Airport Wildlife Handbook

A quick reference guide for mitigating wildlife at aviation facilities in North Central Texas.

July 2012

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What is NCTCOG?

The North Central Texas Council of Governments (NCTCOG) is a voluntary association of, by and for local governments, and was established to assist local governments in planning for common needs, cooperating for mutual benefit, and coordinating for sound regional development. NCTCOG's purpose is to strengthen both the individual and collective power of local governments and to help them recognize regional opportunities, eliminate unnecessary duplication, and make joint decisions.

NCTCOG serves a 16-county region of North Central Texas (**Figure 1**), which is centered around the two urban centers of Dallas and Fort Worth. NCTCOG has over 230 member governments including 16 counties, numerous cities, school districts, and special districts.

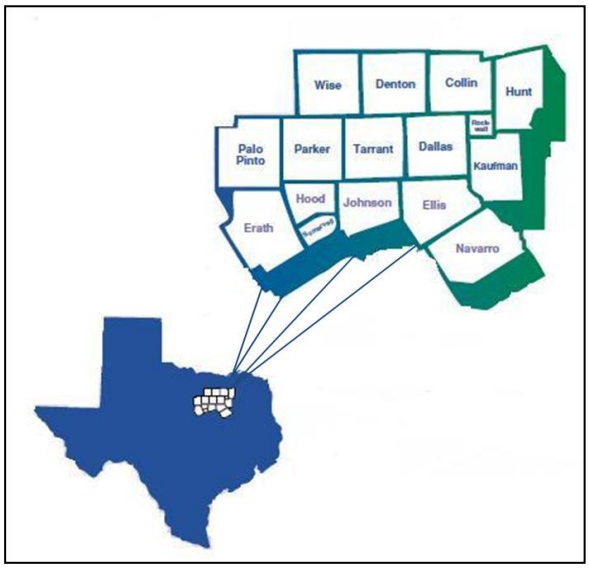

Figure 1

NCTCOG Aviation

The NCTCOG aviation program is engaged in several initiatives benefitting the region's aviation facilities. These include the development of a Regional General Aviation and Heliport System Plan (System Plan) funded by the Federal Aviation Administration (FAA); planning for surface access to regional aviation facilities; and an aviation education planning and implementation for regional colleges and universities. Additionally, staff oversees the Air Transportation Technical Advisory Committee (ATTAC) which is made up of regional airport managers and aviation stakeholders. The purpose of the Committee is to oversee the Regional General Aviation and Heliport System Plan and advise NCTCOG staff on regionally significant issues affecting the general aviation and heliport system. This handbook is a collaborative effort by the NCTCOG aviation staff to develop a resource for both city and airport officials to aid them in establishing sustainable long-range plans for the region's airport planning associated with airport wildlife. Funding for this effort was provided by the FAA through the System Plan.

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DISCLAIMER

This handbook is meant as a tool to aid airport staff when handling wildlife issues on or near the airport and does not contain all the information needed to meet federal regulations or standards. It is not intended to replace any existing or future FAA policies and guidelines. It is intended to provide some important wildlife-related information and airfield procedures to follow in response to wildlife activity on or near your airport. You assume total responsibility for the airport and its employees. Any material provided in this handbook is meant as a guide and is subject to a final review for accuracy, technical information, or otherwise.

This handbook was created in cooperation with the North Central Texas Airport Wildlife Consortium.

A special thanks to DFW International Airport for their contributions to this handbook.

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Wildlife Photos: Thinkstock

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Glossary

This section defines acronyms and abbreviations used throughout the document.

Term	Description
AC	Advisory Circulars
ACRP	Airport Cooperative Research Program
ADO	Airports District Office
AOA	Aircraft Operations Area
ATF	Bureau of Alcohol, Tobacco, Firearms and Explosives
ATTAC	Air Transportation Technical Advisory Committee
GA	General Aviation
FAA	Federal Aviation Administration
NCTCOG	North Central Texas Council of Governments
NPRM	Notice of Proposed Rulemaking
SOQ	Statement of Qualifications
System Plan	North Central Texas General Aviation and Heliport System Plan
TRB	Transportation Research Board
U.S.	United States
WHA	Wildlife Hazard Assessment
WHMP	Wildlife Hazard Management Plan

Introduction

Wildlife on and near airports has been a safety and economic concern to aviation personnel since the beginning of flight. According to the FAA, Orville Wright documented the first known bird strike during a flight over a corn field near Dayton, Ohio in 1905. Managing wildlife can be as diverse as habitat manipulation to the use of predators to repelling wildlife to lethal control of wildlife. Types of wildlife associated with safety issues at airports include birds, mammals, and reptiles. This report contains sources/references that the reader may find useful in establishment of a customized Wildlife Hazard Management Plan (WHMP) for their local airport.

The nature and magnitude of a wildlife strike problem at any airport depends on a multitude of factors, including air traffic type and volume, local and migratory wildlife populations, and local wildlife habitat conditions. Wildlife is attracted to an airport because desirable food, water, or habitat is present. Operation activities may also result in creating an attractant, such as uncovered dumpsters, irregular maintenance, and even mowing. If any of these land-use practices or operational activities is utilized on or near an airport, or these features are present, then there is a potential issue or concern.

As part of the NCTCOG System Plan, this handbook is intended to assist airport employees as a quick reference guide for the North Central Texas region by providing species identification. Once a species is identified, airport personnel will be able to reference this handbook for species specific mitigation techniques. Also, this handbook will provide information for creating a WHMP, regulatory guidance, strike reporting, and regional wildlife resources and contacts.

When Do You Need to Take Action?

The FAA believes that all airports should understand the level of wildlife activity on or near their airport. Accordingly, the FAA initiated rulemaking in late summer 2009 to make assessments mandatory at all Part 139 airports whether or not an airport has had a “triggering event.”

If a “triggering event” has occurred on or near an airport, a Wildlife Hazard Assessment (WHA), per 14 CFR 139.337(c) (1-5), must be conducted. A list of triggering events can be found at 14 CFR 139.337(b)(1-4) and include multiple wildlife strikes, substantial damage from striking wildlife, engine ingestion of wildlife, and the observation of wildlife of size and numbers capable of creating a wildlife strike with access to the aircraft movement area or flight patterns.

Outside of a triggering event, managing an airport’s “attractiveness” to wildlife is fundamental in controlling wildlife and preventing a wildlife strike, which could cause substantial damage to aircraft, significant costs to repair damages, loss of aircraft, or loss of human life. If an airport provides easy access to resources, such as food, water, and habitat, wildlife will continue to try and utilize these resources. Appropriate action includes identifying all attractive features on or adjacent to the airport and then imposing changes to either remove the attraction or to deny wildlife access to it (Bird Strike Committee USA, June 2007).

Where attractants have been identified, conducting a Wildlife Hazard Assessment and the development of a Wildlife Hazard Management Plan is recommended. However, outside of these actions, the development of a small scale management plan for the airport can provide guidelines for immediate action. Elimination of the attractant is always the preferred course of action; however, it may not always be feasible. s such, habitat modification on or surrounding the airport can provide long-term solutions to deterring wildlife. The use of repellant and harassment techniques to disperse wildlife, or the removal of the problem wildlife, can also provide immediate, although sometimes temporary, solutions. If wildlife is observed utilizing aircraft movement areas, immediate action should be considered to prevent a wildlife strike.

Various habitat modifications and deterrents may require approval from the appropriate FAA Regional Office, coordination with various state and Federal agencies (USACE, TPWD, and USFWS), or the hiring of a trained/permitted professional. Contacting the various regional offices, the USDA Wildlife Services office, or a local wildlife consultant can provide guidance in these matters.

If an airport feels that there is no obvious concern or attractant, observation is still recommended. With seasonal changes come the influx of migrating birds and some wildlife may change their habits. Staying involved with local planning efforts, specifically within 5 miles of the airport, and talking with pilots and airport staff about recent wildlife observations is also recommended.

Airport sponsors and managers have a legal responsibility under Federal regulations to ensure a safe operating environment. As a part of this responsibility, airport sponsors and managers must assess the risk and magnitude of the wildlife strike problems for their airport (14 CFR 139.337).

Wildlife Hazard Assessments and Management Plans

The FAA states, “The presence of wildlife on and near airports creates a hazard to operating aircraft. Wildlife strikes, mainly from birds, cause severe damage to operating aircraft and in some cases lead to loss of life. In recent years, due to increase in passenger traffic, the introduction of much quieter engines on newer planes and a large increase in wildlife population, the probability of wildlife strikes has increased dramatically.” See Appendix A for Title 14, Code of Federal Regulations, Part 139.337 – Wildlife Hazard Management.

Note: **Airports must ensure compliance with other applicable state and federal laws and regulations. Please consult with an FAA Qualified Wildlife Biologist.**

Wildlife Hazard Assessments

Wildlife Hazard Assessments (WHAs) are studies conducted by qualified individuals to identify potential and real wildlife hazards to air safety at an airport. The FAA requires certificated airports to conduct a WHA when any one of the following triggering events occurs on or near the airport:

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

A WHA typically takes a full calendar year of data collection/analysis in order to fully capture presence of and changes in wildlife populations or habitat due to the changing seasons. Biologists identify and map habitat types and also wildlife observed in selected areas of the airport and surrounding communities, analyze Wildlife Strike Data for the airport, and based on this information coupled with resources currently in use by the airport, determine what, if any, wildlife management programs should be implemented or changed. Based on the size and location of the airport, number of operations, type of aircraft served, and challenges posed by wildlife and habitat for the airport, the WHA can be a relatively brief or a lengthy document. One thing all WHAs should be, though, is thorough. Wildlife attractants, wildlife activity, strike records, and recommended actions to reduce potential or real hazards should be included in the assessment.

A WHA is designed to assess an airport's wildlife hazards and to make recommendations to resolve any wildlife issues. The FAA encourages all airports to perform a WHA which can be funded by the Airport Improvement Program (AIP). Benefits for conducting a WHA include:

- Development of a Wildlife Hazard Management Plan
- Improved safety at the airport
- Long-term cost savings
- Airport viewed as proactive
- Reduction in wildlife strikes

CertAlert No. 09-10: Wildlife Hazard Assessments in Accordance with Part 139 Requirements[1]

> The risk of wildlife strikes to aircraft has been increasing. Many populations of wildlife species commonly involved in strikes have increased markedly in the last three decades and adapted to living in urban environments, including near airports. Thirteen of the 14 bird species in North America with mean body masses greater than 8 lbs. have shown significant population increases during this time. For example, from 1980 to 2006, the resident (non-migratory) Canada goose population in the USA and Canada increased at a mean rate of 7.3 % per year. In addition, commercial air traffic has increased from about 18 million aircraft movements in 1980 to over 28 million in 2007.Part 139 requires certificated airports to conduct a Wildlife Hazard Assessment if they experience a triggering event, as described on the previous page.
>
> The Wildlife Hazard Assessment must be conducted by a qualified wildlife biologist who meets the requirements in Advisory Circular 150/5200-36A, *Qualifications for Wildlife Biologists Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards at Airports*. The Wildlife Hazard Assessment must be conducted in accordance with Advisory Circular 150/5200-33B, *Hazardous Wildlife Attractants on or near Airports* and the Wildlife Hazard Management Manual. The Wildlife Hazard Management Manual can be viewed and downloaded free of charge from the FAA's wildlife hazard mitigation web site: www.faa.gov/airports/airport_safety/wildlife. A Wildlife Hazard Assessment should include:

[1] Current as of January 31, 2012. Please check with your local FAA ADO to confirm the most current Advisory Circular (AC).

