification Safety Inspection. The following checklist and the accompanying worksheet for the airport's annual review provide guidance for compliance with the requirements of 14 CFR 139.337.

Action Required: Please distribute to all appropriate Airport personnel.

Attachments: Wildlife Hazard Management Plan Checklist
Wildlife Hazard Management Plan Annual Review Worksheet

Wildlife Hazard Management Plan (WHMP) Checklist
14 CFR 139.337 (f) The plan must include at least the following:

Airport Name: Inspection/ Review Date:		Inspector/ Reviewer Name:
Requirement	✓	**Comments to meet requirement**
WHMP Contents		
Brief introduction describes the greatest hazards identified in the Wildlife Hazard Assessment (WHA; ie, the most hazardous species and/or the highest priority attractants/ habitats); See footnote 1 for more info.		
Plan follows the order of the 139 regulation, with section headings include the regulation language as provided on this checklist		
Procedures in the Plan are concise and specific including who, what, when, and why, etc		
"(1) A list of the individuals having authority and responsibility for implementing each aspect of the plan." Decision-making roles and responsibilities for implementing the wildlife hazard management plan including: Airport Director, Wildlife Biologist and/or Wildlife Coordinator, Operations Dept., Maintenance Dept., Security Dept., Planning Dept., Finance Dept., ,		
Designation of responsibility for determining and responding to wildlife hazard conditions, for all hours of airport operation. [Ref 139.337 (a), immediate actions, and 139.339c 7, condition reporting, and see 139.337 (f)(5)(iii)]		
Reference to any mutual agreements on hazardous wildlife attractant coordination such as Wildlife Hazard Working Group membership and mission, agreements with planning and zoning organizations and/or cooperating organizations, cooperative programs with public agencies.		

Airport Name: Inspection/ Review Date:		Inspector/ Reviewer Name:
Requirement	✓	**Comments to meet requirement**
"(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." As prioritized in the Wildlife Hazard Assessment or based on ongoing data collection and analysis, long-term species-specific or attractant-specific measures with target dates for completion. Examples: installation of deer-proof fence, grass management strategy, removal of specific attractants, trapping or other population control programs, off-airport cooperative management programs; See footnote 2 for more info Note: direct wildlife management (ie, hazing programs) should be listed in (5)iii		
"(3) Requirements for and, where applicable, copies of local, State, and Federal wildlife control permits." If lethal control or use of pesticides is part of this Plan, appropriate permits are needed and applicable regulations must be cited. Note: Citation of applicable regulations only; transcript of regulations is not necessary		
If wildlife control permits are in place, copies of all permits must be included in ACM and must be current.		
"(4) Identification of resources that the certificate holder will provide to implement the plan." Lists identifying what the airport will supply in terms of: personnel; time; equipment (i.e. radios, vehicle(s), guns, traps); supplies (i.e. shellcrackers, mylar tape);; vehicle(s); sources of supply		
"(5) Procedures to be followed during air carrier operations that at a minimum includes—(i) Designation of personnel responsible for implementing the procedures;" Wildlife patrol staffing, position titles, hours of availability, hours of airport operation.		

Airport Name: Inspection/ Review Date:		Inspector/ Reviewer Name:
Requirement	✓	Comments to meet requirement
"(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;" Routine inspection procedures including documentation of wildlife inspections and observations. These should include daily runway sweeps sufficient to detect and retrieve carcasses (requires several minutes of runway access)[Ref 139.327 (a) 1-3, Self-Inspection Program, if applicable.]		
"(iii) Wildlife hazard control measures" Procedures for continuous monitoring of wildlife conditions on the airfield during times, seasons, and conditions with potential for wildlife activity as identified in the WHA.		
Wildlife dispersal procedures including species- or guild-specific procedures for hazardous species identified in the WHA.		
Specific actions and/or criteria for alternate courses of action for unusually heavy wildlife activity, such as due to weather or migration, and for at-large animals such as loose dogs, livestock, or deer on AOA) [Ref 139.337 (a), immediate actions."]		
Any special procedures for wildlife control during periods of heavy air traffic.		
"(iv) Ways to communicate effectively between personnel conducting wildlife control or observing wildlife hazards and the air traffic control tower." Training in communication procedures and airfield familiarization [Ref 139.303]		
Equipment needed, such as radios, cellular phones, lights		
Reference to mutually agreed-upon procedures for wildlife dispersal that may require runway access or may impact air traffic.		
Procedures for immediate coordination and response to pilot-reported wildlife strikes or observations		
Procedures for short-term heavy wildlife activity requiring air carrier notification. [Ref 139.339c 7, condition reporting]		

Airport Name: Inspection/ Review Date:		Inspector/ Reviewer Name:
Requirement	✓	**Comments to meet requirement**
"(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." One or more meetings to formally review progress and challenges in implementing the Plan, as documented on the attached worksheet or similar documentation		
Any standardized monitoring procedures (ie, wildlife surveys)		
Procedures for documenting communication, coordination, and prevention of off-airport attractants.		
Procedures for reviewing and analyzing data (strikes, observations and control actions, and standardized surveys) frequently and long-term, such as for annual review.		
"(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." Certification that the training curriculum and instructor meet the requirements of Advisory Circular 150/5200-36, Appendix C		
Procedures to document training participation [Ref 139.303 (c)]		
Training and documentation procedures to meet any additional training requirements, listed in (f)(3), such as species identification, firearms safety, or pesticide application		

Airport Name: Inspection/ Review Date:		Inspector/ Reviewer Name:
Requirement	✓	Comments to meet requirement
Annual 139 inspection items		Items on this page to be verified during the annual Part 139 Airport Certification Safety Inspection [Ref 139.301, Records]
WHMP includes items listed in WHMP Contents below		
Documentation of coordination off-airport land uses		
Wildlife control permits		
Wildlife control permit annual reports		
Documentation of wildlife patrols and control measures (ie, Wildlife Observation and Control Log, airport self-inspection datasheets, perimeter fence patrol records)		
Wildlife control supplies and equipment pr 139.337 (f) (4)		
Wildlife strike reports and recordkeeping		
Documentation of ATCT and/or mutual procedures for implementing 139.337 (a), immediate actions; 139.337 (f)(5)(iii), wildlife hazard control measures; and 139.339 (c)(7), communication of wildlife hazard conditions to air carriers		
Continued monitoring survey data sheets if included in 139.337(f)(6) review and evaluation of the WHMP		
Documentation of WHMP annual review per attached worksheet or comparable		
Documentation of annual wildlife hazard management training dates and attendees dates [Ref 139.301, Records, and 139.303(c), Personnel training, and 139.337 (f)(7), training]		
Certification of instructor qualifications and curriculum requirements per 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.		
Documentation of additional training required by 139.337 (f) (3) legal requirements, if applicable, such as wildlife species identification, firearms safety, pesticide application.		

Footnotes

1: A wildlife hazard assessment, defined in part 139.337 (c), conducted by a wildlife damage management biologist, provides the scientific basis for the development, implementation, and refinement of a wildlife hazard management plan. Though parts of the wildlife hazard assessment may be incorporated directly in the wildlife hazard management plan, they are two separate documents. Part of the wildlife hazard management plan can be prepared by the biologist(s) who conducts the wildlife hazard assessment. However, some parts can be prepared only by the airport. For example, airport management assigns airport personnel responsibilities, commits airport funds, and purchases equipment and supplies. Airport management may request the wildlife biologist to review the finished plan.
The wildlife damage management biologist's primary responsibilities are:

- to provide information on the wildlife attractants that have been identified on or near the airport,
- to identify wildlife management techniques,
- to prioritize appropriate mitigation measures,
- to recommend necessary equipment and supplies, and
- to identify training requirements for the airport personnel who will implement the wildlife hazard management plan.

It is often helpful for the airport manager to appoint a Wildlife Hazard Management Group that has responsibility for the airport's wildlife management program. The biologist should assist the Wildlife Hazard Management Group with periodic evaluations of the plan and make recommendations for further refinements or modifications.

2: The FAA/USDA Manual Wildlife Hazard Management at Airports, available at http://wildlife.pr.erau.edu/EnglishManual/2005_FAA_Manual_complete.pdf, provides additional information on the types of wildlife hazard management measures that may be included in a WHMP. Chapters 6 and 9 contain information about long term and short term, species-specific control measures to be implemented on and off of airport property. Examples of such measures include habitat modification, resource protection, repelling/exclusion, and removal. Specific measures discussed include:

Food/prey management:
- Rodents
- Earthworms
- Insects
- Grain/seeds
- Garbage—handling, storage
- Handouts (feeding wildlife)

Vegetation management:
- AOA vegetation
- Drainage ditch vegetation
- Landscaping
- Agriculture

Water management:
- Permanent Water
- Wetlands
- Canals/ditches/streams
- Holding ponds
- Sewage (glycol) treatment ponds
- Other water areas
- Ephemeral water
    - o Runways, taxiways, aprons
    - o Other wet areas

Airport buildings:
- Airfield structures
- Abandoned structures
- Terminal
- Airport construction

References

Advisory Circular 150/5200-33B, Hazardous Wildlife Attractants on or Near Airports
http://www.faa.gov/airports/resources/advisory_circulars/media/150-5200-33B/150_5200_33B.pdf

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
http://www.faa.gov/airports/resources/advisory_circulars/media/150-5200-36/150_5200_36.pdf

FAA/ USDA Manual: Wildlife Hazard Management at Airports, Chapter 6, Developing Control Programs
http://wildlife.pr.erau.edu/EnglishManual/2005_FAA_Manual_complete.pdf

Wildlife Hazard Management Plan Review

Airport: _____

On _____ we conducted the review the Wildlife Hazard Management Plan, as per the requirements of 139.337(f) (6).

Signature of Airport Manager/Director (or designee)

_____

General Information/ Significant findings:

- **Name of review coordinator**- (Person facilitating discussions and writing plan updates; usually the Wildlife Coordinator, Wildlife Biologist, or Airport Manager) & **Participating airport personnel and representatives of other organizations.** (As listed in 139.337(f)(1); may include members of airport management, the wildlife coordinator, airport operations/ wildlife staff, wildlife Biologist who conducted Wildlife Hazard Assessment, members of the wildlife hazard working group, etc.)
  - *Include sign in sheet of meeting attendees*

- **Summary and review of results of annual data analysis**- Example: ranking of highest priority species based on the analysis. (Per standardized continual monitoring procedures of 139.337(f)(6); data for analysis may include logs of wildlife strikes, wildlife observations and control measures, standardized wildlife monitoring surveys, and wildlife data from off-airport sites of concern.)

- **Summary of progress and challenges in management of the most significant wildlife attractants and/or habitats on or near the airport** - (Review of habitat management priorities listed in 139.337(f)(2))

- **Summary of progress and challenges in direct wildlife hazard management (i.e., dispersals, strike response) on the airfield** - (Review of procedures to be followed during air carrier operations as listed in 139.337(f)(5))

- **Changes or updates to Wildlife Hazard Management Plan to include but not limited to changes to management strategies, changes to airports training program, etc.**

*The wildlife hazard working group is made up of representatives that own and/or manage properties, attractants, and habitats for wildlife (both on- and off- airport property) that impact airport safety. The function of the wildlife hazard working group, or of the airport's relationships with such representatives, is to cooperatively address the airport's specific wildlife hazard issues. During the annual review of the Plan, the effectiveness in addressing the issues should be evaluated, with any needed changes documented.

Appendix E: LGA's Federal Depredation Permit

DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

3-201
(1/97)

FEDERAL FISH AND WILDLIFE PERMIT

2. AUTHORITY-STATUTES
16 USD 703-712

REGULATIONS
50 CFR Part 13
50 CFR 21.41

1. PERMITTEE

La GUARDIA AIRPORT
PORT AUTHORITY OF NY & NJ, HANGER 7C 3RD FLOOR
ATTN: DOUG STEARNS
FLUSHING, NY 11371

3. NUMBER
MB719627-2
AMENDMENT

4. RENEWABLE
YES
NO

5. MAY COPY
YES
NO

6. EFFECTIVE
08/19/2010

7. EXPIRES
03/31/2011

8. NAME AND TITLE OF PRINCIPAL OFFICER *(If #1 is a business)*
DOUG STEARNS
MANAGER OF AIRPORT OPERATIONS

9. TYPE OF PERMIT
DEPREDATION AT AIRPORTS

10. LOCATION WHERE AUTHORIZED ACTIVITY MAY BE CONDUCTED
WITHIN THE PROPERTY BOUNDARIES OF LA GUARDIA AIRPORT, FLUSHING, NY
TEL: 718-533-3402

11. CONDITIONS AND AUTHORIZATIONS.

A. GENERAL CONDITIONS SET OUT IN SUBPART D OF 50 CFR 13, AND SPECIFIC CONDITIONS CONTAINED IN FEDERAL REGULATIONS CITED IN BLOCK #2 ABOVE, ARE HEREBY MADE A PART OF THIS PERMIT. ALL ACTIVITIES AUTHORIZED HEREIN MUST BE CARRIED OUT IN ACCORD WITH AND FOR THE PURPOSES DESCRIBED IN THE APPLICATION SUBMITTED. CONTINUED VALIDITY, OR RENEWAL, OF THIS PERMIT IS SUBJECT TO COMPLETE AND TIMELY COMPLIANCE WITH ALL APPLICABLE CONDITIONS, INCLUDING THE FILING OF ALL REQUIRED INFORMATION AND REPORTS.

B. THE VALIDITY OF THIS PERMIT IS ALSO CONDITIONED UPON STRICT OBSERVANCE OF ALL APPLICABLE FOREIGN, STATE, LOCAL OR OTHER FEDERAL LAW.

C. VALID FOR USE BY PERMITTEE NAMED ABOVE.

Amendment 2 in Bold - D. You are authorized to take, temporarily possess, and transport the migratory birds specified below to relieve or prevent injurious situations impacting public safety. All take must be done as part of an integrated wildlife damage management program that emphasizes nonlethal management techniques. You may not use this authority for situations in which migratory birds are merely causing a nuisance.

(1) The following may be lethally taken: by means of shooting:
- (a) 200 of each: Atlantic brant and Canada Geese,
- (b) 500 of each: Ring-billed, Laughing, Great Black-backed and Herring Gulls,
- (c) 100 of each: Mallards, American Black Duck, **Barn Swallows**, Double-crested cormorants, Mourning Doves.
- (d) 25 of each: Ruddy Duck and Killdeer
- **(e) 10 Ospreys**
- (f) 5 of each Great Egrets, 5 Great Blue Herons
- **(g) 200 Barn Swallow NEST and eggs contained within**
- (h) 50 Killdeer NEST and eggs contained within

State restrictions: Peregrine Falcons and other bird species are listed as Endangered/ Threatened by New York State law and therefore may not be taken, unless otherwise authorized by the New York Department of Environmental Conservation.

E. You are authorized in emergency situations only to take, trap, or relocate any migratory birds, nests and eggs, including

ADDITIONAL CONDITIONS AND AUTHORIZATIONS ALSO APPLY

12. REPORTING REQUIREMENTS

ANNUAL REPORT DUE WITH NEXT RENEWAL FORM
USFWS Forms can be found at: <http://www.fws.gov/migratorybirds/mbpermits.html>

ISSUED BY

TITLE
CHIEF, MIGRATORY BIRD PERMIT OFFICE - REGION 5

DATE
08/19/2010

species that are not listed in Condition D (except bald eagles, golden eagles, or endangered or threatened species) when the migratory birds, nests, or eggs are posing a direct threat to human safety. A direct threat to human safety is one which involves a threat of serious bodily injury or a risk to human life.

You must report any emergency take activity to your migratory bird permit issuing office (Hadley, Ma, by fax to: 413-253-8424), within 72 hours after the emergency take action. Your report must include the species and number of birds taken, method, and a complete description of the circumstances warranting the emergency action.

F. You are authorized to salvage and temporarily possess migratory birds found dead or taken under this permit for (1) disposal, (2) transfer to the U.S. Department of Agriculture, (3) diagnostic purposes, (4) purposes of training airport personnel, (5) donation to a public charity (those suitable for human consumption), or (6) donation to a public scientific or educational institution as defined in 50 CFR 10.12. Any dead bald eagles or golden eagles salvaged must be reported within 48 hours to the National Eagle Repository at (303) 287-2110 and to the migratory bird permit issuing office by fax to 413-253-8424. The Repository will provide directions for shipment of these specimens.

G. You may not salvage and must immediately report to U.S. Fish and Wildlife Service Law Enforcement any migratory birds that appear to have been poisoned, shot, or otherwise injured as the result of criminal activity.

H. You may use the following methods of take: (1) **shotgun or other firearms by USDA only**; (2) nets; (3) registered animal drugs (excluding nicarbazin), pesticides and repellents; (4) falconry abatement; and (5) legal lethal and live traps (excluding pole traps). Birds caught live may be euthanized or transported and relocated to another site approved by the appropriate State wildlife agency, if required. When using firearms, you may use rifles or air rifles to shoot any bird when you determine that the use of a shotgun is inadequate to resolve the injurious situation. The use of any of the above techniques is at your discretion for each situation.

I. You may temporarily possess and stabilize sick and injured migratory birds and immediately transport them to a federally licensed rehabilitator for care.

J. The following subpermittees are authorized: **Supervisory staff of the Port Authority of NY & NJ**

In addition, any other person who is (1) employed by or under contract to you for the activities specified in this permit, or (2) otherwise designated a subpermittee by you in writing, may exercise the authority of this permit.

K. You and any subpermittee(s) **MUST** comply with the attached Standard Conditions for Migratory Bird Depredation Permits

For suspected illegal activity, immediately contact USFWS Law Enforcement at: Valley Stream, NY: 516-825-3950

Standard Conditions
Migratory Bird Depredation Permits
50 CFR 21.41

All of the provisions and conditions of the governing regulations at 50 CFR part 13 and 50 CFR part 21.41 are conditions of your permit. The standard conditions below are additional provisions and conditions of your permit. Failure to comply with the conditions of your permit could be cause for suspension of the permit. If you have questions regarding these conditions, refer to the regulations or, if necessary, contact your migratory bird permit issuing office. For copies of the regulations and forms, or to obtain contact information for your issuing office, visit: www.fws.gov/permits/mbpermits/birdbasics.html.

1. To minimize the lethal take of migratory birds, you are required to continually apply non-lethal methods of harassment in conjunction with lethal control.

2. Shotguns used to take migratory birds can be no larger than 10-gauge and must be fired from the shoulder. You must use nontoxic shot listed in 50 CFR 20.21(j).

3. You may not use blinds, pits, or other means of concealment, decoys, duck calls, or other devices to lure or entice migratory birds into gun range.

4. You are not authorized to take, capture, harass, or disturb bald eagles or golden eagles, or species listed as threatened or endangered under the Endangered Species Act found in 50 CFR 17, without additional authorization.

   For a list of threatened and endangered species in your state, visit the U.S. Fish and Wildlife Service's Threatened and Endangered Species System (TESS) at: www.fws.gov/endangered.

5. If you encounter a migratory bird with a Federal band issued by the U.S. Geological Survey Bird Banding Laboratory, Laurel, MD, report the band number to 1-800-327-BAND or www.reportband.gov.

6. This permit does not authorize take or release of any migratory birds, nests, or eggs on Federal lands without additional prior written authorization from the applicable Federal agency.

7. This permit does not authorize take or release of any migratory birds, nests, or eggs on State lands or other public or private property without prior written permission or permits from the landowner or custodian.

8. Unless otherwise specified on the face of the permit, migratory birds, nests, or eggs taken under this permit must be:
   (a) turned over to the U.S. Department of Agriculture for official purposes,
   (b) donated to a public educational or scientific institution as defined by 50 CFR 10, or
   (c) completely destroyed by burial or incineration.

9. Subpermittees must be at least 18 years of age. As the permittee, you are legally responsible for ensuring that your subpermittees are adequately trained and adhere to the terms of your permit. You are responsible for maintaining current records of who you have designated as a subpermittee, including copies of letters you have provided.

10. You and any subpermittees must carry a legible copy of this permit and display it upon request whenever you are exercising its authority.

11. You must maintain records as required in 50 CFR 13.46 and 50 CFR 21.41. All records relating to the permitted activities must be kept at the location indicated in writing by you to the migratory bird permit issuing office.

12. Acceptance of this permit authorizes the U.S. Fish and Wildlife Service to inspect any wildlife held, and to audit or copy any permits, books, or records required to be kept by the permit and governing regulations.

13. You may not conduct the activities authorized by this permit if doing so would violate the laws of the applicable State, county, municipal or tribal government or any other applicable law.

(DPRD - 4/7/2008)

Appendix F: 50 CFR § 21.27: Special Purpose Permits

(e) *What are the OMB information collection requirements of the permit program?* OMB has approved the information collection requirements of the permit and assigned clearance number 1018–0099. Federal agencies may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. We will use the information collection requirements to administer this program and in the issuance and monitoring of these special permits. We will require the information from State wildlife agencies responsible for migratory bird management in order to obtain a special Canada goose permit, and to determine if the applicant meets all the permit issuance criteria, and to protect migratory birds. We estimate the public reporting burden for this collection of information to average 8 hours per response for 45 respondents (States), including the time for reviewing instructions, gathering and maintaining data needed, and completing and reviewing the collection of information. Thus, we estimate the total annual reporting and record-keeping for this collection to be 360 hours. States may send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Service Information Collection Clearance Officer, Fish and Wildlife Service, ms 224–ARLSQ, 1849 C Street N.W., Washington, DC 20240, or the Office of Management and Budget, Paperwork Reduction Project 1018–0099, Washington, DC 20503.

[64 FR 32774, June 17, 1999]

§ 21.27 Special purpose permits.

Permits may be issued for special purpose activities related to migratory birds, their parts, nests, or eggs, which are otherwise outside the scope of the standard form permits of this part. A special purpose permit for migratory bird related activities not otherwise provided for in this part may be issued to an applicant who submits a written application containing the general information and certification required by part 13 and makes a sufficient showing of benefit to the migratory bird resource, important research reasons, reasons of human concern for individual birds, or other compelling justification.

(a) *Permit requirement.* A special purpose permit is required before any person may lawfully take, salvage, otherwise acquire, transport, or possess migratory birds, their parts, nests, or eggs for any purpose not covered by the standard form permits of this part. In addition, a special purpose permit is required before any person may sell, purchase, or barter captive-bred, migratory game birds, other than waterfowl, that are marked in compliance with § 21.13(b) of this part.

(b) *Application procedures.* Submit application for special purpose 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 detailed statement describing the project or activity which requires issuance of a permit, purpose of such project or activity, and a delineation of the area in which it will be conducted. (Copies of supporting documents, research proposals, and any necessary State permits should accompany the application);

(2) Numbers and species of migratory birds involved where same can reasonably be determined in advance; and

(3) Statement of disposition which will be made of migratory birds involved in the permit activity.

(c) *Additional permit conditions.* Inaddition to the general conditions set forth in part 13 of this subchapter B, special purpose permits shall be subject to the following conditions:

(1) Permittees shall maintain adequate records describing the conduct of the permitted activity, the numbers and species of migratory birds acquired and disposed of under the permit, and inventorying and identifying all migratory birds held on December 31 of each calendar year. Records shall be maintained at the address listed on the permit; shall be in, or reproducible in English; and shall be available for inspection by Service personnel during regular business hours. A permittee

may be required by the conditions of the permit to file with the issuing office an annual report of operation. Annual reports, if required, shall be filed no later than January 31 of the calendar year followng the year for which the report is required. Reports, if required, shall describe permitted activities, numbers and species of migratory birds acquired and disposed of, and shall inventory and describe all migratory birds possessed under the special purpose permit on December 31 of the reporting year.

(2) Permittees shall make such other reports as may be requested by the issuing officer.

(3) All live, captive-bred, migratory game birds possessed under authority of a valid special purpose permit shall be physically marked as defined in §21.13(b) of this part.

(4) No captive-bred migratory game bird may be sold or bartered unless marked in accordance with §21.13(b) of this part.

(5) No permittee may take, purchase, receive or otherwise acquire, sell, barter, transfer, or otherwise dispose of any captive-bred migratory game bird unless such permittee submits a Service form 3-186A (Migratory Bird Acquisition/Disposition Report), completed in accordance with the instructions on the form, to the issuing office within five (5) days of such transaction.

(6) No permittee, who is authorized to sell or barter migratory game birds pursuant to a permit issued under this section, may sell or barter such birds to any person unless that person is authorized to purchase and possess such migratory game birds under a permit issued pursuant to this part and part 13, or as permitted by regulations in this part.

(d) *Term of permit.* A special purpose permit issued or renewed under this part expires on the date designated on the face of the permit unless amended or revoked, but the term of the permit shall not exceed three (3) years from the date of issuance or renewal.

[39 FR 1178, Jan. 4, 1974, as amended at 54 FR 38152, Sept. 14, 1989; 63 FR 52637, Oct. 1, 1998]

§ 21.28 [Reserved]

§ 21.29 Falconry standards and falconry permitting.

(a) *Background*—(1) *The legal basis for regulating falconry.* The Migratory Bird Treaty Act prohibits any person from taking, possessing, purchasing, bartering, selling, or offering to purchase, barter, or sell, among other things, raptors (birds of prey) listed in §10.13 of this subchapter unless the activities are allowed by Federal permit issued under this part and part 13 of this chapter, or as permitted by regulations in this part.

(i) This section covers all Falconiformes (vultures, kites, eagles, hawks, caracaras, and falcons) and all Strigiformes (owls) listed in §10.13 of this subchapter ("native" raptors), and applies to any person who possesses one or more wild-caught, captive-bred, or hybrid raptors protected under the MBTA to use in falconry.

(ii) The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250) provides for the taking of golden eagles from the wild to use in falconry. It specifies that the only golden eagles that may be used for falconry are those that would be taken because of depredations on livestock or wildlife (16 U.S.C. 668a).

(2) *"Possession" and short-term handling of a falconry raptor.* We do not consider short-term handling, such as letting any other person hold or practice flying a raptor you possess under your permit, to be possession for the purposes of this section if you are present and the person is under your supervision.

(3) *Regulatory year for governing falconry.* For determining possession and take of raptors for falconry, a year is any 12-month period for take defined by the State, tribe, or territory.

(b) *Federal approval of State, tribal, and territorial falconry programs*—(1) *General.* (i) A State (including the District of Columbia), tribe, or territory under the jurisdiction of the United States that wishes to allow falconry must establish laws and regulations (hereafter referred to as laws) that meet the standards established in this

Appendix G: Environmental Conservation Law of New York §11-0521 and §11-0523

§ 11-0521. Destructive wildlife; taking pursuant to permit.

1. The department may direct any environmental conservation officer, or issue a permit to any person, to take any wildlife at any time whenever it becomes a nuisance, destructive to public or private property or a threat to public health or welfare, provided, however, that where such wildlife is a bear, no such permit shall be issued except upon proof of damage to such property or threat to public health or safety presented to the department. Upon presentation of such proof, the department may issue a permit authorizing the use of trained tracking dogs pursuant to section 11-0928 of this article, and, if the department has determined that no other alternative is feasible, a separate permit to take the bear. Wildlife so taken shall be disposed of as the department may direct.

2. The department may, by permit issued to a landowner, permit such landowner, and any person he may designate in writing as his agent, to take beaver on lands owned by the permittee, during any specified period, in any specified number, and by any specified means, notwithstanding the provision contained in paragraph d of subdivision 3 of section 11-0901 or any other provision of the Fish and Wildlife Law. Beaver so taken shall be disposed of as the department may direct.

3. Nothing in this section shall be construed as requiring or obligating the department to issue a permit to take wildlife or to direct the taking of any wildlife when in its opinion the nuisance, destruction of property or threat to public health and welfare will not be effectively abated thereby.

§ 11-0523. Destructive or menacing wildlife; taking without permit.

1. Owners and lessees and members of their immediate families actually occupying or cultivating lands, and persons authorized in writing and actually employed by them in cultivating such lands, may take (a) unprotected wildlife other than birds and (b) starlings, common crows and, subject to section 11-0513, pigeons, when such wildlife is injuring their property or has become a nuisance thereon. Such taking may be done in any manner, notwithstanding any provision of the Fish and Wildlife Law, except section 11-0513, or the Penal Law or any other law.

2. Any bear killing or worrying livestock on land occupied or cultivated, or destroying an apiary thereon, may be taken or killed, at any time, by shooting or device to entrap or entice on such land, by the owner, lessee or occupant thereof, or any member of the owner's, lessee's or occupant's immediate family or by any person employed by such owner, lessee or occupant. The owner or occupant of such lands shall promptly notify the nearest environmental conservation officer and deliver to such officer the carcass of any bear killed pursuant to this subdivision. The environmental conservation officer shall dispose of the carcass as the department may direct.

