

# Wildlife Hazard Management Plan



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Per FAA AC 150-5200-36B

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## List of Acronyms

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AEI	Adams Environmental, Inc.
AET	Adams Environmental Team
AICC	Airport Integrated Control Center
AOA	Airport Operating Area
ATC	Air traffic Control
AWC	Airport Wildlife Consultants
DM	Duty Manager
CFR	Code of Federal Regulations
CPS	City Public Service
FAA	Federal Aviation Administration
MBTA	Migrator Treaty Act
NOTAM	Notice to Airmen
QWB	Qualified Wildlife Biologist
SAT	San Antonio International Airport
SAAS	San Antonio Airport Systems
TPWD	Texas Department of Wildlife
T&E	Threatened and Endangered
TTPP	Trap, Transport and Process Permit
USACE	United State Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WHG	Wildlife Hazard Group
WHMP	Wildlife Hazard Management Plan



## Introduction

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Pursuant to the Code of Federal Regulations (CFR) Title 14 Part (§) 139.337, San Antonio International Airport (SAT) developed this Wildlife Hazard Management Plan (WHMP) in cooperation with the Adams Environmental Team (AET) comprised of Adams Environmental, Inc. (AEI) and Airport Wildlife Consultants (AWC). This WHMP shall be reviewed periodically by SAT's Qualified Wildlife Biologist and shall be updated as recommendations are implemented and as changing circumstances merit. All changes made to the WHMP shall be sent to the Federal Aviation Administration (FAA) for approval, and shall be documented in the Table of Revisions of this document.

San Antonio International Airport Staff have diligently reported wildlife strikes since 1990. According to the FAA National Wildlife Strike Database, a total of 1550 bird and wildlife strikes have been reported for SAT from 1990-2021. In 2009 the airport hired a full time wildlife manager to mitigate wildlife on and around the airfield. In 2014 Wildlife Manager became the Qualified Wildlife Biologist for the San Antonio International Airport. The primary wildlife hazards identified on or near the airport included jackrabbits, white-tailed deer, feral hogs, blackbirds, pigeons, mourning doves, white-winged doves, black vultures, turkey vultures, and caracaras. Blackbirds, pigeons, mourning doves, white-winged doves are most frequently involved in strikes at SAT, but vultures pose the greatest hazard to aircraft due to their size, flying behavior, and potential to cause damage. Some raptors including red-tailed hawks, Swainson's hawks, and American kestrels were also observed. Wildlife attractants in the area were stockpiles of gravel and demolition materials, trees (especially in public areas), and minor accumulations of trash. Off-site attractants include lakes, ponds, streams, city sponsored green belts and parks, and power lines. Waterfowl tend to congregate on lakes and ponds in the area, but do not present a major problem for the airport.

## Individuals Having Authority

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The San Antonio Aviation Director has the authority and responsibility of designating a Qualified Wildlife Biologist to implement the WHMP. Several divisions within SAT have responsibilities outlined in this WHMP and will incorporate them into their programs. Clear communication among airport personnel is essential for the WHMP to succeed. Personnel working at the airport should communicate resource needs, recommendations, and progress to the designated Qualified Wildlife Biologist. The SAT Qualified Wildlife Biologist will obtain FAA approval of the WHMP and will review the WHMP and any amendments for compliance with Federal, State and local laws and regulations.

Specifically, the following personnel at the airport are generally responsible for the following:

- **Aviation Director:** Designate a Qualified Wildlife Biologist at SAT to monitor and implement all management activities as described in the WHMP. Oversee funding and budgeting of the WHMP.
- **Qualified Wildlife Biologist:** Perform and coordinate wildlife mitigation for the Wildlife Hazard Management Program at SAT.
- **Airport Operations Staff:** Work closely with the Qualified Wildlife Biologist to mitigate wildlife hazards at SAT. Inspect AOA for wildlife activity. Collect animal remains from strikes for identification by the Qualified Wildlife Biologist. Communicate the nature and location of any identified wildlife attractants or hazards to the Qualified Wildlife Biologist upon discovery. Communicate wildlife-related emergency situations to the airport community, as appropriate. Notify the Qualified Wildlife Biologist of attractants on the AOA and assist with the removal as requested. Assist the Qualified Wildlife Biologist with wildlife control activities. Enforce the "No

Feeding” policy for airport employees found feeding wildlife on airport property. Record all wildlife activity on or around SAT property in the OPS daily log