(1) An analysis of the events or circumstances that prompted the assessment;
(2) Identification of the wildlife species observed and their numbers, locations, local movements, and daily and seasonal occurrences;
(3) Identification and location of features on and near the airport that attract wildlife;
(4) A description of wildlife hazards to air carrier operations; and
(5) Recommended actions for reducing identified wildlife hazards to air carriers.

The Office of Safety and Standards (AAS) has conducted a search of the National Wildlife Strike Database stating "We found a number of airports that appear to have experienced triggering events but we have no record that they have initiated the Wildlife Hazard Assessment (WHA) required by Part 139."

Actions: Airports that have experienced a triggering event, but have yet to undertake a wildlife hazard assessment, should be immediately contacted by their FAA Airport Certification Safety Inspector. Airport operators should be directed to review the FAA Wildlife Strike Database at wildlife.faa.gov. No password is required. Airport operators must immediately initiate action to start a WHA if they confirm that their airport has experienced a triggering event.

Wildlife Hazard Management Plans

Once a WHA is completed, the airport will develop a Wildlife Hazard Management Plan (WHMP) based on findings. Please see Appendix C for a summary of wildlife management plan requirements FAR Part 139.337(e) and 139.337(f). Below is a list of items that the Birdstrike Control Program[2] includes at a minimum:

Personnel

- The persons who have authority and responsibility for implementing the plan
- Specific responsibilities for various sections of the wildlife hazard management plan are assigned or delegated to various airfield departments such as:
- Airfield Director
- Operations
- Maintenance
- Security
- Planning
- Finance
- Wildlife Program Manager

Priorities

- Priorities for needed habitat modification and changes in land use identified in any ecological study with target dates for completion
- Attractants (food, water, and cover) are identified, with priorities for mitigation and completion dates
- A list of completed habitat modification or other projects designed to reduce the wildlife/aircraft strike potential are included, and provide a history of work already accomplished
- These recommendations depredate airfield property:
- Aircraft Operations Area (AOA)
- Areas within 2 miles of aircraft movement
- Areas within 5 miles of aircraft movement
- Airfield structures
- Non-airfield property within 2 miles of aircraft movement areas
- Non-airfield property within 5 miles of aircraft movement areas
- Non-airfield structures

[2]Birdstrike Control Program. www.birdstrikecontrol.com/whmp.html. Retrieved 5/1/2012.

Habitat Management

Habitat management recommendations, inclusive of management plans for specific areas, attractants, species, or situations, as identified in any airfield ecological studies include:

- Food/prey-base management; rodents, insects, and other prey
- Trash and debris; handling, storage
- Species-specific population management; harassment, exclusion, and 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 treatment ponds, other water areas, ephemeral water, runways, taxiways, aprons, other wet areas, airfield buildings and structures, terminal, and airport construction
- Resource Protection

Permitting

Local, State, and Federal wildlife control permitting requirements should be included in all Wildlife Hazard Management Plans.

Resources

Mitigation resources should be provided by the airfield director/owner for implementation of the plan.

Procedures

Procedures to be followed during aircraft operations, including:

- Assignment of personnel responsibilities for implementing the procedures
- Physical inspections of the movement areas and other areas critical to wildlife hazard management, sufficiently in advance of aircraft operations to allow time for wildlife controls to be effective
- Wildlife control measures
- Communication measures between wildlife control personnel and any aircraft in operation at the airport and airfield managers and staff

Review

Periodic evaluation and review of the wildlife hazard management plan for:

- Effectiveness in dealing with the wildlife hazard
- Indications that the existence of the wildlife hazard, as previously described in any ecological study, should be reevaluated

Training

Develop a training program to provide airfield personnel with the knowledge and skills needed to carry out the wildlife hazard management plan administered by a qualified airport wildlife biologist. Please reference the training curriculum for airport personnel in AC 150/5200-36A.

Notes:

Species Identification

The following pages categorize animals seen commonly or seasonally in the North Central Texas Region.

Everyone who is involved in wildlife dispersal or depredation must follow rules of the federal and state governments. Some birds cannot be harmed, or even bothered (eagles) and others should be dispersed whenever present or they become a hazard to air traffic safety (blackbirds, pigeons and dove). A list of who to contact can be found in the Contacts Section near the back of this handbook.

The control methods are suggested for guidance. Please contact a specialist in the contacts section regarding your specific problems. If in doubt about anything, ask your local FAA or USDA representative.

- Airport impact based on the history of severity and size of species in the event of a collision.
- Occurrence rate based on species noted overall in North Central Texas, however, seasonal occurences may vary.
- Protected means that the species is protected under the Migratory Bird Treaty Act.

Birds

There are many types of birds that are common year round in North Central Texas; however a few may only be found seasonally. It is important to make sure you know which species of bird you are dealing with at your airport before you began to mitigate. If you are unsure please contact a qualified airport wildlife biologist.

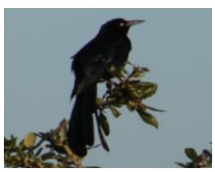
Blackbirds

Identification and Biology

There are many species of blackbirds in Texas which have several traits in common. The males are predominantly black or iridescent in color. All blackbirds have an omnivorous diet consisting primarily of grains, weed seeds, fruits, and insects. Outside of the nesting season, blackbirds generally feed in flocks and roost at night in congregations varying from a few birds to several thousand birds[3]. The most commonly seen blackbirds in the North Central Texas region include the following:

Red-winged blackbirds are abundant nesters. They nest in hayfields, marshes, and ditches. Large flocks like to feed in fields. Most are likely seen in large flocks at the edge of grassy fields in the cooler months. Size varies between 7–9 inches. Males have red “shoulders” with hints of yellow. Females look like large, streaky sparrows.

Common grackles are commonly found in urban areas including roosting in large colonies in residential neighborhoods. Flocks feed in fields, lawns, woodlots, and bottomlands. These birds winter in the southern United States, often in association with redwings, cowbirds, and starlings.



Great-tailed grackles are abundant year-round residents in North Central Texas. The great-tailed grackle nests in colonies, in shrubs or trees, and sometimes in association with herons and egrets. The flocks feed around farms, pastures, and parks.

[3] ACRP. (2010). *Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports.* http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_032.pdf

Brown-headed cowbirds are found in Texas in the winter months. Flocks feed in pastures and feedlots and they are often associated with livestock. Males have brown heads while females are dull brown and hard to identify. They often roost with redwings, grackles, and starlings.

Brewer's blackbirds nest in a diversity of habitats. It prefers pastures, lawns, and agricultural lands for feeding. Feeding on insects and seeds, it is a winter migrant to Texas, sometimes roosting with other blackbird species. Most are around 8 inches in length. Males are iridescent purple while females have a faint metallic green sheen.

Rusty blackbirds are only in our region during the winter months and travel in small flocks. They are listed as a bird of conservation concern in our area. They can be identified by rusty colored feather edges and distinct yellow eyes.

Control

- Do not allow cereal grain, corn, or sunflower crops on or near airports
- Repel blackbirds using pyrotechnics, propane cannons, distress calls, electronic noise systems
- Depredate blackbirds only if a nuisance and proper permit is obtained
- Manage grass height
- Remove or thin trees where roosting
- Toxic bait (restricted-use pesticides requiring special pesticide license)
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

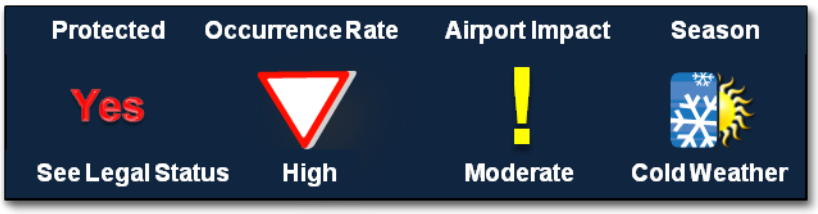
Legal Status

Blackbirds are protected by the Migratory Bird Treaty Act. However, a federal depredation permit is not needed to take blackbirds when they are found to constitute a health hazard or other nuisance (50 CFR 21.43). State and local laws should be consulted before any control measures are taken.

Notes:

Doves

Identification and Biology



Mourning and White-winged Doves are commonly found throughout airports in our region year round. Mourning doves are a long, slim, gray-brown bird with a small head and long pointed tail. White-winged Dove (shown in photo) are less common but not rare. White-winged Dove are easily identified by white edged wings. They are well adapted to urban settings, grasslands, and meadows and are most commonly seen perched along fences and on mow strips. Mourning Doves are attracted to seeds on grasslands and sunflowers in less managed areas.

Control

- Repel doves by using pyrotechnics
- Eliminate feeding, watering, roosting, nesting sites, and add grit or gravel
- Discourage people from feeding doves
- Exclude doves by using either heavy-duty netting or hardware cloth so that birds cannot use the area for nesting or perching
- Clean up spilled grain around grain elevators near airports
- Eliminate pools of standing water that doves use for watering
- Change roost ledges to an angle of 45° or more
- Screen the underside of rafter areas with netting
- Depredate doves only if a nuisance and proper permit is obtained
- Remove inactive nests (permit required if there are eggs)
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

Mourning Doves and White-winged Doves are protected by the Migratory Bird Treaty Act. These doves may not be taken outside of the legal hunting season without a federal depredation permit. A permit from TPWD is not necessary if a federal permit has been obtained. A federal depredation permit is not required to scare depredating migratory birds except for endangered or threatened species, including bald and golden eagles (50 CFR 21.41).

Notes:

Gulls

Identification and Biology

Gulls are most often seen at airports in fall/winter/early spring. The sexes are identical in plumage but males are generally slightly larger than females. Juveniles do not look like the adults shown; coloration and patterns vary widely. They flock in large numbers usually congregating on pavement. Gulls normally nest near water; however, some species will readily nest on rooftops and similar areas. They are attracted to airports especially runways and taxiways after a rain shower due to earthworms surfacing. Gulls will eat almost anything including fish, insects, and scavenge garbage.

Herring – White head, pink spot on bill

Ring-billed – White head ring around bill

Bonaparte's – Black head, black bill

Franklin's – Black head, pink bill

Control

- Harass first thing in the morning to keep away all day
- Use pyrotechnics and distress calls to chase gulls away
- Sweep earthworms and other invertebrates from operating surfaces following heavy rains
- Remove inactive nests (permit required if there are eggs)
- Display gull effigies (lifelike model)
- Install wire grids over ponds to stop roosting
- Improve general sanitation at the airport by ensuring proper disposal of all garbage Eliminate open garbage dumpsters
- Cut infield turf to intermediate height (6–14 inches)
- Eliminate off-airport landfills within designated separation criteria
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

All species of gulls are protected by the Migratory Bird Treaty Act. These laws strictly prohibit the capture, killing, or possession of these birds. Persons wishing to take gulls must obtain a federal depredation permit. A permit from TPWD is not necessary if a federal permit has been obtained. No permits are required to scare migrating birds that are causing damage except for endangered or threatened species (50 CFR 21.41).