3. Red-winged blackbirds, common grackles and cowbirds destroying any crop may be killed during the months of June, July, August, September and October by the owner of the crop or property on which it is growing or by any person in his employ.

4. Varying hares, cottontail rabbits and European hares which are injuring property on occupied farms or lands may be taken thereon, at any time, in any manner, except by the use of ferrets, fitch-ferrets or fitch, by the owners or occupants of such farms or lands or by a person authorized in writing by them and actually employed by them in cultivating such farm lands.

5. Skunks injuring property or which have become a nuisance may be

taken at any time in any manner.

6. Raccoons, coyotes or fox injuring private property may be taken by the owner, occupant or lessee thereof, or an employee or family member of such owner, occupant or lessee, at any time in any manner.

7. Whenever black, grey and fox squirrels, opossums or weasels are injuring property on occupied farms or lands or dwellings, they may be taken at any time in any manner, by the owners or occupants thereof or by a person authorized in writing by such owner or occupant.

8. No license or permit from the department is required for any taking authorized by this section.

9. Varying hares, cottontail rabbits, skunks, black, grey and fox squirrels, raccoons, opossums or weasels taken pursuant to this section in the closed season or in a manner not permitted by section 11-0901 shall be immediately buried or cremated. No person shall possess or traffic in such skunks or raccoons or the pelts thereof or in such varying hares or cottontail rabbits or the flesh thereof.

Appendix H: LGA's State Depredation Permit

New York State Department of Environmental Conservation
Division of Fish, Wildlife and Marine Resources - Special Licenses Unit
625 Broadway
Albany, NY 12233-4752
Phone Number (518) 402-8985
Fax Number: (518) 402-8925

NEW YORK STATE FISH AND WILDLIFE LICENSE

License Type: Depredation: Airports License Number: 5

Licensee:

DOUG STEARNS
LA GUARDIA AIRPORT
PORT AUTH OF NY & NJ
FLUSHING, NY 11371

Fee Amount: $.00
Effective Date: 04/01/2009
Expiration Date: 03/31/2010
Region: 2 County: QUEENS
Home Phone Number:
Business Phone Number: (718) 533-3402

DOB: 3/26/1913

Statutory Authority:

6NYCRR	Part 175	6NYCRR	Part 182
ECL	11-0505(5)	ECL	11-0521
ECL	11-0535	Federal	16 USC 703-712
Federal	50 CFR Part 13	Federal	50 CFR Part 21.41

Conditions:

1. A. Please read all license conditions BEFORE conducting any activity pursuant to this license.

   B. The licensee assumes all liability and responsibility for any activities conducted under the authority of this license or any actions resulting from activities authorized by the license.

   C. This license may be revoked for any of the following reasons:
   i. licensee provided materially false or inaccurate statements in his or her application, supporting documentation or on required reports;
   ii. failure by the licensee to comply with any terms or conditions of this license;
   iii. licensee exceeds the scope of the purpose or activities described in his or her application for this license;
   iv. licensee fails to comply with any provisions of the NYS Environmental Conservation Law, any other State or Federal laws or regulations of the Department directly related to the licensed activity;
   v. licensee submits a check, money order or voucher for this license or application for this license that is subsequently returned to the Department for insufficient funds or nonpayment after the license has been issued.

   D. The renewal of this license is the responsibility of the licensee. This license is deemed expired on the date of expiration listed on the license unless otherwise notified by the Department.

   E. Direct all questions concerning this license to the Special Licenses Unit (518) 402-8985.

2. A. This license is not valid without a corresponding Federal Permit from the US Fish and Wildlife Service. The licensee must comply with all terms and conditions of the Federal Permit.

   B. The licensee shall submit copies of all reports required under their Federal Permit to the NYS DEC Special Licenses Unit, 625 Broadway, Albany, NY 12233-4752 no less than forty-five (45) days prior to the expiration of this license.

   C. The licensee may designate agents to conduct activities authorized by this license. Such designations shall be made in writing to the NYS DEC Special Licenses Unit by sending a list with the name and address of the person(s) the licensee wishes to designate as an agent. This list shall be current and on file at the NYS DEC Special Licenses Unit. The licensee is responsible for all actions taken by designated agents under this license.

   D. The licensee shall not take any endangered or threatened species or species of special concern (6 NYCRR Part 182) using lethal control techniques.

   E. This license does not authorize the taking of any non-target species. In the event such species are taken, the licensee shall cease activities and contact the New York State Department of Environmental Conservation's Region 2 Wildlife Manager at (718) 482-4922.

   F. The licensee and/or designated agents shall carry a copy of this license when conducting activities authorized by this license and shall display a copy of this license when requested.

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New York State Department of Environmental Conservation
Division of Fish, Wildlife and Marine Resources - Special Licenses Unit
625 Broadway
Albany, NY 12233-4752
Phone Number (518) 402-8985
Fax Number: (518) 402-8925

NEW YORK STATE FISH AND WILDLIFE LICENSE

Conditions:

3. A. The licensee is authorized to use department approved non-lethal control methods on migratory birds, including state listed endangered or threatened species or species of special concern (6 NYCRR Part 182), that are creating or will create a hazard to human health or safety at La Guardia Airport, Flushing, Queens County, New York.

   B. The licensee is authorized to use lethal control methods (pursuant to take limits and methods of take provided by Federal License MB719627-0) on migratory birds, except endangered or threatened species or species of special concern (6 NYCRR Part 182), when non-lethal control methods have failed to deter birds from entering La Guardia airspace or when immediate removal of birds is required to protect human health or safety.

   C. Control measures shall include non-lethal techniques designed to frighten migratory birds from the hazard areas.

   D. Lethal control techniques may be used only when alternative methods have failed or when immediate removal of offending animals is required to protect human health and safety.

   E. Only persons who have received training in species identification and wildlife control techniques within the previous two (2) years are authorized to use lethal control methods pursuant to this license.

   F. The licensee is authorized in emergency situations only to take, trap, or relocate any migratory birds, nests and eggs (except bald eagles, golden eagles or endangered or threatened species) when the migratory birds, nests or eggs are posing a direct threat to human safety. A direct threat to human safety is one which involves a threat of serious bodily injury or a risk to human life.

   G. The licensee and/or designated agents shall attempt to retrieve birds shot or found dead on the property and properly dispose of the carcasses by donation to public, scientific and/or educational institutions, or by prompt burial and/or incineration. If any endangered or threatened species are found dead, the licensee shall immediately freeze and hold the carcasses and shall notify the NYS Department of Environmental Conservation Endangered Species Unit (518) 402-8863 within three (3) business days of finding the carcass.

4. A. The licensee shall file a written annual report no less than forty-five (45) days prior to the expiration date of this license. Such annual report shall contain: a) name of the licensee, b) license number, c) number of birds shot or found dead on the property by species, d) any band numbers or other markings present on birds shot or found dead, e) number of individuals shooting, and f) location of shooting positions and hours of operation, to the NYS DEC Regional Wildlife Manager. The licensee shall consult with the Regional Wildlife Manager as deemed appropriate.

Appendix I: LGA's Airport Air Strike Hazard Permit

New York State Department of Environmental Conservation
Division of Fish, Wildlife and Marine Resources
Bureau of Wildlife
47-40 21 st Street, Long Island City, New York 11101
Phone: (718) 482-4922 • FAX: (718) 482-4502
Website: www.dec.state.ny.us

AIRPORT AIR STRIKE HAZARD PERMIT

Issued pursuant to Environmental Conservation Law §11-0521

PERMIT NUMBER	AIRPORT MANAGER	TELEPHONE NUMBER
09-2-001	Port Authority of New York & New Jersey	718 533-3402
AIRPORT ADDRESS LaGuardia Airport, Hangar # 7, Flushing, NY 11371 att: D. Stearns		

The permittee and any person employed by or acting under authorization of the permittee may kill or scare nuisance wildlife at any time when it becomes a threat to aircraft and airport safety and/or operations as stipulated below:

A. Nuisance wildlife, for the purposes of this permit, means all wildlife **except** threatened and endangered species, species of special concern, and migratory birds requiring federal and/or state permits and licenses.

B. The permittee is authorized to use: (1) firearms to kill nuisance wildlife; and/or (2) auditory or visual scare devices such as shell crackers, live ammunition, zon guns, falconry and trained dogs to repel nuisance wildlife.

C. The permittee is authorized to capture and kill nuisance wildlife (except deer) by using box, cage, foothold, and/or body-gripping traps.

D. Nuisance wildlife may **not** be removed or relocated from the site.

E. All carcasses shall be disposed of by burial or incineration, unless otherwise directed (see Special Conditions, if any).

F. This permit must be carried and displayed whenever exercising the authorities granted herein.

G. Any shooting, trapping or killing must be entered on the Daily Log (included with your permit) on the dates of occurrence.

H. This permit is continuous until revoked. Date of issuance is: December 31, 2009

I. The reporting period for this permit is January 1 to December 31. The permittee is required to forward a copy of the Daily Log by January 1 of each year to the Bureau of Wildlife at the above address. The Daily Log must contain the species, date taken, sex, and disposition of each animal taken and/or transferred under the authority of this permit.

J. This permit is conditional upon compliance with all applicable local, state and/or federal laws/regulations and with any Special Conditions listed in K.

K. Special Conditions:

1.Only persons who have received training in species identification and wildlife control techniques within the previous two (2) years are authorized to use lethal control methods pursuant to this permit.

2. The permittee shall develop and implement a wildlife control plan consistent with FAA requirements. This plan shall include but not be limited to vegetation management, insect control, solid waste management, stormwater control and landscape management. The approved plan shall be submitted to the Department upon acceptance by the FAA.

3. List of New York State endangered, threatened and species of special concern is attached.

Joseph J. Pane
Principal Fish & Wildlife Biologist

December 31, 2009
Date

Appendix J: New York State List of Endangered, Threatened and Special Concern Species

NEW YORK STATE
DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

List of Endangered, Threatened and Special Concern Fish & Wildlife Species of New York State

Endangered

Those endangered species which meet one or both of the criteria specified in section 182.2(g) of 6NYCRR Part 182 and which are found, have been found, or may be expected to be found in New York State include:

	Common Name	Scientific Name
Molluscs	[1]Dwarf Wedgemussel	*Alasmidonta heterodon*
	[1]Pink mucket	*Lampsilis abrupta*
	[1]Clubshell	*Pleurobema clava*
	[1]Fat pocketbook	*Potamilus capax*
	Rayed Bean	*Villosa fabalis*
	[2]Chittenango Ovate Amber Snail	*Novisuccinea chittenangoensis*
Insects	Tomah Mayfly	*Siphlonisca aerodromia*
	[1,3]American Burying Beetle	*Nicrophorus americanus*
	Hessel's Hairstreak	*Callophrys hesseli*
	[1]Karner Blue Butterfly	*Lycaeides melissa samuelis*
	Regal Fritillary	*Speyeria idalia*
	Persius Duskywing	*Erynnis persius*
	Grizzled Skipper	*Pyrgus centaureae wyandot*
	Arogos Skipper	*Atrytone arogos arogos*
	Bog Buckmoth	*Hemileuca species 1*
	Pine Pinion Moth	*Lithophane lepida lepida*
Fishes	[1]Shortnose Sturgeon	*Acipenser brevirostrum*
	[3]Silver Chub	*Macrhybopsis storeriana*
	Pugnose Shiner	*Notropis anogenus*
	Round Whitefish	*Prosopium cylindraceum*
	Bluebreast Darter	*Etheostoma camurum*
	[3]Gilt Darter	*Percina evides*
	[3]Spoonhead Sculpin	*Cottus ricei*
	Deepwater Sculpin	*Myoxocephalus thompsoni*
Amphibians	Tiger Salamander	*Ambystoma tigrinum*
	Northern Cricket Frog	*Acris crepitans*
	Mud Turtle	*Kinosternon subrubrum*
	[2]Bog Turtle	*Clemmys muhlenbergii*
	[1]Atlantic Hawksbill Sea Turtle	*Eretmochelys imbricata*

Reptiles	[1]Atlantic Ridley Sea Turtle	*Lepidochelys kempii*
	[1]Leatherback Sea Turtle	*Dermochelys coriacea*
	Queen Snake	*Regina septemvittata*
	Massasauga	*Sistrurus catenatus*
Birds	Spruce Grouse	*Falcipennis canadensis*
	[3]Golden Eagle	*Aquila chrysaetos*
	Peregrine Falcon	*Falco peregrinus*
	Black Rail	*Laterallus jamaicensis*
	[1,2,4]Piping Plover	*Charadrius melodus*
	[1,3]Eskimo Curlew	*Numenius borealis*
	[1]Roseate Tern	*Sterna dougallii dougallii*
	Black Tern	*Chlidonias niger*
	Short-eared Owl	*Asio flammeus*
	Loggerhead Shrike	*Lanius ludovicianus*
Mammals	[1]Indiana Bat	*Myotis sodalis*
	[3]Allegheny Woodrat	*Neotoma magister*
	[1]Sperm Whale	*Physeter catodon*
	[1]Sei Whale	*Balaenoptera borealis*
	[1]Blue Whale	*Balaenoptera musculus*
	[1]Finback Whale	*Balaenoptera physalus*
	[1]Humpback Whale	*Megaptera novaeangliae*
	[1]Right Whale	*Eubalaena glacialis*
	[1,3]Gray Wolf	*Canis lupus*
	[1,3]Cougar	*Felis concolor*

Threatened

Those threatened species which meet one or both of the criteria specified in section 182.2(h) of 6NYCRR Part 182 and which are found, have been found, or may be expected to be found in New York State include:

	Common Name	Scientific Name
Molluscs	Brook Floater	*Alasmidonta varicosa*
	Wavy-rayed Lampmussel	*Lampsilis fasciola*
	Green Floater	*Lasmigona subviridis*
Insects	Pine Barrens Bluet	*Enallagma recurvatum*
	Scarlet Bluet	*Enallagma pictum*
	Little Bluet	*Enallagma minisculum*
	[2,3]Northeastern Beach Tiger Beetle	*Cicindela dorsalis dorsalis*
	Frosted Elfin	*Callophrys irus*
	Lake Sturgeon	*Acipenser fulvescens*
	Mooneye	*Hiodon tergisus*

Fishes	[3]Lake Chubsucker	*Erimyzon sucetta*
	Gravel Chub	*Erimystax x-punctata*
	[3]Mud Sunfish	*Acantharchus pomotis*
	Banded Sunfish	*Enneacanthus obesus*
	Longear Sunfish	*Lepomis megalotis*
	Longhead Darter	*Percina macrocephala*
	Eastern Sand Darter	*Ammocrypta pellucida*
	Swamp Darter	*Etheostoma fusiforme*
	Spotted Darter	*Etheostoma maculatum*
Amphibians	None Listed	---
Reptiles	Blanding's Turtle	*Emydoidea blandingii*
	[2]Green Sea Turtle	*Chelonia mydas*
	[2]Loggerhead Sea Turtle	*Caretta caretta*
	Fence Lizard	*Sceloporus undulatus*
	Timber Rattlesnake	*Crotalus horridus*
Birds	Pied-billed Grebe	*Podilymbus podiceps*
	Least Bittern	*Ixobrychus exilis*
	Bald Eagle	*Haliaeetus leucocephalus*
	Northern Harrier	*Circus cyaneus*
	King Rail	*Rallus elegans*
	Upland Sandpiper	*Bartramia longicauda*
	Common Tern	*Sterna hirundo*
	Least Tern	*Sterna antillarum*
	Sedge Wren	*Cistothorus platensis*
	Henslow's Sparrow	*Ammodramus henslowii*
Mammals	[2,3]Canada Lynx	*Lynx canadensis*

Special Concern

The following are designated as species of special concern as defined in Section 182.2(i) of 6NYCRR Part 182. Species of special concern warrant attention and consideration but current information, collected by the department, does not justify listing these species as either endangered or threatened.

	Common Name	Scientific Name
Molluscs	Buffalo Pebble Snail	*Gillia altilis*
	Fringed Valvata	*Valvata lewisi*
	Mossy Valvata	*Valvata sincera*
	Unnamed Dragonfly Species	*Gomphus spec. nov.*
	Southern Sprite	*Nehalennia integricollis*
	Extra Striped Snaketail	*Ophiogomphus anomalus*
	Pygmy Snaketail	*Ophiogomphus howei*
	Common Sanddragon	*Progomphus obscurus*

Insects	Gray Petaltail	*Tachopteryx thoreyi*
	Checkered White	*Pontia protodice*
	Olympia Marble	*Euchloe olympia*
	Henry's Elfin	*Callophrys henrici*
	Tawny Crescent	*Phyciodes batesii*
	Mottled Duskywing	*Erynnis martialis*
	Barrens Buckmoth	*Hemileuca maia*
	Herodias Underwing	*Catocala herodias gerhardi*
	Jair Underwing	*Catocala jair*
	A Noctuid Moth	*Heterocampa varia*
Fishes	Mountain Brook Lamprey	*Ichthyomyzon greeleyi*
	Black Redhorse	*Moxostoma duquesnei*
	Streamline Chub	*Erymystax dissimilis*
	Redfin Shiner	*Lythrurus umbratilis*
	Ironcolor Shiner	*Notropis chalybaeus*
Amphibians	Hellbender	*Cryptobranchus alleganiensis*
	Marbled Salamander	*Ambystoma opacum*
	Jefferson Salamander	*Ambystoma jeffersonianum*
	Blue-spotted Salamander	*Ambystoma laterale*
	Longtail Salamander	*Eurycea longicauda*
	Eastern Spadefoot Toad	*Scaphiopus holbrookii*
	Southern Leopard Frog	*Rana sphenocephala utricularius*
Reptiles	Spotted Turtle	*Clemmys guttata*
	Wood Turtle	*Clemmys insculpta*
	Eastern Box Turtle	*Terrapene carolina*
	Eastern Spiny Softshell	*Apalone spinifera*
	Eastern Hognose Snake	*Heterodon platyrhinos*
	Worm Snake	*Carphophis amoenus*
Birds	Common Loon	*Gavia immer*
	American Bittern	*Botaurus lentiginosus*
	Osprey	*Pandion haliaetus*
	Sharp-shinned Hawk	*Accipiter striatus*
	Cooper's Hawk	*Accipiter cooperii*
	Northern Goshawk	*Accipiter gentilis*
	Red-shouldered Hawk	*Buteo lineatus*
	Black Skimmer	*Rynchops niger*
	Common Nighthawk	*Chordeiles minor*
	Whip-poor-will	*Caprimulgus vociferus*
	Red-headed Woodpecker	*Melanerpes erythrocephalus*
	Horned Lark	*Eremophila alpestris*

	Bicknell's Thrush	*Catharus bicknelli*
	Golden-winged Warbler	*Vermivora chrysoptera*
	Cerulean Warbler	*Dendroica cerulea*
	Yellow-breasted Chat	*Icteria virens*
	Vesper Sparrow	*Pooecetes gramineus*
	Grasshopper Sparrow	*Ammodramus savannarum*
	Seaside Sparrow	*Ammodramus maritimus*
Mammals	Small-footed Bat	*Myotis leibii*
	New England Cottontail	*Sylvilagus transitionalis*
	Harbor Porpoise	*Phocoena phocoena*

[1]Currently listed as "endangered" by the U. S. Department of the Interior.

[2]Currently listed as "threatened" by the U. S. Department of the Interior.

[3]Species is extirpated from New York State.

[4]Piping Plover is listed as federally endangered in the Great Lakes Region, and as federally threatened in the Atlantic Coastal Region.

Definitions

Extinct - Species is no longer living or existing.

Extirpated - Species is not extinct, but no longer occurring in a wild state within New York, or no longer exhibiting patterns of use traditional for that species in New York (e.g. historical breeders no longer breeding here).

Endangered - Any native species in imminent danger of extirpation or extinction in New York State.

Threatened - Any native species likely to become an endangered species within the foreseeable future in New York State.

Special Concern - Any native species for which a welfare concern or risk of endangerment has been documented in New York State.

Authority

Environmental Conservation Law of New York, Section 11-0535 and 6 NYCRR (New York Code of Rules and Regulations) Part 182 - effective (last promulgated in state regulation) December 4, 1999.

Revision History

Effective April 24, 2000 - Canada Lynx (*Lynx canadensis*) was added to the Threatened list.
Effective August 8, 2007 - Bald Eagle (*Haliaeetus leucocephalus*) was removed from the Endangered Species List by the U. S. Department of the Interior.
A previous version of this document erroneously indicated that the Gray Wolf (*Canis lupus*) was federally Threatened.

Appendix K: 50 CFR § 10.13, Complete List of Migratory Birds

the District of Columbia, the Commonwealth of Puerto Rico, American Samoa, the Virgin Islands, and Guam.

Whoever means the same as person.

Wildlife means the same as fish or wildlife.

[38 FR 22015, Aug. 15, 1973, as amended at 42 FR 32377, June 24, 1977; 42 FR 59358, Nov. 16, 1977; 45 FR 56673, Aug. 25, 1980; 50 FR 52889, Dec. 26, 1985]

§ 10.13 List of Migratory Birds.

The following is a list of all species of migratory birds protected by the Migratory Bird Treaty Act (16 U.S.C. 703–711) and subject to the regulations on migratory birds contained in this subchapter B of title 50 CFR. The species listed are those protected by the Convention for the Protection of Migratory Birds, August 16, 1916, United States-Great Britain (on behalf of Canada), 39 Stat. 1702, T.S. No. 628; the Convention for the Protection of Migratory Birds and Game Mammals, February 7, 1936, United States-Mexico, 50 Stat. 1311, T.S. No. 912; the Convention for the Protection of Migratory Birds and Birds in Danger of Extinction, and Their Environment, March 4, 1972, United States-Japan, 25 U.S.T. 3329, T.I.A.S. No. 7990; and the Convention for the Conservation of Migratory Birds and Their Environment, United States-U.S.S.R., November 26, 1976, 92 Stat. 3110, T.I.A.S. 9073, 16 U.S.C. 703, 712. The species are listed two ways. In the first part of the List species are arranged alphabetically by English (common) name groups, with the scientific name following the English (common) name. All species of ducks are listed together under the heading "DUCKS". In the second part of the List, species are listed by scientific name arranged in taxonomic order. Taxonomy and nomenclature follows the American Ornithologists' Union's Check-list of North American Birds (6th Edition, 1983).

I. ALPHABETICAL LISTING

Accentor, Siberian, *Prunella montanella*
Albatross:
  Black-footed, *Diomedea nigripes*
  Laysan, *Diomedea immutabilis*
  Short-tailed, *Diomedea albatrus*
  Yellow-nosed, *Diomedea chlororhynchos*
Anhinga, *Anhinga anhinga*
Ani:
  Groove-billed, *Crotophaga sulcirostris*
  Smooth-billed, *Crotophaga ani*
Auklet:
  Cassin's, *Ptychoramphus aleuticus*
  Crested, *Aethia cristatella*
  Least, *Aethia pusilla*
  Parakeet, *Cyclorrhynchus psittacula*
  Rhinoceros, *Cerorhinca monocerata*
  Whiskered, *Aethia pygmaea*
Avocet, American, *Recurvirostra americana*
Barn-Owl, Common, *Tyto alba*
Beardless-Tyrannulet, Northern, *Camptostoma imberbe*
Becard, Rose-throated, *Pachyramphus aglaiae*
Bittern:
  American, *Botaurus lentiginosus*
  Chinese, *Ixobrychus sinensis*
  Least, *Ixobrychus exilis*
  Schrenk's, *Ixobrychus eurhythmus*
Black-Hawk, Common, *Buteogallus anthracinus*
Blackbird:
  Brewer's, *Euphagus cyanocephalus*
  Red-winged, *Agelaius phoeniceus*
  Rusty, *Euphagus carolinus*
  Tawny-shouldered, *Agelaius humeralis*
  Tricolored, *Agelaius tricolor*
  Yellow-headed, *Xanthocephalus xanthocephalus*
  Yellow-shouldered, *Agelaius xanthomus*
Bluebird:
  Eastern, *Sialia sialis*
  Mountain, *Sialia currucoides*
  Western, *Sialia mexicana*
Bluethroat, *Luscinia svecica*
Bobolink, *Dolichonyx oryzivorus*
Booby:
  Blue-footed, *Sula nebouxii*
  Brown, *Sula leucogaster*
  Masked, *Sula dactylatra*
  Red-footed, *Sula sula*
Brambling, *Fringilla montifringilla*
Brant, *Branta bernicla*
Bufflehead (see DUCKS)
Bullfinch:
  Eurasian, *Pyrrhula pyrrhula*
  Puerto Rican, *Loxigilla portoricensis*
Bunting:
  Indigo, *Passerina cyanea*
  Lark, *Calamospiza melanocorys*
  Lazuli, *Passerina amoena*
  McKay's, *Plectrophenax hyperboreus*
  Painted, *Passerina ciris*
  Reed (see Reed-Bunting)
  Rustic, *Emberiza rustica*
  Snow, *Plectrophenax nivalis*
  Varied, *Passerina versicolor*
Bushtit, *Psaltriparus minimus*
Canvasback (see DUCKS)
Caracara, Crested, *Polyborus plancus*
Cardinal, Northern, *Cardinalis cardinalis*
Carib, Green-throated, *Eulampis holosericeus*
Catbird, Gray, *Dumetella carolinensis*
Chat, Yellow-breasted, *Icteria virens*
Chickadee (see Tit):
  Black-capped, *Parus atricapillus*
  Boreal, *Parus hudsonicus*
  Carolina, *Parus carolinensis*

Chestnut-backed, *Parus rufescens*
Mexican, *Parus sclateri*
Mountain, *Parus gambeli*
Chuck-will's-widow, *Caprimulgus carolinensis*
Condor, California, *Gymnogyps californianus*
Coot:
American, *Fulica americana*
Caribbean, *Fulica caribaea*
Eurasian, *Fulica atra*
Cormorant:
Brandt's, *Phalacrocorax penicillatus*
Double-crested, *Phalacrocorax auritus*
Great, *Phalacrocorax carbo*
Olivaceous, *Phalacrocorax olivaceus*
Pelagic, *Phalacrocorax pelagicus*
Red-faced, *Phalacrocorax urile*
Cowbird:
Bronzed, *Molothrus aeneus*
Brown-headed, *Molothrus ater*
Shiny, *Molothrus bonariensis*
Crake:
Corn, *Crex crex*
Yellow-breasted, *Porzana flaviventer*
Crane:
Common, *Grus grus*
Sandhill, *Grus canadensis*
Whooping, *Grus americana*
Creeper, Brown, *Certhia americana*
Crossbill:
Red, *Loxia curvirostra*
White-winged, *Loxia leucoptera*
Crow:
American, *Corvus brachyrhynchos*
Fish, *Corvus ossifragus*
Hawaiian, *Corvus hawaiiensis*
Mexican, *Corvus imparatus*
Northwestern, *Corvus caurinus*
White-necked, *Corvus leucognaphalus*
Cuckoo:
Black-billed, *Coccyzus erythropthalmus*
Common, *Cuculus canorus*
Hawk (see Hawk-Cuckoo)
Lizard (see Lizard-Cuckoo)
Mangrove, *Coccyzus minor*
Oriental, *Cuculus saturatus*
Yellow-billed, *Coccyzus americanus*
Curlew (see Whimbrel):
Bristle-thighed, *Numenius tahitiensis*
Eskimo, *Numenius borealis*
Far Eastern, *Numenius madagascariensis*
Least, *Numenius minutus*
Long-billed, *Numenius americanus*
Dickcissel, *Spiza americana*
Dipper, American, *Cinclus mexicanus*
Dotterel, Eurasian, *Charadrius morinellus*
Dove:
Ground (see Ground-Dove)
Inca, *Columbina inca*
Mourning, *Zenaida macroura*
Quail (see Quail-Dove)
White-tipped, *Leptotila verreauxi*
White-winged, *Zenaida asiatica*
Zenaida, *Zenaida aurita*
Dovekie, *Alle alle*
Dowitcher:
Long-billed, *Limnodromus scolopaceus*
Short-billed, *Limnodromus griseus*

