

ENVIRONMENTAL ASSESSMENT
WILDLIFE HAZARD MANAGEMENT AT [REDACTED] AIRPORT

Prepared by:

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ANIMAL AND PLANT HEALTH INSPECTION SERVICE
ANIMAL DAMAGE CONTROL

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1. Introduction

The U.S. Department of Agriculture (USDA) is directed by law to protect American agriculture and other resources from damage associated with wildlife. The primary authority for the Animal Damage Control (APHIS-ADC) program is the Animal Damage Control Act of March 2, 1931, as amended (46 Stat. 1468; 7 U.S.C. 426-426b and 426c) and the Rural Development, Agriculture, and Related Agencies Appropriations Act of 1988 (P.L. 100-202). In 1988, Congress strengthened the mandate of APHIS-ADC with the Rural Development, Agriculture, and Related Agencies Appropriations Act which authorizes the Secretary of Agriculture to enter into agreements to control nuisance mammals and birds. Under this legislation, APHIS-ADC provides assistance to military and civilian airfields in the management of wildlife hazards to aircraft.

Aircraft collisions with wildlife are known as “strikes”. In this analysis it is also used to account for birds being killed by the wake of air turbulence caused by a close encounter with an aircraft. The acronym BASH has been used for many years by the U.S. Air Force to refer to “bird-aircraft strike hazards”. A “bird-strike” is an incident where an aircraft collides with a bird. Mammals are also hazards to aircraft but no special terminology has developed to describe strikes or hazards associated with mammals. Collectively, hazards to aircraft caused by wildlife are known simply as wildlife hazards.

The APHIS-ADC program uses an Integrated Pest Management (IPM) approach in which a variety of methods may be used or recommended to prevent or reduce wildlife hazards to aircraft. IPM is described in Appendix J of APHIS-ADC Program Final Environmental Impact Statement (EIS) (USDA 1994). The objective of the APHIS-ADC operation at [REDACTED] Airport ([REDACTED]) is to reduce bird strikes through an appropriate combination of methods, thereby protecting human lives and property through an IPM program.

This document analyzes the impact of the APHIS-ADC operations at HNL on the environment as required under the National Environmental Policy Act.

2. Purpose and Need

2.1 Aviation Wildlife Conflicts - General

Wildlife strike hazards are a major concern for aviation in the United States. Aircraft collisions with wildlife, particularly birds, cost the airline industry and the military approximately \$250 million annually and threaten the lives of passengers and crews. The hazards associated with wildlife at airfields make wildlife damage management an integral part of airport safety and management.

The Federal Aviation Administration (FAA) reported that there are 2,200 bird and mammal strikes in the United States each year (Cleary et.al. 1996). About 97% of the reported strikes involved birds, 3% involved mammals and less than 1% involved reptiles. The types of aircraft most frequently involved in wildlife strikes were Boeing 737 (18%), McDonald Douglas MD-80/DC-9 (18%), and Boeing 727 (7%). Aircraft components

most frequently damaged by birds were engines (29%), wings (21%), radomes (15%), and windshields (9%) (Cleary et.al. 1996).

On September 22, 1995, an E-3 AWACS crashed at Elmendorf Air Force Base (AFB) in Anchorage, Alaska after it ran into a flock of Canada geese. The crash killed all 24 crew members and destroyed the \$189 million aircraft. Two separate bird-strike incidents occurred during November 1995 at the National Airport, Washington D.C. causing \$538,000 in damages.

2.2 [REDACTED] Airport

APHIS-ADC has documented 94 bird-strike incidents for [REDACTED] since January 1989. The incidents include those actually reported by pilots and the indirect evidence of a strike which is the recovery of a bird carcass on runways. The 74 pilot-reported strikes represent 79 percent of the total documented strikes at [REDACTED]. Pilot-reported strikes typically under represent the actual number of strikes. At [REDACTED] Airport and [REDACTED] Airport, where regular patrols are made to search for bird carcasses, pilot-reported strikes were found to represent only about one third of the actual number of strike incidents (Linnell et. al. 1996). The same low reporting rate has been found at [REDACTED] ([REDACTED]).

