ACRP Problem No. 12-04-14

Minimizing Bird Hazards At Southeastern Airports Through Airside Vegetation Management

ACRP Staff Comments: No comments offered.

TRB Aviation Group Committees Comments: AIRCRAFT/AIRPORT COMPATIBILITY CMTE - Great idea, and helpful guidance for airports in the Southeast region. If the scope were expanded to provide a comprehensive review of the benefits of different types of turf grasses as bird repellants and soil stabilizers, it would be very useful to airports. It would supplement the work in ACRP Report 32: Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports. The math on the costs needs to be reviewed for accuracy.
ENVIRONMENTAL IMPACTS OF AVIATION CMTE - Support. The research provided in this problem statement may be valuable for airport managers and maintenance personnel. By providing scientific evidence of attractiveness of wildlife species to vegetation on the airport, wildlife biologists can work with airports to potentially modify current vegetation management strategies or replace species to reduce the wildlife hazard attractants at their airport. Once this research is completed for the southeastern airports, the methodology may be applicable to other regions.

Review Panel Comments: Recommended — This should not be limited to Southeastern airports; it should look at other regions as there may be value to this, especially if it focuses on BMPs. Problem Statement 12-10-15 can be incorporated into this problem statement, with 12-04-14 being the primary one.

AOC Disposition: No funds allocated. The FAA is already investing considerable effort into this research area.
I. MINIMIZING BIRD HAZARDS AT SOUTHEASTERN AIRPORTS THROUGH AIRSIDE VEGETATION MANAGEMENT

II. RESEARCH PROBLEM STATEMENT
ACRP Report 32 documents problems at airports associated with wildlife, including birds, and provides general guidance for measures to minimize the risks associated with wild animals. The report outlines the importance of managing airside vegetation to reduce the risks of birds at an airport. The report does not provide in-depth guidance that is needed by airport administrators to secure support from experts that are needed to develop site specific plans. A guidebook for airport operators and planners that provides planting and management options related to site conditions and potential wildlife in the area is needed and is not available.

This proposal suggests that a site specific plan for minimizing bird hazards at a major airport with a well documented problem be developed for the facility and that the planning process be incorporated into a Guidebook for use as a template for developing plans for other facilities with similar problems. The procedures of the proposed Guidebook will strengthen the information and procedures found in TRB’s Cooperative Research Report 32: Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports (ACRP Report 32).

Minimizing bird populations at an airport is rather complex. Dove that visit and feed at the Birmingham-Shuttlesworth International Airport nest in nearby neighborhoods. The population that visits appeared to increase in recent years as runways were expanded. Associated with the runway expansions were changes in the plant community resulting in more seed availability that attracted dove from the nearby neighborhoods. Such changes are not isolated to dove populations – increases in Canadian geese numbers have also been documented at other airports as habitats shift as a result of construction and revegetation of the disturbed areas. Sometimes the individuals responsible for vegetation establishment know too little about plant selection to deter wildlife, and plant wildlife attracting species in their efforts to establish groundcover. This is exactly what occurred at the Birmingham-Shuttlesworth Airport, as annual ryegrass (*Lolium multiforum*) was planted for erosion control, with the unfortunate effect of also serving as a preferred dove food. While the selection of vegetation to minimize the availability of attractive animal habitat sounds relatively simple, the challenge includes stabilizing various land features including hill slopes and drainageways that require different plants with some options that may provide habitat for birds and other animals.

III. OBJECTIVE
Research is needed that identifies plants and management techniques that provide long-term soil stabilization for hill slopes and drainageways and, also, that provide the least attractive habitat to dove and other birds and animals that may inhabit the airport runway vegetated areas and be a potential safety hazard to aircraft.

Research products will include an up-to-date vegetation management plan for the grounds associated with the Birmingham-Shuttlesworth International Airport runways and a guidebook reflecting the steps to develop similar vegetation management plans at other airports in the southeast. The vegetation management plan for the Birmingham-Shuttlesworth International Airport and the related guidebook can serve as a template and guidance for use by other airport managers in developing their plans.
IV. RESEARCH PROPOSED
Research is needed to identify adapted plants that will stabilize the hill slopes and drainageways associated with the runways and provide minimum habitat values to dove and other animals that that are a potential problem to aircraft and that are using the grounds for feeding or nesting.