DUCKS

American Black Duck, *Anas rubripes*
Bufflehead, *Bucephala albeola*
Canvasback, *Aythya valisineria*
Eider:
Common, *Somateria mollissima*
King, *Somateria spectabilis*
Spectacled, *Somateria fischeri*
Steller's, *Polysticta stelleri*
Gadwall, *Anas strepera*
Garganey, *Anas querquedula*
Goldeneye:
Barrow's, *Bucephala islandica*
Common, *Bucephala clangula*
Harlequin Duck, *Histrionicus histrionicus*
Hawaiian Duck, *Anas wyvilliana*
Laysan Duck, *Anas laysanensis*
Mallard, *Anas platyrhynchos*
Masked Duck, *Oxyura dominica*
Merganser
Common, *Mergus merganser*
Hooded, *Lophodytes cucullatus*
Red-breasted, *Mergus serrator*
Mottled Duck, *Anas fulvigula*
Oldsquaw, *Clangula hyemalis*
Pintail:
Northern, *Anas acuta*
White-cheeked, *Anas bahamensis*
Pochard:
Baer's, *Aythya baeri*
Common, *Aythya ferina*
Redhead, *Aythya americana*
Ring-necked Duck, *Aythya collaris*
Ruddy Duck, *Oxyura jamaicensis*
Scaup:
Greater, *Aythya marila*
Lesser, *Aythya affinis*
Scoter:
Black, *Melanitta nigra*
Surf, *Melanitta perspicillata*
White-winged, *Melanitta fusca*
Shoveler, Northern, *Anas clypeata*
Smew, *Mergellus albellus*
Teal:
Baikal, *Anas formosa*
Blue-winged, *Anas discors*
Cinnamon, *Anas cyanoptera*
Falcated, *Anas falcata*
Green-winged, *Anas crecca*
Tufted Duck, *Aythya fuligula*
Whistling-Duck:
Black-bellied, *Dendrocygna autumnalis*
Fulvous, *Dendrocygna bicolor*
West Indian, *Dendrocygna arborea*
Wigeon:
American, *Anas americana*
Eurasian, *Anas penelope*
Wood Duck, *Aix sponsa*

END OF DUCKS

Dunlin, *Calidris alpina*
Eagle:
Bald, *Haliaeetus leucocephalus*
Golden, *Aquila chrysaetos*
Sea (see Sea-Eagle)
White-tailed, *Haliaeetus albicilla*

Egret:
Cattle, *Bubulcus ibis*
Chinese, *Egretta eulophotes*
Great, *Casmerodius albus*
Plumed, *Egretta intermedia*
Reddish, *Egretta rufescens*
Snowy, *Egretta thula*
Eider (see DUCKS)
Elaenia, Caribbean, *Elaenia martinica*
Emerald, Puerto Rican, *Chlorostilbon maugaeus*
Euphonia, Antillean, *Euphonia musica*
Falcon:
Aplomado, *Falco femoralis*
Peregrine, *Falco peregrinus*
Prairie, *Falco mexicanus*
Fieldfare, *Turdus pilaris*
Finch:
Cassin's, *Carpodacus cassinii*
House, *Carpodacus mexicanus*
Purple, *Carpodacus purpureus*
Rosy, *Leucosticte arctoa*
Flamingo, Greater, *Phoenicopterus ruber*
Flicker, Northern, *Colaptes auratus*
Flycatcher:
Acadian, *Empidonax virescens*
Alder, *Empidonax alnorum*
Ash-throated, *Myiarchus cinerascens*
Brown-crested, *Myiarchus tyrannulus*
Buff-breasted, *Empidonax fulvifrons*
Dusky, *Empidonax oberholseri*
Dusky-capped, *Myiarchus tuberculifer*
Fork-tailed, *Tyrannus savana*
Gray, *Empidonax wrightii*
Gray-spotted, *Muscicapa griseisticta*
Great Crested, *Myiarchus crinitus*
Hammond's, *Empidonax hammondii*
Least, *Empidonax minimus*
Narcissus, *Muscicapa narcissina*
Nutting's, *Myiarchus nuttingi*
Olive-sided, *Contopus borealis*
Puerto Rican, *Myiarchus antillarum*
Scissor-tailed, *Tyrannus forficatus*
Sulphur-bellied, *Myiodynastes luteiventris*
Vermilion, *Pyrocephalus rubinus*
Western, *Empidonax difficilis*
Willow, *Empidonax traillii*
Yellow-bellied, *Empidonax flaviventris*
Frigatebird:
Great, *Fregata minor*
Magnificent, *Fregata magnificens*
Lesser, *Fregata ariel*
Fulmar, Northern, *Fulmarus glacialis*
Gadwall (see DUCKS)
Gallinule, Purple, *Porphyrula martinica*
Gannet, Northern, *Sula bassanus*
Garganey (see DUCKS)
Gnatcatcher:
Black-capped, *Polioptila nigriceps*
Black-tailed, *Polioptila melanura*
Blue-gray, *Polioptila caerulea*
Godwit:
Bar-tailed, *Limosa lapponica*
Black-tailed, *Limosa limosa*
Hudsonian, *Limosa haemastica*
Marbled, *Limosa fedoa*
Golden-Plover, Lesser, *Pluvialis dominica*
Goldeneye (see DUCKS)
Goldfinch:
American, *Carduelis tristis*
Lawrence's, *Carduelis lawrencei*
Lesser, *Carduelis psaltria*
Goose:
Barnacle, *Branta leucopsis*
Bean, *Anser fabalis*
Canada, *Branta canadensis*
Emperor, *Chen canagica*
Greater White-fronted, *Anser albifrons*
Hawaiian, *Nesochen sandvicensis*
Ross', *Chen rossii*
Snow, *Chen caerulescens*
Goshawk, Northern, *Accipiter gentilis*
Grackle:
Boat-tailed, *Quiscalus major*
Common, *Quiscalus quiscula*
Great-tailed, *Quiscalus mexicanus*
Greater Antillean, *Quiscalus niger*
Grasshopper-Warbler, Middendorff's, *Locustella ochotensis*
Grassquit:
Black-faced, *Tiaris bicolor*
Yellow-faced, *Tiaris olivacea*
Grebe:
Eared, *Podiceps nigricollis*
Horned, *Podiceps auritus*
Least, *Tachybaptus dominicus*
Pied-billed, *Podilymbus podiceps*
Red-necked, *Podiceps grisegena*
Western, *Aechmophorus occidentalis*
Greenfinch, Oriental, *Carduelis sinica*
Greenshank, Common, *Tringa nebularia*
Grosbeak:
Black-headed, *Pheucticus melanocephalus*
Blue, *Guiraca caerulea*
Crimson-collared, *Rhodothraupis celaeno*
Evening, *Coccothraustes vespertinus*
Pine, *Pinicola enucleator*
Rose-breasted, *Pheucticus ludovicianus*
Yellow, *Pheucticus chrysopeplus*
Ground-Dove:
Common, *Columbina passerina*
Ruddy, *Columbina talpacoti*
Guillemot:
Black, *Cepphus grylle*
Pigeon, *Cepphus columba*
Gull:
Bonaparte's, *Larus philadelphia*
California, *Larus californicus*
Common Black-headed, *Larus ridibundus*
Franklin's, *Larus pipixcan*
Glaucous, *Larus hyperboreus*
Glaucous-winged, *Larus glaucescens*
Great Black-backed, *Larus marinus*
Heermann's, *Larus heermanni*
Herring, *Larus argentatus*
Iceland, *Larus glaucoides*
Ivory, *Pagophila eburnea*
Laughing, *Larus atricilla*
Lesser Black-backed, *Larus fuscus*
Little, *Larus minutus*
Mew, *Larus canus*
Ring-billed, *Larus delawarensis*
Ross', *Rhodostethia rosea*
Sabine's, *Xema sabini*

Slaty-backed, *Larus schistisagus*
Thayer's, *Larus thayeri*
Western, *Larus occidentalis*
Yellow-footed, *Larus livens*
Gyrfalcon, *Falco rusticolus*
Harrier, Northern, *Circus cyaneus*
Hawfinch, *Coccothraustes coccothraustes*
Hawk:
Asiatic Sparrow, *Accipiter gularis*
Black (see Black-Hawk)
Broad-winged, *Buteo platypterus*
Cooper's, *Accipiter cooperii*
Ferruginous, *Buteo regalis*
Gray, *Buteo nitidus*
Harris', *Parabuteo unicinctus*
Hawaiian, *Buteo solitarius*
Red-shouldered, *Buteo lineatus*
Red-tailed, *Buteo jamaicensis*
Rough-legged, *Buteo lagopus*
Sharp-shinned, *Accipiter striatus*
Short-tailed, *Buteo brachyurus*
Swainson's, *Buteo swainsoni*
White-tailed, *Buteo albicaudatus*
Zone-tailed, *Buteo albonotatus*
Hawk-Cuckoo, Hodgson's, *Cuculus fugax*
Hawk-Owl, Northern, *Surnia ulula*
Heron:
Great Blue, *Ardea herodias*
Green-backed, *Butorides striatus*
Little Blue, *Egretta caerulea*
Night (see Night-Heron)
Pacific Reef, *Egretta sacra*
Tricolored, *Egretta tricolor*
Hoopoe, *Upupa epops*
House-Martin, Common, *Delichon urbica*
Hummingbird (see Carib, Emerald, Mango, Starthroat, Woodstar, Violet-ear):
Allen's, *Selasphorus sasin*
Anna's, *Calypte anna*
Antillean Crested, *Orthorhynchus cristatus*
Berylline, *Amazilia beryllina*
Black-chinned, *Archilochus alexandri*
Blue-throated, *Lampornis clemenciae*
Broad-billed, *Cynanthus latirostris*
Broad-tailed, *Selasphorus platycercus*
Buff-bellied, *Amazilia yucatanensis*
Calliope, *Stellula calliope*
Costa's, *Calypte costae*
Lucifer, *Calothorax lucifer*
Magnificent, *Eugenes fulgens*
Ruby-throated, *Archilochus colubris*
Rufous, *Selasphorus rufus*
Violet-crowned, *Amazilia violiceps*
White-eared, *Hylocharis leucotis*
Ibis:
Glossy, *Plegadis falcinellus*
Scarlet, *Eudocimus ruber*
White, *Eudocimus albus*
White-faced, *Plegadis chihi*
Jabiru, *Jabiru mycteria*
Jacana, Northern, *Jacana spinosa*
Jaeger:
Long-tailed, *Stercorarius longicaudus*
Parasitic, *Stercorarius parasiticus*
Pomarine, *Stercorarius pomarinus*
Jay:
Blue, *Cyanocitta cristata*
Brown, *Cyanocorax morio*
Gray, *Perisoreus canadensis*
Gray-breasted, *Aphelocoma ultramarina*
Green, *Cyanocorax yncas*
Pinyon, *Gymnorhinus cyanocephalus*
Scrub, *Aphelocoma coerulescens*
Steller's, *Cyanocitta stelleri*
Junco:
Dark-eyed, *Junco hyemalis*
Yellow-eyed, *Junco phaeonotus*
Kestrel:
American, *Falco sparverius*
Eurasian, *Falco tinnunculus*
Killdeer, *Charadrius vociferus*
Kingbird:
Cassin's, *Tyrannus vociferans*
Couch's, *Tyrannus couchii*
Eastern, *Tyrannus tyrannus*
Gray, *Tyrannus dominicensis*
Loggerhead, *Tyrannus caudifasciatus*
Thick-billed, *Tyrannus crassirostris*
Tropical, *Tyrannus melancholicus*
Western, *Tyrannus verticalis*
Kingfisher:
Belted, *Ceryle alcyon*
Green, *Chloroceryle americana*
Ringed, *Cyeryle torquata*
Kinglet:
Golden-crowned, *Regulus satrapa*
Ruby-crowned, *Regulus calendula*
Kiskadee, Great, *Pitangus sulphuratus*
Kite:
American Swallow-tailed, *Elanoides forficatus*
Black, *Milvus migrans*
Black-shouldered, *Elanus caeruleus*
Hook-billed, *Chondrohierax uncinatus*
Mississippi, *Ictinia mississippiensis*
Snail, *Rostrhamus sociabilis*
Kittiwake:
Black-legged, *Larus tridactyla*
Red-legged, *Larus brevirostris*
Knot:
Great, *Calidris tenuirostris*
Red, *Calidris canutus*
Lapwing, Northern, *Vanellus vanellus*
Lark, Horned, *Eremophila alpestris*
Limpkin, *Aramus guarauna*
Lizard-Cuckoo, Puerto Rican, *Saurothera vieilloti*
Longspur:
Chestnut-collared, *Calcarius ornatus*
Lapland, *Calcarius lapponicus*
McCown's, *Calcarius mccownii*
Smith's, *Calcarius pictus*
Loon:
Arctic, *Gavia arctica*
Common, *Gavia immer*
Red-throated, *Gavia stellata*
Yellow-billed, *Gavia adamsii*
Magpie:
Black-billed, *Pica pica*
Yellow-billed, *Pica nuttalli*
Mallard (see DUCKS)
Mango:
Antillean, *Anthracothorax dominicus*
Green, *Anthracothorax viridis*

Martin:
Caribbean, *Progne dominicensis*
Cuban, *Progne cryptoleuca*
Gray-breasted, *Progne chalybea*
House (see House-Martin)
Purple, *Progne subis*
Meadowlark:
Eastern, *Sturnella magna*
Western, *Sturnella neglecta*
Merganser (see DUCKS)
Merlin, *Falco columbarius*
Mockingbird, Northern, *Mimus polyglottos*
Moorhen, Common, *Gallinula chloropus*
Murre:
Common, *Uria aalge*
Thick-billed, *Uria lomvia*
Murrelet:
Ancient, *Synthliboramphus antiquus*
Craveri's, *Synthliboramphus craveri*
Kittlitz's, *Brachyramphus brevirostris*
Marbled, *Brachyramphus marmoratus*
Xantus', *Synthliboramphus hypoleucus*
Needletail, White-throated, *Hirundapus caudacutus*
Night-Heron:
Black-crowned, *Nycticorax nycticorax*
Japanese, *Nycticorax goisagi*
Malay, *Nycticorax melanolophus*
Yellow-crowned, *Nycticorax violaceus*
Nighthawk:
Antillean, *Chordeiles gundlachii*
Common, *Chordeiles minor*
Lesser, *Chordeiles acutipennis*
Nightjar:
Buff-collared, *Caprimulgus ridgwayi*
Jungle, *Caprimulgus indicus*
Puerto Rican, *Caprimulgus noctitherus*
Noddy:
Black, *Anous minutus*
Blue-gray, *Procelsterna cerulea*
Brown, *Anous stolidus*
Lesser, *Anous tenuirostris*
Nutcracker, Clark's, *Nucifraga columbiana*
Nuthatch:
Brown-headed, *Sitta pusilla*
Pygmy, *Sitta pygmaea*
Red-breasted, *Sitta canadensis*
White-breasted, *Sitta carolinensis*
Oldsquaw (see DUCKS)
Oriole:
Altamira, *Icterus gularis*
Audubon's, *Icterus graduacauda*
Black-cowled, *Icterus dominicensis*
Black-vented, *Icterus wagleri*
Hooded, *Icterus cucullatus*
Northern, *Icterus galbula*
Orchard, *Icterus spurius*
Scott's, *Icterus parisorum*
Streak-backed, *Icterus pustulatus*
Osprey, *Pandion haliaetus*
Ovenbird, *Seiurus aurocapillus*
Owl:
Barn (see Barn-Owl)
Barred, *Strix varia*
Boreal, *Aegolius funereus*
Burrowing, *Athene cunicularia*
Elf, *Micrathene whitneyi*
Flammulated, *Otus flammeolus*
Great Gray, *Strix nebulosa*
Great Horned, *Bubo virginianus*
Hawk (see Hawk-Owl)
Long-eared, *Asio otus*
Pygmy (see Pygmy-Owl)
Saw-whet (see Saw-Whet Owl)
Screech (see Screech-Owl)
Short-eared, *Asio flammeus*
Snowy, *Nyctea scandiaca*
Spotted, *Strix occidentalis*
Oystercatcher:
American, *Haematopus palliatus*
Black, *Haematopus bachmani*
Parula:
Northern, *Parula americana*
Tropical, *Parula pitiayumi*
Pauraque, Common, *Nyctidromus albicollis*
Pelican:
American White, *Pelecanus erythrorhynchos*
Brown, *Pelecanus occidentalis*
Petrel:
Black-capped, *Pterodroma hasitata*
Bonin, *Pterodroma hypoleuca*
Bulwer's, *Bulweria bulwerii*
Cook's, *Pterodroma cookii*
Dark-rumped, *Pterodroma phaeopygia*
Herald, *Pterodroma arminjoniana*
Kermadec, *Pterodroma neglecta*
Mottled, *Pterodroma inexpectata*
Murphy's, *Pterodroma ultima*
Storm (see Storm-Petrel)
White-necked, *Pterodroma externa*
Pewee:
Greater, *Contopus pertinax*
Lesser Antillean, *Contopus latirostris*
Wood (see Wood-Pewee)
Phainopepla, *Phainopepla nitens*
Phalarope:
Red, *Phalaropus fulicaria*
Red-necked, *Phalaropus lobatus*
Wilson's, *Phalaropus tricolor*
Phoebe:
Black, *Sayornis nigricans*
Eastern, *Sayornis phoebe*
Say's, *Sayornis saya*
Pigeon:
Band-tailed, *Columba fasciata*
Plain, *Columba inornata*
Red-billed, *Columba flavirostris*
Scaly-naped, *Columba squamosa*
White-crowned, *Columba leucocephala*
Pintail (see DUCKS)
Pipit:
Pechora, *Anthus gustavi*
Red-throated, *Anthus cervinus*
Sprague's, *Anthus spragueii*
Tree (see Tree-Pipit)
Water, *Anthus spinoletta*
Plover:
Black-bellied, *Pluvialis squatarola*
Common Ringed, *Charadrius hiaticula*
Golden (see Golden-Plover)
Great Sand, *Charadrius leschenaultii*
Little Ringed, *Charadrius dubius*
Mongolian, *Charadrius mongolus*
Mountain, *Charadrius montanus*

Piping, *Charadrius melodus*
Semipalmated, *Charadrius semipalmatus*
Snowy, *Charadrius alexandrinus*
Wilson's, *Charadrius wilsonia*
Pochard (see DUCKS)
Poorwill, Common, *Phalaenoptilus nuttallii*
Puffin:
Atlantic, *Fratercula arctica*
Horned, *Fratercula corniculata*
Tufted, *Fratercula cirrhata*
Pygmy-Owl:
Ferruginous, *Glaucidium brasilianum*
Northern, *Glaucidium gnoma*
Pyrrhuloxia, *Cardinalis sinuatus*
Quail-Dove:
Bridled, *Geotrygon mystacea*
Key West, *Geotrygon chrysia*
Ruddy, *Geotrygon montana*
Rail:
Black, *Laterallus jamaicensis*
Clapper, *Rallus longirostris*
King, *Rallus elegans*
Sora (see Sora)
Virginia, *Rallus limicola*
Yellow, *Coturnicops noveboracensis*
Raven:
Chihuahuan, *Corvus cryptoleucus*
Common, *Corvus corax*
Razorbill, *Alca torda*
Redhead (see DUCKS)
Redpoll:
Common, *Carduelis flammea*
Hoary, *Carduelis hornemanni*
Redshank, Spotted, *Tringa erythropus*
Redstart:
American, *Setophaga ruticilla*
Painted, *Myioborus pictus*
Slaty-throated, *Myioborus miniatus*
Reed-Bunting:
Common, *Emberiza schoeniculus*
Pallas', *Emberiza pallasi*
Roadrunner, Greater, *Geococcyx californianus*
Robin:
American, *Turdus migratorius*
Clay-colored, *Turdus grayi*
Rufous-backed, *Turdus rufopalliatus*
Rosefinch, Common, *Carpodacus erythrinus*
Rough-winged Swallow, Northern, *Stelgidopteryx serripennis*
Rubythroat, Siberian, *Luscinia calliope*
Ruff, *Philomachus pugnax*
Sanderling, *Calidris alba*
Sandpiper:
Baird's, *Calidris bairdii*
Broad-billed, *Limicola falcinellus*
Buff-breasted, *Tryngites subruficollis*
Common, *Actitis hypoleucos*
Curlew, *Calidris ferruginea*
Least, *Calidris minutilla*
Marsh, *Tringa stagnatilis*
Pectoral, *Calidris melanotos*
Purple, *Calidris maritima*
Rock, *Calidris ptilocnemis*
Semipalmated, *Calidris pusilla*
Sharp-tailed, *Calidris acuminata*
Solitary, *Tringa solitaria*
Spoonbill, *Eurynorhynchus pygmeus*
Spotted, *Actitis macularia*
Stilt, *Calidris himantopus*
Terek, *Xenus cinereus*
Upland, *Bartramia longicauda*
Western, *Calidris mauri*
White-rumped, *Calidris fuscicollis*
Wood, *Tringa glareola*
Sapsucker:
Red-breasted, *Sphyrapicus ruber*
Williamson's, *Sphyrapicus thyroideus*
Yellow-bellied, *Sphyrapicus varius*
Saw-whet Owl, Northern, *Aegolius acadicus*
Scaup (see DUCKS)
Scoter (see DUCKS)
Screech-Owl:
Eastern, *Otus asio*
Puerto Rican, *Otus nudipes*
Western, *Otus kennicottii*
Whiskered, *Otus trichopsis*
Sea-Eagle, Steller's, *Haliaeetus pelagicus*
Seedeater, White-collared, *Sporophila torqueola*
Shearwater:
Audubon's, *Puffinus lherminieri*
Black-vented, *Puffinus opisthomelas*
Buller's, *Puffinus bulleri*
Christmas, *Puffinus nativitatus*
Cory's, *Calonectris diomedea*
Flesh-footed, *Puffinus carneipes*
Greater, *Puffinus gravis*
Little, *Puffinus assimilis*
Manx, *Puffinus puffinus*
Pink-footed, *Puffinus creatopus*
Short-tailed, *Puffinus tenuirostris*
Sooty, *Puffinus griseus*
Townsend's, *Puffinus auricularis*
Wedge-tailed, *Puffinus pacificus*
Shoveler (see DUCKS)
Shrike:
Loggerhead, *Lanius ludovicianus*
Northern, *Lanius excubitor*
Siskin, Pine, *Carduelis pinus*
Skimmer, Black, *Rhynchops niger*
Skua:
Great, *Catharacta skua*
South Polar, *Catharacta maccormicki*
Skylark, Eurasian, *Alauda arvensis*
Smew (see DUCKS)
Snipe:
Common, *Gallinago gallinago*
Jack, *Lymnocryptes minimus*
Pin-tailed, *Gallinago stenura*
Swinhoe's, *Gallinago megala*
Solitaire, Townsend's, *Myadestes townsendi*
Sora, *Porzana carolina*
Sparrow:
American Tree, *Spizella arborea*
Bachman's, *Aimophila aestivalis*
Baird's, *Ammodramus bairdii*
Black-chinned, *Spizella atrogularis*
Black-throated, *Amphispiza bilineata*
Botteri's, *Aimophila botterii*
Brewer's, *Spizella breweri*
Cassin's, *Aimophila cassinii*
Chipping, *Spizella passerina*
Clay-colored, *Spizella pallida*
Field, *Spizella pusilla*

Five-striped, *Amphispiza quinquestriata*
Fox, *Passerella iliaca*
Golden-crowned, *Zonotrichia atricapilla*
Grasshopper, *Ammodramus savannarum*
Harris', *Zonotrichia querula*
Henslow's, *Ammodramus henslowii*
Lark, *Chondestes grammacus*
Le Conte's, *Ammodramus leconteii*
Lincoln's, *Melospiza lincolnii*
Olive, *Arremenops rufivirgatus*
Rufous-crowned, *Aimophila ruificeps*
Rufous-winged, *Aimophila carpalis*
Sage, *Amphispiza belli*
Savannah, *Passerculus sandwichensis*
Seaside, *Ammodramus maritimus*
Sharp-tailed, *Ammodramus caudacutus*
Song, *Melospiza melodia*
Swamp, *Melospiza georgiana*
Vesper, *Pooecetes gramineus*
White-crowned, *Zonotrichia leucophrys*
White-throated, *Zonotrichia albicollis*
Worthen's, *Spizella wortheni*
Spoonbill, Roseate, *Ajaia ajaja*
Starling:
Ashy, *Sturnus cineraceus*
Violet-backed, *Sturnus philippensis*
Starthroat, Plain-capped *Heliomaster constantii,*
Stilt, Black-necked, *Himantopus mexicanus*
Stint:
Little, *Calidris minuta*
Long-toed, *Calidris subminuta*
Rufous-necked, *Calidris ruficollis*
Temminck's, *Calidris temminckii*
Stork, Wood, *Mycteria americana*
Storm-Petrel:
Ashy, *Oceanodroma homochroa*
Band-rumped, *Oceanodroma castro*
Black, *Oceanodroma melania*
Fork-tailed, *Oceanodroma furcata*
Leach's, *Oceanodroma leucorhoa*
Least, *Oceanodroma microsoma*
Sooty, *Oceanodroma tristrami*
Wedge-rumped, *Oceanodroma tethys*
White-faced, *Pelagadroma marina*
Wilson's, *Oceanites oceanicus*
Surfbird, *Aphriza virgata*
Swallow:
Bahama, *Tachycineta cyaneoviridis*
Bank, *Riparia riparia*
Barn, *Hirundo rustica*
Cave, *Hirundo fulva*
Cliff, *Hirundo pyrrhonota*
Rough-winged (see Rough-winged Swallow)
Tree, *Tachycineta bicolor*
Violet-green, *Tachycineta thalassina*
Swan:
Trumpeter, *Cygnus buccinator*
Tundra, *Cygnus columbianus*
Whooper, *Cygnus cygnus*
Swift:
Antillean Palm, *Tachornis phoenicobia*
Black, *Cypseloides niger*
Chimney, *Chaetura pelagica*
Common, *Apus apus*
Fork-tailed, *Apus pacificus*
Needle-tailed (see Needletail)
Vaux's, *Chaetura vauxi*
White-collared, *Streptoprocne zonaris*
White-throated, *Aeronautes saxatalis*
Tanager:
Hepatic, *Piranga flava*
Puerto Rican, *Neospingus speculiferus*
Scarlet, *Piranga olivacea*
Stripe-headed, *Spindalis zena*
Summer, *Piranga rubra*
Western, *Piranga ludoviciana*
Tattler:
Gray-tailed, *Heteroscelus brevipes*
Wandering, *Heteroscelus incanus*
Teal (see DUCKS)
Tern:
Aleutian, *Sterna aleutica*
Arctic, *Sterna paradisaea*
Black, *Chlidonias niger*
Black-naped, *Sterna sumatrana*
Bridled, *Sterna anaethetus*
Caspian, *Sterna caspia*
Common, *Sterna hirundo*
Elegant, *Sterna elegans*
Forster's, *Sterna forsteri*
Gray-backed, *Sterna lunata*
Gull-billed, *Sterna nilotica*
Least, *Sterna antillarum*
Little, *Sterna albifrons*
Roseate, *Sterna dougallii*
Royal, *Sterna maxima*
Sandwich, *Sterna sandvicensis*
Sooty, *Sterna fuscata*
White, *Gygis alba*
White-winged, *Chlidonias leucopterus*
Thrasher:
Bendire's, *Toxostoma bendirei*
Brown, *Toxostoma rufum*
California, *Toxostoma redivivum*
Crissal, *Toxostoma crissale*
Curve-billed, *Toxostoma curvirostre*
Le Conte's, *Toxostoma lecontei*
Long-billed, *Toxostoma longirostre*
Pearly-eyed, *Margarops fuscatus*
Sage, *Oreoscoptes montanus*
Thrush:
Aztec, *Ridgwayia pinicola*
Blue Rock, *Monticola solitarius*
Dusky, *Turdus naumanni*
Eye-browed, *Turdus obscurus*
Gray-cheeked, *Catharus minimus*
Hawaiian, *Phaeornis obscurus*
Hermit, *Catharus guttatus*
Red-legged, *Turdus plumbeus*
Small Kauai, *Phaeornis palmeri*
Swainson's, *Catharus ustulatus*
Varied, *Ixoreus naevius*
Wood, *Hylocichla minima*
Tit, Siberian, *Parus cinctus*
Titmouse:
Bridled, *Parus wollweberi*
Plain, *Parus inornatus*
Tufted, *Parus bicolor*
Towhee:
Abert's, *Pipilo aberti*
Brown, *Pipilo fuscus*
Green-tailed, *Pipilo chlorurus*
Rufous-sided, *Pipilo erythrophthalmus*