[REDACTED] is a joint-owned, joint-use, military and civilian airport located on about [REDACTED] acres of land, [REDACTED] miles [REDACTED] of the central business district of [REDACTED]. [REDACTED] are home of the [REDACTED], located within the airport environs. The [REDACTED]. All [REDACTED]. In 1995, there were [REDACTED] aircraft operations (takeoffs and landings) recorded at [REDACTED]. These included medium and heavy jet airliners and military aircraft, general aviation fixed wing and helicopter traffic. The primary land uses in the immediate vicinity of [REDACTED] include aviation related commercial/industrial activities, military activities and general business.

The APHIS-ADC bird hazard management operations at HNL began in 1987 at the request of the [REDACTED] ([REDACTED] T). The primary focus of the cooperative program was to reduce the presence of the introduced cattle egret (*Bulbulcus ibis*) at [REDACTED]. Cattle egrets are a strike threat to aircraft landing and departing from the [REDACTED] aerodrome. A large cattle egret rookery (nesting site) is located at [REDACTED], within close proximity to the aerodrome. Cattle egrets are attracted to open, grassy areas where they feed on insects, mice and other small prey.

Owls (*Tyto alba*) are also threats to aviation, showing up in 14 percent of the 94 bird-

strike records at [REDACTED]. Doves (*Geopelia striata* and *Streptopelia chinensis*) represent 11 percent of the bird-strikes and lesser Pacific golden plovers (*Pluvialis dominica*) contributed to 9 percent of the bird-strikes.

The most significant bird-strike incident at [REDACTED] occurred on April 22, 1991. A Philippine Airline B747 suffered a severe strike to its no. 2 engine shortly after take-off at mid-day. The flight was aborted and the aircraft returned to [REDACTED]. White feathers were found in the engine. The incident cost the airline an estimated \$87,975. The bird species was never determined.

Seven surveys of [REDACTED], which is within the airport boundary, and the nearby shoreline habitat of the reef runway ([REDACTED]) were conducted by [REDACTED] between April 1993 and April 1995. The purpose of the surveys was to monitor affects of soil remediation efforts at the airport on threatened and endangered species. The surveys reveal the presence of ducks, black-crowned night herons, the endangered black-necked stilt, and other waterbird and shorebird species that are not encountered in the APHIS-ADC monthly surveys. Ducks and herons are of sufficient size to warrant concern over their presence within the airport environs. A carcass of a black-necked stilt was found at the 7,500 ft. mark on [REDACTED] on August 13, 1993 from an apparent strike with a Japan Airlines B-747 on take-off. One black-crowned night heron carcass was found at [REDACTED] at the intersection of [REDACTED] and [REDACTED] on February 24, 1996. The population of herons is increasing within [REDACTED] ([REDACTED], pers. comm.) They have been observed roosting in the mangroves of [REDACTED].

3. Description of the Current Program

In general, APHIS-ADC conducts the wildlife hazard management program at [REDACTED] in an IPM approach using the most appropriate methods to reduce or eliminate hazards to aircraft. Once a month, a day-time survey is made along an established route that parallels most of the runways and taxiways. Birds are counted and attractants such as standing water are identified and brought to the attention of the respective airfield managers in a written report. Corrective measures are recommended to reduce or eliminate the attractants.