Notes:

Herons, Egrets, and Cranes

Identification and Biology

Herons, egrets, and cranes spend much of their time in shallow water hunting for food. They all share certain physical characteristics; extremely long legs and long bills in comparison to the rest of their body.[4] All will nest in large colonies of mixed species.

Herons

All Heron will normally avoid landing directly in the water to avoid scaring their prey. Instead, they land on the edge and stalk toward the water. These birds prey on a variety of live food such as insects, crustaceans, fish, and amphibians. Generally they are found near wet marshy areas.

Great Blue Heron stand about 45-50 inches tall and have a 38-inch wingspan. Their feathers are a bluish gray color and have greenish legs. They have a long, thick, yellow bill. Both sexes are similar in appearance. They usually hold their neck in an "S" curve when in flight and are found in our region year round.

Little Blue Heron stand about 24 inches tall. They have a strong sharp bill with a black tip. Little Blue Herons are wading birds usually seen near or in water. They usually hold their neck in an "S" curve when at rest and in flight. They are pure white in the first year of their life, and when molting to adults, plumage looks mottled. They are commonly found in our region during the summer months.

Egrets

Great Egrets have black legs and a single head plume coming from behind the eye. They stand about 32 inches tall and have a 55 inch wingspan. This long-legged, long-necked wading bird usually holds its neck in an "S" curve in flight. It has black legs and a long and thick yellow bill. Great egrets frequently feed along streams, ponds, rice fields, and saltwater and freshwater marshes. They are found in our region in the summer months.

[4] ACRP. (2010). *Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports.* http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_032.pdf

Snowy egrets are smaller than great egrets and have a black bill, black legs, and yellow feet. They stand about 29 inches tall. Snowy egrets like both freshwater and saltwater marshes and ponds and rice fields for feeding.

Cattle egrets are a white bird with a yellow bill and yellow legs. They are the smallest egret in North America, about 18 to 24 inches tall. They often hunt and feed in agricultural fields and pastures. Items commonly eaten by cattle egrets include small mammals, insects, and amphibians.

Cranes

Sandhill cranes are long-legged, long-necked, gray heron-like birds with a patch of bald red skin on top of their heads. They are slightly taller than great egrets. The Sandhill crane stands 40- 45 inches tall with a wingspan of 5- 7 feet when fully grown. Sandhill cranes are not as common as other wading birds listed here.

Control

- Repel using propane exploders and pyrotechnics
- Eliminate prey species such as field mice and large insects, water-borne food sources
- To the extent practicable, eliminate all fish-bearing water at or near airport
- Harass with dogs
- Place netting over ponds
- Deep sloping sides to standing water sources will help keep wading birds away
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

All herons, egrets, and cranes are protected by the Migratory Bird Treaty Act. This act strictly prohibits the capture, killing, or possession of these birds without a special permit. No permits are required to scare migrating birds that are causing damage except for endangered or threatened species (50 CFR 21.41). State and local laws should be consulted before any control measures are taken.

Notes:

European Starlings

Identification and Biology

Starlings are robin-sized birds with short tails, and triangular shaped wings when in flight. Their feathers are brown with spots which are most visible in the spring. Starlings fly swift and direct patterns. Bills of all starlings are yellow during the reproductive cycle (January to June) and dark at other times. Starlings prefer large open disturbed habitats including cities, towns, farms, ranches, open woodlands, fields, and lawns. Ideal nesting habitat includes areas with trees or other structures that have cavities suitable for nesting and short grass areas. Starlings consume fruits, seeds, and insects.[5]

Control

- Clean up standing water and cover garbage cans
- Modify roost sites by covering with netting and trim trees
- Frighten by alarm calls, propane cannons
- Repel using porcupine wires or soft sticky materials to discourage roosting on ledges
- Toxic bait (restricted-use pesticides requiring special pesticide license)
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

European starlings are not protected by federal law or Texas state law. Local laws may regulate or prohibit certain control techniques.

Notes:

[5] Johns and Glahn. (1994). *Starlings*. http://icwdm.org/handbook/birds/Starlings/Starlings.aspx

Killdeer

Identification and Biology

Killdeer are seen at all times of the year, in pairs in spring, in small loose flocks at other times. There are large numbers in our region in the spring and summer months. They can be identified by two black stripes around the throat, a white forehead on mostly black head, and relatively long legs. They have a reddish tail with a white wing pattern visible in flight. Killdeer are known to exhibit a “broken wing” distraction behavior if there is a nest or babies nearby. Although this insect eater is a shorebird, it inhabits grasslands and nests in short grass, in concrete cracks, or among rocks.

Control

- Implement an insect control program to eliminate prey base
- Repel using propane exploders, battery-operated alarms, and pyrotechnics
- Manage grass height
- Harass with dogs
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

Killdeer are protected by the Migratory Bird Treaty Act. This act strictly prohibits the capture, killing, or possession of these birds without a special permit No permits are required to scare migrating birds that are causing damage except for endangered or threatened species (50 CFR 21.41). State and local laws should be consulted before any control measures are taken.

Notes:

Kingbirds

Identification and Biology

There two species of kingbird in the North Central Texas Region, Eastern and Western Kingbirds. Note the color variation among Eastern and Western species. The *Eastern Kingbird* is entirely black on top with a white belly and tip of tail. The *Western Kingbird* is gray with a yellow belly. Kingbirds are slim swift-flying birds, about 7–9 inches in length. They are solitary to small with loose flocks. Kingbirds fly from place to place rather than walk or hop and are mainly seen perched along fences. Kingbirds are bold and aggressive; they will defend territory against much larger birds.

Control

- Implement an insect control program to eliminate prey base
- Repel by using pyrotechnics
- Eliminate watering, roosting, and nesting sites
- Remove inactive nests (permit required if there are eggs)
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

Kingbirds are protected by the Migratory Bird Treaty Act. This act strictly prohibits the capture, killing, or possession of these birds without a special permit. No permits are required to scare migrating birds that are causing damage except for endangered or threatened species (50 CFR 21.41). State and local laws should be consulted before any control measures are taken.

Notes:

Meadowlarks

Identification and Biology

Two species of Meadowlarks are found in this area; Eastern and Western, both look similar. They are found year round in small loose flocks in this region. Meadowlarks can be identified by a yellow underbelly with a black “V” on the chest, bright white outer tail feathers seen only in flight, long bill, brown streaked upper feathers, and long sharp claws. Meadowlarks are often seen perched singing with its head tipped back. They prefer open grasslands however they may be hard to see despite bright yellow under parts.

Control

- Implement an insect control program to eliminate prey base
- Do not allow cereal grain, corn, and sunflower crops on or near airports
- Depredate Meadowlarks only if a nuisance and proper permit is obtained
- Manage grass heights
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

Meadowlarks are protected by the Migratory Bird Treaty Act. This act strictly prohibits the capture, killing, or possession of these birds without a special permit. No permits are required to scare migrating birds that are causing damage except for endangered or threatened species (50 CFR 21.41). State and local laws should be consulted before any control measures are taken.

Notes:

Pigeons

Identification and Biology

Pigeons, or Rock Dove, are common throughout the airports in our region year round. They typically have a gray body with a whitish rump, two black bars on the secondary wing feathers, a broad black band on the tail, and red/pink feet. However, their body color can vary from gray to white, tan, and black. They are larger than a dove, ranging from 10-13 inches in length. They are seen in flocks of varying sizes and are rarely seen alone. Pigeons have adapted to urban settings where they find food and seek warmth from concrete.

Control

- Eliminate feeding, watering, roosting, and nesting sites
- Prohibit people from feeding pigeons
- Clean up grit, gravel, and spilled grain around railroad yards adjacent to airports
- Eliminate pools of standing water that pigeons use for watering
- Exclude pigeons from buildings by blocking access to indoor roosts
- Change roost ledges to an angle of 45° or more
- Screen the underside of rafter areas with netting
- Install porcupine wires on flat surfaces wherever pigeons are prone to roost
- Reduce pigeon roosting using various nontoxic chemical repellents (polybutenes)
- Depredate
- There are various chemical repellants and toxicants available for pigeons. All are restricted use and require a special pesticide license
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

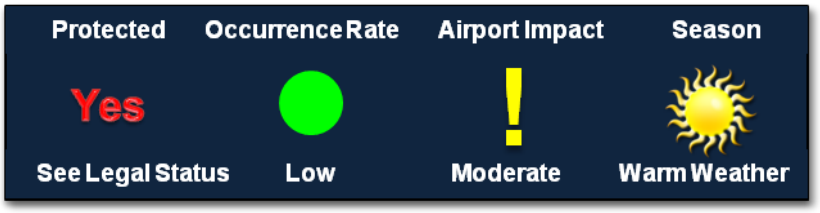
Legal Status

Pigeons, or Rock Dove, are not protected by federal law and most states do not afford them protection. State and local laws should be consulted, however, before any control measures are taken. Some cities are considered bird sanctuaries that provide protection to all species of birds.

Notes:

Sandpipers

Identification and Biology



Peeps and Upland Sandpipers are medium to large shorebirds. They both share certain physical characteristics; long narrow beaks, large eyes, and long legs.

Peeps are a term for small sandpipers. These are not baby Upland Sandpipers. Peeps prefer shallow water such as drain channels. They can range from 5-7 inches tall and eat insects. It is hard to tell species apart, unless you are sure, call them “sandpiper”.

Upland Sandpipers are large for sandpipers, ranging between 10-12 inches tall. They have a long neck with big eyes for a shorebird. They may be seen in either small or large loose groups. They are most numerous in spring and early summer and primarily eat insects. Similar to killdeer, it prefers grasslands, however, prefers to be near or in taller grass.

Control

- Implement an insect control program to eliminate prey base
- Manage grass height
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

Sandpipers are protected by the Migratory Bird Treaty Act. This act strictly prohibits the capture, killing, or possession of these birds without a special permit. No permits are required to scare migratory birds that are causing damage, except for endangered or threatened species (50 CFR 21.41). Upland Sandpipers are listed as a species of conservation concern in this area. State and local laws should be consulted before any control measures are taken.

Notes:

Scissor-tailed Flycatcher

Identification and Biology

Scissor-tailed Flycatchers are very bold. You might see them protecting their territories from much larger birds, such as hawks, especially in the spring while protecting their nests. Indentify by gray head of varying shades, light chest, dark beak, and dark gray wings. They have a pink or orange belly and orange under wings. Size is about 13 inches long from beak to tail tip. Long tail is distinguishing characteristic. They are most commonly seen in small loose groups and breed in open grasslands with occasional trees and shrubs. Scissor-tailed Flycatchers eat insects; especially grasshoppers, crickets, and beetles.

Control

- Implement an insect control program to eliminate prey base
- Repel by using pyrotechnics
- Eliminate watering, roosting, and nesting sites
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

Scissor-tailed Flycatchers are protected by the Migratory Bird Treaty Act. This act strictly prohibits the capture, killing, or possession of these birds without a special permit. No permits are required to scare migratory birds that are causing damage, except for endangered or threatened species (50 CFR 21.41). State and local laws should be consulted before any control measures are taken.

Notes:

Sparrows

Identification and Biology

Numerous sparrow species live in this area. Sparrows are small and chunky birds, ranging from 3-5 inches in length. They have streaked or plain chests and bellies. Sparrows travel in varied flock sizes but can be solitary. Sparrow's habitats and perching areas vary. They feed on insects, seeds, and scraps discarded by people.

