REDFIELD MUNICIPAL AIRPORT

WILDLIFE HAZARD MANAGEMENT PLAN

Developed by:

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The following Wildlife Hazard Management Plan was developed to fulfill the requirements by FAA for the Redfield Municipal Airport (1D8). It is intended specifically to reduce potential wildlife hazards at 1D8.

The plan has been reviewed and accepted and will become effective with the following signature.

_____ _____

Adam Hansen Date
City Finance Officer
Redfield Municipal Airport

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Chapter 1 Introduction

OVERVIEW

Wildlife Hazard Management Plans (WHMP) address the responsibilities, policies, and procedures necessary to reduce wildlife hazards at airports. The Federal Aviation Administration (FAA) recognizes the potential hazards wildlife pose and requires airports that incur bird-aircraft strikes to implement a WHMP according to CFR 14 - Part 139.337. The purpose of this WHMP for Redfield Municipal Airport (1D8) is to provide the airport with an organized approach to operate and maintain the airport in a manner that minimizes the possibility of a wildlife incident. The Wildlife Hazard Site Visit (WHSV) conducted at Redfield Municipal Airport in 2016, is the basis for this WHMP.

BACKGROUND

Wildlife creates a variety of problems at airports that can compromise safe aircraft operations. The most significant are the thousands of collisions that occur annually between wildlife and aircraft. Wildlife strikes result in millions of dollars in direct and indirect damages. Fortunately, wildlife strikes usually do not result in catastrophic accidents involving the loss of human life, but the potential is real and such accidents have occurred in the past. WHMPs address the responsibilities, policies, and procedures necessary to reduce wildlife hazards at airports.

The City of Redfield is planning to make improvements to 1D8 which includes the construction of a new Runway 17/35, the removal of Runways 13/31 and 1/19, the elimination/filling of on airport wetlands and the eventual construction of a ten foot wildlife perimeter fence. An Environmental Assessment (EA) has been completed for the construction of the new Runway 17/35, the purchase of the Runway Protection Zones (RPZs) and Departure Surfaces to the end of the RPZ limits, and to reduce and/or eliminate hazardous wildlife attractants at the airport.

In 2011, a year-long wildlife hazard review of 1D8 was completed by the USDA, Wildlife Services program (WS). The review identified wildlife hazard issues and wetland attractants on the current airfield. Additionally, WS made recommendations to reduce airfield hazards, including the removal of wetlands.

As 1D8 moves forward with the planned airfield expansion and improvements, some wetlands will be impacted while others may pose potential wildlife hazards. A Wetland Delineation in 2015 identified and delineated eleven wetlands on current and future airport property. While wetlands at airports can be attractive to wildlife species hazardous to aircraft, their removal and mitigation can be difficult and costly. Therefore, in addition to a standard WHSV, the primary purpose of the 2016 WHSV was to investigate the level of wildlife attraction of each 1D8 wetland in order to aid in the decision as to which wetlands must/will be filled and mitigated off-site and which ones do not. To help reduce the cost of the project, the City of Redfield will evaluate other alternatives such as leaving some wetlands alone and /or simply modifying the wetlands to drain, implementing underground storage (HDPE, Concrete, etc.), and off-site storage.

This WHMP addresses how the city of Redfield will manage wildlife hazards and habitats on the current 1D8 airfield as well as those associated with the planned expanded airport.

EVALUATION OF THE PLAN

Wildlife hazards at 1D8 will be monitored regularly as part of the ongoing wildlife control program and the WHMP will be reviewed at least annually and updated as necessary (see Chapter 8).

ACTION ITEMS

In addition to addressing the responsibilities, policies, and procedures necessary to reduce wildlife hazards, this WHMP identifies several action items that 1D8 will take to further meet the recommendations identified in the November 2016 WHSV.

Listed in Table 1 is a list of wildlife management projects to reduce wildlife hazards at 1D8. The list includes target dates for completion and the date that each project was completed. Note that some of the projects may have already been implemented or completed, but because they require a continued effort they are listed as "ongoing". As new wildlife hazard issues develop over time, additional projects may be assigned by the Wildlife Hazard Working Group (WHWG).

WILDLIFE MANAGEMENT PROJECTS / ACTION ITEMS	Target Date	Date Completed
Form a WHWG. Designate a Wildlife Coordinator (Page 4).	Spring 2018	
Follow the grass habitat management guidelines and work toward maintaining a dense grass habitat on the airfield with minimal non-grass species. (Page 6).		Ongoing
Remove all small trees and shrubs from the airfield (Page 7).	Spring 2018	
Modify Wetlands 1, 2, 3, 4, 6, 10 and 11 as able so that they do not contain standing water or support wetland vegetation (Page 7).		Ongoing
Obtain a U. S. Fish and Wildlife Service (USFWS) Permit to lethally take mallards, Canada geese and gulls at 1D8. Permits should be renewed annually. (Page 9).	Spring 2018	
Develop an effective program to haze waterfowl and gulls from the airfield. A no-tolerance policy for these species should be enforced whenever these birds are seen on the airfield. Lethal control, with proper permits should be taken when necessary to reinforce the non-lethal techniques. (Page 13).	Spring 2018	
Enclose the airfield with an effective deer proof perimeter fence. (Page 13).	Summer 2021	
Train employees in the safe and effective application of wildlife dispersal methods and equipment, including the safe use of firearms and pyrotechnics (Page 20).	Summer 2018	
Develop a Wildlife Activity Log or database for recording and tracking wildlife activity, wildlife strikes and control efforts (Page 22).	Spring 2018	

Table 1 1D8 Wildlife Management Projects

Chapter 2 – Authorities and Responsibilities

OVERVIEW

The City Finance Officer or his designee will be assigned the role of Wildlife Coordinator and have the responsibility of implementing the WHMP. Additional responsibilities will be assigned to Airport Duty Managers and Airport Maintenance. At small general aviation airports with minimal staff, it is common for a single person to fill all three of these rolls. Each department having responsibilities outlined in the WHMP will incorporate them into their programs. The City Finance Officer or his designee will ensure that the WHMP and amendments adhere to Federal, State, and local laws and regulations and that the FAA has an opportunity to review the WHMP.

WILDLIFE COODINATOR

- Establish and chair Wildlife Hazard Working Group
- Supervise, coordinate, conduct, and monitor wildlife activities in accordance with the WHMP
- Update the WHMP as necessary
- Provide for the proper training of wildlife control personnel in the safe handling and proper use of wildlife dispersal methods and equipment, including the safe use of firearms and pyrotechnics
- Issue NOTAM's if necessary to warn pilots of wildlife hazards
- Maintain a log of all wildlife strikes and control actions (Chapter 8) and forward reports to FAA as necessary
- Make wildlife strike report forms, FAA 5200-7 (Appendix B), readily available to airfield operations and pilots, and encourage them to be submitted
- Purchase and stock the necessary supplies to conduct wildlife control (Chapter 5)
- Obtain the appropriate permits for wildlife control (Chapter 4)

AIRPORT DUTY MANAGERS

- Conduct routine runway sweeps for dead birds and hazardous wildlife at least once per day and record all findings
- Haze wildlife from runways when appropriate (Chapter 6)
- Record all wildlife activity or animals dispersed or shot in the "Wildlife Activity Log" (Chapter 8)
- Report all known wildlife strikes online to the FAA Wildlife Strike Database at http://www.faa.gov/airports/airport_safety/wildlife/database/ or log on a FAA Form 5200-7 (Appendix B) and forward to the Wildlife Coordinator

AIRPORT MAINTENANCE

- Assist with habitat modifications addressed in the WHSV such as vegetation maintenance, brush and tree removal (Chapter 3)
- Mow grass to the recommended heights (Chapter 3)
- Maintain perimeter wildlife fence (once installed) to exclude large mammals such as deer
- Maintain ditches and fill low spots to avoid pooling water
- Assist as necessary with wildlife control activities involving field rodents, rabbits, bird abatement, and other programs
- Inspect hangars and other airport buildings on a regular basis
- Inspect runway lights, signs and other structures on a regular basis

WILDLIFE HAZARD WORKING GROUP

The WHWG will monitor and implement the WHMP. The WHWG will include:

- Wildlife Coordinator
- Airport Duty Managers
- Airport Maintenance Managers

ACTION ITEM:

- **Form a Wildlife Hazard Working Group. Designate a Wildlife Coordinator**

Chapter 3 – Habitat Management

OVERVIEW

Habitat management is the most effective long-term remedial measure for reducing wildlife hazards on, or near, airports. Habitat management includes the physical removal, exclusion, or manipulation of areas that are attractive to wildlife. The ultimate goal is to make the environment fairly uniform and unattractive to the species considered the greatest hazard to aviation. Habitat modifications will be monitored carefully to ensure that they reduce wildlife hazards and do not create new problems.

ATTRACTANTS

Wildlife is attracted to airports because of the availability of one or more of their basic needs - **water, food, and cover**. Water sources can be lakes, streams, ditches, and temporary pools formed from rains, sprinkler systems, and outdoor water fountains. Food sources might be rodents, insects, earthworms, other invertebrates, reptiles, amphibians, seeds, fruits, nuts, refuse, and handouts. Wildlife will find cover in trees, weedy fields, crops, tall grass, streamside vegetation, burrows, buildings, and structures like culverts and abandoned machinery. Reduction of these will inherently reduce the species of wildlife and their populations that use an area.