- **Airport Integrated Control Center (AICC):** Route all wildlife-related inquiries (telephone calls, letters, etc.) to the Qualified Wildlife Biologist and disseminate notification of wildlife hazard conditions to the FAA as requested.
- **Airport Maintenance Division:** Communicate observations of wildlife and attractants to the Qualified Wildlife Biologist. Maintain the perimeter fences and culverts to exclude mammals such as coyotes, feral dogs, and jackrabbits. Assist with habitat and landscape modification to minimize attraction to wildlife. Remove any accumulated refuse on the airport. Minimize pooling of water formed by rain or artificial sources. Coordinate landscaping changes or vegetation removal with the Qualified Wildlife Biologist to minimize the attraction by wildlife. Conduct landscaping operations during hours of bird inactivity. Control weeds and insects using the appropriate pesticides. Coordinate with the Qualified Wildlife Biologist to provide specialized equipment required for wildlife hazard management.
- **Air Traffic Control Tower:** Warn pilots of observed or reported wildlife hazards. Delay aircraft movements to avoid wildlife strikes, as appropriate. Record strikes on the Wildlife Strike Report Form, FAA 5200-7, and forward the completed form to the Qualified Wildlife Biologist. Advise the Qualified Wildlife Biologist of all wildlife activity observed on or around the airfield by completing and submitting the Daily Wildlife Activity Report Form. Update Automatic Terminal Information System with current bird watch condition as reported by the Qualified Wildlife Biologist or Operations Supervisor.
- **Airline Representatives and Pilots:** Notify SAT ATC of wildlife activity observed on approach, departure, or while on the airfield. Record strikes on the Wildlife Strike Report Form, FAA 5200-7, and forward the completed form to the Qualified Wildlife Biologist.
- **Wildlife Hazard Group:** Will Review significant wildlife hazards from the previous year. Review the effectiveness of wildlife control procedures. Evaluate the impact of off airport projects to KSAT operations and make recommendations. Review any future airport projects, expansion plans, and nearby land-use changes that may affect wildlife patterns around KSAT. The WHG will review and make recommendation to the Wildlife Hazards Management Plan (WHMP). WHG will be hosted by the Qualified Wildlife Biologist to include at a minimum, Airport Operations, Airfield Maintenance, Airport Integrated Control Center (AICC), Air traffic Control (ATC) and Airport Horticulture and or additional division as needed. The WHG will meet at a minimum on an annual (October) basis to discuss wildlife hazards.
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## Wildlife Hazard Mitigation Actions

### Wildlife Population Management

Task	Date Completed	Status	Completion Date
Black Vultures and Turkey Vultures			

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Coordinate with CPS to place bird deterrents on the power line towers where vultures are roosting. Although some mechanical types of deterrents are available, the most successful one appears to be use of effigies. The airport should obtain permission from the USFWS to kill several vultures and hang them approximately 200 to 300 feet above the ground within tower structures.			As needed
All airport property, especially that along Wetmore Drive, Starcrest Drive, and the Salado Creek basin should be regularly inspected for dead animals. If animals are found in these areas, the carcasses should be removed and properly disposed.			Weekly
<b>Mourning Doves and White-Wing Doves</b>			
Vegetation on the AOA should be regularly mowed and grasses should not be allowed to form seed heads.			On going
Stockpiling of sand and gravel within the AOA should be avoided when possible. Areas of exposed grit and gravel should be removed or covered with plastic.			On-going
Deterrents such as noise, shell crackers, pyrotechnics, and scarecrows should be combined with occasionally killing birds with a pellet rifle so that the birds will associate lethal action with noise. Note that this must be coordinated with the USFWS and TPWD.			As Required
Increase trapping efforts to help with control			On-going
<b>Great-Tailed Grackles</b>			
Trees used for roosting should be trimmed to reduce the number of perching sites. Plastic tape or strips should be hung within the tree canopy.			On-going / annually Fall / Spring
Where water is available, grackles can be harassed by placing a sprinkler head inside tree canopy and periodically spraying water during the night when the birds are roosting.			When available
When changes to landscaping a change from thick shrubs should be removed and replaced with widely spaced sagebrush or Xeriscape featuring native sage brushes and cactus.			When able
A pilot study should be initiated to test the use of white Christmas lights inside the canopy trees to deter grackles. The lights could be wrapped or allowed to hang from branches.			When available
Pyrotechnics and noisemakers combined with the lethal take of birds should be used to harass large flocks of grackles late at night when flights are not scheduled.			As Required
<b>Rock Pigeons</b>			
Pigeons are currently using ledges within the parking structure for roosting. These ledges could be altered by sloping them to an angle of 45° or more or by treating them with bird deterrent materials such as spikes and nets.	Will leave open due the continuous amount of construction work at the airport		May 2023

Buildings and other structures on airport property should be inspected to determine if crevices or holes are present. If they are found, these holes and crevices should be blocked or sealed using screening, concrete, bricks, or similar substances.			On-going / weekly
Trapping or lethal take of pigeons on a regular basis can harass and decrease populations and by making roosting areas unsafe and undesirable.			On-going
<b>Moderate Priority Bird Species</b>			
Barn, cliff, and cave swallows: These birds are attracted by insect populations in the area, and deterring them from the AOA will be difficult. These birds are acclimated to man's activities and do not necessarily respond well to harassment procedures. During the nesting period, the parking structure and buildings should be inspected for nesting sites and those sites destroyed. Permits from USFWS and TPWD will be required.			As Required daily during nesting season (April-September) All garage parking, Terminal – A-B lower curb
Starlings were also listed as moderate priority species and tend to congregate with grackles. Methods used to control and harass grackles should be effective for starlings.			As Required
Raptors and Falcons: Continue practices that are minimizing the occurrence of small mammals and remove areas of water accumulation on the AOA to decrease attraction of American kestrels to the AOA. Wooded areas on airport property should be inspected regularly for hawk nests and those nests destroyed. These practices would require coordination with the USFWS.			On-going / quarterly
Nighthawks: Minimize insect populations congregating around lights on the AOA by removal of lights where possible and application of insecticides. This should assist in minimizing the population of nighthawks on the AOA.			As Required
Caracaras: Remove any dead animals from runways and other locations in the AOA to minimize attraction of the AOA to caracaras.			As Required
Off AOA roadways inspections for caracaras removal			Weekly
Black-bellied whistling ducks, great blue herons, and great egrets: Remove impounded surface water on the AOA to deter these species.			As Required
<b>Rodent and Rabbits</b>			
Continue to monitor rodents on the airfield and initiate control programs as necessary.			On-going Quarterly
Under current game regulations, it is legal to shoot jackrabbits at any time of year and there is no bag limit. In addition to vegetation management, we suggest that the best method for this species would be to take rabbits on a regular basis. Hunts could be conducted at night using silent fire arms, such as high powered air rifles, and spotlights.			On-going (monthly/Quarter)
<b>Other Mammals</b>			