Control

- Remove roosting sites
- Repel sparrows using pyrotechnics, propane cannons, alarm calls, electronic noise systems, balloons, scarecrows, and kites
- Use repellents such as Methyl Anthranilate, Polybutenes, or deterrent spikes
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

Sparrows are protected by the Migratory Bird Treaty Act. This act strictly prohibits the capture, killing, or possession of these birds without a special permit. No permits are required to scare migrating birds that are causing damage except for endangered or threatened species (50 CFR 21.41). State and local laws should be consulted before any control measures are taken.

Notes:

Swallows

Identification and Biology

Swallows are a swift and agile bird with pointed wings and small feet. There are several species of swallows in this area ranging from 5-7 inches in length. Swallow's feathers are blue/black on top with rust and white. Swallows will often flock in large numbers, lining up on fences, or seen flying into and from large drains culverts or bridges during nesting season. Swallow's are insectivores and eat flying insects.

Control

- Implement an insect control program to eliminate prey base
- Slick surfaces discourage nesting
- Remove inactive nests (permit required if there are eggs)
- There are no effective repellents
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

Swallows are protected by the Migratory Bird Treaty Act. This act strictly prohibits the capture, killing, or possession of these birds without a special permit. No permits are required to scare migrating birds that are causing damage except for endangered or threatened species (50 CFR 21.41). A depredation permit issued by the US Fish and Wildlife Service is required to remove active swallow nests. Consult a federal and state authority before removing nest. State and local laws should be consulted before any control measures are taken.

Notes:

Waterfowl

Ducks and geese are common year round, but more abundant here in winter. Cormorants are found in our region during the winter months. Ducks and cormorants are almost always associated with water, from large lakes to shallow puddles. Geese prefer large open expanses including parks, lawns, and airfields, usually but not always associated with water. Some waterfowl are well adapted to urban areas. There are many size, color, and dietary need variations among duck species. Disperse waterfowl immediately when near airfields.

The food of individual waterfowl species ranges from fish, to insects, to plants, in various combinations, depending on availability. Waterfowl bills have evolved to allow the exploitation of a wide variety of food sources and associated habitats. Even though many species are adapted to feeding in the water, most will readily come on land to take advantage of available food.[6]

Identification and Biology

Canada Goose

Geese typically feed twice a day: once in the morning and later in the afternoon. They then return to their roost site in the evening which is usually on open water such as lakes, ponds, and even flooded areas in fields. Canada Geese are increasing in this area as year-around residents and are increasing as a nuisance urban species.

Cormorants

All are fish-eaters, dining on small eels, fish, and even water snakes. They dive from the surface, though many species make a characteristic half-jump as they dive, presumably to give themselves a more streamlined entry into the water. After fishing, cormorants go ashore, and are frequently seen holding their wings out in the sun.

[6] Cleary, E. (1994). *Prevention and Control of Wildlife Damage*.
http://icwdm.org/handbook/birds/Waterfowl/WaterfowlBiology.aspx

Ducks

There are many types of ducks. The overall body plan of ducks is elongated and broad, and the ducks are also relatively long-necked, however not as long-necked as the geese and swans. The body shape of diving ducks varies somewhat from this in being more rounded. The bill is usually broad and contains serrated lamellae which are particularly well defined in the filter-feeding species. Ducks have webbed feet and exploit a variety of food sources such as grasses, aquatic plants, fish, insects, small amphibians, worms, and small mollusks.

Control

- Repel waterfowl using pyrotechnics or propane exploders, guard dogs, and scarecrows
- Haze waterfowl using red or green laser lights
- Repel waterfowl using chemical repellents such as methyl anthranilate or anthraquinone; consult a qualified airport wildlife biologist for guidance
- Establish a feeding ban
- Install overhead wires stretched over water areas
- Install netting over ponds or install bird balls
- Live capture and relocate waterfowl (easiest late June to late July)
- Depredate ducks only if a nuisance and proper permit is obtained
- Eliminate or minimize water and wetland habitat on airport property
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

All waterfowl are protected by the Migratory Bird Treaty Act. This act strictly prohibits the capture, killing, or possession of these birds without a special permit. No permits are required to scare migrating birds that are causing damage except for endangered or threatened species (50 CFR 21.41). State and local laws should be consulted, however, before any control measures are taken.

Notes:

Raptors

Eagles, Hawks, Owls, and Vultures are birds of prey and are frequently referred to as raptors. Food habits vary greatly among the raptors. Raptors are highly specialized predators that take their place at the top of the food chain.

When identifying hawks, keep in mind they do not always look the same in the field as they do in this guide or other books. Variations among individuals occur due to:

- **Time of Year** (plumage wears away, which wears away the colors)
- **Age** (juveniles don't always look like their parents)
- **Sex** (females and males may look different depending on species)

Eagles

Identification and Biology

DO NOT HARASS, BOTHER, OR DEPREDATE

Eagles are protected from any type of harassment. Call Wildlife Services if Eagles are causing a potential safety hazard.

There are two species of eagles in the United States; bald eagles and golden eagles. Golden Eagles generally hunt small mammals and Bald Eagles prefer fish. However, both will readily take whatever is available. Although rare to North Central Texas, both Bald and Golden Eagles have been spotted in our area.

Bald Eagles

Bald Eagles are a large raptor with broad wings and a large head with a long, hooked bill. They have an evenly brown body with a white head and white tail. Immature Bald Eagles are all brown with speckles of white until they sexually mature at 5 years of age. They prefer habitats near water such as large lakes and rivers. Bald Eagles are opportunistic eaters, but mainly eat fish. Bald Eagles can be seen in Texas during the winter months.

Golden Eagles

Golden Eagles are a large raptor with a wingspan between 5.9 ft.-7.7 ft. They are primarily brown with gold on the back of the neck and head. Immature Golden Eagles have patches of white on the tail and wings. They prefer habitats with completely open areas especially near mountains, hills, and cliffs. Golden Eagles are opportunistic eaters, mainly eating small mammals.

Control

- Eliminate perch sites at the airport
- Cap utility poles with sheet metal cones or porcupine wire
- Cut airside grass short to eliminate habitat for rabbits and field mice
- Control rodents and other small mammals at airport to reduce prey base
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance
- DO NOT Harass or Depredate!

Legal Status

All eagles are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. These laws strictly prohibit the capture, killing, or possession of eagles. Bald and golden eagles may not be harassed without a special permit issued by the U.S. Fish and Wildlife Service.

Notes:

Hawks

Identification and Biology

Hawks are medium-sized birds of prey. Hawks can often be spotted perched atop telephone poles, fences, posts, and telephone wires. These birds can sit for very long periods of time in silence as they scan the surrounding fields for rodents.[7]

American Kestrel

American Kestrel is a small hawk, present at all times of year, but in larger numbers during migration, not as prevalent in summer. It perches on any structure and may be seen alone or in pairs. It eats insects, small reptiles, and small birds. Kestrel hawks will kite into the wind and appear to hover and may be especially active on windy days. Identified by its strong facial markings, reddish colored tail, and size.

Cooper's Hawk

Cooper's Hawk is common to woodlands, but it may venture out to hunt. Its diet is mostly smaller birds. Its tail is much longer in relation to body size compared to other hawks in this handbook. Identified by bars on tail, white under feathers, streaked chest, and may have red or orange eyes.

Notes:

[7] American Bird Guide. (2008). *Hawks*. www.americanbirdguide.com/hawks.shtml

Swainson's Hawk

Swainson's Hawks are common to this region during migration and warmer months. They prefer open areas like grasslands where they will hunt small rodents and insects. They have been known to follow lawn mowers, hunting disturbed insects or rodents. They are identified by a dark head white chin and a dark "bib" on its chest. The coloration may vary depending on age and season. They migrate in small to large flocks and will perch on the ground or fences.

Red-tailed Hawk

Red-tailed Hawks are large, full-bodied, broad-winged raptors. It is common to the North Texas region all year with higher numbers in the winter months. They are seen perched on lamps, fences, trees and mainly over open areas. They can be easily identified on perch or in flight by red tail and dark leading edge of wings and wingtips.

Northern Harrier

Northern Harrier is a medium-sized raptor easily identified by a flash of white at base of the tail and black wing tips. Males are gray while females are deep brown in color. Harriers have a facial disk like an owl, which may or may not be seen in the field. They are seen in North Texas flying low over grassy fields or sitting in grass, usually in the cooler months. Harriers feed primarily on small mammals and birds. They may also appear to hover into wind.

RAPTORS

Control

- Implement an insect control program to eliminate prey base
- Control rodents and other small mammals at airport to reduce prey base
- Eliminate perch sites at the airport
- Cap utility poles with sheet metal cones or porcupine wire
- Cut airside grass short to eliminate habitat for rabbits and field mice
- Live trap Hawks – under the supervision of a professional
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

All hawks are protected by the Migratory Bird Treaty Act. This act strictly prohibits the capture, killing, or possession of these birds without a special permit. No permits are required to scare migrating birds that are causing damage except for endangered or threatened species (50 CFR 21.41). State and local laws should be consulted, however, before any control measures are taken.

Notes:

Owls

Identification and Biology

Owls, unlike hawks, are almost entirely nocturnal. Thus, they are far more difficult to observe, and much less is known about them. They have large heads and large, forward-facing eyes. Their flight is described as noiseless and moth-like.

Short-Eared Owls

Short-Eared Owls are medium-sized, mostly dappled brown with thin, pale vertical streaks on the chest, with yellow eyes. They can be seen in Texas during the cooler months in open country feeding on small mammals.

Barn Owls

Barn Owls are a year round resident near urban areas, nesting under bridges. They have pale bodies, heart-shaped, white face and dark eyes. Their habitat includes open country such as grasslands, deserts, agricultural fields and marshland. Barn Owls are found in Texas year-round feeding on small mammals.

Notes:

Great Horned Owls

Great Horned Owls are large raptors, mostly dappled brown body with a horizontal chest pattern, ear tufts, and large yellow eyes. They are found in a wide variety of habitats, but prefer open woodlands and agricultural areas. Great Horned Owls are found in Texas year-round and have a broad diet including small mammals, geese, small birds, amphibians and reptiles.

Control

- Repel owls using propane exploders, battery-operated alarms, pyrotechnics, Mylar reflective tape, or scarecrows
- Eliminate perch sites at the airport
- Cap utility poles with sheet metal cones or porcupine wire
- Cut airside grass short to eliminate habitat for rabbits and field mice
- Live trap owls – under the supervision of a professional
- Control rodents and other small mammals at airport to reduce prey base
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

All owls are protected by the Migratory Bird Treaty Act. This act strictly prohibits the capture, killing, or possession of these birds without a special permit. No permits are required to scare migrating birds that are causing damage except for endangered or threatened species (50 CFR 21.41). State and local laws should be consulted, however, before any control measures are taken.

Notes:

Vultures

Identification and Biology

Vultures are scavenging raptors that feed mainly from carcasses of dead animals. A common characteristic among all vultures is a bald head that helps keep them clean while eating. They are found in North Central Texas year-round.