PART A - VEGETATION MANAGEMENT

Vegetation manipulation is a key long-term element in deterring wildlife from airfields. The goal of vegetation management at 1D8 is to maintain plant communities that are least likely to attract wildlife. In most cases, a monotypic grass environment is unattractive to the greatest number of species.

The Redfield Municipal Airport contains a diversity of vegetation types, some being highly attractive to wildlife. The most effective approach to reducing this attraction is to eliminate all agricultural crops, alfalfa, trees, shrubs, weeds and plants, and establish a grass hay crop involving warm season grasses and a mowing regime that minimizes seed production, bird nesting and bird activity.

GRASS MANAGEMENT

Grass will be the primary vegetation type on the 1D8 airfield. FAA Cert Alert No. 98-05 advises that "airport operators should ensure that grass species and other varieties of plants attractive to hazardous wildlife are not used on the airport". In addition, grasses that produce large seeds and are known to be attractive to wildlife will be avoided when planting new areas. All non-grass species (alfalfa, sweet clover, thistle etc.) will be controlled with a broadleaf herbicide or other appropriate methods.

GRASS TYPE

The type of grass used within the perimeter fence should produce small or no seeds, but still able to generate new growth or reseed itself to provide a thick, monotypic stand and prevent erosion. It needs to withstand drought, flooding, and other normal climatic conditions, and be somewhat unpalatable to grazers such as geese and deer.

In general, cool season grasses such as bromes, wheatgrass and blue grasses are not usually recommended as they typically have two growing seasons that vary considerably from year to year. If conditions are not just right, these areas often become weedy and can produce a lot of seed. However, if fertilized sufficiently to produce a dense stand, and **mowed regularly** to maintain proper height and prevent seed formation, these grass types can be managed to minimize their attraction to wildlife.

Western wheat grass greens up in the spring but typically does not grow after mid-summer. For an airport that chooses to plant cool season grass, western wheat grass is highly recommended by Natural Resource Conservation Service (NRCS) plant materials specialists. When sparse, it can produce a lot of seed. However, once established, seed is rarely produced. Western wheat grass is broadly adapted to a variety of environments and conditions and makes a good hay crop. Intermediate wheat grass has similar characteristics to western wheat grass but will produce seeds in a moist year. Fescues may be a good mix with western wheat grass however it does produce seeds and should be mowed regularly to prevent seed formation.

Warm season grasses (i.e. buffalo, grama, big bluestem and switch grass) have only one growing season each year which is more predictable. Warm season grasses typically do not begin to grow until June and mature in August, maintaining a short and predictable growing season. Big bluestem and switch grass are taller growing warm season grasses that will produce good hay crops. Buffalo, blue grama and side oats grama are native low growing grasses that are well suited to the Bismarck climate and require minimal mowing. Since warm season grasses remain dormant until approximately June, herbicides such as glyphosate (i.e. Roundup) can be applied to control broad-leafed weeds and other cool season grasses in the spring. NRCS plant materials specialists will be consulted before planting any new grasses on the 1D8 airfield.

GRASS HEIGHT

Safety areas will be planted to grass and maintained at heights required by FAA. Other airfield grass areas will be maintained at a height between 6 and 12 inches in accordance with FAA grass height recommendations. Grass heights of 6 inches or more are generally thought to discourage large flocking birds such as geese and gulls by blocking their view of approaching predators. Vegetation height greater than 6 inches can discourage both avian and mammalian predators as small prey species such as rodents and insects are difficult to spot and access. Grass heights above 12 inches creates attractive cover for a wide range of wildlife species including ground nesting birds. Grass height may exceed 12 inches temporarily during the brief period prior to hay cutting, usually in early July.

MOWING

The first mowing/haying of the year should be done prior to seed production. When possible, grass will be mowed during the middle of the day when birds are the most inactive. Mowing is quite attractive to several species of birds and mammals because it exposes food such as rodents, insects and seeds. Any areas inside the wildlife fence that are not hayed (i.e. marsh areas, steeply sloped areas or areas missed during haying) will be mowed with whatever means necessary (hand mower, weed whacker etc.) to maintain the proper grass height of 6 – 12 inches. Hay will be removed from the airfield immediately after baling and will not be stored on 1D8 property.

ACTION ITEM:

- **Follow the grass habitat management guidelines and work toward maintaining a dense grass habitat on the airfield with minimal non-grass species.**

TREES AND SHRUBS

Trees and shrubs are utilized by a variety of avian and mammalian wildlife for a variety of reasons. All woody vegetation will be removed from the airfield as soon as it appears

ACTION ITEM:

- **Remove all small trees and shrubs from the airfield.**

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PART B - WETLAND MANAGEMENT

The 1D8 airfield and surrounding area contains several temporary, seasonal, semi-permanent and permanent wetlands such as ponds, streams, marshes, lakes and drainage areas that provide water, food and cover for many wildlife species. The 2015 Wetland Delineation identified eleven wetlands that are on or adjacent to the current and planned 1D8 airfield. Each of these wetlands were evaluated during the WHSV and are illustrated in Figure 1 below.

Wetlands 1, 2, 3, 4, 6, 10 and 11 were identified as wetlands potentially attractive to hazardous birds that should be modified so that they do not contain standing water or support wetland vegetation.

In addition to wetlands identified in the wetland delineation, some areas on the airfield may remain seasonally wet or will temporarily hold standing water. These areas will be filled, graded or modified such that water consistently drains into ditches or away from the airfield. Ditches should be appropriately sloped so that water does not pool and will leave the airfield in an appropriate amount of time. Any wetland vegetation associated with drainage ditches or other wet areas will be maintained at $\leq$ 12 inches as recommended above in the vegetation management section.

ACTION ITEM:

- **Modify Wetlands 1, 2, 3, 4, 6, 10 and 11 as able so that they do not contain standing water or support wetland vegetation**

PART C - STRUCTURE MANAGEMENT

Wildlife are often attracted to and utilize airfield structures for perching, nesting, and loafing. Airfield structures such as runway lights, ramp and taxiway signs, and light poles are used as hunting and loafing perches for birds such as hawks and gulls. Airport buildings such as the hangars, maintenance buildings, etc. often attract roosting, nesting and loafing birds. When able, birds often attempt to nest inside aircraft engines and landing gear as well as other areas of buildings such as ventilation ducts and electrical fixtures. The droppings from birds that nest or roost in ceilings and rafters not only cause damage and create a nuisance, but are also a health concern due to the many human diseases associated with bird feces.

Anytime wildlife is observed using airfield structures, measures will be taken to discourage or eliminate their activity. Once a perimeter wildlife fence is installed at 1D8, it will be monitored on a monthly basis to ensure that it is tight to the ground and gates are secure to prevent deer from gaining access to the airfield. Buildings will be inspected on a regular basis. Measures will be taken whenever necessary to prevent access by wildlife. Runway lights, signs and other structures will be inspected regularly. Perch deterrents will be placed whenever and wherever necessary to discourage birds from perching in critical areas.