Striped skunks: Removal of suitable habitat for burrows should decrease the occurrence of this mammal on the AOA. Place a 6 inch layer of fragmented rock around concrete structures to make the areas unsuitable for burrowing and decrease populations on the AOA. Lethal removal using air rifles or trapping of this animal could also be used.			On-going
White-tailed deer and wild hogs: Properly maintain fences. Some lethal take may be required and would involve coordination with TPWD. It is important to prevent overpopulation of deer outside of the AOA to prevent deer from considering land inside the AOA as potential feeding areas.			As Required
Deer trapping with a wildlife capturing service and Texas Parks and Wildlife Trap Transport and Process permits			As needed/
Coyotes: Although they are a low priority species, the coyote has presented definite problems for aircraft within the AOA. Any coyotes encroaching on the AOA should be lethally removed. Drainage grates and fences should be properly maintained.			As Required
Domestic and Feral Cats and Dogs: If possible, these animals should be captured and removed from the AOA. Captured animals should be turned over to animal control services provided by the City of San Antonio. Repeat offenders should be lethally removed using air rifles or similar measures. Proper fence maintenance should deter encroachment of dogs from the AOA. Control of birds and small mammals will deter encroachment of cats.			On-going

## Habitat Modification

Task	Date Completed	Status	Completion Date
<b>Water Management. Habitat that is characterized by relatively persistent standing water comprises less than 1% Great Blue herons, Great Egrets, Black-Bellied Whistling Duck, American Kestrels, and Northern Harriers have been</b>			
<b>Observed in and around this habitat hunting for frogs, other aquatic wildlife, and small mammals foraging or drinking water.</b>			
Areas temporarily inundated on the AOA are monitored on a regular basis by the Qualified Wildlife Biologist to determine if they attract wildlife that could potentially strike aircraft. All such persistent accumulations of water are dispersed or drained whenever practical.			Monitored after every rain event



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All landscape change or improvement must be review by Qualified Wildlife Biologist and Horticulture manager			Every new and any changes to landscaping
Chronic wet areas are identified and accumulated water is removed and prevented by grading or draining, as appropriate. Coordination with the USACE will be required for jurisdictional waters.			Monitored after every rain event
In accordance with FAA AC 150/5200-33B, all retention and detention basins on SAT property are monitored for drainage within 48 hours of a rain event. Any retention and detention basin that does not drain within 48 hours is modified to drain or fitted with a wire grid to deter use by waterfowl and wading birds.			Monitored after every rain event
Minor swales in depressions areas are heavily used by jackrabbits for forms. These areas should be mowed or filled with fractured limestone gravel and treated with Roundup.			On-going Weekly
All depressions potentially accumulating water for more than 48 hours should be filled with fractured limestone gravel (2-4 inch diameter) to prevent further erosion and to minimize growth of vegetation and accumulation of water.			Monitored after every rain event
Outside of the AOA are several surface waters that attract various wildlife hazards. SAT should coordinate with the property owners and encourage them to maintain the surface waters in a manner to discourage use by waterfowl and other wildlife, where possible.			On-Going
<b>Grass Management. Grass Habitat in the AOA is maintained by periodic mowing and comprises about 75% of the AOA. It is dominated by short grass with about 2-5% of the vegetation being broadleaf herbaceous plants.</b>			
Grasses on the entire AOA should be maintained at a height of no more than 10 inches, preferably 6 inches. The entire AOA be intensively managed by mowing to ensure that wildlife will not be attracted to certain sections of the AOA.			On-going
All mowing activities should be conducted at night when attraction to wildlife is minimal.			As possible
Currently, the dominant grasses on the AOA are small seeded. If large seeded grasses become established in areas, they should be removed immediately.			As Required
The AOA supports a very healthy and diverse population of insects that attract insect eating birds. Regular mowing of grasses to minimize accumulation of litter will encourage a decrease in insect populations. Pesticides could be used to decrease insect populations.			On-going
In an effort to make these areas less attractive to jackrabbits, they should be maintained at a shorter height or filled with fractured limestone gravel and maintained plant-free with Roundup.			As Required