Turkey Vultures

Turkey Vultures are large soaring raptors with mostly a dark brown body with long, broad, pale brown wings. Adults have a bald, bright red head with a sharply hooked white bill. Juveniles lack this bright coloration. They can be seen soaring over open farmland, forests, rangeland and landfills.

Black Vultures

Black Vultures are large soaring raptors, mostly black with a white patch at the tip of the wings. They have a bald, wrinkled, dark gray head. Black Vultures can be seen traveling in large flocks. They can be seen roosting on high-rise buildings, cell phone towers, and high tension electrical towers searching open spaces for carrion.

Control

- Remove dead animals such as road kill immediately
- Repel using of pyrotechnics, lasers, and vulture effigies
- Eliminate perch sites at the airport
- Cap utility poles with sheet metal cones or porcupine wire
- Cut airside grass short to eliminate habitat for rabbits and field mice
- Monitor utility poles and towers and other roosts off airport property
- Control rodents and other small mammals at airport to reduce prey base
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

All vultures are protected by the Migratory Bird Treaty Act. These laws strictly prohibit the capture, killing, or possession of hawks, owls, or eagles without a special permit. No permits are required to scare migrating birds that are causing damage except for endangered or threatened species (50 CFR 21.41).

Notes:

Mammals

Mammals are common year round. Sizes and colors of each species may vary. Mammals can cause serious damage to aircraft and can cause a major nuisance if not mitigated properly. Airport perimeter fencing will help keep mammals off of the airport, however, some still can gain access by digging, jumping, or finding a hole in the fence. It is important to inspect your fences regularly for any damage or dig sites to eliminate access to the Airport Operations Area. Food for mammals can range from other small mammals to insects or plants. Ensure your airport has a strict policy against feeding of wild animals. Refer to the specific mammal in this guide for further mitigation techniques. *Note: The protected status in this section refers to the State's regulations. The USFWS Migratory Bird Treaty Act does not apply to mammals.*

Armadillos

Identification and Biology

The armadillo identified by a protective armor of "horny" material on its head, body, and tail. This bony armor has nine movable rings between the shoulder and hip shield. The head is small with a long, narrow, pig like snout. The long tapering tail is encased in 12 bony rings. An armadillo is about the size of an opossum, weighing from 8-17 pounds. They prefer dense, shady cover such as brush, woodlands, forests, and areas adjacent to creeks and rivers. Armadillos primarily eat insects but have been known to eat fruits and vegetables.[8]

Control

- Clear brush and other cover to reduce habitat
- Use live trapping such as box traps or leg hold traps (size No. 1 or 2)
- Soil insecticides that remove food sources will discourage armadillos from feeding in an area
- Consult Texas Parks & Wildlife for requirements
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

Armadillos are unprotected in Texas however; live armadillos may not be sold. State and local laws should be consulted before any control measures are taken.

Notes:

[8] Hawthorne, D. (1994). *Armadillos.* http://icwdm.org/handbook/mammals/armadillos.asp

Bobcats

Identification and Biology

Bobcats are an adaptable predator, usually nocturnal, that inhabit wooded areas, as well as semi-desert, urban edge, and forest edges. They have a gray to brown coat, whiskered face, and black-tufted ears. It is about twice as large as the domestic cat. It has distinctive black bars on its forelegs and a black-tipped, stubby tail. Bobcats prefer rabbits and hares; however, it will hunt anything from insects and small rodents to deer. Prey selection depends on location and habitat, season, and abundance. Like most cats, bobcats are territorial and solitary.

Control

- Regularly inspect fences and gates
- Eliminate access to your AOA
- Mow airside vegetation short to eliminate rabbit and field mouse habitat
- Install 8-10 ft. chain link fencing with a buried 4-ft skirt and 3-strand barbed-wire outriggers
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

Bobcats can be controlled as nuisance and depredating species based on the fact they are listed as fur-bearing animals. Parts and fur cannot be salvaged without license or permit to do so. State and local laws should be consulted before any control measures are taken.

Notes:

Coyotes

Identification and Biology

Coyotes are a dog-like animal, brown in color, and generally keep its tail down. Coyotes eat carrion (dead animal carcass), small mammals, and fruits. Coyotes are most active at night and during early morning hours (especially where human activity occurs and during hot summer weather). Where there is minimal human interference and during cool weather, they may be active throughout the day. Coyotes might access the AOA by digging under fences, entry through drainage culverts, or through gaps in gates. Usually seen singly, but may travel in small groups, especially adults with their young in early spring.

Control

- Mow airside vegetation short to eliminate rabbit and field mouse habitat
- Install 8-10 ft. chain link fencing with a buried 4 ft. skirt and 3-strand barbed wire outriggers
- Use gas cartridges for den fumigation; under supervision of a professional
- Use leg-hold traps (Nos. 3 or 4) or snares
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

A license or permit is not required in Texas to control coyotes.

Notes:

Deer

Identification and Biology

White-tailed deer are the most common and widely distributed deer in North America. There are at least 30 recognized subspecies of the white-tailed deer. The peak of breeding season (rut) is generally mid-November. Deer are more active and seen more during Fall. The fawning season is mid-May to late June. Very young females will have only one fawn. However, on good deer range, twins are the rule rather than the exception. Single births are most common, and twins are the exception for mule deer. Deer prefer to feed on brush and tender twigs rather than on grass.[9]

Control

- Use flashing lights, sirens, pyrotechnics or propane cannons to chase deer away from airports
- Eliminate all stands of trees and brush in which deer can hide at the airport
- Install 8-12 foot chain-link fencing with 3-strand barbed wire outriggers and a 4-foot skirt
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

Deer are protected in all states. In Texas persons wishing to take deer outside of the normal hunting season must have a Texas depredation permit. Depredation permits are issued by Texas Parks and Wildlife.

Notes:

[9] ACRP. (2010). *Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports.* http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_032.pdf

Feral Hogs

Identification and Biology

Feral hogs appear throughout Texas, but vary slightly in color and coat pattern. They can reach a shoulder height of 36 inches and weigh from 100- 400 pounds. Feral hogs are more muscular than domestic hogs, and have very little fat. They are omnivores and their diet includes grasses, forbs, roots, and tubers. They also browse acorns, fruits, bulbs, mushrooms, invertebrates, reptiles, amphibians, and carrion, as well as live mammals and birds if given the opportunity. They are very destructive and their presence should be addressed immediately.

Control

- Remove nut and fruit producing vegetation
- Adequate fencing will help keep them off the AOA
- Consult a qualified Airport Wildlife Biologist or USDA Wildlife Services for guidance

Legal Status

Hogs cannot be lived trapped and transported in Texas except to transport to processing facilities. Regulation is controlled by Texas Animal Health Commission.

Notes:

Rabbits/Hares

Identification and Biology

Protected	Occurrence Rate	Airport Impact	Season
No	◆	!	☀/❄
See Legal Status	Medium	Minimal	All Seasons

Rabbits and Hares are small mammals that are found in meadows, woods, forests, grasslands, deserts, and wetlands. Rabbits mainly live underground while Hares live in nests above ground. Hares are very fast-moving reaching speeds up to 45 mph. The frequency of sightings fluctuates year to year. Rabbits and Hares are prey to hawks, owls, snakes, coyote, and bobcats.

Control

- Mow airside vegetation short
- Airport signage routinely provides shade area for jackrabbits. Area may need to be altered to make less attractive.
- Adequate fencing will help keep them off the AOA
- Practice habitat management to minimize weed seed production
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

No license is required to control Rabbits and Hares.

Notes:

Raccoons

Identification and Biology

Raccoons are omnivorous, eating both plant and animal foods. Plant foods include all types of fruits, berries, nuts, acorns, corn, and other types of grain. Animal foods are crayfish, clams, fish, frogs, snails, insects, turtles and their eggs, mice, rabbits, muskrats, and the eggs and young of ground-nesting birds and waterfowl. Contrary to popular myth, raccoons do not always wash their food before eating, although they frequently play with their food in water.[10]

Control

- Secure trash cans inside buildings or wire lids down
- Use dumpsters with lids that lock down
- Contact Wildlife Services or local urban wildlife biologist if raccoons become a safety hazard
- Prohibit employee and tenant feeding of wildlife
- Consult a qualified airport wildlife biologist or USDA Wildlife Services for guidance

Legal Status

Raccoons are protected furbearers in most states, with seasons established for running, hunting, or trapping. Most states, however, have provisions for landowners to control furbearers that are damaging their property. Texas does not allow live trapping and relocating of raccoons because of the potential spread of rabies. Consult with Texas Parks and Wildlife for guidance.

Notes:

[10] Boggess, E. (1994). *Raccoons.* http://icwdm.org/handbook/carnivor/Raccoons/Raccoons.aspx

Reptiles

Reptiles are a group of animals that include snakes, lizards, turtles, and toads. Do not kill snakes unnecessarily. Many snake species call Texas their home, but just a few are venomous! Snakes play an important role on the airport keeping mice, rats, and other prey populations in check. Less prey means less food for hawks, and hawks are a flight hazard. If unsure, do not approach or harass unless there is an immediate risk to safety. For more information about snakes, visit the Web, especially Texas Parks and Wildlife. *Note: The protected status in this section refers to the State's regulations. The USFWS Migratory Bird Treaty Act does not apply to reptiles.*

Snakes

Identification and Biology

Snakes are elongated legless carnivorous reptiles with no eyelids or external ears. Most snake species are nonvenomous, however a few found in Texas are.

Venomous

Copperhead Snake

Identified by either beige or reddish brown crossbars, some may have a pink, green, or grayish-green tail tip. Young copperheads have a brightly colored yellowish tail tip. The tail tips are held close within striking distance and wiggled like a bright caterpillar. Their diet includes small mammals, birds, small snakes, lizards, frogs, salamanders, and cicadas. Copperheads are mostly active during the spring, early summer, and fall. During the hot months they become nocturnal.[11]

Coral Snake

Identified by their thin body and red, yellow/white, and black colored banding, coral snakes are venomous if their skin is red to yellow. Remember the saying "Red to yellow, kill a fellow." These snakes are small in size with the average size around 3 ft. in length. Coral snakes feed on frogs, lizards, rodents, and nesting birds.

[11] UTA: Amphibian and Reptile Diversity Research Center
http://www.uta.edu/biology/herpetology/DFW_Herpetology.htm

Cottonmouth Snake

Cottonmouth are Identified by a flat and broad head, upturned snout, a heat sensing pit between the eye and nostril, vertically oriented pupils, a thick body and slender tail. Newborns have a bright to faded yellow tail tip and greenish yellow before it turns to black as it matures. They are beige to dark brown with irregular crossbars ranging from brown to black. Look for a pale stripe from behind the eye to the back of their head. They are most commonly found near marshes, swamps, slow moving streams, lakes, ponds, and rivers. Cottonmouths are opportunistic predators known to prey on fish, salamanders, frogs, turtles, other snakes, birds and their eggs, and small mammals (UTA: Amphibian and Reptile Diversity Research Center).

Western Diamondback Rattlesnake

Identified by boldly marked chevrons that form an interlacing diamond-like pattern, their base color can range from brick red, buff pink, straw-yellow, beige, brownish, and light gray. They can be found in a variety of habitats including grasslands, scrub oak-juniper forest, rolling plains, thorn scrub, rocky canyons, and deserts. The Western Diamondback Rattlesnake primarily preys on mammals such as mice, rats, cottontail rabbits, chipmunks, and squirrels (UTA: Amphibian and Reptile Diversity Research Center).