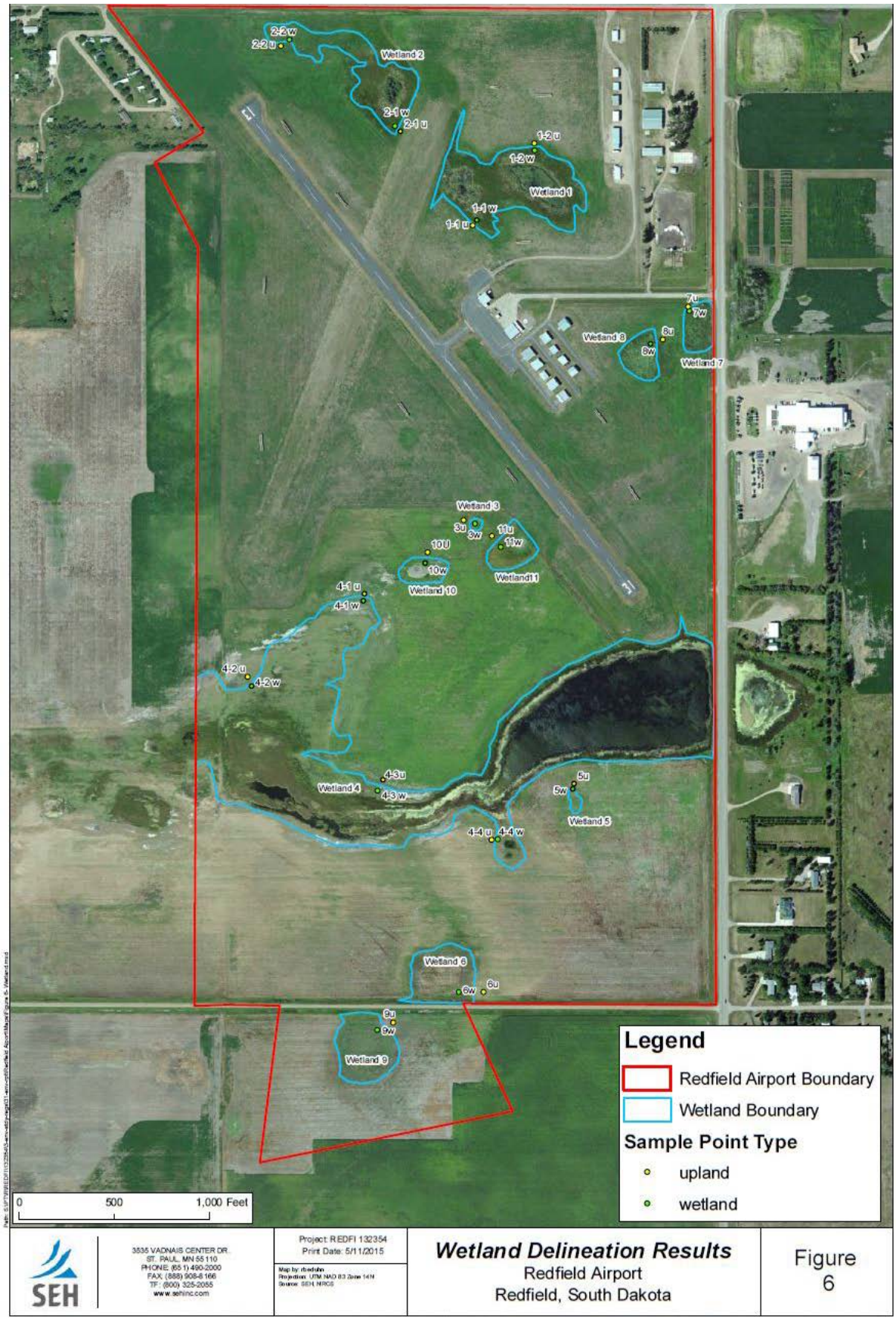

Figure 1 Airfield Wetlands

Chapter 4 – Permits & Regulations

OVERVIEW

Federal, state and local governments administer laws and regulations that protect wildlife and their habitat. A number of laws affect wildlife control at airports. Most agencies issue permits to harass and/or take wildlife species. These permits are needed to run a successful control program and will be obtained on a routine basis by the Wildlife Coordinator.

SOUTH DAKOTA REGULATIONS AND PERMIT REQUIREMENTS

Several South Dakota State government agencies have regulations that affect wildlife control at airports. Pertinent regulations can be found in the **South Dakota Codified Law (SDCL) Title 41.** County and municipal regulations can also affect airports. State wildlife laws are mainly administered by the South Dakota Department of Game, Fish and Parks (SDGFP) and involve resident birds, mammals, reptiles, and amphibians, as well as state threatened and endangered species.

FEDERAL REGULATIONS AND PERMIT REQUIREMENTS

The U.S. Government has passed several acts for the protection of wildlife, including the Migratory Bird Treaty Act, the Lacey Act, the Endangered Species Act, the Bald and Golden Eagle Protection Act, the National Environmental Policy Act, and the Federal Insecticide, Fungicide, and Rodenticide Act. These are the basis of most wildlife regulations that have been issued in the **Codes of Federal Regulations (CFR)**. Several agencies are responsible for implementing these regulations and many affect wildlife control at airports. Federal wildlife laws are mostly administered by the USFWS and involve primarily migratory birds and threatened and endangered species.

1D8 WILDLIFE PERMITS

1D8 will procure and maintain all federal, state and local permits as necessary to frighten, harass or lethally take any protected birds or wildlife. On an annual basis, when filing annual permit reports and renewing permits, 1D8 will attempt to anticipate any new species or increased numbers of take that might be needed in the future, and have them added to the annual permits. All wildlife permits that 1D8 obtains will be renewed annually. Copies of all wildlife permits will be maintained in Appendix D of this WHMP.

WILDLIFE CATEGORIES

Wildlife categories include migratory and resident, game and nongame, furbearers and predator/varmints, and threatened and endangered species (Table 2). Wildlife control personnel will know the category for the species they are controlling, so that they can determine the relevant laws and necessary permits.

ACTION ITEM:

- **Obtain a U. S. Fish and Wildlife Service (USFWS) Permit to lethally take mallards, Canada geese and gulls at 1D8. Permits should be renewed annually.**

WILDLIFE PERMIT REQUIREMNTS
South Dakota Airports

Category	Species	State Permit[1]	Federal Permit
RESIDENT GAME BIRDS	Pheasant, grouse, partridge, quail and turkey	YES	NO
RESIDENT NONGAME BIRDS	Starlings, house sparrow, rock dove (feral pigeon)	Yes[2]	NO
MIGRATORY GAME BIRDS	Ducks, geese, swans, coots, snipe, sand hill crane, woodcock, crows and mourning doves	YES[3]	YES
MIGRATORY NONGAME BIRDS	All bird species except game birds, resident nongame birds, fully protected wildlife and feral, domestic & exotic birds	YES[3]	YES
DEPREDATION ORDER BIRDS	Crows, grackles, blackbirds and cowbirds	YES[4]	YES[4]
GAME MAMMALS	Deer, elk, antelope, bighorn sheep, mountain goat, moose, tree squirrels, cottontail rabbit and mountain lion	YES	NO
PREDATORS/VARMINTS	Coyote, red fox, gray fox, skunks, gophers, ground squirrels, chipmunks, jackrabbits, marmots, porcupine, prairie dog	NO[2]	NO
FURBEARERS	Raccoon, beaver, badger, muskrat, bobcat, weasel, mink and opossum	YES[5]	NO
PROTECTED FURBEARERS	Lynx, wolf, swift fox, black bear, pine marten, fisher, river otter and black bear	YES	NO
NONGAME MAMMALS	All species of mammals, except game mammals, predators/varmints, furbearers, protected furbearers and domestic mammals	NO	NO
FERAL DOMESTIC MAMMALS	Dogs, cats, livestock (Call local Animal Control)	NO	NO
REPTILES AND AMPHIBIANS	All reptiles and amphibians (threatened or endangered species require a separate permit)	YES	NO
FULLY PROTECTED WILDLIFE	Eagles, threatened and endangered species	YES	YES

[1] Control actions requiring a state permit should be coordinated through the Wildlife Damage Management Office of the South Dakota Department of Game, Fish and Parks.
[2] No State permit is required if control is conducted by resident airport personnel on airport property
[3] No State permit is required if control is conducted by resident airport personnel on airport property, and a Federal Permit has been obtained.
[4] Permits are not required when causing damage or creating a health hazard. However, there are further requirements such as first attempting control with non-lethal methods, using non-toxic shot and annual reporting. Refer to 50 CFR §21.43 and SDCL 41-11-10.
[5] Raccoons and badgers may be killed without a permit when doing damage around buildings.

Table 2 Wildlife Permit Requirements for South Dakota Airports

THREATENED AND ENDANGERES SPECIES

USFWS and SDGFP keep updated lists of endangered and threatened species. SDGFP keeps a current listing of State and Federally endangered, threatened and sensitive species that can be found on the internet at http://gfp.sd.gov/wildlife/threatened-endangered/threatened-species.aspx. Wildlife control personnel at 1D8 need to be familiar with these species and their potential occurrence at the airport (Table 3). Some of these species may present hazards to air traffic at 1D8, and permits are required to harass them. In most cases, permits will not be issued for the lethal removal of threatened and endangered species. 1D8 wildlife control personnel will be able to identify these species and will have the appropriate permits to haze them when necessary. Habitat critical to these species is also regulated by the USFWS or SDGFP and can have an effect on habitat modification plans to reduce wildlife hazards.

	Name	Federal Status	State Status
Invertebrates:	American burying beetle	Endangered	
	Scaleshell	Endangered	
	Higgins Eye	Endangered	
Fishes:	Banded killifish		Endangered
	Blacknose shiner		Endangered
	Finescale dace		Endangered
	Longnose sucker		Threatened
	Northern pearl dace		Threatened
	Northern redbelly dace		Threatened
	Pallid sturgeon	Endangered	Endangered
	Shovelnose sturgeon	Threatened	
	Sicklefin chub		Endangered
	Sturgeon chub		Threatened
	Topeka shiner	Endangered	
Reptiles and Amphibians:	Eastern hognose snake		Threatened
	False map turtle		Threatened
	Lined snake		Endangered
Birds:	American dipper		Threatened
	Bald eagle		Endangered
	Eskimo curlew	Endangered	Endangered
	Interior least tern	Endangered	Endangered
	Osprey		Threatened
	Peregrine falcon		Endangered
	Piping plover	Threatened	Threatened
	Whooping crane	Endangered	Endangered
Mammals:	Black-footed ferret	Endangered	Endangered
	Northern river otter		Threatened
	Swift fox		Threatened
Plants:	Western prairie fringed orchid	Threatened	

Table 3 Threatened and Endangered Species of Eastern South Dakota.