APHIS-ADC has controlled cattle egrets within the [REDACTED] aerodrome since 1986. As long as grass is present, cattle egrets will come to the airfield. The areas most frequently used by cattle egrets have been the approach to Runway [REDACTED] on [REDACTED] and the grassy strip between Runway [REDACTED] and Taxiway [REDACTED]. During the year 1996, APHIS-ADC personnel were requested to haze flocks of cattle egrets from [REDACTED] a total of 18 times. This state of control has been achieved after a number of years of vigilant monitoring by airfield personnel and rapid and effective response by APHIS-ADC to the presence of cattle egrets. When cattle egrets are observed on the airfield, [REDACTED], notifies APHIS-ADC. A response is made

within one hour to move the egrets off the airfield using shotgun fire. In nearly all cases the egrets immediately depart the airfield. If necessary, a control operation is planned for the next day. As the cattle egrets arrive in the morning they are shot with shotguns. This is usually sufficient to keep them away from the airfield for months at a time.

The feeding of feral cats by employees at the airport, seems to be a common occurrence both on [REDACTED]. APHIS-ADC has been requested to remove feral cats from the airfield and from surrounding airport property. Cats were reported in the strike record on two occasions. If there is feral cat activity on the airfield, usually a nighttime occurrence, cage trapping operations are conducted in the area of the sightings. All captured cats are turned over to the Hawaiian Humane Society. If a dog wanders out onto the airfield, it is driven off by airport personnel or captured with assistance from APHIS-ADC or the Hawaiian Humane Society.

When properly maintained, the grassy fields, canals and landscaped areas do not attract many birds. The grass is regularly mowed. Drainage canals on the airfield are routinely cleared of mangrove and kiawe seedlings that could create bird habitat.

While the nocturnally active common barn owl and black-crowned night heron have been reported in the strike record, no night-time surveys or control operations have been made at [REDACTED]. Technical assistance recommendations are provided to the airfield managers whenever attractants for these species are identified on the airfield.

4. Alternatives

The following alternatives (options) that could be implemented by APHIS-ADC at [REDACTED] are discussed below. The wildlife hazard management methods that would be allowed under each alternative include lethal and nonlethal methods such as hazing, shooting, live trapping, habitat and structure management, insect and rodent control, and surveying and monitoring.

4.1 Current Program (No Action Alternative)

The current program at [REDACTED] has been in effect since 1987. The analysis of a “No Action” alternative is a procedural requirement of NEPA. For the purposes of this analysis the current program is the “No Action” alternative. It includes current bird control measures, and technical assistance monitoring and recommendations that are made for habitat modifications, including reducing or eliminating areas that regularly draw standing water that may attract Hawaiian stilts to the area. The current program is being conducted to safeguard immediate threats to human safety, and to assist [REDACTED] in complying with FAA regulations.

4.2 No APHIS-ADC Control

Alternative B would allow APHIS-ADC to provide only technical assistance to the airport. Under this alternative, APHIS-ADC would make recommendations to [REDACTED] personnel on effective lethal and nonlethal control methods. This would include recommendations regarding physical modifications to airport property including vegetation, buildings and structures. Recommendations would be intended to reduce attractants of birds. Lethal control methods such as shooting would be demonstrated to airport personnel.

Technical assistance provided by APHIS-ADC would result in the airport conducting the wildlife control activities directly or through a contracting agent.

4.3 Modified Program

Under this alternative, the current program would be expanded to include quarterly night-time monitoring to identify bird strikes caused by nocturnally active species such as the common barn owl and black-crowned night heron. Bird strike hazards will be reduced or eliminated through the application of the most appropriate combination of methods in an IPM approach.

Table. 1. Comparison of the methods for each alternative

Management Method	Alt. A Current Program	Alt. B No ADC Control Technical Assistance Only ¹	Alt. C Modified Program
Hazing	yes	no	yes
Shooting (lethal)	yes	no	yes
Live Trapping	yes	no	yes
Survey and Monitor	yes	yes	yes
Habitat/Structure Management	yes	yes	yes

¹Technical assistance from APHIS-ADC would allow [REDACTED] or its contracting agents to implement any of the management methods listed in the table.