Non-Venomous

Bull/Gopher Snake

Identified by yellowish base color with brown, black or sometimes reddish colored blotching, their skin pattern consists of large blotches on top, three sets of spots on the sides, and bands of black on the tail. The bull snake is easily mistaken as a Western Diamondback Rattlesnake because of coloration, skin pattern, and by its imitation “rattling.” Rattlesnakes keep their tail up while bull snakes keep tail towards the ground to make the rattle noise. These snakes are found in a variety of habitats including: grasslands, forests, rolling plains, and deserts. A bull snake’s diet includes small mammals such as mice, rats, gophers, ground squirrels, rabbits, lizards, birds, and bird eggs.

Notes:

Rat Snake

Indentified by a background color shades of brown to yellow, and sometimes orange, rat snakes can have hard to distinguish blotches. Newly born rat snakes have a base color of gray with brown saddle-shaped blotches. Their average size is between 3–5 ft. Rat snakes can be very ill-tempered and will coil up, raising their head and striking if approached. This species is often mistaken as a rattle snake because they vibrate their tail. They primarily prey on mice, rats, and small birds and habitats include any place that rodents and birds inhabit.

Control

- Reduce rodent population
- Keep all vegetation closely mowed; remove bushes, shrubs, rocks, boards, firewood, and debris lying close to the ground, especially around buildings
- Alter all sites that provide cool, damp, dark habitat for snakes
- Trap snakes using funnel trap with drift fences

Legal Status

Snakes are considered nongame wildlife and are protected by Texas law unless they are about to cause personal or property damage. Therefore, snakes should not be indiscriminately killed. Some species are listed on federal and Texas state threatened and endangered species lists. State and local laws should be consulted before any control measures are taken.

Notes:

Turtles/Tortoises

Identification and Biology

Texas is home to many species of turtles and Tortoises. Most turtles do absolutely no harm, don't bite, scratch or pinch. One however, does; the Alligator Snapping Turtle. Alligator Snapping Turtles can be easily identified by a large head, long tail, and a long, thick, shell with ridges of large spikes. They can grow to be between 16-32 inches in length and weigh up to 175 pounds. They are opportunistic carnivores and will eat live fish, dead fish, snakes, amphibians, other turtles, and anything they can get.

Control

- Do not pick up bare-handed
- Do not pick up by the tail
- Wash hands thoroughly after handling turtles; *may carry salmonella*
- Pick up and move using a shovel, if safe to do so

Legal Status

Turtle and tortoises are considered nongame wildlife and are protected by Texas law unless they are about to cause personal or property damage. Therefore, turtle and tortoises should not be indiscriminately killed. Some species are listed on federal and Texas state threatened and endangered species lists. State and local laws should be consulted before any control measures are taken.

Notes:

Wildlife Mitigation Techniques

The management of wildlife on and near airports is not usually an easily solved problem. There are many mitigation techniques that an airport can use to deter wildlife including habitat manipulation, use of predators, repelling wildlife, and lethal control. All wildlife is a major concern for safety issues at airports including birds, mammals, and reptiles. According to the FAA, birds make-up 97% of the reported strikes, mammals about 3%, and reptiles less than 1%. Airport landscape can either attract or deter wildlife. It is important to make sure that the airport has proper landscaping in order not to create wildlife hazards.

Turf Management

Managing your airfield's turf can be one of the most significant ways to mitigate wildlife. Proper turf management is important because of the following reasons:

- Grass indigestible to majority of wildlife species
- Intermediate height disrupts visual interflock communication
- Limits predator detection
- Obscures ease of movement
- Out-competes weedy vegetation
- Taller grass becomes senescent and has slower growth rate
- Less frequent mowing saves money

Below are the guidelines from several federal agencies regarding the most effective heights to maintain your turf on the airport:

- The Air Force mandates turf heights between 7-14 inches
- The Navy has a guideline for turf heights between 7-14 inches
- The FAA recommends turf heights between 6-12 inches

Estimating Numbers

Birds should be reported in accurate numbers where possible. Below is an example from DFW International Airport of criteria that can be used for developing your airport's standards for reporting wildlife.

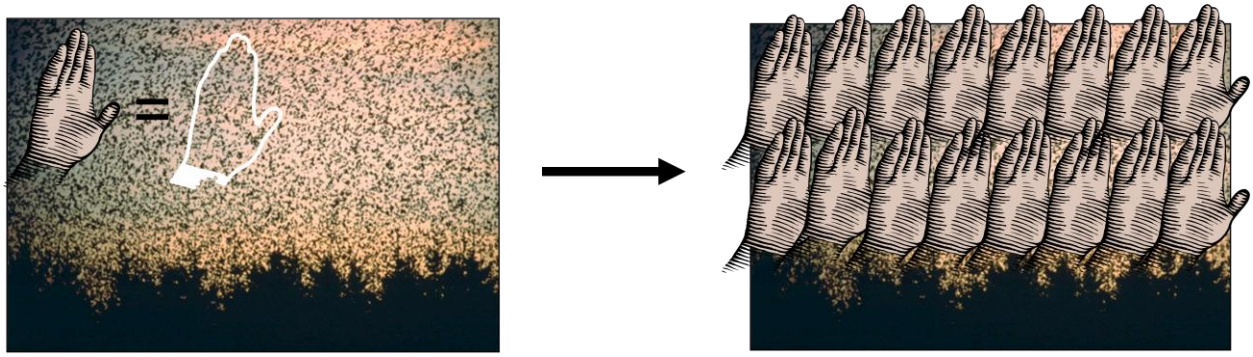
Category Criteria:

1. **None** – No birds at all
2. **Light** – A few loose flocks of 5-10 birds each
3. **Moderate** – Multiple flocks of 10 or more birds each
4. **Heavy** – Large concentration of 100 – 250 birds
5. **Severe** – One or more flocks over 250 birds

Object Placement Techniques

This type of technique should be used for large flocks that are difficult to accurately count. The following steps explain how to use an object placement technique.

- Place an object at a fixed distance from your eye over the flock
- Count the number of objects that can fit within the area the flock covers
- Count the number of individuals that fit "inside" the object
- Multiply the numbers of individuals by the number of objects



Airfield Observations to Report

It is critical that all personnel report wildlife seen dead or alive on the airport. In addition to regularly reporting wildlife activity, the following should always be reported:

- Nests
- Flocks of birds
- Large concentrations of otherwise solitary birds (like hawks)
- Wildlife species seen on the airfield in unusual numbers (like an unusual number of frogs, insects, etc.)
- Tall grass
- Ponds and puddles on or near the airfield
- Fence issues:
  - Digs
  - Gate gaps over 3" wide
  - Shrubs/trees growing near or on a fence
  - Tears or pulls from mowers
- Areas to which birds appear to continually flock or are attracted, on the airfield

Note: **Harassment and depredation activities at the airport should be coordinated through the Air Traffic Control Tower and local authorities where applicable.**

Dispersal Tips

When dispersing wildlife it is important to use alternate methods because birds become habituated to the same noises over and over. Do not let birds become comfortable on the airport. You can avoid this by harassing them often, especially large groups of grackles, blackbirds, pigeons, and dove. One way to disperse birds is by using airfield cannons. They can be set up if flocks are attracted to an area and you cannot remain to continually harass them. However, you must keep air traffic in mind when placing the cannons. Ensure that you are not dispersing towards any air traffic, but away from the AOA.

Other pyrotechnic methods such as pistol launched cartridges are very effective for dispersal. Companies that sell these and the users that purchase them are required to abide by regulations under the Bureau of Alcohol, Tobacco and Firearms. See contacts list for important information.

Important Rules for Depredation

- While safety is of the utmost importance, you are required by Federal law to work within the rules of your U.S. Fish and Wildlife Service Depredation Permits
- Observe the rules of the most current Depredation Permit and carry it on your person, as well as a valid hunting license, when depredating or dispersing
- Exhaust all dispersal options first, according to the rules of your depredation permit
- Only those who are trained to depredate and noted in the permit are permitted to do so
- Depredate when there is an immediate risk to flight safety or when birds will not disperse

Note: **Funding is available through the Airport Improvement Program for Wildlife Hazard Assessments, habitat modifications, and construct fencing, as well as funding to conduct mitigation activities off-site or at mitigation banks, to offset impacts to waters of the United States on an airport.**

Wildlife Strikes

Wildlife strikes can be very dangerous. It is important to report all strikes even if no damage has occurred. Wildlife strikes should be reported to the FAA on Form 5200-7, either by the pilot or the airport. The form is available online at: wildlife.faa.gov.

The FAA states that 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).

Bird strikes are reported to the FAA under any of the above circumstances.

Remains that are found outside of 200 feet from a runway centerline are not considered Strikes.

However, let the person in charge of wildlife mitigation know anytime you find remains anywhere inside the AOA, and remove them.

Strike Reporting

Complete an online FAA Strike Report.

1. To access the form, visit http://wildlife.faa.gov
2. Ensure your Airport ID is in field (#7).
3. Complete ALL applicable fields. If unsure for any field, leave blank, or type “Unk” for Unknown.
4. After the form is completed, click the SUBMIT button on the bottom of the page.

If there is damage, documentation is important. Take pictures and obtain details if possible. Include any facts in the FAA Strike Report.

Additional Strike Procedures

When a Strike is reported by a pilot or air traffic control, try to determine:

- Damage (get photos whenever possible)
- Where the strike occurred
- What part(s) of the aircraft were affected
- Species, via remains found during runway inspection or snarge collected during aircraft inspection.
-

How to Submit Bird Remains

If you are submitting a bird strike, please also collect and submit bird remains to the Smithsonian Feather and DNA Lab for identification. Knowing what types of birds are involved in wildlife strikes is extremely useful in developing successful wildlife management programs.

To submit bird remains:

1. Place the feathers and other material in a clean plastic zip-lock bag.

2. Include a copy of the online FAA Strike Report (see above). If you entered your phone number or email address, they will contact you with the identification.

3. For US Postal Service, recommended for routine cases, send to: Feather Identification Lab, Smithsonian Institution, NHB E-600, MRC 116, P.O. Box 37012, Washington, D.C. 20013-7012.

4. For overnight shipping (e.g. FedEx, DHL, UPS), recommended for damaging or priority cases, send to: Feather Identification Lab, Smithsonian Institution, NHB E-600, MRC 116, 10th & Constitution Ave., NW, Washington, D.C. 20560-0116.

Note: **This bird identification service is provided without charge to all United States registered aircraft owners/operators, regardless of where the strike occurred, and to all aircraft owners/operators when the strike occurred at a U.S. Airport. For additional information about submitting bird remains, see CERTALERT 03-03 and/or contact the Feather Identification Lab at 202-633-0801.**

Bird Strike Collection Kit

Bird Strike Collection Kits are cheap to make and easy to assemble. Having pre-made kits available improves bird strike reporting and encourages the sampling of bird strike 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. For a list of recommended items to include in your bird strike collecting kits, see **Appendix E**.

Disposal of Depredated Remains

By USFWS regulations, remains of migratory birds MUST be disposed of according to your airport's depredation permits.