Tree-Pipit, Olive, *Anthus hodgsoni*
Trogon:
  Eared, *Euptilotus neoxenus*
  Elegant, *Trogon elegans*
Tropicbird:
  Red-billed, *Phaethon aethereus*
  Red-tailed, *Phaethon rubricauda*
  White-tailed, *Phaethon lepturus*
Turnstone:
  Black, *Arenaria melanocephala*
  Ruddy, *Arenaria interpres*
Veery, *Catharus fuscescens*
Verdin, *Auriparus flaviceps*
Violet-Ear, Green, *Colibri thalassinus*
Vireo:
  Bell's *Vireo bellii*
  Black-capped, *Vireo atricapillus*
  Black-whiskered, *Vireo altiloquus*
  Gray, *Vireo vicinior*
  Hutton's, *Vireo huttoni*
  Philadelphia, *Vireo philadelphicus*
  Puerto Rican, *Vireo latimeri*
  Red-eyed, *Vireo olivaceus*
  Solitary, *Vireo solitarius*
  Warbling, *Vireo gilvus*
  White-eyed, *Vireo griseus*
  Yellow-throated, *Vireo flavifrons*
Vulture:
  Black, *Coragyps atratus*
  Turkey, *Cathartes aura*
Wagtail:
  Black-backed, *Motacilla lugens*
  Gray, *Motacilla cinerea*
  White, *Motacilla alba*
  Yellow, *Motacilla flava*
Warbler:
  Adelaide's, *Dendroica adelaidae*
  Arctic, *Phylloscopus borealis*
  Bachman's *Vermivora bachmanii*
  Bay-breasted, *Dendroica castanea*
  Black-and-white, *Mniotilta varia*
  Black-throated Blue, *Dendroica caerulescens*
  Black-throated Gray, *Dendroica nigrescens*
  Black-throated Green, *Dendroica virens*
  Blackburnian, *Dendroica fusca*
  Blackpoll, *Dendroica striata*
  Blue-winged, *Vermivora pinus*
  Canada, *Wilsonia canadensis*
  Cape May, *Dendroica tigrina*
  Cerulean, *Dendroica cerulea*
  Chestnut-sided, *Dendroica pensylvanica*
  Colima, *Vermivora crissalis*
  Connecticut, *Oporornis agilis*
  Elfin Woods, *Dendroica angelae*
  Golden-cheeked, *Dendroica chrysoparia*
  Golden-crowned, *Basileuterus culicivorus*
  Golden-winged, *Vermivora chrysoptera*
  Grace's, *Dendroica graciae*
  Grasshopper (see Grasshopper-Warbler)
  Hermit, *Dendroica occidentalis*
  Hooded, *Wilsonia citrina*
  Kentucky, *Oporornis formosus*
  Kirtland's, *Dendroica kirtlandii*
  Lucy's, *Vermivora luciae*
  MacGillivray's, *Oporornis tolmiei*
  Magnolia, *Dendroica magnolia*
  Mourning, *Oporornis philadelphia*
  Nashville, *Vermivora ruficapilla*
  Olive, *Peucedramus taeniatus*
  Orange-crowned, *Vermivora celata*
  Palm, *Dendroica palmarum*
  Parula (see Parula)
  Pine, *Dendroica pinus*
  Prairie, *Dendroica discolor*
  Prothonotary, *Protonotaria citrea*
  Red-faced, *Cardellina rubrifrons*
  Rufous-capped, *Basileuterus rufifrons*
  Swainson's, *Limnothlypis swainsonii*
  Tennessee, *Vermivora peregrina*
  Townsend's, *Dendroica townsendi*
  Virgina's, *Vermivora virginiae*
  Willow, *Phylloscopus trochilus*
  Wilson's, *Wilsonia pusilla*
  Worm-eating, *Helmitheros vermivorus*
  Yellow, *Dendroica petechia*
  Yellow-rumped, *Dendroica coronata*
  Yellow-throated, *Dendroica dominica*
Waterthrush:
  Louisiana, *Seiurus motacilla*
  Northern, *Seiurus noveboracensis*
Waxwing:
  Bohemian, *Bombycilla garrulus*
  Cedar, *Bombycilla cedrorum*
  Wheatear, Northern, *Oenanthe oenanthe*
  Whimbrel, *Numenius phaeopus*
Whip-poor-will, *Caprimulgus vociferus*
Whistling-Duck (see DUCKS)
Wigeon (see DUCKS)
Willet, *Catoptrophorus semipalmatus*
Wood-Pewee:
  Eastern, *Contopus virens*
  Western, *Contopus sordidulus*
Woodcock:
  American, *Scolopax minor*
  Eurasian, *Scolopax rusticola*
Woodpecker:
  Acorn, *Melanerpes formicivorus*
  Black-backed, *Picoides arcticus*
  Downy, *Picoides pubescens*
  Gila, *Melanerpes uropygialis*
  Golden-fronted, *Melanerpes aurifrons*
  Hairy, *Picoides villosus*
  Ivory-billed, *Campephilus principalis*
  Ladder-backed, *Picoides scalaris*
  Lewis', *Melanerpes lewis*
  Nuttall's, *Picoides nuttallii*
  Pileated, *Dryocopus pileatus*
  Puerto Rican, *Melanerpes portoricensis*
  Red-bellied, *Melanerpes carolinus*
  Red-cockaded, *Picoides borealis*
  Red-headed, *Melanerpes erythrocephalus*
  Strickland's, *Picoides stricklandi*
  Three-toed, *Picoides tridactylus*
  White-headed, *Picoides albolarvatus*
Woodstar, Bahama, *Calliphlox evelynae*
Wren:
  Bewick's *Thryomanes bewickii*
  Cactus, *Campylorhynchus brunneicapillus*
  Canyon, *Catherpes mexicanus*
  Carolina, *Thryothorus ludovicianus*
  House, *Troglodytes aedon*
  Marsh, *Cistothorus palustris*
  Rock, *Salpinctes obsoletus*
  Sedge, *Cistothorus platensis*

Winter, *Troglodytes troglodytes*
Wryneck, Eurasian, *Jynx torquilla*
Yellowlegs:
Greater, *Tringa melanoleuca*
Lesser, *Tringa flavipes*
Yellowthroat:
Common, *Geothlypis trichas*
Gray-crowned, *Geothlypis poliocephala*

II. TAXONOMIC LISTING

ORDER GAVIIFORMES

FAMILY GAVIIDAE

Gavia stellata, Red-throated Loon
Gavia arctica, Arctic Loon
Gavia immer, Common Loon
Gavia adamsii, Yellow-billed Loon

ORDER PODICIPEDIFORMES

FAMILY PODICIPEDIDAE

Tachybaptus dominicus, Least Grebe
Podilymbus podiceps, Pied-billed Grebe
Podiceps auritus, Horned Grebe
Podiceps grisegena, Red-necked Grebe
Podiceps nigricollis, Eared Grebe
Aechmophorus occidentalis, Western Grebe

ORDER PROCELLARIIFORMES

FAMILY DIOMEDEIDAE

Diomedea albatrus, Short-tailed Albatross
Diomedea nigripes, Black-footed Albatross
Diomedea immutabilis, Laysan Albatross
Diomedea chlororhynchos, Yellow-nosed Albatross

FAMILY PROCELLARIIDAE

Fulmarus glacialis, Northern Fulmar
Pterodroma hasitata, Black-capped Petrel
Pterodroma phaeopygia, Dark-rumped Petrel
Pterodroma externa, White-necked Petrel
Pterodroma inexpectata, Mottled Petrel
Pterodroma ultima, Murphy's Petrel
Pterodroma neglecta, Kermadec Petrel
Pterodroma arminjoniana, Herald Petrel
Pterodroma cookii, Cook's Petrel
Pterodroma hypoleuca, Bonin Petrel
Bulweria bulwerii, Bulwer's Petrel
Calonectris diomedea, Cory's Shearwater
Puffinus creatopus, Pink-footed Shearwater
Puffinus carneipes, Flesh-footed Shearwater
Puffinus gravis, Greater Shearwater
Puffinus pacificus, Wedge-tailed Shearwater
Puffinus bulleri, Buller's Shearwater
Puffinus griseus, Sooty Shearwater
Puffinus tenuirostris, Short-tailed Shearwater
Puffinus nativitatis, Christmas Shearwater
Puffinus puffinus, Manx Shearwater
Puffinus opisthomelas, Black-vented Shearwater
Puffinus auricularis, Townsend's Shearwater
Puffinus assimilis, Little Shearwater
Puffinus lherminieri, Audubon's Shearwater

FAMILY HYDROBATIDAE

Oceanites oceanicus, Wilson's Storm-Petrel
Pelagodroma marina, White-faced Storm-Petrel
Oceanodroma furcata, Fork-tailed Storm-Petrel
Oceanodroma leucorhoa, Leach's Storm-Petrel
Oceanodroma homochroa, Ashy Storm-Petrel
Oceanodroma castro, Band-rumped Storm-Petrel
Oceanodroma tethys, Wedge-rumped Storm-Petrel
Oceanodroma melania, Black Storm-Petrel
Oceanodroma tristrami, Sooty Storm-Petrel
Oceanodroma microsoma, Least Storm-Petrel

ORDER PELECANIFORMES

FAMILY PHAETHONTIDAE

Phaethon lepturus, White-tailed Tropicbird
Phaethon aethereus, Red-billed Tropicbird
Phaethon rubricauda, Red-tailed Tropicbird

FAMILY SULIDAE

Sula dactylatra, Masked Booby
Sula nebouxii, Blue-footed Booby
Sula leucogaster, Brown Booby
Sula sula, Red-footed Booby
Sula bassanus, Northern Gannet

FAMILY PELECANIDAE

Pelecanus erythrorhynchos, American White Pelican
Pelecanus occidentalis, Brown Pelican

FAMILY PHALACROCORACIDAE

Phalacrocorax carbo, Great Cormorant
Phalacrocorax auritus, Double-crested Cormorant
Phalacrocorax olivaceus, Olivaceous Cormorant
Phalacrocorax penicillatus, Brandt's Cormorant
Phalacrocorax pelagicus, Pelagic Cormorant
Phalacrocorax urile, Red-faced Cormorant

FAMILY ANHINGIDAE

Anhinga anhinga, Anhinga

FAMILY FREGATIDAE

Fregata magnificens, Magnificent Frigatebird
Fregata minor, Great Frigatebird
Fregata ariel, Lesser Frigatebird

ORDER CICONIIFORMES

FAMILY ARDEIDAE

Botaurus lentiginosus, American Bittern
Ixobrychus exilis, Least Bittern
Ixobrychus sinensis, Chinese Bittern
Ixobrychus eurhythmus, Schrenk's Bittern
Ardea herodias, Great Blue Heron
Casmerodius albus, Great Egret
Egretta eulophotes, Chinese Egret
Egretta sacra, Pacific Reef Heron
Egretta intermedia, Plumed Egret
Egretta thula, Snowy Egret
Egretta caerulea, Little Blue Heron
Egretta tricolor, Tricolored Heron
Egretta rufescens, Reddish Egret

Bubulcus ibis, Cattle Egret
Butorides striatus, Green-backed Heron
Nycticorax nycticorax, Black-crowned Night-Heron
Nycticorax melanolophus, Malay Night-Heron
Nycticorax goisagi, Japanese Night-Heron
Nycticorax violaceus, Yellow-crowned Night-Heron

FAMILY THRESKIORNITHIDAE

Eudocimus albus, White Ibis
Eudocimus ruber, Scarlet Ibis
Plegadis falcinellus, Glossy Ibis
Plegadis chihi, White-faced Ibis
Ajaia ajaja, Roseate Spoonbill

FAMILY CICONIIDAE

Jabiru mycteria, Jabiru
Mycteria americana, Wood Stork

ORDER PHOENICOPTERIFORMES

FAMILY PHOENICOPTERIDAE

Phoenicopterus ruber, Greater Flamingo

ORDER ANSERIFORMES

FAMILY ANATIDAE

Dendrocygna bicolor, Fulvous Whistling-Duck
Dendrocygna autumnalis, Black-bellied Whistling-Duck
Dendrocygna arborea, West Indian Whistling-Duck
Cygnus columbianus, Tundra Swan
Cygnus cygnus, Whooper Swan
Cygnus buccinator, Trumpeter Swan
Anser fabalis, Bean Goose
Anser albifrons, Greater White-fronted Goose
Chen caerulescens, Snow Goose
Chen rossii, Ross' Goose
Chen canagica, Emperor Goose
Branta bernicla, Brant
Branta leucopsis, Barnacle Goose
Branta canadensis, Canada Goose
Nesochen sandvicensis, Hawaiian Goose
Aix sponsa, Wood Duck
Anas crecca, Green-winged Teal
Anas formosa, Baikal Teal
Anas falcata, Falcated Teal
Anas rubripes, American Black Duck
Anas fulvigula, Mottled Duck
Anas platyrhynchos, Mallard
Anas wyvilliana, Hawaiian Duck
Anas laysanensis, Laysan Duck
Anas bahamensis, White-cheeked Pintail
Anas acuta, Northern Pintail
Anas querquedula, Garganey
Anas discors, Blue-winged Teal
Anas cyanoptera, Cinnamon Teal
Anas clypeata, Northern Shoveler
Anas strepera, Gadwall
Anas penelope, Eurasian Wigeon
Anas americana, American Wigeon
Aythya ferina, Common Pochard
Aythya valisineria, Canvasback
Aythya americana, Redhead
Aythya baeri, Baer's Pochard
Aythya collaris, Ring-necked Duck
Aythya fuligula, Tufted Duck
Aythya marila, Greater Scaup
Aythya affinis, Lesser Scaup
Somateria mollissima, Common Eider
Somateria spectabilis, King Eider
Somateria fischeri, Spectacled Eider
Polysticta stelleri, Steller's Eider
Histrionicus histrionicus, Harlequin Duck
Clangula hyemalis, Oldsquaw
Melanitta nigra, Black Scoter
Melanitta perspicillata, Surf Scoter
Melanitta fusca, White-winged Scoter
Bucephala clangula, Common Goldeneye
Bucephala islandica, Barrow's Goldeneye
Bucephala albeola, Bufflehead
Mergellus albellus, Smew
Lophodytes cucullatus, Hooded Merganser
Mergus merganser, Common Merganser
Mergus serrator, Red-breasted Merganser
Oxyura jamaicensis, Ruddy Duck
Oxyura dominica, Masked Duck

ORDER FALCONIFORMES

FAMILY CATHARTIDAE

Coragyps atratus, Black Vulture
Cathartes aura, Turkey Vulture
Gymnogyps californianus, California Condor

FAMILY ACCIPITRIDAE

Pandion haliaetus, Osprey
Chondrohierax uncinatus, Hook-billed Kite
Elanoides forficatus, American Swallow-tailed Kite
Elanus caeruleus, Black-shouldered Kite
Rostrhamus sociabilis, Snail Kite
Ictinia mississippiensis, Mississippi Kite
Milvus migrans, Black Kite
Haliaeetus leucocephalus, Bald Eagle
Haliaeetus albicilla, White-tailed Eagle
Haliaeetus pelagicus, Steller's Sea-Eagle
Circus cyaneus, Northern Harrier
Accipiter gularis, Asiatic Sparrow Hawk
Accipiter striatus, Sharp-shinned Hawk
Accipiter cooperii, Cooper's Hawk
Accipiter gentilis, Northern Goshawk
Buteogallus anthracinus, Common Black-Hawk
Parabuteo unicinctus, Harris' Hawk
Buteo nitidus, Gray Hawk
Buteo lineatus, Red-shouldered Hawk
Buteo platypterus, Broad-winged Hawk
Buteo brachyurus, Short-tailed Hawk
Buteo swainsoni, Swainson's Hawk
Buteo albicaudatus, White-tailed Hawk
Buteo albonotatus, Zone-tailed Hawk
Buteo solitarius, Hawaiian Hawk
Buteo jamaicensis, Red-tailed Hawk
Buteo regalis, Ferruginous Hawk
Buteo lagopus, Rough-legged Hawk
Aquila chrysaetos, Golden Eagle

FAMILY FALCONIDAE

Polyborus plancus, Crested Caracara
Falco tinnunculus, Eurasian Kestrel
Falco sparverius, American Kestrel
Falco columbarius, Merlin
Falco femoralis, Aplomado Falcon

Falco peregrinus, Peregrine Falcon
Falco rusticolus, Gyrfalcon
Falco mexicanus, Prairie Falcon

ORDER GRUIFORMES

FAMILY RALLIDAE

Coturnicops noveboracensis, Yellow Rail
Laterallus jamaicensis, Black Rail
Crex crex, Corn Crake
Rallus longirostris, Clapper Rail
Rallus elegans, King Rail
Rallus limicola, Virginia Rail
Porzana carolina, Sora
Porzana flaviventer, Yellow-breasted Crake
Porphyrula martinica, Purple Gallinule
Gallinula chloropus, Common Moorhen
Fulica atra, Eurasian Coot
Fulica americana, American Coot
Fulica caribaea, Caribbean Coot

FAMILY ARAMIDAE

Aramus guarauna, Limpkin

FAMILY GRUIDAE

Grus canadensis, Sandhill Crane
Grus grus, Common Crane
Grus americana, Whooping Crane

ORDER CHARADRIIFORMES

FAMILY CHARADRIIDAE

Vanellus vanellus, Northern Lapwing
Pluvialis squatarola, Black-bellied Plover
Pluvialis dominica, Lesser Golden-Plover
Charadrius mongolus, Mongolian Plover
Charadrius leschenaultii, Great Sand Plover
Charadrius alexandrinus, Snowy Plover
Charadrius wilsonia, Wilson's Plover
Charadrius hiaticula, Common Ringed Plover
Charadrius semipalmatus, Semipalmated Plover
Charadrius melodus, Piping Plover
Charadrius dubius, Little Ringed Plover
Charadrius vociferus, Killdeer
Charadrius montanus, Mountain Plover
Charadrius morinellus, Eurasian Dotterel

FAMILY HAEMATOPODIDAE

Haematopus palliatus, American Oystercatcher
Haematopus bachmani, Black Oystercatcher

FAMILY RECURVIROSTRIDAE

Himantopus mexicanus, Black-necked Stilt
Recurvirostra americana, American Avocet

FAMILY JACANIDAE

Jacana spinosa, Northern Jacana

FAMILY, SCOLOPACIDAE

Tringa nebularia, Common Greenshank
Tringa melanoleuca, Greater Yellowlegs
Tringa flavipes, Lesser Yellowlegs
Tringa stagnatilis, Marsh Sandpiper
Tringa erythropus, Spotted Redshank
Tringa glareola, Wood Sandpiper
Tringa solitaria, Solitary Sandpiper
Catoptrophorus semipalmatus, Willet
Heteroscelus incanus, Wandering Tattler
Heteroscelus brevipes, Gray-tailed Tattler
Actitis hypoleucos, Common Sandpiper
Actitis macularia, Spotted Sandpiper
Xenus cinereus, Terek Sandpiper
Bartramia longicauda, Upland Sandpiper
Numenius minutus, Least Curlew
Numenius borealis, Eskimo Curlew
Numenius phaeopus, Whimbrel
Numenius tahitiensis, Bristle-thighed Curlew
Numenius madagascariensis, Far Eastern Curlew
Numenius americanus, Long-billed Curlew
Limosa limosa, Black-tailed Godwit
Limosa haemastica, Hudsonian Godwit
Limosa lapponica, Bar-tailed Godwit
Limosa fedoa, Marbled Godwit
Arenaria interpres, Ruddy Turnstone
Arenaria melanocephala, Black Turnstone
Aphriza virgata, Surfbird
Calidris tenuirostris, Great Knot
Calidris canutus, Red Knot
Calidris alba, Sanderling
Calidris pusilla, Semipalmated Sandpiper
Calidris mauri, Western Sandpiper
Calidris ruficollis, Rufous-necked Stint
Calidris minuta, Little Stint
Calidris temminckii, Temminck's Stint
Calidris subminuta, Long-toed Stint
Calidris minutilla, Least Sandpiper
Calidris fuscicollis, White-rumped Sandpiper
Calidris bairdii, Baird's Sandpiper
Calidris melanotos, Pectoral Sandpiper
Calidris acuminata, Sharp-tailed Sandpiper
Calidris maritima, Purple Sandpiper
Calidris ptilocnemis, Rock Sandpiper
Calidris alpina, Dunlin
Calidris ferruginea, Curlew Sandpiper
Calidris himantopus, Stilt Sandpiper
Eurynorhynchus pygmeus, Spoonbill Sandpiper
Limicola falcinellus, Broad-billed Sandpiper
Tryngites subruficollis, Buff-breasted Sandpiper
Philomachus pugnax, Ruff
Limnodromus griseus, Short-billed Dowitcher
Limnodromus scolopaceus, Long-billed Dowitcher
Lymnocryptes minimus, Jack Snipe
Gallinago gallinago, Common Snipe
Gallinago stenura, Pin-tailed Snipe
Gallinago megala, Swinhoe's Snipe
Scolopax rusticola, Eurasian Woodcock
Scolopax minor, American Woodcock
Phalaropus tricolor, Wilson's Phalarope
Phalaropus lobatus, Red-necked Phalarope
Phalaropus fulicaria, Red Phalarope

FAMILY LARIDAE

Stercorarius pomarinus, Pomarine Jaeger
Stercorarius parasiticus, Parasitic Jaeger
Stercorarius longicaudus, Long-tailed Jaeger
Catharacta skua, Great Skua
Catharacta maccormicki, South Polar Skua
Larus atricilla, Laughing Gull
Larus pipixcan, Franklin's Gull
Larus minutus, Little Gull

Larus ridibundus, Common Black-headed Gull
Larus philadelphia, Bonaparte's Gull
Larus heermanni, Heermann's Gull
Larus canus, Mew Gull
Larus delawarensis, Ring-billed Gull
Larus californicus, California Gull
Larus argentatus, Herring Gull
Larus thayeri, Thayer's Gull
Larus glaucoides, Iceland Gull
Larus fuscus, Lesser Black-backed Gull
Larus schistisagus, Slaty-backed Gull
Larus livens, Yellow-footed Gull
Larus occidentalis, Western Gull
Larus glaucescens, Glaucous-winged Gull
Larus hyperboreus, Glaucous Gull
Larus marinus, Great Black-backed Gull
Rissa tridactyla, Black-legged Kittiwake
Rissa brevirostris, Red-legged Kittiwake
Rhodostethia rosea, Ross' Gull
Xema sabini, Sabine's Gull
Pagophila eburnea, Ivory Gull
Sterna nilotica, Gull-billed Tern
Sterna caspia, Caspian Tern
Sterna maxima, Royal Tern
Sterna elegans, Elegant Tern
Sterna sandvicensis, Sandwich Tern
Sterna dougallii, Roseate Tern
Sterna hirundo, Common Tern
Sterna paradisaea, Arctic Tern
Sterna aleutica, Aleutian Tern
Sterna forsteri, Forster's Tern
Sterna antillarum, Least Tern
Sterna albifrons, Little Tern
Sterna sumatrana, Black-naped Tern
Sterna lunata, Gray-backed Tern
Sterna anaethetus, Bridled Tern
Sterna fuscata, Sooty Tern
Chlidonias leucopterus, White-winged Tern
Chlidonias niger, Black Tern
Anous stolidus, Brown Noddy
Anous minutus, Black Noddy
Anous tenuirostris, Lesser Noddy
Procelsterna cerulea, Blue-Gray Noddy
Gygis alba, White Tern
Rynchops niger, Black Skimmer

FAMILY ALCIDAE

Alle alle, Dovekie
Uria aalge, Common Murre
Uria lomvia, Thick-billed Murre
Alca torda, Razorbill
Cepphus grylle, Black Guillemot
Cepphus columba, Pigeon Guillemot
Brachyramphus marmoratus, Marbled Murrelet
Brachyramphus brevirostris, Kittlitz's Murrelet
Synthliboramphus hypoleucus, Xantus' Murrelet
Synthliboramphus craveri, Craveri's Murrelet
Synthliboramphus antiquus, Ancient Murrelet
Ptychoramphus aleuticus, Cassin's Auklet
Cyclorrhynchus psittacula, Parakeet Auklet
Aethia pusilla, Least Auklet
Aethia pygmaea, Whiskered Auklet
Aethia cristatella, Crested Auklet
Cerorhinca monocerata, Rhinoceros Auklet
Fratercula cirrhata, Tufted Puffin
Fratercula arctica, Atlantic Puffin
Fratercula corniculata, Horned Puffin

ORDER COLUMBIFORMES

FAMILY COLUMBIDAE

Columba squamosa, Scaly-naped Pigeon
Columba leucocephala, White-crowned Pigeon
Columba flavirostris, Red-billed Pigeon
Columba inornata, Plain Pigeon
Columba fasciata, Band-tailed Pigeon
Zenaida asiatica, White-winged Dove
Zenaida aurita, Zenaida Dove
Zenaida macroura, Mourning Dove
Columbina inca, Inca Dove
Columbina passerina, Common Ground-Dove
Columbina talpacoti, Ruddy Ground-Dove
Leptotila verreauxi, White-tipped Dove
Geotrygon chrysia, Key West Quail-Dove
Geotrygon mystacea, Bridled Quail-Dove
Geotrygon montana, Ruddy Quail-Dove

ORDER CUCULIFORMES

FAMILY CUCULIDAE

Cuculus canorus, Common Cuckoo
Cuculus saturatus, Oriental Cuckoo
Cuculus fugax, Hodgson's Hawk-Cuckoo
Coccyzus erythropthalmus, Black-billed Cuckoo
Coccyzus americanus, Yellow-billed Cuckoo
Coccyzus minor, Mangrove Cuckoo
Geococcyx californianus, Greater Roadrunner
Saurothera vieilloti, Puerto Rican Lizard-Cuckoo
Crotophaga ani, Smooth-billed Ani
Crotophaga sulcirostris, Groove-billed Ani

ORDER STRIGIFORMES

FAMILY TYTONIDAE

Tyto alba, Common Barn-Owl

FAMILY STRIGIDAE

Otus flammeolus, Flammulated Owl
Otus asio, Eastern Screech-Owl
Otus kennicottii, Western Screech-Owl
Otus trichopsis, Whiskered Screech-Owl
Otus nudipes, Puerto Rican Screech-Owl
Bubo virginianus, Great Horned Owl
Nyctea scandiaca, Snowy Owl
Surnia ulula, Northern Hawk-Owl
Glaucidium gnoma, Northern Pygmy-Owl
Glaucidium brasilianum, Ferruginous Pygmy-Owl
Micrathene whitneyi, Elf Owl
Athene cunicularia, Burrowing Owl
Strix occidentalis, Spotted Owl
Strix varia, Barred Owl
Strix nebulosa, Great Gray Owl
Asio otus, Long-eared Owl
Asio flammeus, Short-eared Owl
Aegolius funereus, Boreal Owl
Aegolius acadicus, Northern Saw-whet Owl

ORDER CAPRIMULGIFORMES

FAMILY CAPRIMULGIDAE

Chordeiles acutipennis, Lesser Nighthawk
Chordeiles minor, Common Nighthawk
Chordeiles gundlachii, Antillean Nighthawk
Nyctidromus albicollis, Common Pauraque
Phalaenoptilus nuttallii, Common Poorwill
Caprimulgus carolinensis, Chuck-will's-widow
Caprimulgus ridgwayi, Buff-collared Nightjar
Caprimulgus vociferus, Whip-poor-will
Caprimulgus noctitherus, Puerto Rican Nightjar
Caprimulgus indicus, Jungle Nightjar

ORDER APODIFORMES

FAMILY APODIDAE

Cypseloides niger, Black Swift
Streptoprocne zonaris, White-collared Swift
Chaetura pelagica, Chimney Swift
Chaetura vauxi, Vaux's Swift
Hirundapus caudacutus, White-throated Needletail
Apus apus, Common Swift
Apus pacificus, Fork-tailed Swift
Aeronautes saxatalis, White-throated Swift
Tachornis phoenicobia, Antillean Palm Swift

FAMILY TROCHILIDAE

Colibri thalassinus, Green Violet-ear
Anthracothorax dominicus, Antillean Mango
Anthracothorax viridis, Green Mango
Eulampis holosericeus, Green-throated Carib
Orthorhynchus cristatus, Antillean Crested Hummingbird
Chlorostilbon maugaeus, Puerto Rican Emerald
Cynanthus latirostris, Broad-billed Hummingbird
Hylocharis leucotis, White-eared Hummingbird
Amazilia beryllina, Berylline Hummingbird
Amazilia yucatanensis, Buff-bellied Hummingbird
Amazilia violiceps, Violet-crowned Hummingbird
Lampornis clemenciae, Blue-throated Hummingbird
Eugenes fulgens, Magnificent Hummingbird
Heliomaster constantii, Plain-capped Starthroat
Calliphlox evelynae, Bahama Woodstar
Calothorax lucifer, Lucifer Hummingbird
Archilochus colubris, Ruby-throated Hummingbird
Archilochus alexandri, Black-chinned Hummingbird
Calypte anna, Anna's Hummingbird
Calypte costae, Costa's Hummingbird
Stellula calliope, Calliope Hummingbird
Selasphorus platycercus, Broad-tailed Hummingbird
Selasphorus rufus, Rufous Hummingbird
Selasphorus sasin, Allen's Hummingbird