5.0 Environmental Consequences

The APHIS-ADC program evaluated the environmental consequences of the management alternatives in the programmatic EIS. In the development of this environmental assessment (EA), issues concerning biological, economic, sociocultural, and physical impacts were identified for evaluation. Each alternative is examined against the issues identified in the environmental assessment process.

5.10 Current Program

5.11 Impacts on Threatened and Endangered Species

The Hawaiian stilt use [REDACTED] primarily as foraging habitat. Hawaiian stilts are encountered very infrequently and the rare event of hazing the bird from an active runway is not likely to adversely affect the population. The current program will have no significant impacts on threatened and endangered species. The FWS and DLNR had no objections to the proposed action of continuing to haze other species of birds by using lethal control techniques and providing technical assistance on any habitat modifications that may reduce bird attractions to the airfield (see Appendix 2-4). These actions help to reduce bird strike hazards to aircraft within the project area.

5.12 Impacts on Target Species

The impact of the program on target species during a typical one-year period (1996) is the lethal removal of 106 cattle egrets. This number is not significant on the overall population of this introduced species because of the high reproductive and recruitment rates. In this same period no dogs were taken, but 114 feral cats were captured and delivered to the Hawaiian Humane Society. The cats were caught primarily outside the air operations area. The control of feral cats is not a considered significant impact on the environment.

5.13 Impacts on Animal Welfare

Animal welfare will be described in terms of humaneness for this EA. The issue of humaneness, as it relates to the killing or capturing of wildlife is an important but very complex concept that can be interpreted in a variety of ways. Humaneness is a person's perception of harm or pain inflicted on an animal, and people may perceive the humaneness of an action differently. Some individuals and groups are opposed to some of the management actions of APHIS-ADC, especially lethal methods. However, because serious safety hazards can occur from wildlife at the airport, it is concluded that the most effective and expeditious methods must be used to handle wildlife conflicts. APHIS- ADC personnel are experienced and professional in their use of management methods so that

they are as humane as possible. The cattle egrets are shot which is considered an effective and humane form of field euthanasia technique. Feral cats and dogs are delivered to the Humane Society for adoption or euthanasia.

5.14 Impacts on Migratory Birds

The use of the term “migratory” is to describe the legal status of birds. Many migratory species that occur at HNL are introduced nonindigenous species that never migrate. Introduced migratory birds in the area include the cattle egret, house finch, and northern cardinal. Indigenous birds with migratory status that are truly migratory include the Pacific golden-plover and ruddy turnstone that are in Hawaii for the winter months but return to the northern temperate zone in the spring. The FWS issues a permit for APHIS-ADC to take migratory birds that create hazards to aircraft. However, except for the introduced cattle egret, APHIS-ADC does not normally take migratory birds. Shooting is the only lethal method of take, and shooting is highly selective. Cattle egrets are the only migratory species that normally present hazards to aircraft. No lethal control would be conducted unless it is the most effective method for reducing the hazard. Therefore, there are no significant impacts on migratory birds.

5.15 Effectiveness of the Alternative

The current program satisfies the immediate wildlife management and control necessary to protect human safety, and reduce economic losses from bird species active during day time periods. It does include monitoring and control of birds that may be encountered at night, such as the black-crowned night heron and common barn owl.

5.16 Impacts to Historic Sites

The wildlife hazard management activities at HNL do not involve any land alterations, consequently there are no impacts on significant historic sites. The State Historic Preservation Division concurred with this determination and have concluded that the project will have “no effect” on historic sites (State Historic Preservation Division 1997).

5.16 Cost of the Program

HNL and Hickam AFB provide funding for the APHIS-ADC program at the airport. APHIS-ADC policy (APHIS-ADC Directive 2.305) on wildlife hazards to aviation states that such activities will be fully funded by cooperating agencies. If APHIS-ADC were not involved, the cost to support wildlife management activities at HNL would still continue at or above the same level.