Burial:

- Be sure to dig at least 10" down
- Choose a location that is away from approach and departure corridors
- Do not bury on the AOA because you may attract coyotes and vultures
- Cover the remains thoroughly

Incineration: Contact your airport manager regarding the airport's incineration policy.

Community Awareness

Community awareness plays an important role in wildlife mitigation. Participation in community events, career fairs, schools (presentations about the issue and why not to feed birds on or near airports), and involvement with local urban wildlife groups are good ways to reach the public. One thing airports need to do is involve themselves in community planning meetings- it is extremely important to be a voice in planning, so awareness is elevated about the community's collective responsibility to conduct planning and development in a safe and responsible manner. It is also important to know what is going on or being planned in our communities so that we are aware of potential impacts.

Involvement with City Officials and Departments

When managing wildlife at your airport, it is important to keep everyone informed and involved. Airport managers should be in contact with local city officials and coordinating with other city departments, to ensure safety.

Community Public Relations

It is important to maintain good communication with the public to ensure open lines of communication. Keep the public informed on the importance of wildlife mitigation. NCTCOG has developed several public outreach materials that can help explain the importance of GA, Including *Airports and Wildlife: What you Need to Know, A Guide for the Public (***Figure 2**).

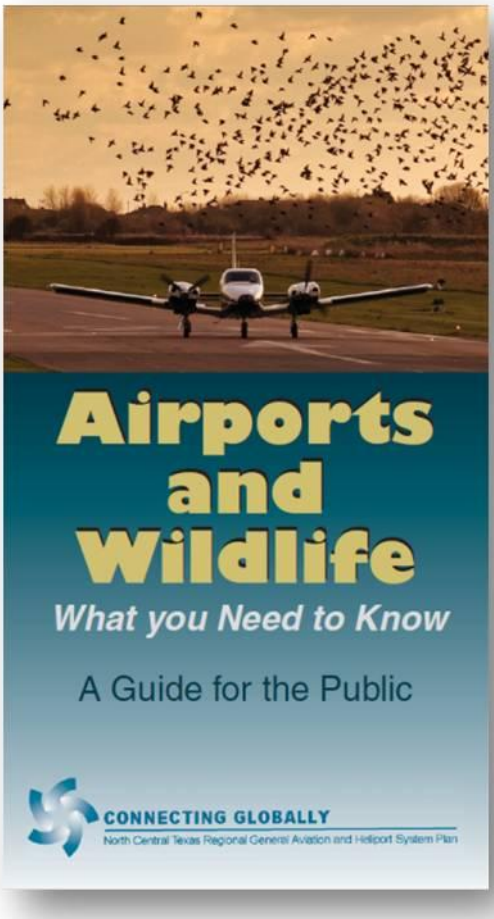


Figure 2

Report Wildlife Strikes Poster

The FAA, in cooperation with the USDA, has created a poster (**Figure 3**) to promote strike reporting. It is important to display these posters at your airport to inform and help increase public and pilot awareness of the bird strike problem. If you have not received a poster, please contact your local FAA or USDA representative for more information.

Figure 3

Working Groups

Airport managers should establish working groups both internally and externally. Internally, personnel involved with wildlife mitigation include airport operations, maintenance, and the air traffic control tower. These staff should be actively involved in communication regarding wildlife mitigation activities and schedules. Externally, airport personnel involved in wildlife mitigation should work with other airports to share and discuss problems, solutions, and ideas. The North Central Texas Airport Wildlife Consortium meets quarterly to discuss issues on or near their airports. If you are interested in participating, please contact Cathy Boyles at cboyles@dfwairport.com for more information about the Consortium and the next scheduled meeting.

FAA Advisories

The FAA roles and responsibilities relating to wildlife hazards and their associated human health and safety concerns are addressed in 14 CFR 139.337. The FAA's Office of Airport Safety and Standards' 150/5200 series Advisory Circulars (AC), Program Policy and Guidance, and CertAlerts further clarify this information.

CertAlerts

CertAlerts give the FAA Airports Safety and Operations Division a quick way of providing additional guidance to FAA inspectors and staff, on Part 139 Airport Certification and related issues.

- CertAlert No. 98-05: Grasses Attractive To Hazardous Wildlife
- CertAlert No. 09-10: Wildlife Hazard Assessments in Accordance with Part 139 Requirements
- CertAlert No. 04-09: Relationship Between FAA And Wildlife Services
- CertAlert No. 04-16: Deer Hazard to Aircraft and Deer Fencing
- CertAlert No. 06-07: Requests by State Wildlife Agencies to Facilitate and Encourage Habitat for State-Listed Threatened and Endangered Species and Species of Special Concern on Airports
- Index of CertAlerts Part 139 Airport Certification

Advisory Circulars

- AC 150/5200-32A, Reporting Wildlife Aircraft Strikes
- AC 150/5200-33B, Hazardous Wildlife Attractants On Or Near Airports
- AC 150/5200-34A, Construction or Establishment of Landfills Near Public Airports
- AC 150/5200-36A, Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports

Resources and Contact Information

FAA Wildlife Homepage
wildlife.faa.gov

General Inquiries

Federal Aviation Administration
Airport Safety and Operations Division (AAS-300)
800 Independence Avenue SW
Washington DC 20591

Phone: (202) 267-8731
Fax: (202) 267-5383

Questions Regarding Wildlife Hazard Mitigation

Amy Anderson, Wildlife Biologist
amy.anderson@faa.gov

John Weller, Wildlife Biologist
john.weller@faa.gov

USDA Wildlife Services
www.aphis.usda.gov/wildlife_damage/index.shtml

Questions Regarding Permits and Wildlife Hazards

Texas State Office Phone: (210) 561-3800

Randy Smith, District Supervisor
Email: randy.m.smith@aphis.usda.gov
Phone: (817) 978-3146

Adam Henry, Wildlife Biologist
Email: adam.c.henry@aphis.usda.gov
Phone: (817) 978-2630 ext. 24

U.S. Fish & Wildlife Service Southwest Region
www.fws.gov/southwest

U.S. Fish & Wildlife Service Permits Office
www.fws.gov/migratorybirds/mbpermits/Depredatees.html

REGION 2
Arizona, New Mexico, Oklahoma, Texas

U.S. Fish and Wildlife Service
Migratory Bird Permit Office
P.O. Box 709
Albuquerque, NM 87103

Phone: (505) 248-7882
Fax: (505) 248-7885
Email: permitsR2MB@fws.gov

To find a list of Permit Application Forms, including the Migratory Depredation and Salvage permits: www.fws.gov/migratorybirds/mbpermits/ApplicationForms.html

Current List of Migratory Birds
http://www.fws.gov/migratorybirds/RegulationsPolicies/mbta/mbtintro.html

Birds of Conservation Concern, and most recent publication (2008):
www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BCC.html
www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf

State and Federal Resources
Texas Parks and Wildlife Department
www.tpwd.state.tx.us/

TxDOT Aviation and Airports
www.txdot.gov/business/aviation/default.htm

Phone: (512) 416-4500

Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF)
ATF Dallas Field Division Management Team
www.atf.gov/field/dallas

Robert R. Champion, Special Agent in Charge (SAC)
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Ft. Worth Field Office
www.atf.gov/field/dallas/fo-texas-northwest.html

Resident Agent in Charge
6000 Western Place, Suite 400
Ft. Worth, Texas 76107 USA
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Fax: (817) 862-2824

Ft. Worth/Dallas Satellite Office (Explosives Technology Branch)

Explosives Enforcement Officers
Voice: (817) 862-2800
Fax: (817) 862-2824

Ft. Worth (Industry Operations)

Area Supervisor
6000 Western Place, Suite 400
Ft. Worth, Texas 76107 USA
Voice: (817) 862-2850
Fax: (817) 862-2851

ATF Documents	Web Address
List of Explosive Forms	www.atf.gov/forms/explosives/
Applications for Explosives License or Permit	www.atf.gov/forms/download/atf-f-5400-13.pdf
Explosive Storage Requirements	www.atf.gov/explosives/how-to/explosive-storage-requirements.html
ATF EXPLOSIVES Industry Newsletter Published Bi-Annually	www.atf.gov/publications/newsletters/
How to Become a Federal Explosives Licensee (FEL)	www.atf.gov/explosives/how-to/become-an-fel.html
Federal Explosives Requirements for Explosive Pest Control Devices (EPCD)	www.atf.gov/explosives/how-to/explosive-pest-control-device-requirements.html

North Central Texas Airport Wildlife Consortium
Cathy Boyles
Wildlife Administrator
Operations Department, Box 619428
DFW Airport, TX 75261
Email: cboyles@dfwairport.com
Phone: (972) 973-3122

References

AC 150/5370-10F Standards for Specifying Construction of Airports contains guidance and drawings for affixing chain link Wildlife Deterrent Fencing to existing Security Fencing:
See PART 8- Item F-163 FENCING, Page 447
http://www.faa.gov/airports/resources/advisory_circulars/index.cfm/go/document.current/documentNumber/150_5370-10

ACRP: Guidebook for Depredating Aircraft/Wildlife Hazards at General Aviation Airports
onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_032.pdf

Avitrol
www.avitrol.com

Bird Guide
www.allaboutbirds.org/guide/search

Bird Strike Committee USA: Best Management Practices for Airport Wildlife Control
www.birdstrike.org/meetings/BMP.htm

Boggess, E. K. Raccoons. In *Prevention and Control of Wildlife Damage* (S. E. Hygnstrom, R. M. Timm, and G. E. Larson, eds.), University of Nebraska–Lincoln, 1994. 2 vols. icwdm.org/handbook/index.asp.

Cowbird Trapping Program
www.tpwd.state.tx.us/huntwild/wild/nuisance/cowbirds/trapping_program/index.phtm

Explosive Pest Control Device Overview
www.atf.gov/explosives/how-to/documents/epcd-flyer.pdf

Explosive Pest Control Device Permit Requirements
law.justia.com/cfr/title27/27-2.0.1.3.5.html#PartTop

Explosive Pest Control Device Storage Requirements
law.justia.com/cfr/title27/27-2.0.1.3.5.html#27:2.0.1.3.5.11

FAA Wildlife Strike Database
wildlife.faa.gov

Internet Center for Wildlife Damage Management
www.icwdm.org/handbook/index.asp

Letter from ATF to Licensees and Permittees
www.atf.gov/press/releases/2010/11/111210-openletter-fel-use-of-epcds.html

Prevention and Control of Wildlife Damage Handbook
icwdm.org/handbook/index.aspx#rae

Snakes of Dallas Fort Worth and Nearby Vicinities
www.uta.edu/biology/herpetology/DFW_Herpetology.htm

Texas Parks and Wildlife
www.tpwd.state.tx.us/

USDA Wildlife Services
www.aphis.usda.gov/wildlife_damage
Phone (866) 487-3297

Appendices

Appendix A Title 14, Code of Federal Regulations, Part 139.337 – Wildlife Hazard Management

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

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

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

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

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

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

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

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

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

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

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

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

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

(1) The wildlife hazard assessment;
(2) Actions recommended in the wildlife hazard assessment to reduce wildlife hazards;
(3) The aeronautical activity at the airport, including the frequency and size of air carrier aircraft;

(4) The views of the certificate holder;
(5) The views of the airport users; and
(6) Any other known factors relating to the wildlife hazard of which the Administrator is aware.