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Hyromulching seeding only allow in area outside of all movement areas and must be approved by Wildlife Biologist before activities are done			As Required
Sodding is the only vegetation change allowed in the movement area.			As Required
<b>Tree Management.</b>			
No trees will be planted on SAT airport owned property			As required
Prune tree canopies annually to discourage their use as grackle and blackbird roosts.			On-going Bi-annually
<b>Ornamental Landscaping. Minimize use of ornamental trees and shrubs used to enhance airport aesthetics. Use varieties that are unattractive to wildlife. Avoid species which produce edible fruits, seed, nuts, or berries.</b>			
Monitor trees to identify roosting by grackles, starlings, blackbirds, and other birds. Trees should be thinned, topped, or removed if necessary. Dense shrubs should not be used because of the attraction to grackles for nesting.			Monthly
When possible landscape should be changed to Xeriscape dominated by a variety of cacti, short, well-spaced sagebrush, and native flowering plants, where possible.			On-going
New landscaping projects on airport property will be reviewed by the Qualified Wildlife Biologist and Airport Horticulturist to minimize the use of new ornamental landscaping that may be attractive to hazardous wildlife.			As Required
Prior to any decision to utilize vegetation screens for noise control, their potential for creating a bird hazard to aircraft must be carefully weighed against the anticipated noise benefits.			As Required
<b>Weed Control. Weeds often grow on the airfield and around the perimeter fences. Weeds that produce seed or provide cover should be controlled using appropriate herbicides</b>			
Many of the areas protected according to storm water regulations are not well-maintained and dense populations of weeds and grasses are becoming established silt fences. All new construction projects should stipulate that silt fences be maintained by regular mowing.			As Required
Most construction sites are temporary and can be very attractive to wildlife. All of these areas should either be treated with proper herbicides or mowed to manage vegetation.			On-going
Stockpiles should temporary and removed within 90 days. No vegetation should be allowed to grow on them ( must be maintained )			As Required

**Structure Management**

Task	Date Completed	Status	Completion Date
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<b>Airfield Structures. Airfield structures such as runway lights, ramp and taxiways signs, Instrument Landing systems towers, and light poles can serve as roosts and nesting areas for wildlife</b>			
Several materials ranging from spikes to sticky substances should be used to discourage birds from using signs for perches where required.			As Required
Periodically treat a 1-foot buffer area around concrete structures/footings in the AOA with a non-selective herbicide, such as Roundup, to prevent growth of vegetation			On-going /monthly
The areas around the concrete pads should be excavated approximately 4 inches deep, filled, tightly packed with 3-inch diameter fragmented limestone or similar size gravel to discourage burrowing by skunks and other small mammals.			On-going
Small equipment storage buildings should be placed flat on concrete pads or protected by a metal or rock/concrete skirt to prevent use of the space under the structures by wildlife.			On-going
Some older buildings have vertical crevices or crawlspaces under the building which should be obstructed using bricks, fencing material, or sheet metal to prevent encroachment of wildlife. Skirts should be excavated about 6 inches deep into the soil.			On-going
<b>Airport Structures. Parking garages, shades for parking attendants, hangers and airport buildings provide roosting perching, or nesting habitat for birds.</b>			
All vegetation in and around tenant structures and properties should be trimmed to a height of no more than six to 10 r inches.			On-going weekly check

Weeds and seed producing plants around tenant buildings and storage areas should be controlled either by using Roundup or hand removal.			As Required
All trash should be placed in dumpsters with properly maintained tops that are kept closed and sealed at all times.			Checked weekly
Lengthy outside storage of equipment and materials should be completely avoided.			As Required
Stockpiles of soil, gravel, and other materials should be kept weed-free and should be removed within 90 days.			As Required
All low areas, drainages, and artificial containers potentially accumulating water should be removed or filled to prevent accumulation of water.			As Required
Excessive irrigation resulting in runoff into ditches or accumulation of water in pools should be avoided.			As Required
Bird nests or roosting areas observed on tenant buildings or property should be removed as allowed by the Migratory Bird Treaty Act.			As Required
New Parking garage CONRAC will need to be monitor for bird activities ( swallows, pigeons nesting)			May 2021
<b>AOA Fence. The only exclusionary method used at SAT for wildlife management is construction of a fence surrounding the AOA. The fence is currently well-maintained with only a few areas that require repair. n Date</b>			
Periodically place dirt and gravel at the base of the fence to prevent wildlife from digging under the fence and entering the AOA.			As Required
Repair holes and other gaps in the fence.			On-going

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Gaps between buildings and fences should be modified to minimize gaps by moving the post, filling the gap with a small section of fence or screen, or attaching the fence and/or post directly to the building.			On-going
Any gates that are not required for the operation of the airport should be removed and replaced with fencing.			As Required
North Perimeter fence completed, with area that have wildlife fencing			
<b>Other Task</b>	<b>Date Completed</b>	<b>Status</b>	<b>Completion Date</b>
Continue WHA survey points on a Monthly rotation all points 1-15 AM/PM			On-going/ Monthly
Small mammals and rodent AOA survey will be on a quarterly rotation ( January, April, July, October)			On-going/ Quarterly
Work with Animal Care Service to increase timely pick up of stray dogs and cat that are trapped at the airport			On-going
Wildlife hazardous training for Operation / maintenance ( are activity involved in wildlife control)			On-going /
Airport Wildlife hazard training ( for airport personnel that are not activity involved in wildlife control)			On-going / annually
Will try to establish a better line of communication between ATC and the Qualified Wildlife Biologist on bird strike that are reported to the Airport			ongoing
Rodent bait station maintained and service every quarter (around all parking areas and outside of the terminals)			Quarterly