Chapter 5 – Resources

AIRPORT SUPPLIES

Wildlife control personnel (Airport Duty Managers and Airport Maintenance personnel) will be equipped with a variety of frightening devices and tools to haze problem wildlife from the airfield when necessary. The frightening and control devices that 7G9 may keep in stock includes the following tools:

1. Propane Cannons
2. 15mm Pyrotechnic Launchers
3. 15 mm Bird Banger Cartridges
4. 15 mm Screamer Siren Cartridges
5. Cracker shells (Shot Tell)
6. 12 gauge shotgun
7. Shotgun Shells
8. Rifle
9. Rifle Ammunition
10. Mylar Tape
11. Spotlight
12. Lasers
13. Flags
14. Coyote/Dog Effigies
15. Hawk Silhouettes
16. Scarecrows - other
17. Distress Tapes
18. Catch pole
19. Dog live traps
20. Raccoon live traps
21. Leg hold Traps for Fox & Coyote
22. Snares
23. Rat/mouse snap traps
24. Pocket Gopher traps
25. Gas Cartridges
26. Latex gloves
27. Garbage bags
28. Bird Strike Remains Collection Kit

Chapter 6 – Wildlife Control Procedures

OVERVIEW

Wildlife that is identified as hazardous during and after the completion of the recommended habitat modifications will be controlled with direct control techniques that are effective, feasible, and legal. Following are wildlife control procedures most commonly used to control wildlife species at airports. While this section provides a general summary of available techniques, it is by no means a comprehensive listing of all methods. Situations surrounding wildlife hazards at airports are extremely variable, therefore, it is essential to adopt a flexible, innovative, and adaptive approach to managing wildlife hazards. Wildlife identification guides and handbooks will be available for use by wildlife control personnel at 1D8.

BIRD CONTROL

Several species of birds are present at 1D8 and represent the most significant strike hazard. Although waterfowl, gulls and hawks are of primary concern, other migratory species may also pose hazards. Much of this chapter is devoted to methods that may be used to haze birds from the airport, but as previously stated, dispersal methods are not limited only to methods discussed herein. If properly applied, however, these techniques will reduce most hazards involving species of concern at the airport.

1D8 has a "no tolerance" policy for ducks, geese, hawks and gulls. These species will be hazed whenever they are seen on or approaching the airfield. Other birds will be hazed from the airfield whenever they are present in areas or in numbers as to create a hazard. Lethal techniques will be used to reinforce hazing when necessary.

ACTION ITEM:

- **Develop an effective program to haze waterfowl, gulls and raptors from the airfield. A no-tolerance policy for these species should be enforced whenever these birds are seen on the airfield. Lethal control, with proper permits should be taken when necessary to reinforce the non-lethal techniques.**

MAMMAL CONTROL

Hazards involving the majority of mammalian species at 1D8 can be reduced by applying habitat modifications and exclusionary devices. Smaller mammals may exist on the airfield in moderate to high densities, providing an attraction to larger predators and hawks. Large mammals such as deer, coyotes and fox should be precluded from using the airfield once the perimeter wildlife fence is installed.

Once installed, 1D8 will monitor the perimeter wildlife fence monthly, or more often if necessary. Any holes, burrows or damage will be filled or repaired as necessary to exclude wildlife. A two foot or greater apron will be attached to the bottom of the fence, where necessary, to prevent deer and medium sized mammals from crawling or digging under the fence. Deer that do gain access to the airfield will be herded out through an open gate or shot, as soon as logistically possible.

Spotlighting at night for deer, jackrabbits, skunk, badger, raccoon and other medium sized mammals will be done on a regular basis. Any animal observed will be shot or removed from the airfield by appropriate methods.

ACTION ITEM:

- **Enclose the airfield with an effective deer proof perimeter fence.**

WILDLIFE CONTROL PERSONNEL

Wildlife control personnel at 1D8 consist of Airport Duty Managers with supplemental support provided as needed by Airport Maintenance personnel. These control personnel will monitor and respond to wildlife hazards on the airfield and coordinate their activities through the Wildlife Coordinator. They will be trained in wildlife identification, proper control techniques, and safe operations as outlined in Chapter 7. They will also be responsible for conducting routine runway sweeps at least once per day, recording any dead animals found from strikes on Form 5200-7 (Appendix B) or other wildlife-related activities (e.g., notable hazards, animals killed or dispersed, unusual wildlife behavior, etc.) on the **Wildlife Activity Log** (Appendix A). Completed forms will be forwarded to the Wildlife Coordinator for review.

WILDLIFE CONTROL

Each wildlife hazard that develops will be analyzed by wildlife control personnel to determine a practical solution. The initial response for most species will be hazing (frightening devices), followed by population control methods when necessary. A primary key to successful wildlife control is persistence and innovation on the part of the employees involved. Personnel will need to select techniques according to their biological, sociological, economical, and political effectiveness. Most control techniques retain their effectiveness if they are used infrequently and in conjunction with other methods. Some methods such as pesticides or leg-hold traps are only effective and legal for specific species and situations. Other techniques are much more readily available and easy to use. The method(s) chosen will depend largely on the situation and the species involved. Personnel involved in direct control should be aware of potential diseases wildlife can carry and take appropriate precautions.

At 1D8, several auditory and visual frightening techniques will be employed as part of the overall wildlife hazard control program. The primary harassment tools utilized by 1D8 wildlife control personnel include cracker shells and 15mm pyrotechnics. Proper use of these tools along with safety recommendations are discussed below. Additionally, other available frightening tools are also discussed, should their integration into the wildlife hazard control program be necessary at some point in the future.

To reinforce harassment techniques or to remove problem wildlife, shooting and trapping will also be employed by 1D8 wildlife control personnel. A twelve-gauge shotgun will be the primary weapon used at 1D8. Leg hold traps will be used to remove medium sized mammal such as coyotes or badgers when present on the airfield. Pesticides may also be used to control field rodents or insects. Safe and legal use of these direct population control methods are discussed below.

PART A - AUDITORY FRIGHTENING TECHNIQUES

OVERVIEW

Frightening or harassment techniques - **hazing** - can quickly repel birds and mammals from problem areas for short term relief. These techniques will only be used as needed so they retain their effectiveness.

PYROTECHNICS

Pyrotechnics are non-lethal, fast burning or explosive devices such as bird bangers and screamers, cracker shells, rockets, and flares used to deter wildlife. These will only be used by personnel trained and certified in their use (Chapter 7).

15MM LAUNCHER

Bird banger, screamer, and screamer-banger rocket cartridges are shot from a launcher similar to a starter pistol. Bangers travel about 40 yards and blow up. Screamers travel up to 100 yards, making noise the entire time. Screamer-banger rockets travel about 300 yards, make noise and blow up. These cartridges are generally effective for controlling wildlife and can be launched using a 15mm pistol launcher, the easiest of all pyrotechnics to use.

CRACKER SHELLS

Cracker shells are shot from a 12-gauge shotgun, travel about 100 yards, and blow up. The barrel needs to be checked for obstructions after each firing because the wad can get stuck and cause the next shell to blow up in the barrel. Cracker shells are not recommended for general use in each vehicle because of the problems they can present, but the principle dispersal personnel may find cracker shells useful because of their increased range.

SAFETY

When using pyrotechnics, safety glasses and gloves are recommended because blasting caps and other debris are sometimes ejected back at the shooter. Caution must be exercised during dry times of the year because cartridge debris is capable of starting fires. If a pyrotechnic cartridge doesn't fire, a dud, the area it traveled to should be monitored for fires and after a short time retrieved if possible. Pyrotechnics should be stored in a dry location, and whenever possible, the batch should be used within a year of its date of acquisition. Do not use pyrotechnics within 300 yards of the fuel tanks. Never point the firing devices at anything that you do not want to shoot! Treat them the same as any other firearm. Do not mix cracker shells with live ammunition. It is best not to shoot pyrotechnics over runways, but if it is necessary, the casing should be recovered to avoid a Foreign Object Debris (FOD) hazard. And finally, examine the barrel for obstructions after firing a 12-gauge cracker shell because wads can get stuck, causing the next shell to blow-up in the barrel.

SHOOTING PYROTECHNICS

Pyrotechnics are easy to use, but they involve the use of firearms and must be treated as such (know the ten commandments of safety described in the shooting section). To shoot pyrotechnics, point the pistol or shotgun in the desired direction at a 30-45 degree angle above the ground. Pistols should be shot with an outstretched arm and shotguns the same as if you were shooting a regular shell. Be sure of your backstop, pull the trigger (pyrotechnics do not have a recoil), follow through (don't pull away while shooting), and watch to see where the projectile goes. Wind direction and velocity will affect the range of pyrotechnics. Any ejected firing caps or spent cartridges should be picked up where possible.

METHODS FOR FRIGHTENING BIRDS

The Wildlife Coordinator and Airport Duty Managers must determine the most effective methods to disperse different species. Reactions may vary depending on a number of factors such as species, time of year, value of resource to wildlife (motivation), and number of animals present. Generally, the best technique to disperse wildlife is to get positioned between the animal(s) and the active runway and stay upwind so they are more likely to fly away from you when dispersed (birds normally take off into the wind, turn, and then fly with the wind when being harassed). Shooters should face away from the runway and shoot at about a 45-degree angle away from the target on the opposite side of the desired escape route. The shooter should get as close to the birds as possible to expedite their departure. In some situations, birds may only circle and move to another part of the airport or return to the same spot without abandoning the site altogether. This is especially true of shorebirds or birds that have been hazed frequently. During these situations an additional shooter may provide assistance. If the birds are close

to or fly toward an active runway, aircraft may be advised to hold on the runway/taxiway until the area can be cleared of birds. All debris from pyrotechnics will be retrieved when possible, especially from the runway and taxiways where they can become a FOD hazard.