ORDER TROGONIFORMES

FAMILY TROGONIDAE

Trogon elegans, Elegant Trogon
Euptilotus neoxenus, Eared Trogon

ORDER CORACIIFORMES

FAMILY UPUPIDAE

Upupa epops, Hoopoe

FAMILY ALCEDINIDAE

Ceryle torquata, Ringed Kingfisher
Ceryle alcyon, Belted Kingfisher
Chloroceryle americana, Green Kingfisher

ORDER PICIFORMES

FAMILY PICIDAE

Jynx torquilla, Eurasian Wryneck
Melanerpes lewis, Lewis' Woodpecker
Melanerpes erythrocephalus, Red-headed Woodpecker
Melanerpes formicivorus, Acorn Woodpecker
Melanerpes uropygialis, Gila Woodpecker
Melanerpes aurifrons, Golden-fronted Woodpecker
Melanerpes carolinus, Red-bellied Woodpecker
Melanerpes portoricensis, Puerto Rican Woodpecker
Sphyrapicus varius, Yellow-bellied Sapsucker
Sphyrapicus ruber, Red-breasted Sapsucker
Sphyrapicus thyroideus, Williamson's Sapsucker
Picoides scalaris, Ladder-Backed Woodpecker
Picoides nuttallii, Nuttall's Woodpecker
Picoides pubescens, Downy Woodpecker
Picoides villosus, Hairy Woodpecker
Picoides stricklandi, Strickland's Woodpecker
Picoides borealis, Red-cockaded Woodpecker
Picoides albolarvatus, White-headed Woodpecker
Picoides tridactylus, Three-toed Woodpecker
Picoides arcticus, Black-backed Woodpecker
Colaptes auratus, Northern Flicker
Dryocopus pileatus, Pileated Woodpecker
Campephilus principalis, Ivory-billed Woodpecker

ORDER PASSERIFORMES

FAMILY TYRANNIDAE

Elaenia martinica, Caribbean Elaenia
Camptostoma imberbe, Northern Beardless-Tyrannulet
Contopus borealis, Olive-sided Flycatcher
Contopus pertinax, Greater Pewee
Contopus sordidulus, Western Wood-Pewee
Contopus virens, Eastern Wood-Pewee
Contopus latirostris, Lesser Antillean Pewee
Empidonax flaviventris, Yellow-bellied Flycatcher
Empidonax virescens, Acadian Flycatcher
Empidonax alnorum, Alder Flycatcher
Empidonax traillii, Willow Flycatcher
Empidonax minimus, Least Flycatcher
Empidonax hammondii, Hammond's Flycatcher
Empidonax oberholseri, Dusky Flycatcher
Empidonax wrightii, Gray Flycatcher

Empidonax difficilis, Western Flycatcher
Empidonax fulvifrons, Buff-breasted Flycatcher
Sayornis nigricans, Black Phoebe
Sayornis phoebe, Eastern Phoebe
Sayornis saya, Say's Phoebe
Pyrocephalus rubinus, Vermilion Flycatcher
Myiarchus tuberculifer, Dusky-capped Flycatcher
Myiarchus cinerascens, Ash-throated Flycatcher
Myiarchus nuttingi, Nutting's Flycatcher
Myiarchus crinitus, Great Crested Flycatcher
Myiarchus tyrannulus, Brown-crested Flycatcher
Myiarchus antillarum, Puerto Rican Flycatcher
Pitangus sulphuratus, Great Kiskadee
Myiodynastes luteiventris, Sulpher-bellied Flycatcher
Tyrannus melancholicus, Tropical Kingbird
Tyrannus couchii, Couch's Kingbird
Tyrannus vociferans, Cassin's Kingbird
Tyrannus crassirostris, Thick-billed Kingbird
Tyrannus verticalis, Western Kingbird
Tyrannus tyrannus, Eastern Kingbird
Tyrannus dominicensis, Gray Kingbird
Tyrannus caudifasciatus, Loggerhead Kingbird
Tyrannus forficatus, Scissor-tailed Flycatcher
Tyrannus savana, Fork-tailed Flycatcher
Pachyramphus aglaiae, Rose-throated Becard

FAMILY ALAUDIDAE

Alauda arvensis, Eurasian Skylark
Eremophila alpestris, Horned Lark

FAMILY HIRUNDINIDAE

Progne subis, Purple Martin
Progne cryptoleuca, Cuban Martin
Progne dominicensis, Caribbean Martin
Progne chalybea, Gray-breasted Martin
Tachycineta bicolor, Tree Swallow
Tachycineta thalassina, Violet-green Swallow
Tachycineta cyaneoviridis, Bahama Swallow
Stelgidopteryx serripennis, Northern Rough-winged Swallow
Riparia riparia, Bank Swallow
Hirundo pyrrhonota, Cliff Swallow
Hirundo fulva, Cave Swallow
Hirundo rustica, Barn Swallow
Delichon urbica, Common House-Martin

FAMILY CORVIDAE

Perisoreus canadensis, Gray Jay
Cyanocitta stelleri, Steller's Jay
Cyanocitta cristata, Blue Jay
Cyanocorax yncas, Green Jay
Cyanocorax morio, Brown Jay
Aphelocoma coerulescens, Scrub Jay
Aphelocoma ultramarina, Gray-breasted Jay
Gymnorhinus cyanocephalus, Pinyon Jay
Nucifraga columbiana, Clark's Nutcracker
Pica pica, Black-billed Magpie
Pica nuttalli, Yellow-billed Magpie
Corvus brachyrhynchos, American Crow
Corvus caurinus, Northwestern Crow
Corvus leucognaphalus, White-necked Crow
Corvus imparatus, Mexican Crow
Corvus ossifragus, Fish Crow
Corvus hawaiiensis, Hawaiian Crow
Corvus cryptoleucus, Chihuahuan Raven
Corvus corax, Common Raven

FAMILY PARIDAE

Parus atricapillus, Black-capped Chickadee
Parus carolinensis, Carolina Chickadee
Parus sclateri, Mexican Chickadee
Parus gambeli, Mountain Chickadee
Parus cinctus, Siberian Tit
Parus hudsonicus, Boreal Chickadee
Parus rufescens, Chestnut-backed Chickadee
Parus wollweberi, Bridled Titmouse
Parus inornatus, Plain Titmouse
Parus bicolor, Tufted Titmouse

FAMILY REMIZIDAE

Auriparus flaviceps, Verdin

FAMILY AEGITHALIDAE

Psaltriparus minimus, Bushtit

FAMILY SITTIDAE

Sitta canadensis, Red-breasted Nuthatch
Sitta carolinensis, White-breasted Nuthatch
Sitta pygmaea, Pygmy Nuthatch
Sitta pusilla, Brown-headed Nuthatch

FAMILY CERTHIIDAE

Certhia americana, Brown Creeper

FAMILY TROGLODYTIDAE

Campylorhynchus brunneicapillus, Cactus Wren
Salpinctes obsoletus, Rock Wren
Catherpes mexicanus, Canyon Wren
Thryothorus ludovicianus, Carolina Wren
Thryomanes bewickii, Bewick's Wren
Troglodytes aedon, House Wren
Troglodytes troglodytes, Winter Wren
Cistothorus platensis, Sedge Wren
Cistothorus palustris, Marsh Wren

FAMILY CINCLIDAE

Cinclus mexicanus, American Dipper

FAMILY MUSCICAPIDAE

SUBFAMILY SYLVIINAE

Locustella ochotensis, Middendorff's Grasshopper-Warbler
Phylloscopus borealis, Arctic Warbler
Phylloscopus trochilus, Willow Warbler
Regulus satrapa, Golden-crowned Kinglet
Regulus calendula, Ruby-crowned Kinglet
Polioptila caerulea, Blue-gray Gnatcatcher
Polioptila melanura, Black-tailed Gnatcatcher
Polioptila nigriceps, Black-capped Gnatcatcher

SUBFAMILY MUSCICAPINAE

Muscicapa griseisticta, Gray-spotted Flycatcher

Muscicapa narcissina, Narcissus Flycatcher

SUBFAMILY TURDINAE

Luscinia calliope, Siberian Rubythroat
Luscinia svecica, Bluethroat
Monticola solitarius, Blue Rock Thrush
Oenanthe oenanthe, Northern Wheatear
Sialis sialis, Eastern Bluebird
Sialis mexicana, Western Bluebird
Sialis currucoides, Mountain Bluebird
Myadestes townsendi, Townsend's Solitaire
Phaeornis obscurus, Hawaiian Thrush
Phaeornis palmeri, Small Kauai Thrush
Catharus fuscescens, Veery
Catharus minimus, Gray-cheeked Thrush
Catharus ustulatus, Swainson's Thrush
Catharus guttatus, Hermit Thrush
Hylocichla mustelina, Wood Thrush
Turdus plumbeus, Red-legged Thrush
Turdus obscurus, Eye-browed Thrush
Turdus naumanni, Dusky Thrush
Turdus pilaris, Fieldfare
Turdus grayi, Clay-colored Robin
Turdus rufopalliatus, Rufous-backed Robin
Turdus migratorius, American Robin
Ixoreus naevius, Varied Thrush
Ridgwayia pinicola, Aztec Thrush

FAMILY MIMIDAE

Dumetella carolinensis, Gray Catbird
Mimus polyglottos, Northern Mockingbird
Oreoscoptes montanus, Sage Thrasher
Toxostoma rufum, Brown Thrasher
Toxostoma longirostre, Long-billed Thrasher
Toxostoma bendirei, Bendire's Thrasher
Toxostoma curvirostre, Curve-billed Thrasher
Toxostoma redivivum, California Thrasher
Toxostoma crissale, Crissal Thrasher
Toxostoma lecontei, Le Conte's Thrasher
Margarops fuscatus, Pearly-eyed Thrasher

FAMILY PRUNELLIDAE

Prunella montanella, Siberian Accentor

FAMILY MOTACILLIDAE

Motacilla flava, Yellow Wagtail
Motacilla cinerea, Gray Wagtail
Motacilla alba, White Wagtail
Motacilla lugens, Black-backed Wagtail
Anthur hodgsoni, Olive Tree-Pipit
Anthus gustavi, Pechora Pipit
Anthus cervinus, Red-throated Pipit
Anthus spinoletta, Water Pipit
Anthus spragueii, Sprague's Pipit

FAMILY BOMBYCILLIDAE

Bombycilla garrulus, Bohemian Waxwing
Bombycilla cedrorum, Cedar Waxwing

FAMILY PTILOGONATIDAE

Phainopepla nitens, Phainopepla

FAMILY LANIIDAE

Lanius excubitor, Northern Shrike
Lanius ludovicianus, Loggerhead Shrike

FAMILY STURNIDAE

Sturnus philippensis, Violet-backed Starling
Sturnus cineraceus, Ashy Starling

FAMILY VIREONIDAE

Vireo griseus, White-eyed Vireo
Vireo latimeri, Puerto Rican Vireo
Vireo bellii, Bells' Vireo
Vireo atricapillus, Black-capped Vireo
Vireo vicinior, Gray Vireo
Vireo solitarius, Solitary Vireo
Vireo flavifrons, Yellow-throated Vireo
Vireo huttoni, Hutton's Vireo
Vireo gilvus, Warbling Vireo
Vireo philadelphicus, Philadelphia Vireo
Vireo olivaceus, Red-eyed Vireo
Vireo altiloquus, Black-whiskered Vireo

FAMILY EMBERIZIDAE

SUBFAMILY PARULINAE

Vermivora bachmanii, Bachman's Warbler
Vermivora pinus, Blue-winged Warbler
Vermivora chrysoptera, Golden-winged Warbler
Vermivora peregrina, Tennessee Warbler
Vermivora celata, Orange-crowned Warbler
Vermivora ruficapilla, Nashville Warbler
Vermivora virginiae, Virginia's Warbler
Vermivora crissalis, Colima Warbler
Vermivora luciae, Lucy's Warbler
Parula americana, Northern Parula
Parula pitiayumi, Tropical Parula
Dendroica petechia, Yellow Warbler
Dendroica pensylvanica, Chestnut-sided Warbler
Dendroica magnolia, Magnolia Warbler
Dendroica tigrina, Cape May Warbler
Dendroica caerulescens, Black-throated Blue Warbler
Dendroica coronata, Yellow-rumped Warbler
Dendroica nigrescens, Black-throated Gray Warbler
Dendroica townsendi, Townsend's Warbler
Dendroica occidentalis, Hermit Warbler
Dendroica virens, Black-throated Green Warbler
Dendroica chrysoparia, Golden-cheeked Warbler
Dendroica fusca, Blackburnian Warbler
Dendroica dominica, Yellow-throated Warbler
Dendroica graciae, Grace's Warbler
Dendroica adelaidae, Adelaide's Warbler
Dendroica pinus, Pine Warbler
Dendroica kirtlandii, Kirtland's Warbler
Dendroica discolor, Prairie Warbler
Dendroica palmarum, Palm Warbler
Dendroica castanea, Bay-breasted Warbler
Dendroica striata, Blackpoll Warbler
Dendroica cerulea, Cerulean Warbler
Dendroica angelae, Elfin Woods Warbler
Mniotilta varia, Black-and-White Warbler
Setophaga ruticilla, American Redstart
Protonotaria citrea, Prothonotary Warbler
Helmitheros vermivorus, Worm-eating Warbler
Limnothlypis swainsonii, Swainson's Warbler
Seiurus aurocapillus, Ovenbird
Seiurus noveboracensis, Northern Waterthrush
Seiurus motacilla, Louisiana Waterthrush

Oporornis formosus, Kentucky Warbler
Oporornis agilis, Connecticut Warbler
Oporornis philadelphia, Mourning Warbler
Oporornis tolmiei, MacGillivray's Warbler
Geothlypis trichas, Common Yellowthroat
Geothlypis poliocephala, Gray-crowned Yellowthroat
Wilsonia citrina, Hooded Warbler
Wilsonia pusilla, Wilson's Warbler
Wilsonia canadensis, Canada Warbler
Cardellina rubrifrons, Red-faced Warbler
Myioborus pictus, Painted Redstart
Myioborus miniatus, Slaty-throated Redstart
Basileuterus culicivorus, Golden-crowned Warbler
Basileuterus rufifrons, Rufous-capped Warbler
Icteria virens, Yellow-breasted Chat
Peucedramus taeniatus, Olive Warbler

SUBFAMILY THRAUPINAE

Spindalis zena, Stripe-headed Tanager
Neospingus speculiferus, Puerto Rican Tanager
Piranga flava, Hepatic Tanager
Piranga rubra, Summer Tanager
Piranga olivacea, Scarlet Tanager
Piranga ludoviciana, Western Tanager
Euphonia musica, Antillean Euphonia

SUBFAMILY CARDINALINAE

Rhodothraupis celaeno, Crimson-collared Grosbeak
Cardinalis cardinalis, Northern Cardinal
Cardinalis sinuatus, Pyrrhuloxia
Pheucticus chrysopeplus, Yellow Grosbeak
Pheucticus ludovicianus, Rose-breasted Grosbeak
Pheucticus melanocephalus, Black-headed Grosbeak
Guiraca caerulea, Blue Grosbeak
Passerina amoena, Lazuli Bunting
Passerina cyanea, Indigo Bunting
Passerina versicolor, Varied Bunting
Passerina ciris, Painted Bunting
Spiza americana, Dickcissel

SUBFAMILY EMBERIZINAE

Arremonops rufivirgatus, Olive Sparrow
Pipilo chlorurus, Green-tailed Towhee
Pipilo erythrophthalmus, Rufous-sided Towhee
Pipilo fuscus, Brown Towhee
Pipilo aberti, Abert's Towhee
Sporophila torqueola, White-collared Seedeater
Tiaris olivacea, Yellow-faced Grassquit
Tiaris bicolor, Black-faced Grassquit
Loxigilla portoricensis, Puerto Rican Bullfinch
Aimophila aestivalis, Bachman's Sparrow
Aimophila botterii, Botteri's Sparrow
Aimophila cassinii, Cassin's Sparrow
Aimophila carpalis, Rufous-winged Sparrow
Aimophila ruficeps, Rufous-crowned Sparrow
Spizella arborea, American Tree Sparrow
Spizella passerina, Chipping Sparrow
Spizella pallida, Clay-colored Sparrow
Spizella breweri, Brewer's Sparrow
Spizella pusilla, Field Sparrow
Spizella wortheni, Worthen's Sparrow
Spizella atrogularis, Black-chinned Sparrow
Pooecetes gramineus, Vesper Sparrow
Chondestes grammacus, Lark Sparrow
Amphispiza bilineata, Black-throated Sparrow
Amphispiza belli, Sage Sparrow
Amphispiza quinquestriata, Five-striped Sparrow
Calamospiza melanocorys, Lark Bunting
Passerculus sandwichensis, Savannah Sparrow
Ammodramus bairdii, Baird's Sparrow
Ammodramus savannarum, Grasshopper Sparrow
Ammodramus henslowii, Henslow's Sparrow
Ammodramus leconteii, Le Conte's Sparrow
Ammodramus caudacutus, Sharp-tailed Sparrow
Ammodramus maritimus, Seaside Sparrow
Passerella iliaca, Fox Sparrow
Melospiza melodia, Song Sparrow
Melospiza lincolnii, Lincoln's Sparrow
Melospiza georgiana, Swamp Sparrow
Zonotrichia albicollis, White-throated Sparrow
Zonotrichia atricapilla, Golden-crowned Sparrow
Zonotrichia leucophrys, White-crowned Sparrow
Zonotrichia querula, Harris' Sparrow
Junco hyemalis, Dark-eyed Junco
Junco phaeonotus, Yellow-eyed Junco
Emberiza rustica, Rustic Bunting
Emberiza pallasi, Pallas' Reed-Bunting
Emberiza schoeniculus, Common Reed-Bunting
Calcarius mccownii, McCown's Longspur
Calcarius lapponicus, Lapland Longspur
Calcarius pictus, Smith's Longspur
Calcarius ornatus, Chestnut-collared Longspur
Plectrophenax nivalis, Snow Bunting
Plectrophenax hyperboreus, McKay's Bunting

SUBFAMILY ICTERINAE

Dolichonyx oryzivorus, Bobolink
Agelaius phoeniceus, Red-winged Blackbird
Agelaius tricolor, Tricolored Blackbird
Agelaius humeralis, Tawny-shouldered Blackbird
Agelaius xanthomus, Yellow-shouldered Blackbird
Sturnella magna, Eastern Meadowlark
Sturnella neglecta, Western Meadowlark
Xanthocephalus xanthocephalus, Yellow-headed Blackbird
Euphagus carolinus, Rusty Blackbird
Euphagus cyanocephalus, Brewer's Blackbird
Quiscalus mexicanus, Great-tailed Grackle
Quiscalus major, Boat-tailed Grackle

Quiscalus quiscula, Common Grackle
Quiscalus niger, Greater Antillean Grackle
Molothrus bonariensis, Shiny Cowbird
Molothrus aeneus, Bronzed Cowbird
Molothrus ater, Brown-headed Cowbird
Icterus dominicensis, Black-cowled Oriole
Icterus wagleri, Black-vented Oriole
Icterus spurius, Orchard Oriole
Icterus cucullatus, Hooded Oriole
Icterus pustulatus, Streak-backed Oriole
Icterus gularis, Altamira Oriole
Icterus graduacauda, Audubon's Oriole
Icterus galbula, Northern Oriole
Icterus parisorum, Scott's Oriole

FAMILY FRINGILLIDAE

SUBFAMILY FRINGILLINAE

Fringilla montifringilla, Brambling

SUBFAMILY CARDUELINAE

Leucosticte arctoa, Rosy Finch
Pinicola enucleator, Pine Grosbeak
Carpodacus erythrinus, Common Rosefinch
Carpodacus purpureus, Purple Finch
Carpodacus cassinii, Cassin's Finch
Carpodacus mexicanus, House Finch
Loxia curvirostra, Red Crossbill
Loxia leucoptera, White-winged Crossbill
Carduelis flammea, Common Redpoll
Carduelis hornemanni, Hoary Redpoll
Carduelis pinus, Pine Siskin
Carduelis psaltria, Lesser Goldfinch
Carduelis lawrencei, Lawrence's Goldfinch
Carduelis tristis, American Goldfinch
Carduelis sinica, Oriental Greenfinch
Pyrrhula pyrrhula, Eurasian Bullfinch
Coccothraustes vespertinus, Evening Grosbeak
Coccothraustes coccothraustes, Hawfinch

[50 FR 13710, Apr. 5, 1985]

Subpart C—Addresses

§ 10.21 Director.

(a) Mail forwarded to the Director for law enforcement purposes should be addressed: Chief, Division of Law Enforcement, U.S. Fish and Wildlife Service, P.O. Box 3247, Arlington, VA 22203–3247.

(b) Mail sent to the Director regarding permits for the Convention on International Trade in Endangered Species of Wild Fauna and Fauna (CITES), injurious wildlife, Wild Bird Conservation Act species, international movement of all ESA-listed endangered or threatened species, and scientific research on, exhibition of, or interstate commerce in nonnative ESA-listed endangered and threatened species should be addressed to: Director, U.S. Fish and Wildlife Service, (Attention: Office of Management Authority), 4401 N. Fairfax Drive, Room 700, Arlington, VA 22203. Address mail for the following permits to the Regional Director. In the address include one of the following: for import/export licenses and exception to designated port permits (Attention: Import/export license); for native endangered and threatened species (Attention: Endangered/threatened species permit); and for migratory birds and eagles (Attention: Migratory bird permit office). You can find addresses for regional offices at 50 CFR 2.2.

[55 FR 48851, Nov. 23, 1990, as amended at 63 FR 52633, Oct. 1, 1998]

§ 10.22 Law enforcement offices.

Service law enforcement offices and their areas of responsibility follow. Mail should be addressed: "Assistant Regional Director, Division of Law Enforcement, U.S. Fish and Wildlife Service, (appropriate address below)":

AREAS OF RESPONSIBILITY AND OFFICE ADDRESSES

California, Hawaii, Idaho, Nevada, Oregon, Washington, American Samoa, Guam, the Marshall Islands, Northern Mariana Islands, and the Trust Territory of the Pacific Islands (District 1):
Eastside Federal Complex, 911 N.E. 11th. Avenue, Portland, OR 97232–4181, Telephone: 503–231–6125.

Arizona, New Mexico, Oklahoma, and Texas (District 2):
P.O. Box 329, Albuquerque, NM 87103, Telephone: 505–766–2091

Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin (District 3):
P.O. Box 45—Federal Building, Ft. Snelling, Twin Cities, MN 55111, Telephone: 612–725–3530.

Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands (District 4):
P.O. Box 4839, Atlanta, GA 30302, Telephone: 404–331–5872

Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia (District 5):
P.O. Box 129, New Town Branch, Boston, MA 02258, Telephone: 617–965–2298

Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming (District 6):

Appendix L: 50 CFR § 21.43, Depredation Order for Blackbirds, Cowbirds, Grackles, Crows and Magpies

(c) That such migratory birds as are killed under the provisions of any depredation order may be used for food or donated to public museums or public scientific and educational institutions for exhibition, scientific, or educational purposes, but shall not be sold, offered for sale, bartered, or shipped for purpose of sale or barter, or be wantonly wasted or destroyed: *Provided*, That any migratory game birds which cannot be so utilized shall be disposed of as prescribed by the Director;

(d) That any order issued pursuant to this section shall not authorize the killing of the designated species of depredating birds contrary to any State laws or regulations. The order shall specify that it is issued as an emergency measure designed to relieve depredations only and shall not be construed as opening, reopening, or extending any open hunting season contrary to any regulations promulgated pursuant to section 3 of the Migratory Bird Treaty Act.

§ 21.43 Depredation order for blackbirds, cowbirds, grackles, crows and magpies.

A Federal permit shall not be required to control yellow-headed redwinged, rusty, and Brewer's blackbirds, cowbirds, all grackles, crows, and magpies, when found committing or about to commit depredations upon ornamental or shade trees, agricultural crops, livestock, or wildlife, or when concentrated in such numbers and manner as to constitute a health hazard or other nuisance: *Provided:*

(a) That none of the birds killed pursuant to this section, nor their plumage, shall be sold or offered for sale, but may be possessed, transported, and otherwise disposed of or utilized.

(b) That any person exercising any of the privileges granted by this section shall permit at all reasonable times including during actual operations, any Federal or State game or deputy game agent, warden, protector, or other game law enforcement officer free and unrestricted access over the premises on which such operations have been or are being conducted; and shall furnish promptly to such officer whatever information he may require, concerning said operations.

(c) That nothing in this section shall be construed to authorize the killing of such birds contrary to any State laws or regulations; and that none of the privileges granted under this section shall be exercised unless the person possesses whatever permit as may be required for such activities by the State concerned.

[39 FR 1178, Jan. 4, 1974, as amended at 54 FR 47525, Nov. 15, 1989]

§ 21.44 Depredation order for designated species of depredating birds in California.

In any county in California in which horned larks, golden-crowned, white-crowned and other crowned sparrows, and house finches are, under extraordinary conditions, seriously injurious to agricultural or other interests, the Commissioner of Agriculture may, without a permit, kill or cause to be killed under his/her general supervision such of the above migratory birds as may be necessary to safeguard any agricultural or horticultural crop in the county: *Provided:*

(a) That such migratory birds shall be killed only when necessary to protect agricultural or horticultural crops from depredation; that none of the above migratory birds killed, or the parts thereof, or the plumage of such birds, shall be sold or removed from the area where killed; but that all such dead migratory birds shall be buried or otherwise destroyed within this area, except that any specimens needed for scientific purposes, as determined by the State or the Director shall not be destroyed.

(b) That any Commissioner of Agriculture exercising the privileges granted by this section shall keep records of the persons authorized by the Commissioner to kill such migratory birds, and the estimated number of such birds killed pursuant to the exercise of his authority, and the Commissioner shall submit a report thereof to the Director on or before December 31 of each year or whenever the Director so requests.

[39 FR 1178, Jan. 4, 1974, as amended at 54 FR 47525, Nov. 15, 1989; 55 FR 17352, Apr. 24, 1990]

Appendix M: FAA Advisory Circular 150/5200-32A

U.S. Department of Transportation

Federal Aviation Administration

Advisory Circular

Subject: REPORTING WILDLIFE AIRCRAFT STRIKES | **Date:** 12/22/04 | **Initiated by:** AAS-300 | **AC No:** 150/5200-32A | **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 examines recent improvements in the Federal Aviation Administration's (FAA) 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 Aircraft Strike Database; and the FAA's Feather Identification program.

2. Background:

The FAA has long recognized the threat to aviation safety posed by wildlife strikes. Worldwide, wildlife strikes cost civil aviation an estimated $1.2 billion annually. Each year in the U.S., wildlife strikes to U.S. civil aircraft cause about $500 million in damage to aircraft and about 500,000 hours of civil aircraft down time. For the period 1990—2004, over 63,000 wildlife strikes were reported to the FAA. About 97 percent of all wildlife strikes reported to the FAA involve birds, almost 3 percent involve mammals and less than 1 percent involved 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. Vultures and waterfowl cause the most losses to U.S. military aircraft.

The FAA has initiated several programs to address this important safety issue, including the collection, analysis, and dissemination of wildlife strike data. The FAA actively encourages the voluntary reporting of wildlife strikes.

3. How to Report a Wildlife Aircraft strike:

A wildlife strike has occurred when:

1. A pilot reports striking 1 or more birds or other wildlife;
2. Aircraft maintenance personnel identify aircraft damage as having been caused by a 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; and
5. An 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) (Transport Canada, Airports Group, *Wildlife Control Procedures Manual*, Technical Publication 11500E, 1994).

Pilots, airport operations, aircraft maintenance personnel, or anyone else who has knowledge of a strike is encouraged to report it to the FAA. Wildlife strikes may be reported to the FAA using the paper FAA Form 5200-7 Bird/Other Wildlife Strike Report, or electronically at the *Airport Wildlife Hazard Mitigation* web site: http://wildlife-mitigation.tc.faa.gov. The FAA's Bird/Other Wildlife Strike Report Form can be downloaded or printed from the same web site. 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). Copies of the Bird/Other Wildlife Strike Report form are also found in 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.