<p>Honeybee Swarms removal, from time to time the airport will have swarms of bee move across the airport. When the Bee swarms land in an area that will affect employee and or public safety. The bee will be harmless removed and place in the airport Apiary or other bee friendly areas</p>		<p>As needed</p>
<p>Old construction area removal of silt fence</p>		<p>May 2023</p>
<p>Construction debris on the AOA, 281 area</p>		<p>May 2023</p>
<p>Storage of airport surplus supplies stored on AOA 281 area</p>		<p>May 2023</p>

## Land Use Changes

The Qualified Wildlife Biologist should participate in all land-use planning and mitigation efforts sited for SAT property including the initial phases of airport building projects. The Qualified Wildlife Biologist should identify wildlife attractants in any new airport design or plan and recommend modifications that discourage use by wildlife whenever possible. SAT staff should be involved in identifying and reviewing proposed off-site projects that may attract hazardous species of wildlife or will likely increase bird numbers within flight zones on adjacent property. These wildlife hazards created by land-use changes should be discussed with local planning authorities for collaboration with wildlife control activities. Incompatible land-uses near the airport include developments with water reservoirs, parks with artificial ponds, wetlands, waste handling facilities, and wildlife refuges/sanctuaries.

## Permits and Regulations

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As outlined below, several regulations and permits apply to wildlife management activities at airports in Texas. Many of these regulations relate to safety, methods, and special considerations or restrictions which are usually specified on the depredation permits.

**Resident Game Birds.** Resident game birds, such as quail and pheasant, are non-migratory. Although they are not regulated by the MBTA and no Federal permit is required for take, they are protected by State law and a TPWD depredation permit may be required before take.

**Migratory Game Birds.** Migratory game birds (ducks, geese) are regulated by the USFWS pursuant to the MBTA and State laws. At least two separate permits are required for take of migratory game birds: the Federal depredation permit and appropriate State permits.

**Migratory Bird Depredation Permit (CFR 50, Part 13).** A depredation permit to take federally-protected migratory birds can be obtained by contacting the local USDA Wildlife Services office and requesting a Federal Fish and Wildlife License/Permit Application.

**Depredation Order for Blackbirds, Cowbirds, Grackles, Crows, Magpies, Canada Geese, and Cormorants.** A Depredation Order is a Federal regulation which authorizes the take of certain bird species involved in damage situations, without a Federal permit.

**Birds That Are Exempt from Federal/TX Protection.** Starlings, pigeons, house sparrows and various “pet” birds such as monk parakeets are exotic (non-native) bird species that are not afforded Federal protection. Therefore, the birds, or their nests, eggs, or young may be taken without a permit.

**Game Mammals.** The taking of game mammals requires a State hunting license issued by the TWPD. Cottontail rabbits, tree squirrels, and white-tailed deer are game mammals.

**Trap, Transport and Process Permit** from the Texas Parks and Wildlife White-tailed Deer Permit is a mechanism to help reduce deer population densities in areas where white-tailed deer are overpopulated.

**Furbearers, Predatory, and Non-game Mammals.** In Texas, a trapping license issued by TWPD is required for furbearers.

**Feral Domestic Mammals.** In Texas, take of feral mammals such as dogs and cats does not require a Federal or State permit.

**Reptiles and Amphibians.** In Texas, all reptiles and amphibians are protected, and their take would require a State Permit or a valid hunting license.

**Federal Threatened and Endangered (T&E) Species.** The Federal Endangered Species Act (Sec. 2 [16 U.S.C. 1531]) protects plants and animals which may be threatened with extinction. This Act also protects wildlife habitat. Once listed, a T&E species cannot be taken or harassed without a special permit. If a significant hazard exists with a listed species that jeopardizes air safety, the USFWS and/or the TWPD should be contacted for assistance.

**Eagle Permits.** Eagles are afforded Federal protection under the Bald and Golden Eagle Protection Act, which requires that a Federal permit be obtained in order to harass these birds.



## Resources

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SAT Safety / Wildlife Division will procure and dedicate a vehicle for wildlife management. The vehicle will be equipped with radio communications and warning lights, along with critical wildlife management equipment.

Supplies that are normally available at the airport include, but are not limited to:

- 15 mm pyrotechnic pistol launchers (Bird bombs/bangers and screamers)
- Cleaning supplies for all firearms and pyrotechnic launchers
- Catch poles
- Exclusion materials such as metal spikes and bird netting
- Cage trap for dogs (e.g., Tomahawk 110B)
- Cage trap for cats/raccoons (e.g., Tomahawk 108)
- Small cage or cloth bag for holding bats
- Cardboard animal crate
- Binoculars
- Large Dog kennel
- Snake tongs
- Communications equipment
- Gloves – thin leather gloves to handle bats, latex gloves to handle birds or carcasses
- Heavy duty Leather Gloves
- Garbage bags – various sizes
- Re-sealable bags – various sizes
- Refrigerator or chest freezer to preserve bird carcasses for identification by the Qualified Wildlife Biologist
- Bird strike collection supplies alcohol pads and zip lock bags of different sizes
- High power pellet rifle for lethal control of birds and mammals
- 12 gauge shotgun for control of hazardous birds and wildlife
- 12 gauge shotgun shell (steel shot)
- Mylar tape
- Night Vision Goggles
- Digital SLR Camera with minimum of 500 mm lens (zoom lens is preferable)
- Spotlight (Hand-held)
- Dissecting Microscope (Plant and Wildlife ID)
- Sat Wildlife Field Guide
- National Geographic birds of North America
- Copy of SAT's Depredation Permit
- Tool box ( pliers, hammer, screwdrivers, cable ties, and other basic tools)
- Wildlife Biologist will have/ carry a current State of Texas hunting license
- Bee suit and gloves