BIOACOUSTICS

Bioacoustics are amplified distress/alarm calls from relevant bird species and loud irritating sounds such as dogs barking, gun shots, and people talking. Distress calls are generally species specific, and consist of a recording of the sound they make when they are injured or have been captured by a predator. Responses to distress calls vary among species, with some birds dispersing from the sound, while others are attracted to the source to investigate. Because gulls and crows will often investigate the source of the call, it should not be used when aircraft are on approach or about to depart, especially if they will be drawn across the runway. Other sounds such as dogs barking can be used to disperse some species such as deer and birds that do not have specific distress calls that repel them.

Operation

When operating distress calls, experience will be the best teacher. Generally, the patrol vehicle should be stationary, situated about 100 yards upwind from the birds. Calls should not be activated from across a runway or active taxiway because sometimes distress calls attract birds. Play the distress call for 10-20 seconds and then shut it off. If the birds are not frightened, play it again in 15-30 seconds for another 10-20 seconds. The longer the call is played, the more curious the birds may be and will investigate the source. When the birds become frightened by the distress calls, reinforce their dispersal by firing a few pyrotechnics. Bioacoustics usually requires more time to frighten birds, but are a valuable tool. The calls can be effective if used with discretion and if the distress recordings are for the species being hazed.

PROPANE EXPLODERS

Propane exploders or gas cannons are static devices operated by propane or other gas. These devices produce a noise louder than a shotgun blast. Exploders can be set up and left to operate continuously for a period of time. As with other frightening methods, however, it is best to use them sparingly so birds do not habituate to them. The exploders should be hidden or camouflaged, moved frequently, and have the interval between blasts varied. The interval between blasts depends upon the species of bird being repelled. For waterfowl, the blast should be as long an interval as possible, about 1 blast/15 minutes. Blackbirds require a more frequent interval at 1 blast/1-5 minutes. For normal programs, the cannon should be operated for 3-5 days and then left off for a few days. Because birds exhibit very little night activity on the airfield, cannons should be shut down during periods of darkness to avoid habituation.

BIRD REACTIONS

Each species reacts differently to auditory stimuli and the different techniques. Waterfowl normally will leave the area immediately, whereas blackbirds and starlings will often form tight flocks and fly away from the noise, but may circle and return to the source of the sound. Gulls generally habituate rapidly to most auditory stimuli, and will circle and return to their original location unless they are periodically reinforced by shooting or some other form of simultaneous lethal control. Crows and ravens are usually attracted to the source of the sound before abandoning the area, but they become accustomed to pyrotechnics rather quickly and may return soon after the patrol leaves. Hawks are often indifferent to blasts, but usually move away from noises in a slow soaring pattern, whereas pigeons often scatter in all directions. Herons and egrets often rise and fly only a short distance and may need several successive auditory stimuli to leave the airport. Unfortunately, most scare devices are not effective at night and auditory devices are limited to propane cannons.

PART B - VISUAL FRIGHTENING DEVICES

OVERVIEW

Visual frightening devices supplement other techniques in reducing wildlife numbers, but are usually not effective by themselves. Several are effective for short- term control of problem situations.

SCARECROWS

Scarecrows have long been used for bird control and do provide some relief, especially when used in conjunction with other techniques. These include human and coyote effigies, hawk silhouettes, and dead bird carcasses. The human effigy is most effective if it is moved often, and has eyes on the front and back of the head and clothes with arms and legs that sway in the wind. Coyote effigies are very effective if they are taxidermy type mounts (even poor quality). Imitation dead-bird carcasses, particularly gulls and crows, have been successful in repelling birds. Stuffed birds in abnormal positions and realistic plastic models have been successful with some species of gulls, and have an effective radius of about 150 feet. The effect is usually only short lived, 2-3 days, unless they are used infrequently and moved. Owl decoys should be avoided since their effectiveness is short lived for most species and they may even attract birds such as crows and blackbirds.

BALLOONS, HAWK KITES & MODEL PLANES

Helium filled balloons with eyes on all sides and hawk kites combine shape and movement to frighten birds, and can be effective for short-term control. They are especially effective for roost control. They can also be used in fields to deter flocks of small birds from feeding, but the effective radius is generally relatively small. Use of balloons or kites should be sporadic so that birds do not become accustomed to them. The condition of balloons and kites should be monitored to ensure they don't break free and create a FOD hazard to aircraft. Another airborne frightening device is a radio-controlled model aircraft shaped and painted to look like hawks. These have proved very effective, but a skilled operator is necessary.

MYLAR TAPE

Mylar tape (½ -1 inch) can effectively keep birds away from small areas, but it requires constant repair and replacement, especially during periods of high wind. It produces fright by sight and sound when properly installed. Tape should be tautly stretched between two posts or stakes. Stakes should be 25 to 100 feet apart, with a 10-50 foot spacing between rows, depending on the situation. When Mylar is stretched, it should be twisted several times so that it will seesaw back and forth in the wind. When the wind picks up, the tape will also make a low irritating hum. This can be quite effective for gulls, blackbirds and waterfowl.

PART C - POPULATION REDUCTION METHODS

OVERVIEW

Wildlife can become accustomed to frightening techniques or may not be deterred by nonlethal dispersal methods at all. This is especially true when only one device is consistently used to frighten wildlife, and for animals whose territory resides on the airport property, especially mammals. It may become necessary to shoot a few offending individuals to reinforce frightening methods or use population reduction methods to remove a significant number of a resident population such as deer mice, ground

squirrels, or voles. A permit is required to take most species of wildlife unless they are specifically exempt. These techniques should be used with discretion and should be conducted in a professional, humane manner. When implementing lethal control measures, the wildlife control personnel must be sensitive to concerns that some members of the general public may have regarding lethal control.

SHOOTING

Shooting is a very effective technique for reducing wildlife hazards at an airport. It can be used to remove problem individuals or add to the effectiveness of a hazing program. Shooting live ammunition requires a person that is safety-minded. The shooter must fully be aware of the backstop, direction of the shot, and species being taken. The shooter must also have in his possession a valid depredation permit for the species being taken, except for starlings, pigeons, house sparrows, depredation order birds and other species identified in Table 2 (Chapter 4). Several species at 1D8 are protected as threatened or endangered and should not be shot under any circumstances due to their rarity and legal status. Threatened and endangered species of eastern South Dakota are identified in Table 3 (Chapter 4).

Equipment

Shooters will need a shotgun to carry out duties at the airport associated with wildlife control. An air rifle/pellet gun is also ideal for many situations. On rare occasions, a higher-powered rifle may have to be used. Extreme caution must be exercised when using a rifle or any firearm, and shooters must be reliable and trained in firearm safety. A 12-gauge shotgun is the recommended all-purpose firearm for the airport, and is desirable for most species of birds that represent the greatest hazards to aircraft. Because of environmental concerns, steel shot will be used. Other firearms (e.g., air-rifle), are optional and will only be purchased if deemed necessary.

Firearm Safety

Safety is the greatest concern when firing live ammunition at an airport. All personnel involved with shooting at the airport will be required to attend firearm safety training (Chapter 7) and airport orientation that familiarizes shooters with sensitive and off-limit areas such as the fuel area.

Shooting Safety

The **"Ten Commandments of Shooting Safety"** provide the basic guidelines for shooting safety, and if followed, will prevent accidents from happening. These are:

1. Treat every firearm with the same respect you would show a loaded gun. Every time you pick up a firearm, the first thing you should do is check to see if it is loaded. Check to see that the chamber and magazine are empty and that the action is open until it is ready to be fired. If you do not understand how to determine if it is loaded, be sure not to accept the firearm from someone until they safely show you that it is unloaded. Also have them show you how the action works. For new firearms, read the instruction manual carefully before you handle it.

2. Always point the muzzle in a safe direction. Do not point a firearm at anything you do not intend to shoot. Control the direction of the muzzle at all times. Never rest a muzzle on your toe or foot. Keep your finger out of the trigger guard until the instant you are ready to fire. Protect the trigger guard from branches or other objects by keeping your finger along the side (**not inside**). Always keep the safety on until you are ready to fire; the safety, though, is not a substitute for safe firearm handling as they can malfunction.

3. Be sure of your target and what is in front of and beyond it. Before you pull the trigger, you must identify your target properly and know what is in front and behind it. Don't take shots where you are unsure of what's beyond, ie. on top of a ridge. Never shoot at hard flat surfaces such as water or pavement; ricochets are dangerous from

these surfaces since you cannot determine where they will go. During target practice, make sure you have a proper backstop. Know the maximum and effective range for your ammunition.

4. Unload firearms when not in use. Leave actions open, and store firearms in cases when traveling to and from shooting areas. Know how your firearm operates. Store them under lock and key in a cool dry place. Ammunition should be stored in a separate place. Trigger guards or locks are a good idea for the home.

5. Handle firearms and ammunition carefully. Avoid all horseplay with firearms. Do not cross fences or difficult terrain, climb trees or ladders, or jump creeks with a loaded weapon. Learn the proper carries for a gun in the field; try to use a two-handed carry whenever possible because you'll have better control of the muzzle direction. Never look down a barrel to check for obstructions; open the action and look from the breech end - carry a field cleaning kit.