Initial activities: (1) inventory existing vegetative species and determine their status in providing soil stabilization and protection of water quality; (2) determine the habitat values of existing plants for birds that inhabit the runway grounds; (3) examine the potential to minimize seed production from existing plant communities with the use of suppressants; (4) determine changes in animal populations on the grounds if vegetation species and management is changed; (5) determination of soil fertility of areas dedicated as vegetated grounds.

Following the initial activities, a vegetation management plan will be developed with and for the Airport Authority. The plan should, if implemented, minimize the potential for the vegetative grounds associated with the runways to be favorable habitat for dove or other wildlife that may be identified as potential problems to aircraft.

Finally, a technical guidance publication will be prepared that presents appropriate technical information developed during this project and the planning procedures that can be used by other airport managers in the southeast as a guide in developing similar airside vegetation management plans.

The development of the detailed research plan and its implementation should be accomplished by a team consisting of individuals having expertise in plant science, weed science, soil fertility, erosion and sediment control and wildlife management. The team must work closely with the Airport Management Authority to ensure that vegetation management recommendations are viable options when costs, schedules of implementation, and long-term management are considered.

V. ESTIMATE OF THE PROBLEM FUNDING AND RESEARCH PERIOD
Recommended Funding to cover 2 years: Professional staff years to cover a 2-year period (actually 30 months to complete evaluations) – one-fourth staff year for a soil fertility specialist/project leader, one-eighth staff year for a plant scientist, one-fourth staff year for a weed scientist, one-half staff year for an erosion sediment control specialist, one-eighthth staff year for a wildlife biologist = 1.0 professional staff time x $150,000 = $150,000; Non-professional staff time for sampling, plot studies and evaluations = $75,000; Indirect costs – 46% of total direct costs = $103,500; Total cost = $328,500

Research Period: Approximately 30 months are needed for field work plus 3 months for review and revision of a final draft report or approximately 33 months.

VI. URGENCY AND PAYOFF POTENTIAL
This proposal relates to the safety and welfare of airline passengers and worker and residents in the vicinity of airports throughout the southeast and to environmental concerns associated with stormwater. Each airport, whether large or small, needs an airside vegetation management plan that minimizes the potential for aircraft and animals to interact and provides adequate long-term erosion and sediment control. The technology and other information that will come from this research can be implemented immediately by airport managers that have airport expansions underway and will be establishing temporary and permanent vegetation for soil stabilization. The primary barrier to the adoption of the research results will be the cost of changing species on grounds that currently have plants that encourage dove or other wildlife to use the airfield grounds. However, the concept of chemical suppression of seed production will be documented and proposed as a sound alternative to changing species. Chemical suppression also makes biological sense, as the plant species likely to be in place at many southern and southeastern airfields are the species that will predominate in mixed turfed stands.
VII. RELATED RESEARCH
Research with air strikes by birds has been conducted, and examples of that research are shown here. In general, work that examines bird strikes typically concludes that control measures should include vegetation management. For example, work in China concluded that the height of the native grass should be reduced in height, while a UK study simply mentioned that ‘habitat change’ should be instigated. Although habitat modifications are mentioned, there is scant research which actually studied changes in the vegetation, either by chemical suppression of seedheads or correct species selection.

Related reports and papers:

VIII. PERSON(S) DEVELOPING THE PROBLEM STATEMENT
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IX. PROCESS USED TO DEVELOP PROBLEM STATEMENT
This problem statement was developed after several meetings with the USDA APHIS staff stationed at the Birmingham airport, and after meetings with the management staff at the airport. The issue with dove-created air strikes was unknown to the researchers on this proposal (we are turfgrass and erosion control professionals, and not wildlife scientists), and when we visited the airport we discovered that vegetation management was a key to bird roosting and feeding. Since those visits at the airport, researchers on this proposal have had phone calls from staff at Atlanta Hartsfield and the Auburn University airport, also about vegetation selection for groundcover establishment. Clearly, there is a need for a science-based guidebook on vegetation selection and management for long-term environmental success, while deterring wildlife that could pose a risk to aircraft. It is anticipated that continued collaboration with USDA Wildlife personnel and Auburn University wildlife researchers will also be a part of this project.

X. DATE AND SUBMITTED BY
This document submitted on March 3, 2011 by:
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