The following resource documents are maintained in the Qualified Wildlife Biologist's office:

- Field guides to wildlife identification
- [Prevention and Control of Wildlife Damage](http://wildlifedamage.unl.edu/handbook/handbook/) (2-binder manual, on CD or available on the web at <http://wildlifedamage.unl.edu/handbook/handbook/> )



- FAA Wildlife Hazard Management at Airports manual – available on the web at <http://wildlife.pr.erau.edu/EnglishManual/EngStart.pdf>
- Transport Canada reference manual for wildlife control procedures at airports – available on the web at <http://www.tc.gc.ca/CivilAviation/Aerodrome/WildlifeControl/tp13549/menu.htm>.
- Advisory Circular 150/5200-36B - Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports
- Advisory Circular 150/5200-33C - Hazardous Wildlife Attractants On or Near Airports
- Advisory Circular 150/5200-38 - Protocol for the Conduct and Review of Wildlife Hazard Site Visits, Wildlife Hazard Assessments, and Wildlife Hazard Management Plans
- Document Information
- Advisory Circular 150/5200-32B - Reporting Wildlife Aircraft Strikes
- SAT's Wildlife Hazard Assessment
- SAT's Wildlife Hazard Management Plan
- SAT's Federal Fish And Wildlife Depredation Permit

Airport Operations vehicles contain the supplies listed below to facilitate an immediate response to wildlife hazards. Personnel are responsible for responding to emergency calls to disperse animals from the runways.

- 15 mm pyrotechnic pistol launchers
- 15 mm pyrotechnics (bangers, screamers, starter caps, etc.)
- Bird identification field guide
- Binoculars
- Latex gloves
- Heavy duty Leather Gloves
- Snake tongs
- Catch pole
- Cardboard animal crate
- SAT's Bird Strike kits
- Garbage bags and re-sealable sandwich bags
- Data sheets (FAA Form 5200-7, wildlife activity sheets)
- Sat Wildlife Field Guide
- National Geographic birds of North America
- Large dog Kennel ( stored in OPS area for ease of access when needed)
- Bird strike collection box of supplies to collect samples as need

SAT can also contact The City of San Antonio Animal Care Services to respond to domestic animal bites, remove stray dogs, and pick up bats for rabies testing, and to assist with animal issues that are out of our scope and capacity. Contact:

The City of San Antonio Animal Care Services  
4710 State Highway 151  
Shannon Wade Sims Assistant Director  
[Shannon.sims@sanantonio.gov](mailto:Shannon.sims@sanantonio.gov)  
W: 210-207-6657 C: 210-216-0050

## WILDLIFE HAZARD MANAGEMENT PROCEDURES

### Overview

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Wildlife observed on SAT determined to pose hazards to aviation are managed using safe, effective, legal, and environmentally responsible direct control techniques. Because wildlife hazards at airports are variable and complex, it is essential to adopt a flexible, innovative, and adaptive approach to managing such hazards. Wildlife identification guides and handbooks are available for use by wildlife control personnel at SAT.

### Depredation

#### Permit

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The US Fish & Wildlife Depredation Permit will be annually (April) renewed, to reflect current operation personal and bird numbers. Current permit will be kept in Airport Wildlife Biologist Office in Terminal A and in wildlife control vehicle at all time.

### Wildlife Patrol

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SAT's Airport Operations personnel will conduct at least one wildlife patrol at SAT during each shift. The patrol will monitor and respond to wildlife hazards on the airfield and will coordinate their activities through the Qualified Wildlife Biologist. Airport Operations personnel will be annual trained in wildlife identification, wildlife management techniques, and safe operations. They will have radio-equipped vehicles and adequate wildlife control supplies. Airport Operations personnel will maintain clear communications with the ATC, in accordance with FAA radio protocols, and will record all observations of wildlife-related activity (e.g., notable hazards, animals killed or dispersed, unusual wildlife behavior, etc.) in the airport wildlife log.

Routine runway sweeps will be conducted at least once per shift, and the presence of any dead animals found that were involved in strikes with aircraft will be recorded on FAA Form 5200-7 (Appendix E). All dead birds or mammals found on runways and taxi-ways or within 200 feet of the runway centerline will be considered the result of a strike unless the death was undoubtedly due to some other cause. Bird or mammal remains of unknown species will be placed in a zipped plastic bag and placed in a freezer with the FAA Form 5200-7 attached for later inspection and identification. In addition to carcasses found on the airport, wildlife strikes will also include: (1) strikes reported by pilots, (2) evidence of wildlife strikes found and reported by aircraft maintenance personnel, and (3) direct observation of a strike by SAT personnel. All wildlife strike forms will be submitted to the Qualified Wildlife Biologist for reporting to the FAA. Wildlife strike forms may be submitted electronically to the FAA at <http://www.wildlife-mitigation.tc.faa.gov>. Printouts of FAA strike report will be retained in the Airport Operations Office.