6. Know your safe zone-of-fire and stick to it. Your safe zone of fire is that area or direction where you can safely fire a shot - know where any companions are, buildings, property, the fuel farm, and other obstructions.

7. Control your emotions when it comes to safety. When you lose control of your emotions, you may get careless. Wildlife control at airports is a job and not a sport. Safety comes first, pass up shots if they are unsafe.

8. Wear hearing and eye protection. While in the air operating area, it is a good idea to wear both hearing and eye protection. Shooting, airplanes and pyrotechnics are loud and have decibels that can damage hearing. Debris, especially from pyrotechnics, can be ejected back into your eyes, damaging them.

9. Don't drink alcohol or take drugs before or while handling firearms. Alcohol and drugs can impair physical and mental functions making it easy to lose control. This is true of several over the counter and prescribed medications, so talk with your physician or check the label.

10. Be aware of additional circumstances which require added cautions or safety awareness. Just because something hasn't been listed thus far, doesn't mean there are not additional dangers. Handling firearms requires a great deal of common sense, respect, and good judgment. Accidents can happen to anyone, even people that have handled firearms for years. Review firearm safety periodically to refresh your memory to ensure that accidents don't happen.

TRAPS

Several different styles of traps are available to control wildlife including cage traps, decoy traps, foothold traps, and snares. Traps are primarily effective in removing problem individuals such as a skunk or raccoon in a building, a fox in the AOA, or nesting starlings. Trapping is generally not an effective control mechanism for removing large numbers of prey-based animals such as voles, mice, ground squirrels or rabbits. 1D8 will have on hand a supply of traps for different types of wildlife that might be expected on the airfield at some point throughout the year. Traps will be checked at least every 48 hours in accordance with South Dakota wildlife regulations.

PESTICIDES

Several pesticides are available for population reduction. These are especially useful for reducing rodent populations. The Agricultural Services division of the South Dakota Department of Agriculture (SDDA) can assist in determining the most appropriate pesticides that can be used to control specific types of wildlife at 1D8.

Certified Pesticide Operators are the only personnel that will be allowed to use **restricted-use** pesticides for the removal of blackbirds, starlings, rodents, rabbits, insects, earthworms, and weeds. To obtain the

necessary license for pesticide application, a person must pass an exam administered by the SDDA. All personnel that use restricted-use chemicals will obtain a pesticide applicator's license or be under the direct supervision of an applicator. All 1D8 personnel using pesticides will strictly adhere to the pesticide label and will follow U.S. EPA, SDDA, and Spink County guidelines.

ACTION ITEM:

- **Train Employees in the Safe and Effective Application of Wildlife Dispersal Methods and Equipment, Including the Safe Use of Firearms and Pyrotechnics**

Chapter 7 – Training

OVERVIEW

Training is essential for those personnel involved in the WHMP. The Wildlife Coordinator will ensure that wildlife control personnel will receive annual training in wildlife hazards, animal identification, wildlife laws, wildlife control, dispersal techniques and safety, as required in FAA Advisory Circular 150/5200-36A (Appendix C).

WILDLIFE HAZARD TRAINING COURSES

Statewide wildlife hazard trainings as outlined in AC 150/5200-36A are typically offered once or twice per year in South Dakota. 1D8 should contact the commercial airports in the state each year to find the dates and places of available trainings.

CERTIFIED 1D8 PERSONNEL

The following 1D8 personnel have attended the wildlife control training as required by AC 150/5200-36A:

Name:	***Date:***
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
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Chapter 8 – Evaluation

OVERVIEW
The WHMP will be evaluated at least annually. The Wildlife Hazard Working Group will determine the effectiveness of the WHMP at reducing wildlife strikes at 1D8 and monitor the status of hazard reduction projects, including their completion dates.

MEETINGS
The Wildlife Hazard Working Group will meet at least once every twelve months, but the group may convene more regularly if situations arise as determined by the Wildlife Coordinator.

WILDLIFE ACTIVITY LOG
Every airport should maintain a permanent database that provides a documented historical record of the wildlife activity at their airport. The wildlife log is a valuable management tool in understanding wildlife trends and potential hazards. If unacceptable increases are noticed, the cause can be determined and the WHMP can be modified to reflect new directions to resolve the problems.

The 1D8 Wildlife Coordinator will maintain a daily log of wildlife strikes and wildlife activity at the airfield. All notable wildlife activity observed during runway sweeps or at other times will be recorded in the log. Recordable items that will be included in the log are the date, time, time of day, the airfield location, the species involved, their numbers, the associated issue or hazard, the actions taken to resolve the issue and the results of those actions. This information will be kept permanently by 1D8 in an Excel spreadsheet or other database. A hard copy of the log can be maintained in Appendix A of this WHMP.

ACTION ITEM:
- **Develop a Wildlife Activity Log or Database for Recording and Tracking Wildlife Activity, Wildlife Strikes and Control Efforts**

AIRPORT EXPANSION
Any future airport expansion plans or additions to the airport will be reviewed by the Wildlife Coordinator to ensure that new developments will not inadvertently result in increased wildlife hazards to aircraft operations.

WILDLIFE ASSESSMENTS
Wildlife are dynamic. Their populations and behaviors adjust over time as they adapt to changes in their local and regional environments. As the WHMP and habitat modifications at 1D8 are implemented, wildlife activity on and around 1D8 will change. As a proactive precaution to identify new wildlife hazards that may develop over time, a Wildlife Hazard Site Visit will be conducted by a qualified airport wildlife biologist every five years. The WHMP will be updated to address any new issues.

FAA INVOLVEMENT
FAA Regional Coordinators will be invited to make comments on the WHMP and to attend annual meetings for their input and concurrence.

APPENDIX A

Sample Wildlife Activity Log

Date	Time	Time of Day	Location	Species Involved	Number of Individuals	Hazard Issue	Action Taken	Results of Action Taken	Number Killed	Comments	Name or Initials
4/25/2014	11:00:00 AM	Daytime	Runway 4/22	Canada Geese	2	Standing on Runway	Hazed with 15 mm Screamer	Geese Left the airfield		First geese seen this spring at airport	John Smith
4/28/2014	6:30:00 AM	Dawn	Runway 13/31	Ring-billed gulls	150	Loafing on Runway	Hazed with 15 mm Screamer	Left the airfield		Lot of gulls moved into area this week	Bill Jones
4/28/2014	7:00:00 AM	Morning	Runway 13/31	Ring-billed gulls	85	Loafing on Runway	Shot 2	Left the airfield	2		Bill Jones
5/3/2014	1:30:00 PM	Afternoon	Runway 13/31	Red-tailed Hawk	1	Found dead beside runway	Disposed of bird. Filed FAA strike report online			Hawks were building nest in big tree south of airport	John Smith
5/7/2014	10:30:00 PM	Night	Temp Standing Water just west of Runway 4	Mallards	35	Attracted to water near end of runway	Hazed with 15 mm Screamers	Flew on to another area		Ducks are atrracted to this new water. Haven't noticed water here before but we should fill this low spot	Bill Jones
5/8/2014	9:00:00 AM	Daytime	Edge of RSA on east side of Runway 22	Canada Geese	2	2 geese with nest & eggs	Shot female goose, removed nest	Male goose left	1	This appears to be the only goose nest on airport this year	John Smith
5/12/2014	8:30:00 AM	Daytime	West side of Airfield	Deer	1	Pilot reported seeing deer on airfield	Looked for deer on airfield	Could not find		Checked Fencline and found hole in fence	John Smith
5/14/2014	3:00:00 PM	Daytime	Near north end of Runway 13/31	Unknown	1	Found feathers on Runway	Filed FAA strike report. Sent feathers into Smithsonian for identification			Waiting on Smithsonian Report	Bill Jones

Wildlife Activity Log
Redfield Municipal Airport

Date	Time	Time of Day	Location	Species Involved	Number of Individuals	Hazard Issue	Action Taken	Results of Action Taken	Number Killed	Comments	Name or Initials

APPENDIX B

U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

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

1. Purpose.

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

2. Applicability.

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

3. Cancellation.

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

4. Background.

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

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

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

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

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

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

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

a. All birds.

b. All bats.

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

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

6. When to Report a Wildlife Aircraft Strike.

A wildlife strike has occurred when:

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

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

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

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

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

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

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

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

7. How to Report a Bird/Wildlife Strike.

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

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

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

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

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

9. Access to the FAA National Wildlife Strike Database.

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

10. Bird/ Wildlife Identification.

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

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

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

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

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

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

b. Provide complete information about the incident.

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

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

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

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

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

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

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

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

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

(4) Include any downy “fluff”.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

BIRD / OTHER WILDLIFE STRIKE REPORT

U S. Department of Transportation
Federal Aviation Administration

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

1. Name of Operator

2. Aircraft Make/Model

3. Engine Make/Model

4. Aircraft Registration

5. Date of Incident
/ /
Month Day Year

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

6A. Flight Number

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

7. Airport Name/ID

8. Runway Used

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

10. Height (AGL)

11. Speed (IAS)

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

13. Part(s) of Aircraft Struck or Damaged

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

Bird(s) Ingested? ☐ Yes

Specify if "N. Other" is checked:

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

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

16. Precipitation
☐ Fog
☐ Rain
☐ Snow
☐ None

17. Bird/Other Wildlife Species

18. Number of birds seen and/or struck

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

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

20. Pilot Warned of Birds ☐ Yes ☐ No

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

DAMAGE / COST INFORMATION

22. Aircraft time out of service
_____ hours

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

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

Reported by *(Optional)*

Title

Date

Email

Phone

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

U.S. Department of Transportation

Federal Aviation Administration

800 Independence Ave SW
Washington DC 20591

Official Business
Penalty for Private Use, $300

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 12438 WASHINGTON D.C.