(e) When the Administrator determines that a wildlife hazard management plan is needed, the certificate holder must formulate and implement a plan using the wildlife hazard assessment as a basis. The plan must:
(1) Provide measures to alleviate or eliminate wildlife hazards to air carrier operations;
(2) Be submitted to, and approved by, the Administrator prior to implementation; and
(3) As authorized by the Administrator, become a part of the Airport Certification Manual.

The plan must include at least the following:

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

(2) A list prioritizing the following actions identified in the wildlife hazard assessment and target dates for their initiation and completion:
(i) Wildlife population management;
(ii) Habitat modification; and
(iii) Land use changes.

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

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

(5) Procedures to be followed during air carrier operations that, at a minimum, include:
(i) Designation of personnel responsible for implementing the procedures;

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

(iii) Wildlife hazard control measures; and

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

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

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

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

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

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

Appendix B Wildlife Hazard Assessment RFP Template

Embry-Riddle Aeronautical University's Center for Wildlife and Aviation has compiled the following template that airports can use when creating their Wildlife Hazard Assessment plans:

RECOMENDED RFP ITEMS (Excludes "boiler plate" items required by the issuing activity) Scope of Services

1. The <name of airport or airport authority> is requesting proposals from qualified individuals or firms to conduct a Wildlife Hazard Assessment (WHA). The WHA shall meet all requirements of CFR 139.337 to include:
   (1) An analysis of events that prompted the assessment.
   (2) Identification of the wildlife species observed and their numbers, locations, local movements, and daily and seasonal occurrences.
   (3) Identification and location of features on or near the airport that attract wildlife.
   (4) A description of wildlife hazards to air carrier operations.
   (5) Recommended actions for reducing wildlife hazards to air carrier operations.

2. The WHA shall be conducted by a qualified wildlife biologist who meets the requirements of Advisory Circular 150/5200-36. These requirements are:
   (1) Have the necessary academic coursework from accredited institutions and work experience to meet the qualifications of a GS-0486 series wildlife biologist as defined by the U.S. Office of Personnel Management classification standards (Appendix A of AC 150/5200-36A), or, be designated as a Certified Wildlife Biologist by the Wildlife Society www.wildlife.org, and,
   (2) Have taken and passed an airport wildlife hazard management training course acceptable to the Administrator, and,
   (3) While working under the direct supervision of a qualified wildlife biologist, have conducted at least one WHA acceptable to the FAA Administrator (as described in CFR 139.337(c)), and,
   (4) Have successfully completed at least one of the following within the past 3 years:
      a. An airport wildlife hazard management training course that is acceptable to the FAA Administrator, or
      b. Attendance, as a registered participant, at a joint Bird Strike Committee-USA/Bird Strike Committee-Canada annual meeting, or
      c. Other training acceptable to the FAA Administrator.

3. Required Submittals
   (1) Statement of Qualifications (SOQ) - Documentation verifying the wildlife biologist conducting the WHA meets the requirements of AC 150/5200-36A as delineated in Paragraph (2) (above).In lieu of this documentation, the wildlife biologist may show evidence they have been deemed "qualified" by inclusion in Embry-Riddle Aeronautical University's Qualified Airport Biologists Listing http://wildlifecenter.pr.erau.edu/biologists.php.

(2) A proposed Statement of Work (SOW) - The response to this RFP shall include a detailed SOW delineating the work to performed in conducting the WHA to meet the requirements of CFR 139.337 as listed in Paragraph (1) (above). The SOW shall include statements as to how the biologist intends to meet the "Duration of Wildlife Hazard Assessment and Basic Survey Techniques" described in Paragraph 6.2.c of the Wildlife Hazard Management Manual at Airports. The latter document is available free of charge at the FAA's Wildlife Hazard Mitigation Website (www.faa.gov/airports/airport_safety/wildlife/).

(3) Schedule - Responder shall submit a project schedule to include, at a minimum, commencement and completion of the assessment process, key meetings and significant events and/or activities, and submission of a preliminary WHA report to <name of airport or airport authority>. <Name of airport or airport authority> would be expected to respond either approving the submission or provide comments. A Final WHA will be submitted after receipt of <name of airport or airport authority> comments.

(4) Proposed Costs - The submitter shall submit one contract price which is to include estimates of proposed hours of work, rates and expenses for each member of the biologist's team. The cost estimates shall cover the period from contract go-ahead to submission of the final WHA report.

(5) Additional Items

a. The firm's legal name, address, and telephone and fax number.
b. The names, experience and qualifications of the staff to be assigned to project, including availability, reputation, and knowledge of FAA regulations, policies and procedures.
c. A description of the firm's recent experience, especially with similar projects, project location, and total costs.
d. A description of the firm's capability to meet time and project budget requirements, including such items as current and projected workloads and how these would be coordinated with the project, as well as the firm's anticipated availability during the term of the project.
e. The firm's understanding of the project as advertised.
f. Familiarity with the airport and the airport location.

Evaluation Criteria

Responder's proposal will be evaluated using the following criteria during the review process:

(1) Direct experience with similar airport projects
(2) Indirect general experience
(3) Staffing qualifications
(4) Cost effectiveness and the ability to complete the project without cost over-runs and within project specifications
(5) Reputation for professional integrity and competence
(6) Responsiveness to this RFP
(7) Ability to meet schedule

Appendix C Summary of Wildlife Management Plan Requirements

FAR Part 139.337(e) and 139.337(f)

Regulation Reference	Required Action
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

Regulation Reference	Required Action
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
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 and 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

Regulation Reference	Required Action
Habitat/population management recommendations:	**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
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

Regulation Reference	Required Action
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 carrier 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 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 Unmitigated attractants

Regulation Reference	Required Action
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.

Regulation Reference	Required Action
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**

Appendix D Wildlife Hazard Management Plan 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; i.e., 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 including 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 (i.e. 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. shell crackers, 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 (i.e., 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 controls permit annual reports.		
Documentation of wildlife patrols and control measures (i.e., 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	Vegetation Management	Water Management	Airport Buildings
Rodents	AOA Vegetation	Permanent Water	Airfield Structures
Earthworms	Drainage Ditch Vegetation	Wetlands	Abandoned Structures
Insects	Landscaping	Canals/ditches/streams	Terminal
Grain/Seeds	Agriculture	Holding Ponds	Airport Construction
Garbage (Handling and Storage)		Sewage (Glycol) Treatment Ponds	
Handouts (Feeding Wildlife)		Other Water Areas	
		Ephemeral Water Including Runways, Taxiways, Aprons and Other Wet Areas	

References

Advisory Circular 150/5200-33B, Hazardous Wildlife Attractants on or Near Airports
www.faa.gov/documentLibrary/media/advisory_circular/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
www.faa.gov/documentLibrary/media/Advisory_Circular/150_5200_36a.pdf

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

Appendix E Smithsonian Institutes' Bird Strike Collection Kit

"MAKE-YOUR-OWN" BIRD STRIKE COLLECTING KITS

Bird Strike Collecting Kits are cheap to make and easy to assemble. Having pre-made kits available improves bird strike reporting and encourages the sampling of bird strike 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 bird strike collecting kits; mix and match as budgets permit:

Resealable Plastic Bags

- A variety of sizes; resealable 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 bleach wipes; it destroys DNA.

Miscellaneous Items for Bird Strike 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
- FTA® DNA collecting cards: If you send a lot of blood/tissue ("snarge") 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 blood/tissue samples.

Extra Safety Items

- Latex Gloves
- Protective Eyewear
- Face 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.

Reminders

- Always encourage proper hygiene and provide personnel easy access to cleaning/hygiene supplies
- Do not cut off the fluffy down at the bottom of feathers
- Do not use bleach on samples
- Be sure personnel are briefed on proper carcass disposal protocols
- Stay informed to the status of HPAI H5N1 avian flu virus. The following website has excellent coverage.

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

Contact Information

Carla & Marcy
Smithsonian Feather ID Lab
202-633-0801
dovec@si.edu
heackerm@si.edu

Appendix F Sample Depredation Permit

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

3-201
(1/97)

FEDERAL FISH AND WILDLIFE PERMIT

1. PERMITTEE

CITY OF MCKINNEY, COLLIN COUNTY REGIONAL AIRPORT
P. O. BOX 517
MCKINNEY, TX 75070-0517
U.S.A.

2. AUTHORITY-STATUTES
16 USD 703-712

REGULATIONS
50 CFR Part 13
50 CFR 21.41

3. NUMBER
MB035540-0

4. RENEWABLE ☒ YES ☐ NO

5. MAY COPY ☒ YES ☐ NO

6. EFFECTIVE
02/01/2011

7. EXPIRES
01/31/2012

8. NAME AND TITLE OF PRINCIPAL OFFICER *(If #1 is a business)*
KENNETH WIEGAND
AIRPORT DIRECTOR

9. TYPE OF PERMIT
DEPREDATION AT AIRPORTS

10. LOCATION WHERE AUTHORIZED ACTIVITY MAY BE CONDUCTED
McKINNEY MUNICIPAL PROPERTIES - AIRPORT AND LANDFILL
COLLIN COUNTY
McKINNEY TX

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.

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:
Cattle Egret - 30, Ring-billed Gull - 350, Black Vulture - 60, Turkey Vulture - 60, Mourning Dove - 100
Meadowlark(sp) - 100, Killdeer 50

(2) The following may be live-trapped and relocated:
Killdeer nest contents (eggs/nestlings) may be relocated to local rehabilitator (if applicable)
unlimited number of raptors (excluding T&E species and eagles)

E. You are authorized in emergency situations only to take, trap, or relocate any migratory birds, nests and eggs, including 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 in **Albuquerque New Mexico at PermitsR2MB@fws.gov** 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

☒ ADDITIONAL CONDITIONS AND AUTHORIZATIONS ALSO APPLY

12. REPORTING REQUIREMENTS
ANNUAL REPORT DUE: 2/10

ISSUED BY	TITLE	DATE
[signature]	ADMINISTRATOR, MIGRATORY BIRD PERMIT OFFICE - REGION 2	03/08/2011

must be reported within 48 hours to the National Eagle Repository at (303) 287-2110 and to the migratory bird permit issuing office at **PermitsR2MB@fws.gov**. 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, electrocuted, have collided with industrial power generation equipment, or were otherwise injured as the result of potential criminal activity.

H. You may use the following methods of take: (1) firearms; (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: **Steve Gould - Airport Operations Manager**
Jeff McNaughton, Airport Maintenance Specialist
Kevin Fletcher, Airport Maintenance Supervisor

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: Fort Worth, Texas 817/334-5202

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 a continuation of your permit conditions and must remain with your 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: http://www.fws.gov/migratorybirds/mbpermits.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.
   [*Note: Explosive Pest Control Devices (EPCDs) are regulated by the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF). If you plan to use EPCDs, you require a Federal explosives permit, unless you are exempt under 27 CFR 555.141. Information and contacts may be found at http://www.atf.gov/explosives/how-to/become-an-fel.htm.*]

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: http://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 http://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, or
   (b) donated to a public educational or scientific institution as defined by 50 CFR 10, or
   (c) completely destroyed by burial or incineration, or
   (d) with prior approval from the permit issuing office, donated to persons authorized by permit or regulation to possess them.

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, *including these Standard Conditions*, 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 - 2/24/2011)