The FAA National Wildlife Strike Database Manager edits all strike reports to insure consistent, error-free data before entering the report into the database. This information is supplemented with non-duplicated strike reports from other sources. About every 6 weeks, an updated version of the database is posted on the web site. Annually, a current version of the database is forwarded to the International Civil Aviation Organization (ICAO) for incorporation into ICAO's Bird Strike Information System Database.

Analyses of data from the FAA National Wildlife Aircraft Strike Database has proved invaluable in determining the nature and severity of the wildlife strike problem. The database provides a scientific basis for identifying risk factors; justifying, implementing and defending corrective actions at airports; and for judging the effectiveness of those corrective actions. The database is invaluable to engine manufacturers and aeronautical engineers as they develop new technologies for the aviation industry. Each wildlife strike report contributes to the accuracy of and effectiveness of the database. Moreover, each report contributes to the common goal of increasing aviation safety.

4. Access to the FAA National Wildlife Aircraft Strike Database:

In order to expedite the dissemination of this important information, the FAA has developed procedures for searching the database on line at: http://wildlife-mitigation.tc.faa.gov. The public may access the database without a password and retrieve basic information on the number of strikes by year, by state, and by species of wildlife.

Access for airport operators, airline operators, engine manufactures, air frame manufactures, and certain other governmental agencies requires a password to access the database and allows retrieval of more detailed wildlife strike information for their specific area of concern. An airport operator's access is limited to strike information for incidents occurring on its particular airport. Airlines may only access strike records involving aircraft owned or operated by them. Comparisons among individual airports and airlines are not made.

Airline and airport operators, airframe and engine manufactures, or governmental agencies may gain access to the FAA National Wildlife Aircraft Strike Database by writing the FAA Staff Wildlife Biologist. All written requests should follow the guidelines provided below:

1. On Company Letterhead, request access to the FAA National Wildlife Aircraft Strike Database. Include:
    a. Your preferred password. (The FAA does not assign passwords. The password should be no more than 8 characters, alphanumeric, and case sensitive.)
    b. Your contact information. (Title, mailing address, phone number, and e-mail address.)
2. Submit the request to:

    FAA Staff Wildlife Biologist, AAS-300

    Federal Aviation Administration,

    800 Independence Ave. SW.

    Washington, DC. 20591.
3. When the FAA receives the request for access to the database, the request and the password will be entered into the system. Upon completion of the process, the requestor will be notified by e-mail.

The database is accessible from the *Airport Wildlife Hazard Mitigation* web page (http://wildlife-mitigation.tc.faa.gov):

5. Bird Identification:

Accurate species identification is critical for bird-aircraft strike reduction programs. Wildlife biologists must know what species of animal they are dealing with in order to make proper management decisions. The FAA, the U.S. Air Force, and the U.S. Department of Agriculture – Wildlife Services are working 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.

Feather identification of 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), or to any foreign air carrier if the strike occurred at a U.S. airport.

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 maintain a comprehensive FAA National Wildlife Aircraft Strike Database.

1. Collect and submit remains as soon as possible.
2. Provide complete information regarding the incident
    a. Fill out FAA Form 5200-7 – Bird/Other Wildlife Strike Report.
        i. A copy of Form 5200-7 can be downloaded and or printed from: http://wildlife-mitigation.tc.faa.gov/T.
    b. Mail report with feather material (see address below).
    c. Provide your contact information if you wish to be informed of the species identification.
3. Collect as much material as possible in a clean plastic/ziplock bag. (Please, do not send whole birds).
    a. Pluck/pick a variety of feathers from the wings, tail and body.
    b. **Do not** cut off feathers. This removes the downy region needed to aid in identification.
    c. Include any feathers with distinct colors or patterns.
    d. Include any downy "fluff".
    e. Include beaks, feet, and talons if possible.
    f. Where only a small amount of material is available, such as scrapings from an engine or smears on wings or windshields, send all of it.
    g. **Do not** use any sticky substance such as tape or post-it notes to attach feathers.
4. Mail the Bird/Other Wildlife Strike Report and collected material to the Smithsonian's Feather Identification Lab. They will forward the report to the FAA Staff Wildlife Biologist at the FAA's Office of Airport Safety and Standards.

For Material Sent via Express Mail Service:	For Material Sent via US Postal Service:
Feather Identification Lab	Feather Identification Lab
Smithsonian Institution	Smithsonian Institution
NHB, E610, MRC 116	PO Box 37012
10th & Constitution Ave. NW	NHB, E610, MRC 116
Washington, D.C. 20560-0116	Washington, D.C. 20013-7012
(This can be identified as "safety investigation material")	(Not recommended for priority cases.)

The species identification turn around time is usually 24 hours from receipt. Once processed, the reports and species identification information are sent to the database Manager for entry into the FAA National Wildlife Aircraft 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 Staff Wildlife Biologist [(202) 267-3389], or the Smithsonian's Feather Identification Lab [(202) 633-0801].

J. R. White

for David L. Bennett
Director of Airport Safety and Standards

Appendix N: FAA Strike Report Form 5200-7

Form Approved OMB NO. 2120-0045
3/31/2010

BIRD / OTHER WILDLIFE STRIKE REPORT

U.S. Department of Transportation
Federal Aviation Administration

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 ☐ Day ☐ Night ___ HR ___ MIN ☐ AM ☐ PM
7. Airport Name	8. Runway Used	9. Location if En Route (Nearest Town/Reference & State)
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)	☐	☐

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:	23. Estimated cost of repairs or replacement (U.S. $):	24. Estimated other Cost (U.S. $) (e.g. loss of revenue, fuel, hotels):
____ hours	$	$

Reported by (Optional)	Title	Date

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. We estimate that it will take approximately 6 minutes to complete the form. The information collected is voluntary. Please note that an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control number associated with this collection is 2120-0045. Comments concerning the accuracy of this burden and suggestions for reducing the burden should be directed to the FAA at: 800 Independence Ave SW, Washington, DC 20591, Attn: Information Collection Clearance Officer, ABA-20

FAA Form 5200-7 (11-97) Supersedes Previous Edition Electronic Version (Adobe) * U.S. GPU: 1997-432-349/74201 NSN: 0052-00-651-9005

U.S. Department
of Transportation

Federal Aviation Administration

800 Independence Ave. S.W.
Washington, D.C. 20591

Official Business
Penalty for Private Use, $300

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 12439 WASHINGTON D.C.

POSTAGE WILL BE PAID BY FEDERAL AVIATION ADMINISTRATION

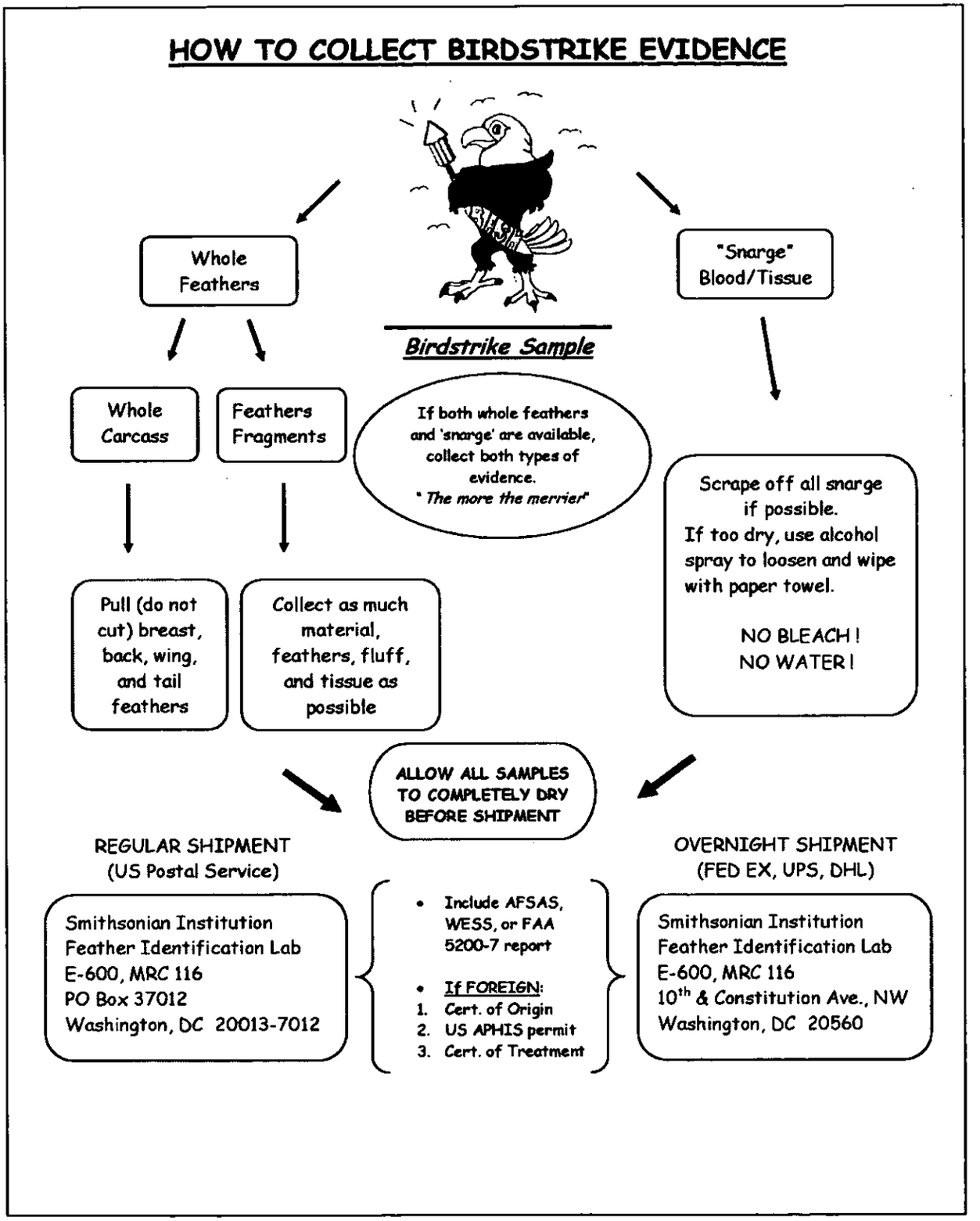
Federal Aviation Administration
Office of Airport Safety and Standards, AAS-310
800 Independence Avenue, SW
WASHINGTON, DC 20591

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 to 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 clock and skip AM/PM.
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 and 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.

Appendix O: Guide to Collecting Birdstike Evidence



Guidelines For
Collecting Birdstrike Material

Feather Identification Lab, Smithsonian Institution

COLLECTING REMAINS

Feathers:

Whole Bird - Pluck a variety of feathers (breast, back, wing, tail)
Partial Bird - Collect a variety of feathers with color or pattern
Feathers only - Send all material available
Do not cut feathers from the bird (we need the downy part at the base of the feathers)
Do not use any sticky substance (no tape or glue)

Tissue/blood ("Snarge"):

Dry material - Scrape or wipe off into a clean re-closeable bag **or** wipe area with pre-packaged alcohol wipe **or** spray with alcohol to loosen material then wipe with clean cloth/gauze. (*please do not use water, bleach, or other cleansers – they destroy DNA)
Fresh material - Wipe area with alcohol wipe and/or clean cloth/gauze **or** apply fresh tissue/blood to an FTA® DNA collecting card

- Always include any feather material available
- Include copy of report (AFSAS, WESS, or FAA 5200-7)
- Always secure all remains in re-sealable plastic bag

SHIPPING

Routine / Non-Damaging Cases
US Postal Service
▼
Feather Identification Lab
Smithsonian Institution
NHB, E600, MRC 116
P.O. Box 37012
Washington, DC 20013-7012

Priority / Damaging Cases
Overnight Shipping
▼
Feather Identification Lab
Smithsonian Institution
NHB, E600, MRC 116
10th & Constitution Ave., NW
Washington, DC 20560-0116

WEBSITES

Birdstrike Committee: www.birdstrike.org
Air Force: http://www.afsc.af.mil/organizations/bash/index.asp
Civil Aviation: http://wildlife-mitigation.tc.faa.gov
Navy: www.safetycenter.navy.mil/aviation/operations/bash

Feather Lab Contact Information

202-633-0801
dovec@si.edu
heackerm@si.edu
dahlanno@si.edu
whattonj@si.edu

"MAKE-YOUR-OWN" - BIRDSTRIKE COLLECTING KITS

Birdstrike Collecting Kits are cheap to make and easy to assemble. Having pre-made kits available improves birdstrike reporting and encourages the sampling of birdstrike remains. Most folks assemble the contents into individual bags or envelopes and keep a supply in field vehicles or office supply cabinets for quick access. Below is a list of recommended items to include in your birdstrike collecting kits; mix and match as budgets permit:

Re-sealable plastic bags
A variety of sizes for various amounts of debris; Re-sealable bags help contain liquids and keeps odors to a minimum.

Sharpie Markers
Permanent markers are water resistant and used for writing data (date, time, aircraft, etc) directly on the bag of remains.

Alcohol Wipes
Pre-packaged alcohol hand-wipes can be used to wipe "snarge" off aircraft. Alcohol is better than water at preserving DNA, preventing mold growth, and is more sanitary for humans. Alternatively, use a spray bottle with 70% alcohol to spray the area before wiping with paper towels.
*Do not use wipes with bleach or other cleansers, it destroys DNA.

FTA® Micro Card and Sterile Applicators
If you send a lot of fresh blood/tissue samples for DNA identification, you may want to look into 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 on ordering these items contact the Feather Lab.
*Note: If you only occasionally send blood/tissue samples, a paper towel with alcohol, or alcohol wipe is still a good option for this type of material.

Miscellaneous Items for Birdstrike Collecting
Kitchen shears - good for cutting feet, wings, bills
Tongue depressors, tweezers, cotton swabs/cotton-tipped applicators
Hand cleaners, or other alcohol based gel hand sanitizers.

(collecting kits cont.)

Extra Safety Items

Latex Gloves
Protective Eyewear
Face Masks: Regular surgical-type hygiene masks. If avian flu is a concern, the Center for Disease Control recommends NIOSH rated N95 face masks. (These may be referred to as respirators.) There is a disposable version of these masks by 3M that looks similar to the regular "cup" style face masks.
Hand sanitizing gels

Reminders

Always encourage proper hygiene & provide personnel easy access to cleaning/hygiene supplies.
Do not cut off the fluffy down at the bottom of feathers.
Do not use water, bleach or other cleansers on samples.
Be sure personnel are briefed on proper carcass disposal protocols.
Stay informed to the status of the HPAI H5N1 avian flu virus.

The following websites have excellent coverage on current avian flu info:

U.S. Geological Survey Wildlife Health Center
http://www.nwhc.usgs.gov/

Centers for Disease Control and Prevention
http://www.cdc.gov/flu/avian/gen-info/facts.htm

The American Ornithologists' Union Ornithological Council
http://www.nmnh.si.edu/BIRDNET/OC/avianinfluenza.html

Smithsonian

Contact Information:
The Feather Identification Lab
Smithsonian Institution
MRC 116, E-600,
PO Box 37012
Washington, DC 20013-7012
(202) 633-0801

Email:
dovec@si.edu
heackerm@si.edu
dahlanno@si.edu
whattonj@si.edu

(rev 09/09 jfw)

Whatman FTA® DNA collecting cards

Whatman FTA® DNA cards are a good option for collecting birdstrike remains that consist of mostly blood and tissue. To purchase the supplies needed, contact the sales reps at Government Scientific Source, Inc.:

U.S. Air Force and Navy-
Nicole White
1-800-248-8030 ext. 151
nwhite@govsci.com

USDA WS and Airport Ops/Operators -
Todd Carl
1-800-248-8030 ext. 170
tcarl@govsci.com

The supplies needed are:

FTA® Micro Indicating Cards (one circle)
Item # WB120211

Sterile Foam-tipped Applicators
Item # WB100032

The FTA® cards need to be kept dry & secure after sampling. We recommend putting the card in a small re-sealable plastic bag for shipping. If FTA® cards are not an option for collecting fresh "snarge", we recommend using alcohol to wipe the remains from the area. Pre-packaged alcohol wipes are fine. Please no water, bleach, or other cleansers. If remains are dry there is no need for alcohol (dried tissue also works well for DNA analysis).

FTA® CARD DNA COLLECTION FOR BIRDSTRIKE IDENTIFICATION

1) Use foam tip of sterile applicator to wipe snarge / blood from surface.

2) Open FTA® card and press the foam tip of applicator with material onto the circle sample area of the card using light pressure. Without lifting the foam tip from the card, rock the applicator tip side-to-side until sample area is saturated.
   - Use one card for each impact point; label accordingly

3) Allow the sample area of the card to air dry (recommend dry for 30 minutes)
   - Keep the sterile applicator and send with card.
   - Label card with report number or incident information.

4) Place card and sterile applicator in clean re-sealable plastic bag.
   - If whole feather material is present in birdstrike remains, send in a separate plastic bag with the card & applicator.

5) Place all material in mailing envelope with a copy of the bird strike report and send to the Feather Lab.

The use of latex gloves, face masks and eye protection is encouraged when working with birdstrike remains. Always practice good hygiene before and after handling remains by thoroughly washing hands with soap and/or using gel hand sanitizer. (5/09)

Appendix P: Wildlife Species Documented at LGA during WHA

Birds

Blackbirds & Starlings
Brown-headed Cowbird (*Molothrus ater*
Common Grackle (*Quiscalus quiscula*)
European Starling (*Sturnus vulgaris*)
Red-winged Blackbird (*Agelaius phoeniceus*)

Columbids (Doves and Pigeons)
Mourning Dove (*Zenaida macroura*)
Rock Pigeon (*Columba livia*)

Corvids (Crow and Jays)
American Crow (*Corvus brachyrhynchos*)
Fish Crow (*Corvus ossifragus*)

Gulls
Common Tern (*Sterna hirundo*)
Great Black-backed Gull (*Larus marimus*)
Herring Gull (*Larus argentatus*)
Laughing Gull (*Leucophaeus atricilla*)
Ring-Billed Gull (*Larus delawarensis*)

Other Flocking Birds
Barn Swallow (*Hirundo rustica*)
Horned Lark (*Eremophila alpestris*)
Tree Swallow (*Tachycineta bicolor*)

Raptors
American Kestrel (*Falco sparverius*)
Merlin (*Falco columbarius*)
Northern Harrier (*Circus cyaneus*)
Osprey (*Pandion haliaetus*)
Peregrine Falcon (*Falco peregrinus*)
Red-tailed Hawk (*Buteo jamaicensis*)

Small Perching Birds
American Robin (*Turdus migratorius*)
Belted Kingfisher (*Megaceryle alcyon*)
Black-and-white Warbler (*Mniotilta varia*)
House Sparrow (*Passer domesticus*)
Northern Flicker (*Colaptes auratus*)
Northern Mockingbird (*Mimus polyglottos*)
Savannah Sparrow (*Passerculus sanwichensis)*
Song Sparrow (*Melospiza melodia*)

Wading & Shore Birds
American Oystercatcher (*Haematopus palliatus*)
Black-crowned Night-Heron (*Nycticorax nycticorax*)
Great Blue Heron (*Ardea herodias*)
Great Egret (*Ardea alba*)
Greater Yellowlegs (*Tringa melanoleuca*)
Killdeer (*Charadrius vociferous*)
Piping Plover (*Charadrius melodus*)
Semipalmated Plover (*Charadrius semipalmatus*)
Snowy Egret (*Egretta thula*)
Whimbrel (*Numenius phaeopus*)
Yellow-crowned Night-Heron (*Nyctanassa violacea*)

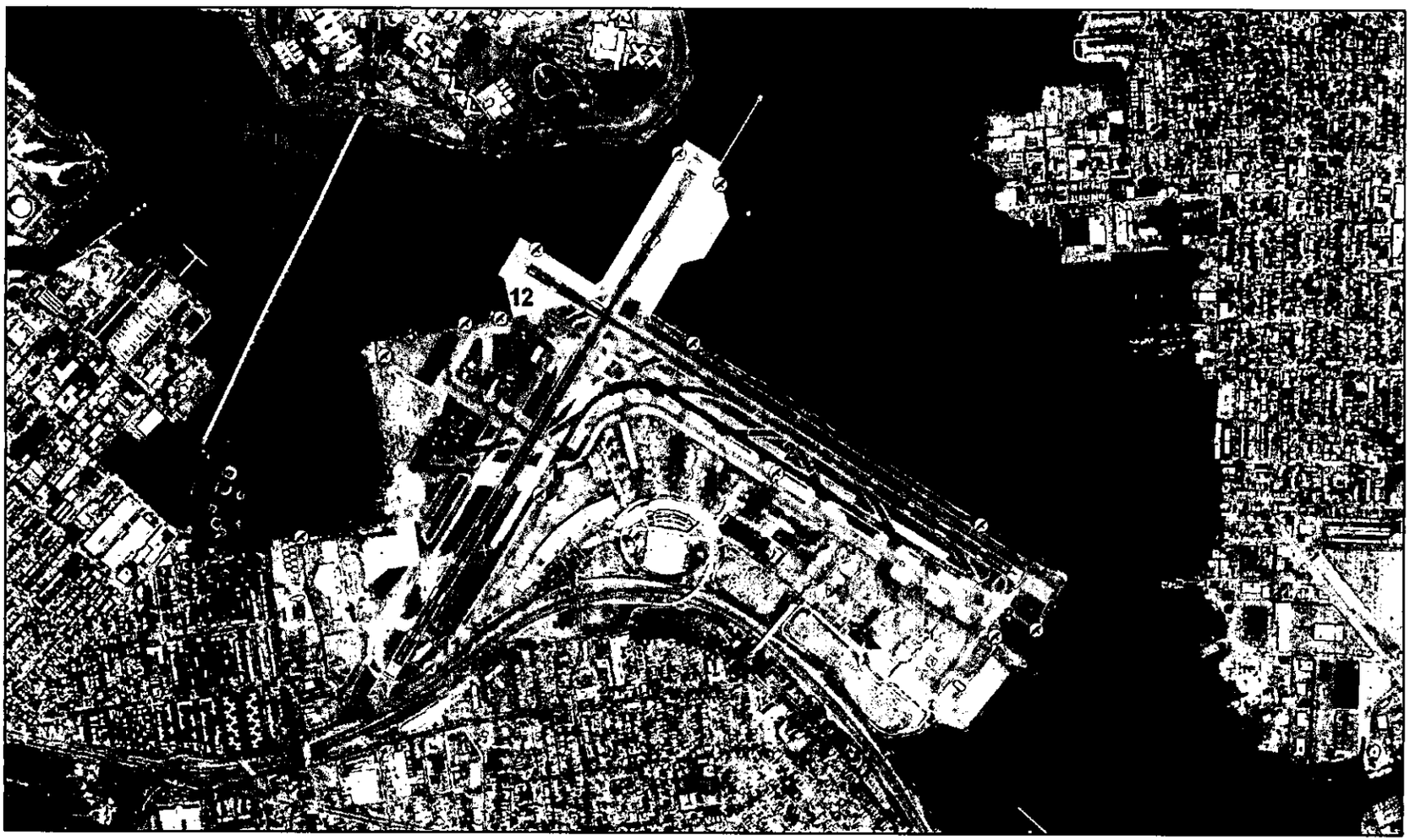
Waterbirds
Black Skimmer (*Rynchops niger*)
Double-crested Cormorant (*Phalacrocorax auritus*)
Red-throated Loon (*Gavia stellata*)

Waterfowl
American Black Duck (*Anas rubripes*)
Brant (*Branta bernicla*)
Bufflehead (*Bucephala albeola*)
Canada Goose (*Branta canadensis*)
Common Goldeneye (*Bucephala clangula*)
Common Merganser (*Mergus merganser*)
Gadwall (*Anas strepera*)
Greater Scaup (*Aythya marila*)
Lesser Scaup (Aythya affinis)
Mallard (*Anas platyrhynchos*)
Mute Swan (*Cygnus olor*)
Northern Pintail (*Anas acuta*)
Red-Breasted Merganser (*Mergus serrator*)
Ruddy Duck (*Oxyura jamaicensis*)
Wood Duck (*Aix sponsa*)

Mammals

House mouse (*Mus musculus*)
Muskrat (*Ondatra zibethicus*)
Norway rat (*Rattus norvegicus*)
Raccoon (*Procyon lotor*)

Appendix R: Map of Bird Survey Locations on LGA



Appendix Q: Example of Survey Sheet

Airport LGA

Date

Page

of

AIRPORT BIRD SURVEY

Observers

Start time

End time

Weather: no clouds, some clouds, overcast, raining, snowing

Light: dawn, day, dusk

Tide

Wind dir.

Temp C

Wind Spd. kn

Dew Point C

Survey location	Species	Number	Activity Code	Notes

Activity Codes:

1-Loafing on ground
2-Loafing on water
3-Feeding
4-Perched on manmade structure
5-Perched on vegetation
6-Flying over observation area
7-Aerial hunting
8-On ground in/adjacent to runway
9-Flying over runway

Appendix S: FAA Advisory Circular 150/5200-33B

U.S. Department of Transportation

Federal Aviation Administration

Advisory Circular

Subject: HAZARDOUS WILDLIFE ATTRACTANTS ON OR NEAR AIRPORTS

Date: 8/28/2007 **AC No:** 150/5200-33B

Initiated by: AAS-300 **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. **APPLICABILITY.** The Federal Aviation Administration (FAA) recommends that public-use airport operators implement the standards and practices contained in this AC. The holders of Airport Operating Certificates issued under Title 14, Code of Federal Regulations (CFR), Part 139, Certification of Airports, Subpart D (Part 139), may use the standards, practices, and recommendations contained in this AC to comply with the wildlife hazard management requirements of Part 139. Airports that have received Federal grant-in-aid assistance must use these standards. The FAA also recommends the guidance in this AC for land-use planners, operators of non-certificated airports, and developers of projects, facilities, and activities on or near airports.

3. **CANCELLATION.** This AC cancels AC 150/5200-33A, *Hazardous Wildlife Attractants on or near Airports*, dated July 27, 2004.

4. **PRINCIPAL CHANGES.** This AC contains the following major changes, which are marked with vertical bars in the margin:

   a. Technical changes to paragraph references.

   b. Wording on storm water detention ponds.

   c. Deleted paragraph 4-3.b, *Additional Coordination.*

5. **BACKGROUND.** 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 threat to aircraft safety, they are not equally hazardous. Table 1

ranks the wildlife groups commonly involved in damaging strikes in the United States according to their relative hazard to aircraft. The ranking is based on the 47,212 records in the FAA National Wildlife Strike Database for the years 1990 through 2003. These hazard rankings, in conjunction with site-specific Wildlife Hazards Assessments (WHA), will help airport operators determine the relative abundance and use patterns of wildlife species and help focus hazardous wildlife management efforts on those species most likely to cause problems at an airport.

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 air operations area (AOA). Constructed or natural areas—such as 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, or wetlands—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.

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) in July 2003 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.

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

Table 1. Ranking of 25 species groups as to relative hazard to aircraft (1=most hazardous) based on three criteria (damage, major damage, and effect-on-flight), a composite ranking based on all three rankings, and a relative hazard score. Data were derived from the FAA National Wildlife Strike Database, January 1990–April 2003.[1]

Species group	Ranking by criteria			Composite ranking[2]	Relative hazard score[3]
	Damage[4]	Major damage[5]	Effect on flight[6]		
Deer	1	1	1	1	100
Vultures	2	2	2	2	64
Geese	3	3	6	3	55
Cormorants/pelicans	4	5	3	4	54
Cranes	7	6	4	5	47
Eagles	6	9	7	6	41
Ducks	5	8	10	7	39
Osprey	8	4	8	8	39
Turkey/pheasants	9	7	11	9	33
Herons	11	14	9	10	27
Hawks (buteos)	10	12	12	11	25
Gulls	12	11	13	12	24
Rock pigeon	13	10	14	13	23
Owls	14	13	20	14	23
H. lark/s. bunting	18	15	15	15	17
Crows/ravens	15	16	16	16	16
Coyote	16	19	5	17	14
Mourning dove	17	17	17	18	14
Shorebirds	19	21	18	19	10
Blackbirds/starling	20	22	19	20	10
American kestrel	21	18	21	21	9
Meadowlarks	22	20	22	22	7
Swallows	24	23	24	23	4
Sparrows	25	24	23	24	4
Nighthawks	23	25	25	25	1

[1] Excerpted from the *Special Report for the FAA, "Ranking the Hazard Level of Wildlife Species to Civil Aviation in the USA: Update #1, July 2, 2003"*. Refer to this report for additional explanations of criteria and method of ranking.

[2] Relative rank of each species group was compared with every other group for the three variables, placing the species group with the greatest hazard rank for $\geq$ 2 of the 3 variables above the next highest ranked group, then proceeding down the list.