### General Wildlife Hazard Control Measures

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Each wildlife hazard that develops will be investigated by the Qualified Wildlife Biologist to determine a practical solution. When appropriate, an integration of multiple methods will be employed for maximum effectiveness. The Qualified Wildlife Biologist will work proactively to minimize attraction of the airport and surrounding areas to birds by manipulating and managing habitat. The initial response to deter most species will be harassment with frightening devices, followed by lethal methods, when necessary. A primary key to successful wildlife control is persistence and innovation. Techniques will be applied based on safety, effectiveness, practicality, and environmental considerations. Most control techniques retain

their effectiveness when used judiciously and in conjunction with other methods. Therefore, the methods chosen will depend largely on the situation and the species involved. Finally, personnel involved in direct control will be made aware of the potential diseases that wildlife can carry and will take appropriate precautions. SAT's wildlife hazard management program will be guided by the following principles:

- Wildlife will be harassed immediately and consistently
- Wildlife breeding and reproduction on the airport will be discouraged, reduced, or eliminated
- Persistent hazardous wildlife will be removed
- SAT will adhere to all laws, regulations, policies, permits, and licenses.

## Communication with ATC

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SAT Airport Operations personnel are equipped with radios and have received proper training to utilize the radios. If an immediate hazard exists that might compromise the safety of air traffic at SAT, the Airport Operations personnel coordinates with the ATC to modify arriving or departing air traffic until the hazard is eliminated. Although the ATC is not expected to monitor all wildlife hazards on the airfield and still direct air traffic, ATC personnel notifies the Airport Operations Supervisor immediately if pilots report on or off airport wildlife hazards or ATC personnel observe any hazards.

SAT Airport Operations personnel conduct physical inspections of movement areas and other areas critical to wildlife hazard management as part of the daily protocol. All observed wildlife is documented and all data sheets are maintained in the Airport Wildlife Log. This Airport Wildlife Log is retained in the Airport Operations Office. If no wildlife is observed, a record indicating that an inspection was conducted and that no animals were observed is entered into the Airport Wildlife Log. During periods of exceptionally heavy wildlife activity (e.g., migratory periods, outbreaks of insects etc.), the Airport Operations Supervisors consult with the Qualified Wildlife Biologist and a Notice to Airmen (NOTAM) is issued, as appropriate. Airport Operations Supervisors also consult with the Qualified Wildlife Biologist to mitigate the issue if possible.

## Evaluation

### Overview

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As noted above, the WHMP will be evaluated at least annually. The WHMP will also be evaluated following multiple wildlife strikes by an air carrier aircraft; if an air carrier aircraft experiences substantial damage from striking wildlife or if an air carrier aircraft experiences an engine ingestion of wildlife. The Qualified Wildlife Biologist will determine the effectiveness of the WHMP at reducing wildlife strikes at SAT and monitor the status of hazard reduction projects, including their completion dates.

### Meetings

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The WHG will meet at least annually, but the group may meet more frequently if situations warrant, as determined by the Qualified Wildlife Biologist. The group will examine the effectiveness of the plan in reducing wildlife hazards at SAT, and examine the information presented in the WHA and continued monitoring reports to determine necessary actions to further reduce wildlife hazards.

## Wildlife Strike Database

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SAT will document the presence of any wildlife population, any hazard that exists due to the presence of the wildlife population, and any wildlife strikes at SAT. This is accomplished primarily through the job responsibilities placed on SAT Airport Operations personnel. The Qualified Wildlife Biologist is required to document wildlife strikes through completion of FAA Form 5200-7 for species identification and submittal to the FAA, and completion of various internal records specific to SAT. Additionally, Airport Operations personnel are required to conduct daily checks of the airfield, identify possible wildlife attractants, and monitor wildlife populations.

FAA Form 5200-7 will be completed and submitted electronically by the Qualified Wildlife Biologist. A printed copy of each strike form and the Airport Wildlife Log will be maintained in the Airport Operations Office. Prior to each annual WHG meeting, a summary of wildlife strikes will be prepared by the Qualified Wildlife Biologist and will be reviewed by the WHG at the meeting. The summary will be developed based on strike data and will list wildlife species involved in strikes, identify trends, and strike numbers. This information will be used to identify emerging needs and to contribute to the evaluation of wildlife hazard management programs at SAT. If unacceptable increases in wildlife strikes and populations are observed, the cause should be determined and the WHMP modified to address the problem.

## Airport Expansion

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Airport expansion plans will be reviewed by the Qualified Wildlife Biologist or a designee to ensure that new developments will not inadvertently result in increased wildlife hazards to aircraft operations. If necessary, coordination among the Airport Operations, Airport Maintenance, City of San Antonio Planning Department, and the Qualified Wildlife Biologist will be conducted through the WHG to review potential impacts of airport development of wildlife hazards at SAT, and to modify the proposals and/or the WHMP to reduce or eliminate potential or emerging hazards.

## Training

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Training is essential for personnel involved with the WHMP. The Qualified Wildlife Biologist will establish training for all personnel that might be working in a wildlife deterrence capacity in the proper selection and application of control methods as well as wildlife species identification.