5.2 No APHIS-ADC Control - Technical Assistance Only

Alternative B would allow APHIS-ADC to provide technical assistance to the airport. Some examples of this would be providing recommendations to airport operations management on habitat modifications to deter wildlife; or instruction in shooting, trapping, or hazing birds. HNL personnel or others contracted by the airport to conduct wildlife hazard management would implement recommendations proposed by APHIS- ADC. Although many techniques are applicable, the airport would determine which recommendations to carry out or contract.

Since APHIS-ADC does not have regulatory or managerial jurisdiction, the ultimate results of technical assistance cannot be environmentally assessed since APHIS-ADC has no authority beyond making recommendations. However, it could be assumed that negative impacts on migratory birds would be greater without the accountability, national and regional oversight, professional expertise, and experience that APHIS-ADC would provide. Immediate and cumulative impacts could not be accurately determined under this alternative. APHIS-ADC would most likely be involved in providing training and recommendations to non-wildlife professionals.

In many situations, technical assistance is effective in reducing wildlife hazards at airports. For example, vegetation management can be effective, however, it is most effective when combined with the full array of management methods. This alternative could make it more difficult for the HNL to provide air travelers and flight personnel with an adequate level of protection. Wildlife damage prevention efforts at the airport would not cease under this alternative, but APHIS-ADC program expertise and techniques would not be readily available to respond to urgent wildlife damage situations arising at the airport. The American public expects a high level of safety protection. Under this alternative, the increased possibilities of aircraft strikes, along with possible threats to human safety and loss of human life, represent serious threats and would not meet the expectations of the American public. Therefore, this is not the preferred alternative.

5.3 Modified Program

The modified program would include all IPM aspects of the current program, including the use of nonlethal measures, and would expand bird surveys to include quarterly monitoring of nocturnal species with the most appropriate combination of methods to control the common barn owl and black-crowned night herons when necessary to prevent bird strike collisions.

If the IPM approach warrants the need for lethal control of the introduced common barn owl or the indigenous black crowned night heron to reduce hazards, it is expected that the occasional take would not have a significant impact on the population of either species. Lethal removal, as a method of controlling a bird strike hazard, will only used after a site-specific determination is made that non-lethal methods would be ineffective.

The expansion of the current program is based on the need to identify and address the bird hazards at night, but there is no additional cost to implement the modified program since it is not expected to involve more than three nights of operations per quarter. In the unlikely event that these activities take much longer than three nights per quarter, because of the severity of bird hazards, the cost to HDOT may increase if HDOT requests a greater APHIS-ADC involvement. Increased bird hazards will not automatically trigger an increase in cost.

In the recent consultation with FWS and DLNR, both agencies supported the proposed effort to monitor nocturnal species and use the IPM approach to address bird hazards at night. DLNR posed questions concerning the possibility of mistaking protected species for target species. The utilization of APHIS-ADC program expertise ensures that target species will not be mistaken for non-target species, even during nocturnal periods. APHIS-ADC at Lihue Airport, has for many years controlled common barn owls in the presence of pueo, and there have been no mishaps. Black-crowned night herons are very distinguishable from black-necked stilts and there is very little chance of mistaking identity since program personnel are trained to recognize bird species. This assurance may not be available with an alternative that does not use the APHIS-ADC direct control option.

7. Cumulative Impacts

Cumulative impacts are impacts on the environment that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions. The scope of this proposal and the number of individual mammals and birds that might be removed in an integrated wildlife management program from a long term perspective would not result in significant cumulative impacts. Because of ongoing contact with state and federal wildlife management agencies, national and local knowledge of wildlife population trends, and mitigation measures used, APHIS-ADC does not have a significant cumulative impact on target species, nontarget species, or sensitive and protected species. This finding is also made on a national level in the APHIS-ADC programmatic EIS.

8. Conclusions

Limitations on the types of methods allowed decreases the effectiveness of actions taken to reduce safety hazards. Because each wildlife damage and hazard situation is unique, many favor the availability of a combination of options to be applied, depending on the factors involved with each individual situation. Such consideration of a full array of available techniques to respond to any one particular case is fundamental to the concept of integrated wildlife damage management.