[3] Percentage values, from Tables 3 and 4 in Footnote 1 of the *Special Report*, for the three criteria were summed and scaled down from 100, with 100 as the score for the species group with the maximum summed values and the greatest potential hazard to aircraft.

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

[5] 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 makes it inadvisable to restore aircraft to airworthy condition.

[6] Aborted takeoff, engine shutdown, precautionary landing, or other.

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Table of Contents

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SECTION 1.

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

1-1. INTRODUCTION. When considering proposed land uses, airport operators, 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 can significantly increase the potential for wildlife strikes.

The FAA recommends the 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 air operations area (AOA). (See the discussion of the synergistic effects of surrounding land uses in Section 2-8 of this AC.)

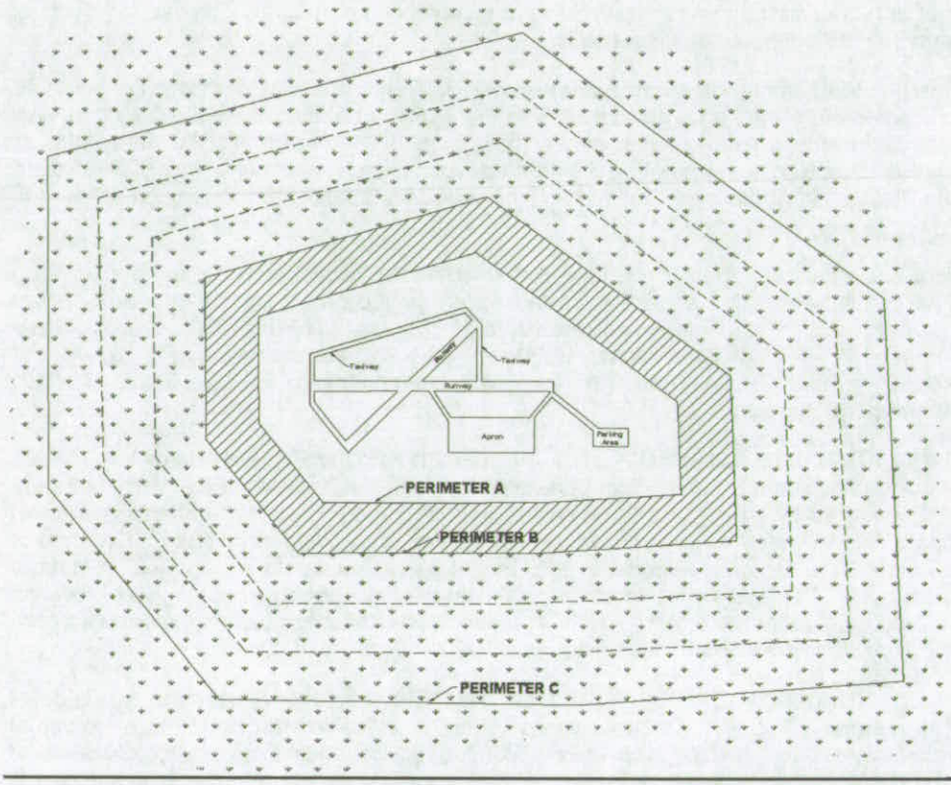
The basis for the separation criteria contained in this section can be found in existing FAA regulations. The separation distances are based on (1) flight patterns of piston-powered aircraft and turbine-powered aircraft, (2) the altitude at which most strikes happen (78 percent occur under 1,000 feet and 90 percent occur under 3,000 feet above ground level), and (3) National Transportation Safety Board (NTSB) 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 at these airports for any of the hazardous wildlife attractants mentioned in Section 2 or for new airport development projects meant to accommodate aircraft movement. This distance is to be maintained between an airport's AOA and the hazardous wildlife attractant. Figure 1 depicts this separation distance measured from the nearest aircraft operations areas.

1-3. AIRPORTS SERVING TURBINE-POWERED AIRCRAFT. Airports selling Jet-A fuel normally serve turbine-powered aircraft. Notwithstanding more stringent requirements for specific land uses, the FAA recommends a separation distance of 10,000 feet at these airports for any of the hazardous wildlife attractants mentioned in Section 2 or for new airport development projects meant to accommodate aircraft movement. This distance is to be maintained between an airport's AOA and the hazardous wildlife attractant. Figure 1 depicts this 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 statute miles between the farthest edge of the airport's AOA and the hazardous wildlife attractant if the attractant could cause hazardous wildlife movement into or across the approach or departure airspace.

Figure 1. Separation distances within which hazardous wildlife attractants should be avoided, eliminated, or mitigated.



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

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

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

SECTION 2.

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

2-1. GENERAL. 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. This section discusses land-use practices having the potential to attract hazardous wildlife and threaten aviation safety. In addition to the specific considerations outlined below, airport operators should refer to *Wildlife Hazard Management at Airports*, prepared by FAA and U.S. Department of Agriculture (USDA) staff. (This manual is available in English, Spanish, and French. It can be viewed and downloaded free of charge from the FAA's wildlife hazard mitigation web site: http://wildlife-mitigation.tc.FAA.gov.). And, *Prevention and Control of Wildlife Damage*, compiled by the University of Nebraska Cooperative Extension Division. (This manual is available online in a periodically updated version at: ianrwww.unl.edu/wildlife/solutions/handbook/.)

2-2. WASTE DISPOSAL OPERATIONS. Municipal solid waste landfills (MSWLF) 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 Sections 1-2 through 1-4, are considered incompatible with safe airport operations.

a. **Siting for new municipal solid waste landfills subject to AIR 21.** Section 503 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (Public Law 106-181) (AIR 21) prohibits the construction or establishment of a new MSWLF within 6 statute 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.

   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.

   The proposed MSWLF must (1) be within 6 miles of the airport, as measured from airport property line to MSWLF property line, and (2) have started construction or establishment on or after April 5, 2001. Public Law 106-181 only limits the construction or establishment of some new MSWLF. It does not limit the expansion, either vertical or horizontal, of existing landfills.

   NOTE: Consult the most recent version of AC 150/5200-34, *Construction or Establishment of Landfills Near Public Airports*, for a more detailed discussion of these restrictions.

b. **Siting for new MSWLF not subject to AIR 21.** If an airport and MSWLF do not meet the restrictions of Public Law 106-181, the FAA recommends against locating MSWLF within the separation distances identified in Sections 1-2 through 1-4. The separation distances should be measured from the closest point of the airport's AOA to the closest planned MSWLF cell.

c. **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 MSWLF operations located within the separations identified in Sections 1-2 through 1-4. In addition, in accordance with 40 CFR 258.10, owners or operators of existing MSWLF units that are located within the separations listed in Sections 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 Section 4-2(b) of this AC for a discussion of this demonstration requirement.)

d. **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 not located on airport property or within the Runway Protection Zone (RPZ). 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; that store uncovered quantities of municipal solid waste outside, even if only for a short time; that use semi-trailers that leak or have trash clinging to the outside; or that 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 these facilities incompatible with safe airport operations if they are located closer than the separation distances specified in Sections 1-2 through 1-4.

e. **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. Off-airport property composting operations should be located no closer than the greater of the following distances: 1,200 feet from any AOA 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 (OFA), Obstacle Free Zone (OFZ), Threshold Siting Surface (TSS), 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. On-airport disposal of compost by-products should not be conducted for the reasons stated in 2-3f.

f. **Underwater waste discharges.** The FAA recommends against the underwater discharge of any food waste (e.g., fish processing offal) within the separations identified in Sections 1-2 through 1-4 because it could attract scavenging hazardous wildlife.

g. **Recycling centers.** Recycling centers that accept previously sorted non-food items, such as glass, newspaper, cardboard, or aluminum, are, in most cases, not attractive to hazardous wildlife and are acceptable.

h. **Construction and demolition (C&D) debris facilities.** C&D landfills do not generally 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, C&D landfills have similar visual and operational characteristics to putrescible waste disposal sites. When co-located with putrescible waste disposal operations, C&D landfills are more likely to attract hazardous wildlife because of the similarities between these disposal facilities. Therefore, a C&D landfill co-located with another waste disposal operation should be located outside of the separations identified in Sections 1-2 through 1-4.

i. **Fly ash disposal.** 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 are maintained in an orderly manner, admit no putrescible waste of any kind, and are not co-located with other disposal operations that attract hazardous wildlife.

   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 Sections 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, and ponds that result from mining activities often attract large numbers of potentially hazardous wildlife. To prevent wildlife hazards, 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.

a. **Existing storm water management facilities.** On-airport storm water 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 storm water, protect water quality, and control runoff. Because they slowly release water

after storms, they create standing bodies of water that can attract hazardous wildlife. Where the airport has developed a Wildlife Hazard Management Plan (WHMP) in accordance with Part 139, the FAA requires immediate correction of any wildlife hazards arising from existing storm water 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 wildlife damage management biologist.

Where possible, airport operators should modify storm water detention ponds to allow a maximum 48-hour detention period for the design storm. 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.

When it is not possible to drain a large detention pond completely, airport operators may use physical barriers, such as bird balls, wires grids, pillows, or netting, to deter birds and other hazardous wildlife. 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, airport operators must get approval from the appropriate FAA Regional Airports Division Office.

The FAA recommends that airport operators encourage off-airport storm water treatment facility operators to incorporate appropriate wildlife hazard mitigation techniques into storm water treatment facility operating practices when their facility is located within the separation criteria specified in Sections 1-2 through 1-4.

b. **New storm water management facilities.** The FAA strongly recommends that off-airport storm water management systems located within the separations identified in Sections 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 remain completely dry between storms. To facilitate the control of hazardous wildlife, the FAA recommends the use of steep-sided, rip-rap lined, narrow, linearly shaped water detention basins. When it is not possible to place these ponds away from an airport's AOA, airport operators should use physical barriers, such as bird balls, wires grids, pillows, or netting, to prevent access of hazardous wildlife to open water and minimize aircraft-wildlife interactions. 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, airport operators must get 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, such as French drains or buried rock fields, because they are less attractive to wildlife.

c. **Existing wastewater treatment facilities.** The FAA strongly recommends that airport operators immediately correct any wildlife hazards arising from existing wastewater treatment facilities located on or near the airport. Where required, a WHMP developed in accordance with Part 139 will outline appropriate wildlife hazard mitigation techniques. Accordingly, airport operators should encourage wastewater treatment facility operators to incorporate measures, developed in consultation with a wildlife damage management 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.

d. **New wastewater treatment facilities.** The FAA strongly recommends against the construction of new wastewater treatment facilities or associated settling ponds within the separations identified in Sections 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 of the amount of pollutants or the elimination of pollutants prior to introducing such pollutants into a publicly owned treatment works (wastewater treatment facility). During the site-location analysis for wastewater treatment facilities, developers should consider the potential to attract hazardous wildlife if an airport is in the vicinity of the proposed site, and airport operators should voice their opposition to such facilities if they are in proximity to the airport.

e. **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 strongly recommends against establishing artificial marshes within the separations identified in Sections 1-2 through 1-4.

f. **Wastewater discharge and sludge disposal.** The FAA recommends against the discharge of wastewater or sludge on airport property because it may improve soil moisture and quality on unpaved areas and lead to improved turf growth that can be an attractive food source for many species of animals. Also, the turf requires more frequent mowing, which in turn may mutilate or flush insects or small animals and produce straw, both of which can attract hazardous wildlife. In addition, the improved turf may attract grazing wildlife, such as deer and geese. Problems may also occur when discharges saturate unpaved airport areas. The resultant soft, muddy conditions can severely 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. Normally, wetlands are attractive to many types of wildlife, including many which rank high on the list of hazardous wildlife species (Table 1).

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

a. **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. Where required, a WHMP will outline appropriate wildlife hazard mitigation techniques. Accordingly, airport operators should develop measures to minimize hazardous wildlife attraction in consultation with a wildlife damage management biologist.

b. **New airport development.** Whenever possible, the FAA recommends locating new airports using the separations from wetlands identified in Sections 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 wildlife damage management biologist, in consultation 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 WHMP that indicates methods of minimizing the hazards.

c. **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 Sections 1-2 through 1-4.

   (1) Onsite mitigation of wetland functions. The FAA may consider exceptions to locating mitigation activities outside the separations identified in Sections 1-2 through 1-4 if the affected wetlands provide unique ecological functions, such as critical habitat for threatened or endangered species or ground water recharge, which cannot be replicated when moved to a different location. Using existing airport property is sometimes the only feasible way to achieve the mitigation ratios mandated in regulatory orders and/or settlement agreements with the resource agencies. Conservation easements are an additional means of providing mitigation for project impacts. Typically the airport operator continues to own the property, and an easement is created stipulating that the property will be maintained as habitat for state or Federally listed species.

Mitigation 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. A wildlife damage management 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 Sections 1-2 through 1-4 before the mitigation is implemented. A WHMP should be developed to reduce the wildlife hazards.

(2) Offsite mitigation of wetland functions. The FAA recommends that wetland mitigation projects that may attract hazardous wildlife be sited outside of the separations identified in Sections 1-2 through 1-4 unless they provide unique functions that must remain onsite (see 2-4c(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.

(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 Sections 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 Sections 1-2 through 1-4 if the containment area or the spoils contain material that would attract hazardous wildlife.

2-6. AGRICULTURAL ACTIVITIES. Because most, if not all, agricultural crops can attract hazardous wildlife during some phase of production, the FAA recommends against the used of airport property for agricultural production, including hay crops, within the separations identified in Sections 1-2 through 1-4. . If the airport has no financial alternative to agricultural crops to produce income necessary to maintain the viability of the airport, then the airport shall follow the crop distance guidelines listed in the table titled "Minimum Distances between Certain Airport Features and Any On-Airport Agricultural Crops" found in AC 150/5300-13, *Airport Design*, Appendix 17. The cost of wildlife control and potential accidents should be weighed against the income produced by the on-airport crops when deciding whether to allow crops on the airport.

a. **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 starlings, that pose a hazard to aviation. Therefore, The FAA recommends against such facilities within the separations identified in Sections 1-2 through 1-4. Any livestock operation within these separations should have a program developed to reduce the attractiveness of the site to species that are hazardous to aviation safety. Free-ranging livestock must not be grazed on airport property because the animals may wander onto the AOA. Furthermore, livestock feed, water, and manure may attract birds.

b. **Aquaculture.** Aquaculture activities (i.e. catfish or trout production) conducted outside of fully enclosed buildings are inherently attractive to a wide variety of birds. Existing aquaculture facilities/activities within the separations listed in Sections 1-2 through 1-4 must have a program developed to reduce the attractiveness of the sites to species that are hazardous to aviation safety. Airport operators should also oppose the establishment of new aquaculture facilities/activities within the separations listed in Sections 1-2 through 1-4.

c. **Alternative uses of agricultural land.** Some airports are surrounded by vast areas of farmed land within the distances specified in Sections 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, for example, flood their land during waterfowl hunting season and obtain additional revenue by renting out duck blinds. The duck hunters then use decoys and call in hundreds, if not thousands, of birds, creating a tremendous threat to aircraft safety. A wildlife damage management biologist should review, in coordination with local farmers and producers, these types of seasonal land uses and incorporate them into the WHMP.

2-7. GOLF COURSES, LANDSCAPING AND OTHER LAND-USE CONSIDERATIONS.

a. **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. The FAA recommends against construction of new golf courses within the separations identified in Sections 1-2 through 1-4. Existing golf courses located within these separations must develop a program to reduce the attractiveness of the sites to species that are hazardous to aviation safety. 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.

b. **Landscaping and landscape maintenance.** 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. A wildlife damage management 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.

Turf grass areas can 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 grass management regime will deter all species of hazardous wildlife in all situations. In cooperation with wildlife damage management biologist, airport operators should develop airport turf grass management plans on a prescription basis, depending on the airport's geographic locations and the type of hazardous wildlife likely to frequent the airport

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 wildlife damage management biologist. Airport operators should also consider developing and implementing a preferred/prohibited plant species list, reviewed by a wildlife damage management biologist, which has been designed for the geographic location to reduce the attractiveness to hazardous wildlife for landscaping airport property.

c. **Airports surrounded by wildlife habitat.** The FAA recommends that operators of airports surrounded by woodlands, water, or wetlands refer to Section 2.4 of this AC. Operators of such airports should provide for a Wildlife Hazard Assessment (WHA) conducted by a wildlife damage management biologist. This WHA is the first step in preparing a WHMP, where required.

d. **Other hazardous wildlife attractants.** Other specific land uses or activities (e.g., sport or commercial fishing, shellfish harvesting, etc.), perhaps unique to certain regions of the country, have the potential to attract hazardous wildlife. Regardless of the source of the attraction, when hazardous wildlife is noted on a public-use airport, airport operators must take prompt remedial action(s) to protect aviation safety.

2-8. SYNERGISTIC EFFECTS OF SURROUNDING LAND USES. There may be circumstances where two (or more) different land uses that would not, by themselves, be considered hazardous wildlife attractants or that are located outside of the separations identified in Sections 1-2 through 1-4 that are in such an alignment with the airport as to create a wildlife corridor directly through the airport and/or surrounding airspace. An example of this situation may involve 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, land uses that together could create a flyway for Canada geese directly across the airspace of the airport. There are numerous examples of such situations;

therefore, airport operators and the wildlife damage management biologist must consider the entire surrounding landscape and community when developing the WHMP.

SECTION 3.

PROCEDURES FOR WILDLIFE HAZARD MANAGEMENT BY OPERATORS OF PUBLIC-USE AIRPORTS.

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 may require the development of a Wildlife Hazard Management Plan (WHMP) when specific triggering events occur on or near the airport. Part 139.337 discusses the specific events that trigger a Wildlife Hazard Assessment (WHA) and the specific issues that a WHMP must address for FAA approval and inclusion in an Airport Certification Manual.

3.2. COORDINATION WITH USDA WILDLIFE SERVICES OR OTHER QUALIFIED WILDLIFE DAMAGE MANAGEMENT BIOLOGISTS. The FAA will use the Wildlife Hazard Assessment (WHA) conducted in accordance with Part 139 to determine if the airport needs a WHMP. Therefore, persons having the education, training, and expertise necessary to assess wildlife hazards must conduct the WHA. The airport operator may look to Wildlife Services or to qualified private consultants to conduct the WHA. When the services of a wildlife damage management biologist are required, the FAA recommends that land-use developers or airport operators contact a consultant specializing in wildlife damage management or the appropriate state director of Wildlife Services.

NOTE: Telephone numbers for the respective USDA Wildlife Services state offices can be obtained by contacting USDA Wildlife Services Operational Support Staff, 4700 River Road, Unit 87, Riverdale, MD, 20737-1234, Telephone (301) 734-7921, Fax (301) 734-5157 *(http://www.aphis.usda.gov/ws/)*.

3-3. WILDLIFE HAZARD MANAGEMENT AT AIRPORTS: A MANUAL FOR AIRPORT PERSONNEL. This 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 WHMPs at airports. The manual includes specific information on the nature of wildlife strikes, legal authority, regulations, wildlife management techniques, WHAs, WHMPs, 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: http://wildlife-mitigation.tc.FAA.gov/. This manual only provides a starting point for addressing wildlife hazard issues at airports. Hazardous wildlife management is a complex discipline and conditions vary widely across the United States. Therefore, qualified wildlife damage management biologists must direct the development of a WHMP and the implementation of management actions by airport personnel.

There are many other resources complementary to this manual for use in developing and implementing WHMPs. Several are listed in the manual's bibliography.

3-4. WILDLIFE HAZARD ASSESSMENTS, TITLE 14, CODE OF FEDERAL REGULATIONS, PART 139. Part 139.337(b) requires airport operators to conduct a Wildlife Hazard Assessment (WHA) when certain events occur on or near the airport.

Part 139.337 (c) provides specific guidance as to what facts must be addressed in a WHA.

3-5. WILDLIFE HAZARD MANAGEMENT PLAN (WHMP). The FAA will consider the results of the WHA, along with the aeronautical activity at the airport and the views of the airport operator and airport users, in determining whether a formal WHMP is needed, in accordance with Part 139.337. If the FAA determines that a WHMP is needed, the airport operator must formulate and implement a WHMP, using the WHA as the basis for the plan.

The goal of an airport's Wildlife Hazard 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.

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

3-6. LOCAL COORDINATION. The establishment of a Wildlife Hazards Working Group (WHWG) will facilitate the communication, cooperation, and coordination of the airport and its surrounding community necessary to ensure the effectiveness of the WHMP. The cooperation of the airport community is also necessary when new projects are considered. Whether on or off the airport, the input from all involved parties must be considered when a potentially hazardous wildlife attractant is being proposed. Airport operators should also incorporate public education activities with the local coordination efforts because some activities in the vicinity of your airport, while harmless under normal leisure conditions, can attract wildlife and present a danger to aircraft. 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.

Airport operators should work with local and regional planning and zoning boards so as 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 Sections 1-2 through 1-4. Pay particular attention to proposed land uses involving creation or expansion of waste water treatment facilities, development of wetland mitigation sites, or development or expansion of dredge spoil containment areas. At the very least, airport operators must ensure they 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.

3-7 COORDINATION/NOTIFICATION OF AIRMEN OF WILDLIFE HAZARDS. 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.

SECTION 4.

FAA NOTIFICATION AND REVIEW OF PROPOSED LAND-USE PRACTICE CHANGES IN THE VICINITY OF PUBLIC-USE AIRPORTS

4-1. FAA REVIEW OF PROPOSED LAND-USE PRACTICE CHANGES IN THE VICINITY OF PUBLIC-USE AIRPORTS.

a. The FAA discourages the development of waste disposal and other facilities, discussed in Section 2, located within the 5,000/10,000-foot criteria specified in Sections 1-2 through 1-4.

b. For projects that are located outside the 5,000/10,000-foot criteria but within 5 statute miles of the airport's AOA, the FAA may review development plans, proposed land-use changes, operational changes, 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.

c. Where a wildlife damage management 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.

a. **Notification of new/expanded project proposal.** Section 503 of the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (Public Law 106-181) limits the construction or establishment of new MSWLF within 6 statute miles of certain public-use airports, when both the airport and the landfill meet very specific conditions. See Section 2-2 of this AC and AC 150/5200-34 for a more detailed discussion of these restrictions.

The Environmental Protection Agency (EPA) requires any MSWLF operator proposing a new or expanded waste disposal operation within 5 statute miles of a runway end to notify the appropriate FAA Regional Airports Division Office and the airport operator of the proposal (40 CFR 258, *Criteria for Municipal Solid Waste Landfills*, Section 258.10, *Airport Safety*). The EPA also requires owners or operators of new MSWLF units, or lateral expansions of existing MSWLF units, that are located within 10,000 feet of any airport runway end used by turbojet 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 4-2.b below.)

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

b. Waste handling facilities within separations identified in Sections 1-2 through 1-4. To claim successfully that a waste-handling facility sited within the separations identified in Sections 1-2 through 1-4 does not attract hazardous wildlife and does not threaten aviation, the developer must establish convincingly that the facility will not handle putrescible material other than that as outlined in 2-2.d. The FAA strongly recommends against any facility other than that as outlined in 2-2.d (enclosed transfer stations). The FAA will use this information to determine if the facility will be a hazard to aviation.

c. Putrescible-Waste Facilities. In their effort to satisfy the EPA requirement, some putrescible-waste facility proponents may offer to undertake experimental measures to demonstrate that their proposed facility will not be a hazard to aircraft. To date, no such facility has been able to demonstrate an ability to reduce and sustain hazardous wildlife to levels that existed before the putrescible-waste landfill began operating. For this reason, demonstrations of experimental wildlife control measures may not be conducted within the separation identified in Sections 1-2 through 1-4.

4-3. OTHER LAND-USE PRACTICE CHANGES. As a matter of policy, the FAA encourages operators of public-use airports who become aware of proposed land use practice changes that may attract hazardous wildlife within 5 statute miles of their airports to promptly notify the FAA. 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.

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.

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.

a. Airports that have received Federal grant-in-aid assistance. Airports that have received Federal grant-in-aid assistance are required by 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. The FAA recommends that airport operators to the extent practicable oppose off-airport land-use changes or practices within the separations identified in Sections 1-2 through 1-4 that 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 eliminating or reducing a proposed wildlife hazard. Airport operators should identify hazardous wildlife attractants and any associated wildlife hazards during any planning process for new airport development projects.

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APPENDIX 1. DEFINITIONS OF TERMS USED IN THIS ADVISORY CIRCULAR.

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 Title 14, Code of Federal Regulations, Part 139.

    6. **Construct a new MSWLF.** 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 MSWLF.** 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 not operating under 14 CFR Part 119, Certification: Air Carriers and Commercial Operators.

    11. **Hazardous wildlife.** Species of wildlife (birds, mammals, reptiles), including feral animals and domesticated animals not under control, that are associated with aircraft strike problems, are capable of causing structural damage to airport facilities, or act as attractants to other wildlife that pose a strike hazard

    12. **Municipal Solid Waste Landfill (MSWLF).** 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. An MSWLF 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. An MSWLF can consist of either a stand alone unit or several cells that receive household waste.

13. **New MSWLF.** 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, and of which 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 several months.

22. **Runway protection zone (RPZ).** 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.

23. **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).

24. **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)

25. **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)

26. **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 Federal Water Pollution Control Act, as amended (86 Stat. 880), or source, special nuclear, or by product material as defined by the Atomic Energy Act of 1954, as amended, (68 Stat. 923). (40 CFR 257.2)

27. **Turbine-powered aircraft.** Aircraft powered by turbine engines including turbojets and turboprops but excluding turbo-shaft rotary-wing aircraft.

28. **Turbine-use airport.** Any airport that sells Jet-A fuel for fixed-wing turbine-powered aircraft.

29. **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 (POTW), as defined by Section 212 of the Federal Water Pollution Control Act (P.L. 92-500) as amended by the Clean Water Act of 1977 (P.L. 95-576) and the Water Quality Act of 1987 (P.L. 100-4). 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 POTW. (See 40 CFR Section 403.3 (q), (r), & (s)).

30. **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, *Taking, Possession, Transportation, Sale, Purchase, Barter, Exportation, and Importation of Wildlife and Plants*). 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).

31. **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 AOA. These attractants can include architectural features, landscaping, waste disposal sites, wastewater treatment facilities, agricultural or aquaculture activities, surface mining, or wetlands.

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

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

    a. A pilot reports striking 1 or more birds or other wildlife;

    b. Aircraft maintenance personnel identify aircraft damage as having been caused by a wildlife strike;

    c. Personnel on the ground report seeing an aircraft strike 1 or more birds or other wildlife;

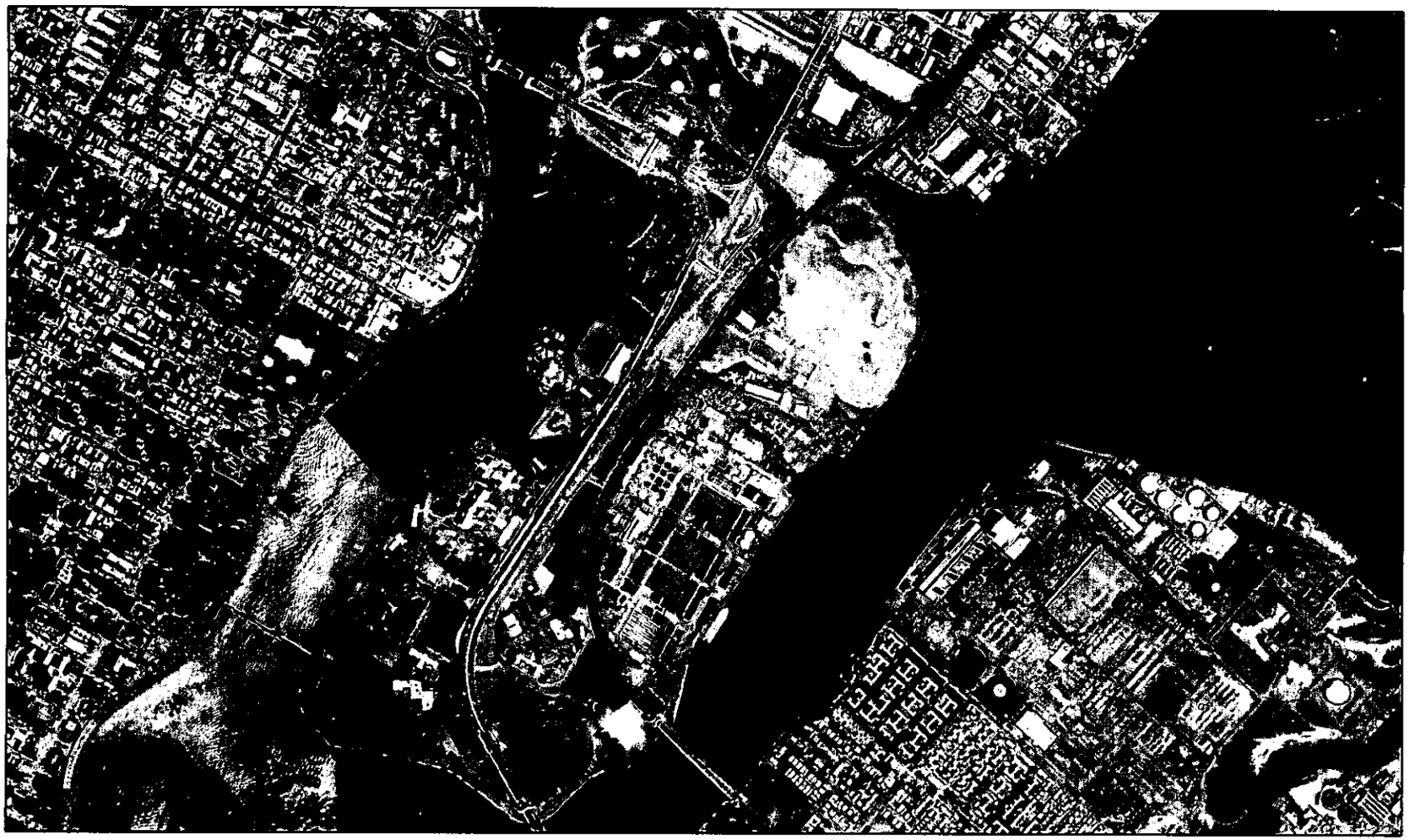
    d. Bird or other wildlife remains, whether in whole or in part, are found within 200 feet of a runway centerline, unless another reason for the animal's death is identified;

    e. 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) (Transport Canada, Airports Group, *Wildlife Control Procedures Manual*, Technical Publication 11500E, 1994).