An FAA Qualified Wildlife Biologist will provide specialized training courses for all Airport Operations Division personnel actively engaged in wildlife hazard management work at SAT. Wildlife hazardous training will be accomplished every 12 consecutive calendar months and will be documented. The purpose of the training will be to familiarize personnel involved with wildlife hazard management with basic wildlife identification and dispersal techniques. The training may include hands-on training using pyrotechnics, and other deterrent equipment, with an emphasis on safety and effectiveness. These training courses will be available to all personnel who have responsibility in dispersing wildlife at SAT. They will be customized to fit the needs of individual recipients and situations, and will incorporate management issues relating directly to SAT wildlife strikes, populations, and physical environment. Instruction will be tailored to competence levels and areas of participating personnel.

San Antonio Airport Systems Wildlife Training SOP's

- All Wildlife Training will be schedule and track thought the Airport Safety Division
- Wildlife Training Course will only be taught by a Qualified Wildlife Biologist (Marcus Machemehl Q.W.B)

Federal Aviation Administration  
Southwest Region Airports Division

APPROVED  
Sep 22 2022  
KP  
Inspector

- All Wildlife Training documentation (Sign in Sheets, Test and Copies of the Certificates) will be kept by the Qualified Wildlife Biologist. These documents will be made available to the FAA Inspector(s) during the Airport Certification Inspection. These documents will be stored in Qualified Wildlife Biologist office.
- Employees required attending Annual Wildlife Hazard Training for actively involved in wildlife training: (FAA required Part 139 training)
  - All OPS Supervise and Agents and OPS Manger
  - All Stinson Airside Employees and Manager
- Employees that are required thought SAAS for report and informing of wildlife condition
  - All Airside Maintenance Employees that report to Airfield Facilities Manager
  - All Airport Safety Division Employees that report to Airport Safety Manager
  - Other Selective Employees required by Qualified Wildlife Biologist

## Shotgun Standard Operating Procedure

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### San Antonio International Airport (SAT)


#### Shotgun Rifle for Hazardous Wildlife Mitigation

##### Standard Operating Procedures

- ALWAYS KEEP THE GUN POINTED IN A SAFE DIRECTION.
- ALWAYS KEEP YOUR FINGER OFF THE TRIGGER (OUTSIDE THE TRIGGER GUARD) UNTIL READY TO SHOOT.
- ALWAYS KEEP THE ACTION OPEN AND FIREARM UNLOADED UNTIL READY TO USE.
- KNOW YOUR TARGET AND WHAT IS BEYOND. When on shooting range, be mindful also of adjacent areas and act accordingly.
- Be sure the gun is safe to operate.
- Know how to use the firearm safely.
- Use only the correct ammunition for your firearm.
- Store firearms in a manner that they are not accessible to unauthorized person(s).
  - This shotgun will be used on AOA (Airport Operating Area and airport properties to mitigate hazardous wildlife only.
  - This shotgun will be used as a last resort to remove hazardous birds/wildlife from AOA / airport properties.
  - This shotgun will not be used around any building.
  - This shotgun will be used in a discreet manner as to not alert the public.
  - This shotgun will be stored as follows:
    - Gun safe located in Safety/Wildlife Office (T-A door #1218) Wildlife Biologist has control of combination to safe.
    - Wildlife truck (truck # 184713 "903") Wildlife truck will be located at all time with Wildlife Biologist in control of keys to truck.
  - This shotgun will remain unloaded and the action open until ready to shoot.
  - This shotgun will be only used by trained and authorized personnel approved in writing by the Aviation Director, Deputy Aviation Director, and Airport Safety Manager.
  - Prior to this shotgun being used, Qualified Wildlife Biologist will call the Airport Integrated Control Center AICC and request the Duty Manager (DM) broadcast bird dispersal activities including location(s).
  - All necessary communication will be communicated to Air Traffic Control Tower related to movement area activities.
  - Airport Operation 203 & 213 will be notified of any hazardous wildlife on or around the AOA.
  - Qualified Wildlife Biologist will attend an approved NRA shotgun training every 2 years

Please refer any question (s) pertaining to this SOSP to SAT Qualified Wildlife Biologist; Marcus Machemehl Q.W.B. (O) 210-207-1663 or (C) 979-595-0306, Email [marcus.machemehl@sanantonio.gov](mailto:marcus.machemehl@sanantonio.gov)


Wildlife Biologist Weapon Badge



**SAN ANTONIO  
INTERNATIONAL AIRPORT**

**Wildlife Control Certified**

The bearer of this badge, Marcus Machemehl Q.W.B, is duly authorized by the Aviation Deputy Director of San Antonio International Airport Systems to carry and use weapons including firearms for the removal of wildlife hazards on the SAAS Airfields. The bearer has received training in the proper handling and usage of firearms and deterrents that include but are not limited to pistol and shotgun platforms. The bearer also assumes all liability and accountability for any actions taken during wildlife

\_\_\_\_\_ Wildlife Biologist 

\_\_\_\_\_ Airport Safety Manager

\_\_\_\_\_ Aviation Deputy Direct

\_\_\_\_\_ Date Issued

Shotgun used table log

Date	Person Using Firearm	Reason for Use	Was Firearm Discharged?	If So, How Many Rounds Fired?	Outcome