Because birds and mammals can create serious safety hazards and cause damage to aircraft, this integrated approach is necessary to provide expedient, professional, and biologically sound assistance to airport operations. Alternative A provides this with no significant impacts, however,

the need to determine the presence of bird hazards at night and conduct occasional control operations on nocturnal species requires an expansion of the current program to night-time hours. Alternative C is a modification of the current program that may add, perhaps, three nights of operational activities every quarter and improves bird hazard monitoring and control. There is no additional cost to the cooperator at this increased level of activity. There are no significant impacts on the human environment with the implementation of Alternative C. A Finding of No Significant Impact will be issued.

This environmental assessment will be reviewed periodically to assure conformance with current environmental regulations and airport requests and airport wildlife status. Changes in the project scope or changes in environmental regulations may trigger the requirement for a new or revised environmental assessment.

9. Consultations

[REDACTED]	[REDACTED], Honolulu, Hawaii.
[REDACTED]	[REDACTED], Honolulu, Hawaii.
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J. Gary Oldenburg	Wildlife Biologist, Reviewer, State Director, USDA-APHIS-ADC, Olympia, Washington.
David Smith	Wildlife Biologist, Oahu District, Division of Forestry and Wildlife, Department of Land and Natural Resources, State of Hawaii.
Margo Stahl	Section 7 Coordinator, U.S. Fish and Wildlife Service, Honolulu, Hawaii.
Shannon Starratt	Environmental Coordinator, Editor, Environmental Compliance Specialist, USDA-APHIS-ADC, Portland, OR.
Michael Wilson	State Historic Preservation Officer, State Historic Preservation Division, Department of Land and Natural Resources, State of Hawaii.

10. References

[REDACTED]

[REDACTED]

[REDACTED]

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11. Appendix 1

BIRDS FOUND ON THE AIRFIELD AT [REDACTED]

SEED-EATING BIRDS

Zebra dove	(<i>Geopelia striata</i>)
Spotted dove	(<i>Streptopelia chinensis</i>)
Chestnut mannikin	(<i>Lonchura malacca</i>)
Nutmeg mannikin	(<i>Lonchura punctulata</i>)
House finch	(<i>Carpodacus mexicanus</i>)

WATERBIRDS

### Pacific golden-plover	(<i>Pluvialis fulva</i>)
### Ruddy turnstone	(<i>Arenaria interpres</i>)
### Sanderling	(<i>Calidris alba</i>)
### Wandering tattler	(<i>Heteroscelus incanus</i>)
Mallard/hybrid	(<i>Anas platyrhynchos</i>)
### Northern pintail	(<i>Anas acuta</i>)
+* Black-necked stilt	(<i>Himantopus mexicanus knudseni</i>)
# Cattle egret	(<i>Bubulcus ibis</i>)
### Black-crowned night heron	(<i>Nycticorax nycticorax</i>)

UPLAND BIRDS

Common barn owl	(<i>Tyto alba</i>)
Eurasian skylark	(<i>Alauda arvensis</i>)
# Northern mockingbird	(<i>Mimus polyglottus</i>)

URBAN BIRDS

Common myna	(<i>Acridotheres tristis</i>)
House sparrow	(<i>Passer domesticus</i>)
Java sparrow	(<i>Padda oryzivora</i>)
Red-Crested cardinal	(<i>Paroaria coronata</i>)
Northern cardinal	(<i>Cardinalis cardinalis</i>)
Red-vented bulbul	(<i>Pycnonotus cafer</i>)

MARINE BIRDS

### Brown booby	(<i>Sula leucogaster</i>)
### Great frigatebird ('Iwa)	(<i>Fregata minor palmerstoni</i>)

#	migratory (legal status)
+	endemic

- ++ **indigenous**
- * **endangered (legal status)**
- ** **threatened (legal status)**