POSTAGE WILL BE PAID BY FEDERAL AVIATION ADMINISTRATION

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

FOLD AND TAPE HERE

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

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

6A. Flight Number - Self-explanatory.

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

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

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

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

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

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

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

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

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

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

APPENDIX C

U.S. Department
of Transportation
Federal Aviation Administration

Advisory Circular

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

Date: 01/31/2013 **AC No:** 150/5200-36A
Initiated by: AAS-300 **Change:** 1

1. Purpose.

This Change adds language requiring certificated airports to maintain documentation of airport wildlife biologist qualifications. This change is in response to an Office of the Inspector General safety recommendation.

2. Principal Changes.

This Change adds a new Paragraph 6(f) on page 4 and removes a single sentence from Section 1 on page 1. We have marked changed text with vertical bars in the margins.

Page Control Chart

Remove Pages	Dated	Insert Pages	Dated
1	1/31/2012	1	1/31/2013
4	1/31/2012	4	1/31/2013
5*	1/31/2012	5	1/31/2013

* Page break change only.

Michael J. O'Donnell
Director of Airports Safety and Standards

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U.S. Department
of Transportation
Federal Aviation Administration

Advisory Circular

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

Date: 01/31/2012 **AC No:** 150/5200-36A
Initiated by: AAS-300 **Change:** 1

1. Purpose.

This Advisory Circular (AC) has two purposes. First, this AC describes the qualifications for wildlife biologists who conduct Wildlife Hazard Assessments (WHA) for airports certificated under Title 14, Code of Federal Regulations, Part 139 (14 CFR Part 139), and at non-certificated airports funded by a Federal Aviation Administration (FAA) Airport Improvement Program (AIP) or Passenger Facility Charge (PFC) Program. We recommend that airports, at a minimum, consult with a qualified airport wildlife biologist when developing a Wildlife Hazard Management Plan (WHMP).

Second, this AC addresses the minimum wildlife hazard management curriculum for the initial and recurrent training of airport personnel who implement an FAA-approved WHMP.

2. Applicability.

The standards and practices in this AC for public-use airports and for those who conduct Wildlife Hazard Assessments and conduct required training are:

a. Mandatory for airports certificated under Title 14, Code of Federal Regulations, Part 139 (14 CFR Part 139).

b. Highly recommended for airports that have accepted AIP or the Passenger Facility Charge (PFC) Program funds.

c. Highly recommended for all other airports that independently fund Wildlife Hazard Assessments.

3. Cancellation.

This AC cancels AC 150/5200-36, Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports, dated June 28, 2006.

(4) Have successfully completed at least one of the following within five years of their initial FAA approved airport wildlife hazard management training course, and every five years thereafter:

(i) An airport wildlife hazard management training course that is acceptable to the FAA Administrator (Appendix C) **or**,

(ii) Attendance, as a registered participant, at a joint Bird Strike Committee–USA/Bird Strike Committee–Canada annual meeting **or**,

(iii) Other training acceptable to the FAA Administrator.

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

(1) Supervise how the individual(s) will conduct the Wildlife Hazard Assessment; and

(2) Report progress of the Wildlife Hazard Assessment; and

(3) Supervise the Wildlife Hazard Assessment report production.

e. Certificate Holders or Airport Sponsors must obtain documentation verifying the qualifications outlined in c (1) – (3) above of any person(s) conducting wildlife hazard assessments or providing requisite training.

f. Holders of Airport Operating Certificates issued under Part 139 must retain records documenting the airport wildlife biologist(s) qualifications to conduct Wildlife Hazard Assessments and Wildlife Hazard Management Plans. These records must be retained for 10 years. If an airport conducts another WHA before the ten year expiration, the airport must maintain the qualification records for the previous WHA one year after the new WHA is completed.

7. Initial and Recurrent Training for Airport Personnel Actively Involved in Managing Hazardous Wildlife On or Near Airports.

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

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

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

d. §139.337(f) does not prohibit holders of Airport Operating Certificates from using a "train-the-trainer" approach when providing the requisite training, provided the trainers receive and successfully complete their initial and recurrent training from a qualified airport wildlife biologist. Trainers who are not qualified airport wildlife biologists are limited to providing training to their airport employees.

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

Michael J. O'Donnell
Director of Airport Safety and Standards

U.S. Department
of Transportation
Federal Aviation Administration

Advisory Circular

Subject: Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports	**Date:** 01/31/2012 **Initiated by:** AAS-300	**AC No:** 150/5200-36A **Change:**

1. Purpose.

This Advisory Circular (AC) has two purposes. First, this AC describes the qualifications for wildlife biologists who conduct Wildlife Hazard Assessments (WHA) for airports certificated under Title 14, Code of Federal Regulations, Part 139 (14 CFR Part 139), and at non-certificated airports funded by a Federal Aviation Administration (FAA) Airport Improvement Program (AIP) or Passenger Facility Charge (PFC) Program. We recommend that airports, at a minimum, consult with a qualified airport wildlife biologist when developing a Wildlife Hazard Management Plan (WHMP). However, airports are not required to do so.

Second, this AC addresses the minimum wildlife hazard management curriculum for the initial and recurrent training of airport personnel who implement an FAA-approved WHMP.

2. Applicability.

The standards and practices in this AC for public-use airports and for those who conduct Wildlife Hazard Assessments and conduct required training are:

a. Mandatory for airports certificated under Title 14, Code of Federal Regulations, Part 139 (14 CFR Part 139).

b. Mandatory for airports that have accepted AIP or the Passenger Facility Charge (PFC) Program funds.

c. Highly recommended for all other airports that independently fund Wildlife Hazard Assessments.

See Grant Assurance No. 34, Policies, Standards, and Specifications, and PFC Assurance No. 9, Standards and Specifications.

3. Cancellation.

This AC cancels AC 150/5200-36, Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports, dated June 28, 2006.

4. Background.

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

5. Related Reading Material.

Please review the most recent versions of the following documents:

a. FAA AC 150/5200-18, Airport Safety Self-Inspection.

b. FAA AC 150/5200-32, Reporting Wildlife Aircraft Strikes.

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

d. FAA AC 150/5200-34, Construction or Establishment of Landfills Near Public Airports.

e. FAA AC 150/5210-20 Ground Vehicle Operations on Airports

f. FAA AC 150/5220-25 Airport Avian Radar Systems

g. FAA AC 150/5300-13 Airport Design

h. FAA AC 150/5340-1K Standards for Airport Markings

i. FAA AC 150/5340-18F Standards for Airport Sign Systems

j. FAA Office of Safety and Standards, Certalert no. 98-05, Grasses Attractive to Hazardous Wildlife.

k. FAA Office of Safety and Standards, Certalert no. 04-09, Relationship Between FAA and WS.

l. FAA Office of Safety and Standards, Certalert no. 04-16, Deer Hazard to Aircraft and Deer Fencing.

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

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

o. Dolbeer, R. A., S. E. Wright, J.R. Weller and M.J. Begier. 2009. Wildlife Strikes to Civil Aircraft in the United States, 1990 – 2008. FAA National Wildlife Aircraft Strike Database Serial Report #15.

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

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

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

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

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

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

v. Aeronautical Information Manual (AIM)

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

6. Professional Qualifications of Wildlife Biologists Conducting Wildlife Hazard Assessments and Wildlife Hazard Management Training at FAA Certificated Airports.

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

> §139.337(c) reads: Wildlife Hazard Assessment required in paragraph (b) of this section shall be conducted by a wildlife damage management biologist who has professional training and/or experience in wildlife hazard management at airports or an individual working under direct supervision of such an individual.

b. Airports with a FAA-approved Wildlife Hazard Management Plan must provide employees the training needed to carryout the Plan.

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

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

(1) Have the necessary academic coursework from accredited institutions and work experience to meet the qualifications of a GS-0486 series wildlife biologist as defined by the U.S. Office of Personnel Management classification standards (Appendix A) **or** be designated as a Certified Wildlife Biologist by The Wildlife Society (http://www.wildlife.org) **and,**

(2) Have taken and passed an airport wildlife hazard management training course acceptable to the FAA Administrator (Appendix C), **and**;

(3) While working under the direct supervision of a qualified airport wildlife biologist, have conducted at least one Wildlife Hazard Assessment acceptable to the FAA Administrator (as described in §139.337(c)). **and,**

(4) Have successfully completed at least one of the following within five years of their initial FAA approved airport wildlife hazard management training course, and every five years thereafter:

(i) An airport wildlife hazard management training course that is acceptable to the FAA Administrator (Appendix C) **or**,

(ii) Attendance, as a registered participant, at a joint Bird Strike Committee–USA/Bird Strike Committee–Canada annual meeting **or**,

(iii) Other training acceptable to the FAA Administrator.