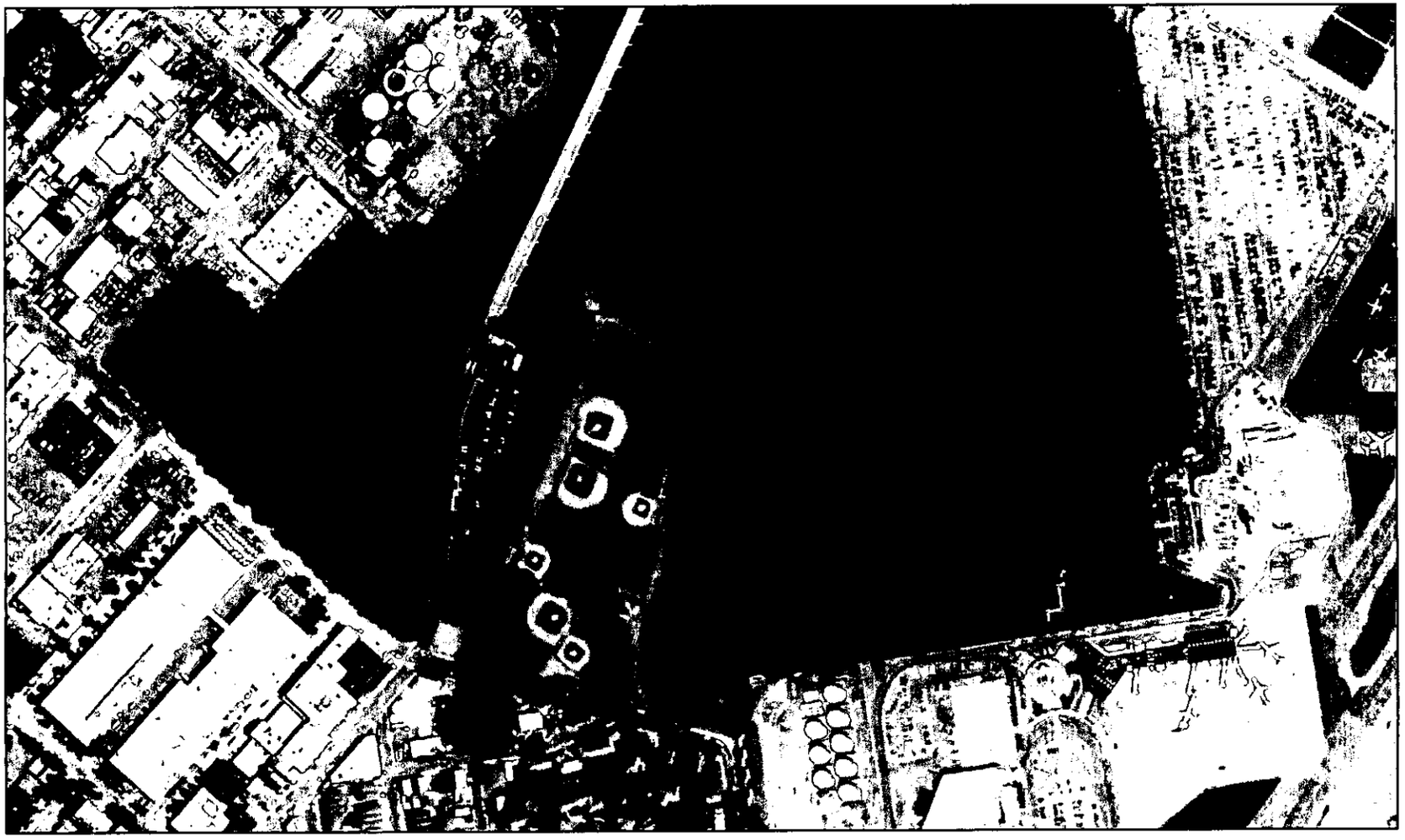
2. RESERVED.

Appendix T: Maps of Off-Airport Survey Locations

A. Randall's/Ward's Island



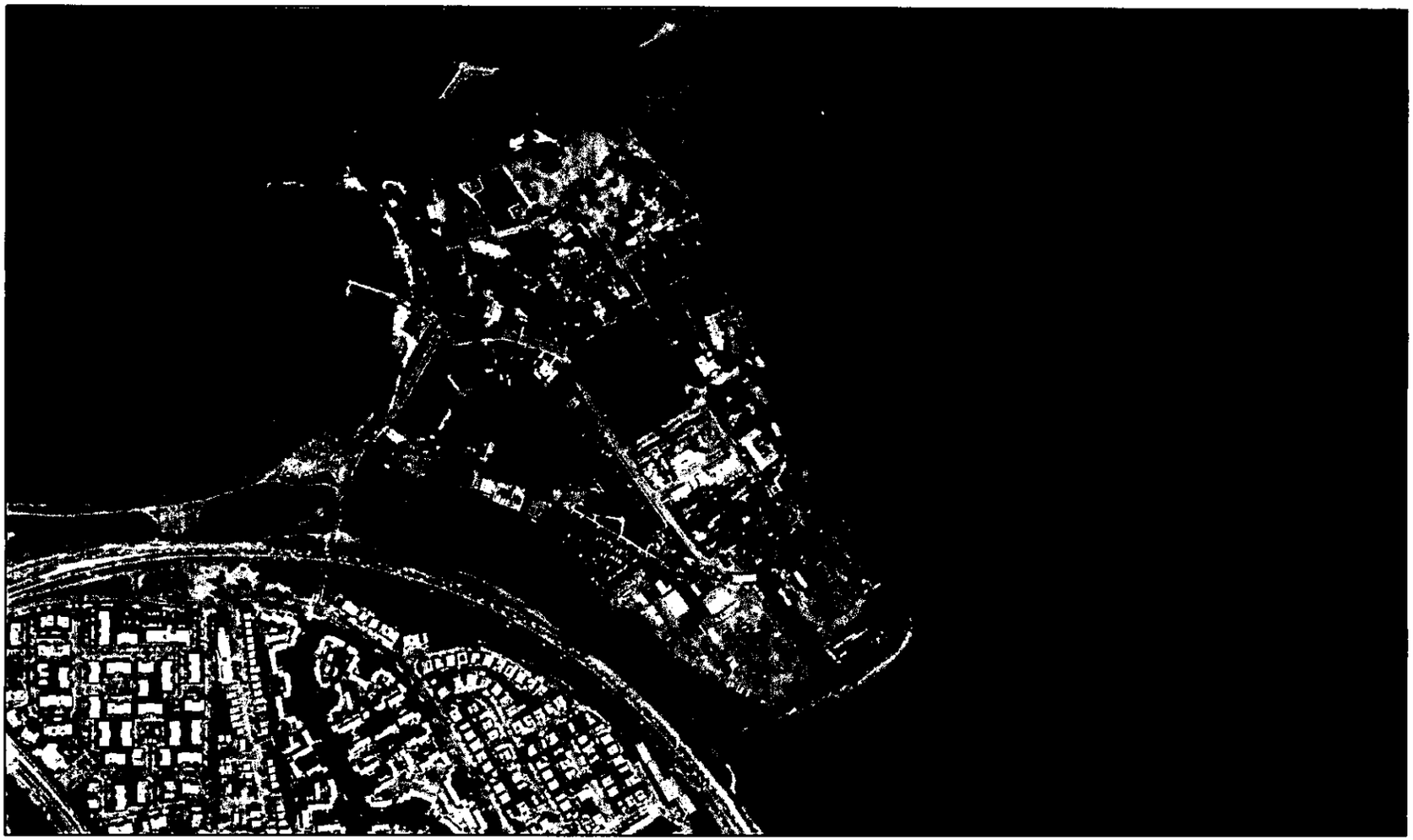
B. Elmjack



C. Flushing Meadows Corona Park

D. Clearview Golf Course

E. Fort Totten



F. Alley Pond

G. Kissena

H. Ferry Point

Appendix U: Months species was observed (highlighted yellow) and month species was struck (X) during the WHA.

Species	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
American Black Duck				X								
American Crow												
American Golden-Plover												X
American Kestrel	X			X						X	X	X
American Oystercatcher												
American Robin	X	X										
Atlantic Brant												
Barn Swallow	X							X	X	X	X	
Bats (Flying Mammal)	X										X	
Belted Kingfisher												
Black-crowned Night-Heron												X
Black Skimmer												
Bufflehead												
Canada Goose												
Ceder Waxwing												X
Common Goldeneye												
Common Grackle												
Common Merganser												
Common Tern											X	
Dark-eyed Junco	X	X										
Domesticated Parrot											X	
Double-crested Cormorant	X											
European Starling	X		X				X				X	X
Fish Crow												
Gadwall			X			X						X
Gray Catbird												X
Gray-cheeked Thrush	X											
Great Black-backed Gull					X							
Great Blue Heron											X	
Great Egret												
Greater Scaup												
Greater Yellowlegs												
Herring Gull		X		X		X		X				

Horned Lark					X							
House Sparrow												
House Wren	X											
Killdeer									X			
Lauging Gull												
Least Sandpiper											X	
Lesser Scaup												
Mallard												
Merlin												
Mourning Dove							X					X
Mute Swan												
Northern Harrier												
Northern Mockingbird												
Northern Pintail												
Osprey												
Ovenbird						X						
Pectoral Sandpiper	X											
Peregrine Falcon												
Red-breasted Merganser												
Red-tailed Hawk												
Red-throated Loon												
Red-winged Blackbird												
Ring-billed Gull				X							X	X
Rock Dove	X			X		X		X		X		
Ruby-crowned Kinglet	X											
Ruddy Duck				X								
Sanderling											X	
Savannah Sparrow												
Semipalmated Plover											X	
Snowy Egret												
Snow Goose			X									
Song Sparrow												
Swainson's Thrush								X				X
Swamp Sparrow	X											

Tree Swallow										X		
Unidentified duck species												
Unidentified Gull	X					X			X			
Unidentified passerines												
Unidentified shorebirds												
Unidentified sparrows												
Unknown	X	X	X	X	X	X	X	X	X	X	X	X
Veery												X
Whimbrel												
White-throated Sparrow	X											
Wood Duck												
Wood Thrush	X											
Yellow-crowned Night-Heron												

Appendix V: Total number of observations and individuals (bold) counted from each guild at each survey point during the WHA.

Guild	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
	74	27	22	23	6	20	13	24	1	35	57	15	32	28	377
Blackbirds & starlings	**468**	**70**	**110**	**349**	**53**	**163**	**23**	**704**	**89**	**518**	**546**	**74**	**275**	**229**	**3671**
	110	24	6	3	1	0	31	5	5	15	64	18	12	4	298
Columbids	**344**	**45**	**14**	**11**	**1**	**0**	**55**	**8**	**11**	**72**	**380**	**40**	**17**	**6**	**1004**
	1	3	2	0	0	0	0	0	0	4	2	1	0	0	13
Corvids	2	3	4	0	0	0	0	0	0	6	12	1	0	0	28
	50	104	164	155	77	97	197	232	168	164	112	30	114	79	1743
Gulls	**73**	**151**	**565**	**3091**	**249**	**238**	**357**	**1185**	**1205**	**1370**	**344**	**62**	**162**	**1124**	**10176**
	0	2	3	3	6	17	53	39	51	4	0	9	4	8	199
Other flocking birds	**0**	**3**	**6**	**7**	**31**	**87**	**111**	**132**	**97**	**6**	**0**	**12**	**9**	**13**	**514**
	1	0	1	2	6	9	2	4	1	1	1	0	1	5	34
Raptors	**1**	**0**	**1**	**2**	**6**	**13**	**2**	**4**	**1**	**1**	**1**	**0**	**1**	**5**	**38**
	0	0	9	3	3	5	1	0	0	4	4	8	17	15	69
Small perching birds	**0**	**0**	**10**	**5**	**9**	**9**	**2**	**0**	**0**	**5**	**7**	**10**	**26**	**28**	**111**
	0	0	19	23	32	14	4	10	8	13	1	16	0	21	161
Wading & shore birds	**0**	**0**	**53**	**187**	**63**	**14**	**4**	**32**	**9**	**19**	**2**	**17**	**0**	**27**	**427**
	0	2	4	31	27	23	32	49	61	17	0	7	2	28	283
Waterbirds	**0**	**2**	**9**	**59**	**40**	**39**	**43**	**83**	**714**	**44**	**0**	**7**	**3**	**798**	**1841**
	1	1	30	117	124	103	20	100	59	192	6	46	9	78	886
Waterfowl	**10**	**4**	**79**	**857**	**607**	**528**	**189**	**860**	**918**	**6133**	**113**	**106**	**89**	**264**	**10757**
	237	163	260	360	282	288	353	463	354	449	247	150	191	266	4063
Total	**898**	**278**	**851**	**4568**	**1059**	**1091**	**786**	**3008**	**3044**	**8174**	**1405**	**329**	**582**	**2494**	**28567**

Appendix W: Total number of observations and individuals (bold) counted from each guild during each month of the WHA.

Guild	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Grand Total
Blackbirds & starlings	25	24	11	14	7	10	46	67	73	33	44	23	377
	426	**83**	**131**	**158**	**211**	**53**	**192**	**326**	**372**	**244**	**1142**	**333**	**3671**
Columbids	13	16	11	26	25	22	27	23	27	41	36	31	298
	49	**36**	**51**	**96**	**125**	**49**	**57**	**80**	**96**	**117**	**92**	**156**	**1004**
Corvids	1	1	2	0	0	3	1	2	1	0	1	1	13
	6	**1**	**3**	**0**	**0**	**9**	**1**	**2**	**1**	**0**	**2**	**3**	**28**
Gulls	169	171	221	212	252	137	102	93	73	99	92	122	1743
	724	**897**	**943**	**1270**	**1932**	**657**	**495**	**522**	**247**	**455**	**1044**	**990**	**10176**
Other flocking birds	0	0	3	0	0	0	15	47	51	48	35	0	199
	0	**0**	**59**	**0**	**0**	**0**	**19**	**103**	**90**	**146**	**97**	**0**	**514**
Raptors	8	3	2	3	3	2	0	0	0	3	7	3	34
	9	**3**	**2**	**3**	**3**	**2**	**0**	**0**	**0**	**3**	**10**	**3**	**38**
Small perching birds	7	3	3	3	4	6	11	10	10	5	4	3	69
	10	**11**	**3**	**9**	**4**	**10**	**19**	**12**	**12**	**9**	**7**	**5**	**111**
Wading & shore birds	6	3	4	0	0	1	4	22	38	38	24	21	161
	6	**3**	**6**	**0**	**0**	**2**	**4**	**28**	**64**	**89**	**181**	**44**	**427**
Waterbirds	47	31	17	9	6	2	22	17	18	32	35	47	283
	407	**64**	**37**	**9**	**6**	**2**	**25**	**23**	**22**	**297**	**384**	**565**	**1841**
Waterfowl	46	79	149	120	146	142	76	46	25	28	14	15	886
	542	**1112**	**1736**	**2542**	**2149**	**1376**	**646**	**221**	**75**	**150**	**106**	**102**	**10757**
Total	322	331	423	387	443	325	304	327	316	327	292	266	4063
	2179	**2210**	**2971**	**4087**	**4430**	**2160**	**1458**	**1317**	**979**	**1510**	**3065**	**2201**	**28567**

Appendix X: Total number of observations and individuals (bold) counted by exhibiting behavior during the WHA.

Guild	Loafing on ground	Loafing on water	Feeding	Perched on manmade structure	Perched on vegetation	Flying over observation area	On ground in or adjacent to runway	Flying over runway	Total
Blackbirds & starlings	5	0	24	121	7	170	2	48	377
	29	**0**	**887**	**728**	**46**	**1696**	**84**	**201**	**3671**
Columbids	6	1	18	92	0	145	1	35	298
	8	**1**	**98**	**305**	**0**	**515**	**2**	**75**	**1004**
Corvids	1	0	1	2	0	8	0	1	13
	1	**0**	**2**	**2**	**0**	**22**	**0**	**1**	**28**
Gulls	124	82	70	125	0	803	5	534	1743
	1899	**712**	**2322**	**1600**	**0**	**2582**	**9**	**1052**	**10176**
Other flocking birds	2	0	1	4	0	165	4	23	199
	9	**0**	**17**	**16**	**0**	**357**	**46**	**69**	**514**
Raptors	1	0	2	14	0	15	0	2	34
	1	**0**	**2**	**17**	**0**	**16**	**0**	**2**	**38**
Small perching birds	5	0	5	16	14	28	0	1	69
	13	**0**	**9**	**27**	**19**	**42**	**0**	**1**	**111**
Wading & shore birds	57	2	23	12	0	55	0	12	161
	86	**2**	**37**	**17**	**0**	**269**	**0**	**16**	**427**
Waterbirds	5	69	5	71	0	68	0	65	283
	19	**82**	**14**	**1508**	**0**	**97**	**0**	**121**	**1841**
Waterfowl	57	645	49	5	0	106	0	24	886
	247	**8847**	**1010**	**9**	**0**	**486**	**0**	**158**	**10757**
Total	322	331	423	387	443	325	304	327	4063
	2179	**2210**	**2971**	**4087**	**4430**	**2160**	**1458**	**1317**	**28567**

Appendix Y: 50 CFR § 21.49 Control Order for Resident Canada Geese at Airports.

unless it displays a currently valid OMB control number.

(f) *When does this depredation order expire?* This depredation order will automatically expire on June 30, 2014, unless revoked or extended prior to that date.

[68 FR 58035, Oct. 8, 2003, as amended at 74 FR 15398, Apr. 6, 2009]

§ 21.49 Control order for resident Canada geese at airports and military airfields.

(a) *Which Canada geese are covered by this order?* This regulation addresses the control and management of resident Canada geese, as defined in § 21.3.

(b) *What is the control order for resident Canada geese at airports, and what is its purpose?* The airport control order authorizes managers at commercial, public, and private airports (airports) (and their employees or their agents) and military air operation facilities (military airfields) (and their employees or their agents) to establish and implement a control and management program when necessary to resolve or prevent threats to public safety from resident Canada geese. Control and management activities include indirect and/or direct control strategies such as trapping and relocation, nest and egg destruction, gosling and adult trapping and culling programs, or other lethal and non-lethal control strategies.

(c) *Who may participate in the program?* To be designated as an airport that is authorized to participate in this program, an airport must be part of the National Plan of Integrated Airport Systems and have received Federal grant-in-aid assistance, or a military airfield, meaning an airfield or air station that is under the jurisdiction, custody, or control of the Secretary of a military department. Only airports and military airfields in the lower 48 States and the District of Columbia are eligible to conduct and implement the various resident Canada goose control and management program components.

(d) *What are the restrictions of the control order for resident Canada geese at airports and military airfields?* The airport control order for resident Canada geese is subject to the following restrictions:

(1) Airports and military airfields should use nonlethal goose management tools to the extent they deem appropriate. To minimize lethal take, airports and military airfields should follow this procedure:

(i) Assess the problem to determine its extent or magnitude, its impact on current operations, and the appropriate control method to be used.

(ii) Base control methods on sound biological, environmental, social, and cultural factors.

(iii) Formulate appropriate methods into a control strategy that uses several control techniques rather than relying on a single method.

(iv) Implement all appropriate nonlethal management techniques (such as harassment and habitat modification) in conjunction with take authorized under this order.

(2)(i) Methods of take for the control of resident Canada geese are at the airport's and military airfield's discretion from among the following:

(A) Egg oiling,
(B) Egg and nest destruction,
(C) Shooting,
(D) Lethal and live traps,
(E) Nets,
(F) Registered animal drugs, pesticides, and repellants,
(G) Cervical dislocation, and
(H) CO_2 asphyxiation.

(ii) Birds caught live may be euthanized or transported and relocated to another site approved by the State or Tribal wildlife agency, if required.

(iii) All techniques used must be in accordance with other Federal, State, and local laws, and their use must comply with any labeling restrictions.

(iv) Persons using shotguns must use nontoxic shot, as listed in § 20.21(j) of this subchapter.

(v) Persons using egg oiling must use 100 percent corn oil, a substance exempted from regulation by the U.S. Environmental Protection Agency under the Federal Insecticide, Fungicide, and Rodenticide Act.

(3) Airports and military airfields may conduct management and control activities, involving the take of resident Canada geese, under this section between April 1 and September 15. The destruction of resident Canada goose

nests and eggs may take place between March 1 and June 30.

(4) Airports and military airfields and their employees and agents may possess, transport, and otherwise dispose of resident Canada geese taken under this section. Disposal of birds taken under this order may be by donation to public museums or public institutions for scientific or educational purposes, processing for human consumption and subsequent distribution free of charge to charitable organizations, or burial or incineration. Airports/military airfields, their employees, and designated agents may not sell, offer for sale, barter, or ship for the purpose of sale or barter any resident Canada geese taken under this section, nor their plumage or eggs. Any specimens needed for scientific purposes as determined by the Regional Director must not be destroyed, and information on birds carrying metal leg bands must be submitted to the Bird Banding Laboratory by means of a toll-free telephone number at 1-800-327-BAND (or 2263).

(5) Resident Canada geese may be taken only within the airport, or the military base on which a military airfield is located, or within a 3-mile radius of the outer boundary of such a facility. Airports and military airfields or their agents must first obtain all necessary authorizations from landowners for all management activities conducted outside the airport or military airfield's boundaries and be in compliance with all State and local laws and regulations.

(6) Nothing in this section authorizes the killing of resident Canada geese or destruction of their nests and eggs contrary to the laws or regulations of any State or Tribe, and none of the privileges of this section may be exercised unless the airport or military airfield possesses the appropriate State or Tribal authorization or other permits required by the State or Tribe. Moreover, this section does not authorize the killing of any migratory bird species or destruction of their nest or eggs other than resident Canada geese.

(7) Authorized airports and military airfields, and their employees and agents operating under the provisions of this section may not use decoys, calls, or other devices to lure birds within gun range.

(8) Airports and military airfields exercising the privileges granted by this section must submit an annual report summarizing activities, including the date and numbers and location of birds, nests, and eggs taken, by December 31 of each year to the Regional Migratory Bird Permit Office listed in §2.2 of this subchapter.

(9) Nothing in this section applies to any Federal land without written permission of the Federal agency with jurisdiction.

(10) Airports and military airfields may not undertake any actions under this section if the activities adversely affect other migratory birds or species designated as endangered or threatened under the authority of the Endangered Species Act. Persons operating under this order must immediately report the take of any species protected under the Endangered Species Act to the Service. Further, to protect certain species from being adversely affected by management actions, airports and military airfields must:

(i) Follow the Federal-State Contingency Plan for the whooping crane;

(ii) Conduct no activities within 300 meters of a whooping crane or Mississippi sandhill crane nest;

(iii) Follow all Regional (or National when available) Bald Eagle Nesting Management guidelines for all management activities;

(iv) Contact the Arizona Ecological Services Office (for the Colorado River and Arizona sites) or the Carlsbad Fish and Wildlife Office (for Salton Sea sites) if control activities are proposed in or around occupied habitats (cattail or cattail bulrush marshes) to discuss the proposed activity and ensure that implementation will not adversely affect clapper rails or their habitats; and

(v) In California, any control activities of resident Canada geese in areas used by the following species listed under the Endangered Species Act must be done in coordination with the appropriate local FWS field office and in accordance with standard local operating procedures for avoiding adverse effects to the species or its critical habitat:

(A) *Birds:* Light-footed clapper rail, California clapper rail, Yuma clapper rail, California least tern, southwestern willow flycatcher, least Bell's vireo, western snowy plover, California gnatcatcher.

(B) *Amphibians:* California red-legged frog and California tiger salamander.

(C) *Insects:* Valley elderberry longhorn beetle and delta green ground beetle.

(D) *Crustaceans:* Vernal pool fairy shrimp, conservancy fairy shrimp, longhorn fairy shrimp, vernal pool tadpole shrimp, San Diego fairy shrimp, and Riverside fairy shrimp.

(E) *Plants:* Butte County meadowfoam, large-flowered wooly meadowfoam, Cook's lomatium, Contra Costa goldfields, Hoover's spurge, fleshy owl's clover, Colusa grass, hairy Orcutt grass, Solano grass, Greene's tuctoria, Sacramento Valley Orcutt grass, San Joaquin Valley Orcutt grass, slender Orcutt grass, California Orcutt grass, spreading navarretia, and San Jacinto Valley crownscale.

(e) *Can the control order be suspended?* We reserve the right to suspend or revoke an airport's or military airfield's authority under this control order if we find that the terms and conditions specified in the control order have not been adhered to by that airport or military airfield. Final decisions to revoke authority will be made by the appropriate Regional Director. The criteria and procedures for suspension, revocation, reconsideration, and appeal are outlined in §§ 13.27 through 13.29 of this subchapter. For the purposes of this section, "issuing officer" means the Regional Director and "permit" means the authority to act under this control order. For purposes of § 13.29(e), appeals must be made to the Director.

(f) *Has the Office of Management and Budget (OMB) approved the information collection requirements of the control order?* OMB has approved the information collection and recordkeeping requirements of the control order under OMB control number 1018–0133. 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. You may send comments on the information collection and recordkeeping requirements to the Service's Information Collection Clearance Officer, U.S. Fish and Wildlife Service, MS 222—ARLSQ, 1849 C Street NW., Washington, DC 20240.

[71 FR 45986, Aug. 10, 2006, as amended at 72 FR 46406, Aug. 20, 2007]

§ 21.50 Depredation order for resident Canada geese nests and eggs.

(a) *Which Canada geese are covered by this order?* This regulation addresses the control and management of resident Canada geese, as defined in § 21.3.

(b) *What is the depredation order for resident Canada geese nests and eggs, and what is its purpose?* The nest and egg depredation order for resident Canada geese authorizes private landowners and managers of public lands (landowners); homeowners' associations; and village, town, municipality, and county governments (local governments); and the employees or agents of any of these persons or entities to destroy resident Canada goose nests and eggs on property under their jurisdiction when necessary to resolve or prevent injury to people, property, agricultural crops, or other interests.

(c) *Who may participate in the depredation order?* Only landowners, homeowners' associations, and local governments (and their employees or their agents) in the lower 48 States and the District of Columbia are eligible to implement the resident Canada goose nest and egg depredation order.

(d) *What are the restrictions of the depredation order for resident Canada goose nests and eggs?* The resident Canada goose nest and egg depredation order is subject to the following restrictions:

(1) Before any management actions can be taken, landowners, homeowners' associations, and local governments must register with the Service at *https://epermits.fws.gov/eRCGR.* Landowners, homeowners' associations, and local governments (collectively termed "registrants") must also register each employee or agent working on their behalf. Once registered, registrants and agents will be authorized to act under the depredation order.

(2) Registrants authorized to operate under the depredation order must use

Appendix Z: Flushing Bay Pier Pilings.