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

(1) Supervise how the individual(s) will conduct the Wildlife Hazard Assessment; and

(2) Report progress of the Wildlife Hazard Assessment; and

(3) Supervise the Wildlife Hazard Assessment report production.

e. Certificate Holders or Airport Sponsors must obtain documentation verifying the qualifications outlined in c (1) – (3) above of any person(s) conducting wildlife hazard assessments or providing requisite training

7. Initial and Recurrent Training for Airport Personnel Actively Involved in Managing Hazardous Wildlife On or Near Airports.

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

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

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

d. §139.337(f) does not prohibit holders of Airport Operating Certificates from using a "train-the-trainer" approach when providing the requisite training, provided the trainers receive and successfully complete their initial and recurrent training from a qualified airport wildlife

biologist. Trainers who are not qualified airport wildlife biologists are limited to providing training to their airport employees.

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

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

Appendix A.

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

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

1. A degree in biological science that includes—

a. At least nine semester hours in such wildlife subjects as mammalogy, ornithology, animal ecology, and wildlife management or research courses in the field of wildlife biology; **and**

b. At least 12 semester hours in zoology in such subjects as general zoology, invertebrate zoology, vertebrate zoology, comparative anatomy, physiology, genetics, ecology, cellular biology, parasitology, and entomology or research courses in these subjects (excess courses in wildlife biology may be used to meet the zoology requirements where appropriate); **and**

c. At least nine semester hours in botany or the related plant sciences; **or**

2. A combination of education and experience equivalent to a major in biological science (i.e., at least 30 semester hours), with at least nine semester hours in wildlife subjects, 12 semester hours in zoology, and nine semester hours in botany or related plant science, as shown in Paragraph 1 above, plus appropriate experience or additional education; **or**

3. Be designated as a Certified Wildlife Biologist by The Wildlife Society (http://www.wildlife.org).

Appendix B.

Training Resource Requirements and Instructor Qualifications.

The following training resource requirements and instructor qualifications are for any individual wishing to:

- Provide an airport wildlife hazard management course acceptable to the FAA Administrator, for personnel conducting Wildlife Hazard Assessments; or

- Provide training to airport personnel actively involved in implementing FAA approved Wildlife Hazard Management Plans.

1. Training Resources and Requirements.

a. A list of training program providers acceptable to the FAA Administrator can be found on the FAA's wildlife strike website: http://wildlife.faa.gov/.

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

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

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

d. The goal of the training must be to provide the knowledge, skills, and abilities needed by a GS-0486 wildlife biologist to conduct Wildlife Hazard Assessments [§139.337(c)] and to conduct wildlife hazard training [§139.337(f)(7)]. To be acceptable to the FAA, the course must be at least 24 hours in length and include the curriculum items listed in Appendix C.

2. Instructor Qualifications.

The lead instructor for the training should:

a. Be a qualified airport wildlife biologist.

b. Have academic credits in education or instructor/teaching experience.

c. Have a minimum of 2 years experience in all aspects of managing hazardous wildlife on or near airports.

Appendix C.

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

1. Training Curriculum Outline.

The goal of the training must be to provide the knowledge, skills, and abilities needed by a GS-0486 wildlife biologist to conduct Wildlife Hazard Assessments [§139.337(c)] and to conduct wildlife hazard training [§139.337(f)(7)]. To be acceptable to the FAA, the course must be at least 24 hours in length and include the curriculum items listed below.

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

(2) Animal Damage Control Act of 1931, as amended

(3) Bald Eagle Protection Act of 1940, as amended

(4) Federal Insecticide, Fungicide, and Rodenticide Act of 1948, as amended

(5) National Environmental Policy Act of 1969, as amended

(6) Endangered Species Act of 1973, as amended

(7) Title 14, Code of Federal Regulation, Part 139, Certification of Airports

(8) Title 40, Code of Federal Regulations, Part 258, Criteria for Municipal Solid Waste Landfills

(9) Title 50, Code of Federal Regulations, Parts 1–199, Wildlife Management

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

(11) Applicable FAA ACs in the 150/5200 series about Airport Wildlife Hazard Management

(12) Applicable FAA Airport Certalerts

(13) Applicable state and local laws, regulations, and ordinances

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

g. Other Federal and State agency roles and responsibilities

(1) U.S. Department of Interior, Fish and Wildlife Service

(a) Role and responsibilities related to managing problem wildlife

(b) Migratory Bird Depredation Permits

(c) Salvage Permits

(2) U.S. Department of Agriculture, Wildlife Services

(a) Role and responsibilities related to managing problem wildlife

(3) Other agencies

(a) U.S. Environmental Protection Agency

(i) Siting landfills

(ii) Pesticide registration and use

(b) U.S. Army Corps of Engineers

(i) Wetlands mitigation

(4) Multi-Federal Agency Memorandum of Agreement

(5) Applicable State wildlife regulations

h. FAA National Wildlife Aircraft Strike Database

(1) Strike reporting

(2) Species identification and feather identification

(3) Database access

i. Environmental issues—working with Federal and State agencies

(1) National Environmental Policy Act

(2) U.S. Army Corps of Engineers (wetland loss and mitigation issues)

j. Initial consultations and Wildlife Hazard Assessments (WHAs)

(1) Triggering events for WHAs

(2) Duration and contents of WHAs

(3) Wildlife surveys at airports to assess wildlife hazards

(4) Data analysis and presentation of results

(5) Writing a WHA

k. FAA review of a WHA and determination of need for a Wildlife Hazard Management Plan (WHMP)

l. Drafting and carrying out integrated WHMPs

(1) Contents of WHMPs

(2) FAA review of WHMPs

(3) Endangered Species Act compliance

(4) National Environmental Policy Act review

m. Integrated wildlife hazard management for airports; survey of basic control strategies and tactics

(1) Flight schedule modification

(2) Habitat modification and exclusion

(3) Wildlife dispersal techniques

(4) Wildlife population management

n. Addressing off-airport attractants and community planning and involvement

o. Outline of field trip (to conduct a “mini” WHA)

p. Field trip/site visit

q. Final exam

r. Post exam review

s. Course evaluation

t. Presentation of certificates

2. Recommendations.

a. Exams or tests may be oral, written, practical demonstrations, or a combination of each.

b. Passing grade/evaluation should be recorded and retained as instructor's records.

c. Instructors should retain course attendance records for a period of three years.

Appendix D.

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

1. Training Curriculum Outline.

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

a. General survey of wildlife hazards to aviation based on the most recent annual FAA National Wildlife Strike Database Serial Report

b. Review of wildlife strikes, control actions, and observations at the airport over at least the past 12 months

c. Review of the airport's Wildlife Hazard Assessment is to include—

(1) Existing wildlife hazards and trends in wildlife abundance

(2) Status of any open or unresolved recommended action items for reducing identified wildlife hazards to air carrier operations within the past 12 months

d. Review of the airport's Wildlife Hazard Management Plan, to include the following:

(1) Airport-specific wildlife attractants, including man-made and natural features and habitat management practices of the last 12 months.

(2) Review of the airport's wildlife permits (local, State, and Federal)

(3) Review of other airport-specific items:

(a) Wildlife hazard management strategies, techniques, and tools:

(i) Flight schedule modification

(ii) Habitat modification, exclusion

(iii) Repelling methods

(iv) Wildlife population management

(b) Responsibilities of airport personnel for—

(i) Reporting wildlife strikes, control actions, and wildlife observations

(ii) Communicating with personnel who conduct wildlife control actions or who see wildlife hazards and air traffic control tower personnel and others who may require notification, such as airport operations or maintenance departments

(iii) Documenting and reporting wildlife hazards seen during patrols and inspections and follow-up control efforts

(iv) Documenting and reporting when no hazards are seen during patrols and inspections

e. Basic bird and mammal identification, stressing local hazardous and rare or endangered species of concern

f. For any airport personnel using pyrotechnic launchers or firearms, training on the following topics from a qualified individual[2]:

(1) Safety, parts, and operation of pyrotechnic launchers

(2) Fundamentals of using pyrotechnics to safely and effectively disperse wildlife

(3) Personnel protective equipment

(4) Cleaning, storage, and transport of firearms and pyrotechnic launchers

(5) Applicable local, State, and Federal regulations on firearms, pyrotechnic launchers, and pyrotechnics[3]

(6) Live fire training with pyrotechnic launchers including strategies for dispersing wildlife away from runways and aircraft movement corridors

(7) For any airport personnel using firearms, live fire training. This training is highly recommended from a qualified individual but not a requirement for this training program[2].

g. Any other training required by local, State, or Federal regulations

2. Recommendations.

a. Exams or tests may be oral, written, practical demonstrations, or a combination of all three.

b. The Trainer should retain passing grades/evaluations records.

c. The Trainer should retain course attendance records for a period of three years.

d. Airport personnel responsible for the airport's wildlife hazard management program should retain records of those to whom instruction in airport wildlife hazard management has been given for the period of time during which the employees conduct hazardous wildlife management activity on the airport and for six months after termination of employment.

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

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

[3] Bureau of Alcohol, Tobacco and Firearms provides information on Federal explosive requirements for explosive pest control devices at: http://www.atf.gov/explosives/how-to/documents/epcd-flyer.pdf.

APPENDIX D