



Department of Defense
Partners in Flight

Bird Aircraft Strike Hazard (BASH)

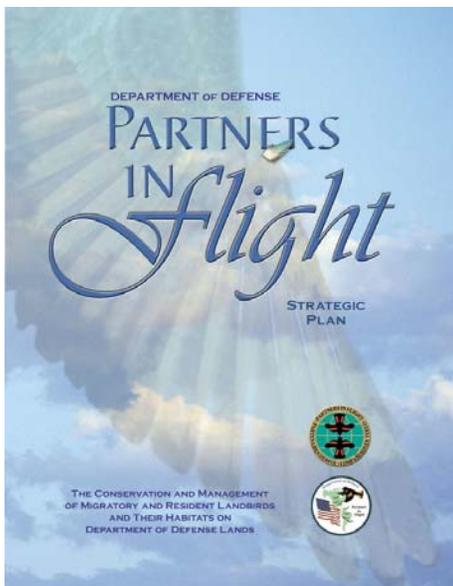
Linking Aviation Safety and Conservation

Fact Sheet #4
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Department of Defense Partners in Flight Program

Mission

To conserve migratory and resident birds and their habitats on Department of Defense lands.



The Strategic Plan can be found at www.dodpif.org, or through the contact information on the next page.

The Cost of Sharing Air Space

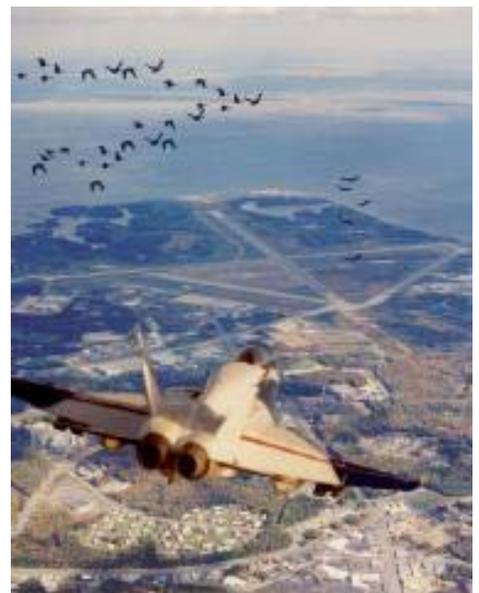
Each year, civilian and military aircraft strike thousands of birds. The Federal Aviation Administration annually reports at least 2,300 wildlife related strikes involving civilian aircraft; the Air Force and Navy report at least an additional 3,000. Strikes involving military aircraft cause in excess of \$75 million in damage every year. Yet only an estimated 20 percent of actual bird strikes are reported. Because pilots and crews can use the same airspace as large concentrations of birds, the prevention of bird strikes is of serious concern to the military.

In an effort to provide the safest flying conditions possible, DoD continually implements and improves aviation safety programs. One of these programs is the Bird Aircraft Strike Hazard (BASH) prevention program. Throughout the military, personnel from air operations, aviation safety, and natural resources work together to reduce the risk of bird and wildlife strikes through the Operational Risk Management (ORM) process.

Tools for BASH Prevention

Radar is one of the most effective tools for detecting bird movements that may present a bird strike hazard. Several radars are used at different scales. The Doppler capability of weather surveillance radar (WSR-88D) can show the direction and speed of migrating bird flocks up to 60 nautical miles from an airfield, during daytime or at night. Use of the WSR-88D has been successful in providing data to model bird activity in relation to Military Training Routes and Air Stations, as well as to locate migration stopover sites and determine trends in bird populations. In the local airfield environment, mobile marine radars can track realtime movements of individual birds or flocks adjacent to and in a 6-8 mile radius of runways. The Air Force and Navy are

developing and testing several “bird radars” to determine which models and configurations can best isolate specific locations of birds where aircraft operations can be modified and environmental management strategies applied to reduce the attractiveness to birds.



The BASH program uses radar and computer models to help prevent birds and planes from sharing the same air space at the same time.

Composite: Tamika den Hartog

BAM—A Predictive Model

Computer models use radar data, historic weather conditions, Christmas Bird Count data, bird strike reports, and other historical data to help predict spatial and temporal patterns of bird movements. One model, a predictive Bird Avoidance Model (BAM), was developed using geographic information system (GIS) technology as a key tool for analysis and correlation of bird habitat, migration, and breeding characteristics, combined with key environmental and geospatial data.

Developing a BASH Plan

Integral to a successful BASH program is a good working relationship with airport managers and the consistent reporting and identification of species involved in strike events. By identifying the wildlife species involved and the location of the strike, researchers and airport managers can better understand why the species is attracted to a particular area of the airport or training route. To identify birds involved in strike events, remains of the birds must be collected and turned in for identification. Quite often, the entire specimen involved in a strike event is recovered and the species can be identified locally by military natural resources managers or by local birding experts. If the remains only contain feather fragments, the fragments are sent to the Smithsonian Institution where microscopic feather analysis is performed. Using a feather bank developed for the military and civilian aviation communities, the Smithsonian Institution can narrow down a bird involved in a birdstrike event to species. The Smithsonian is developing a bird-DNA library to aid in the more difficult bird remains identifications. By knowing the species of bird involved in a birdstrike event, managers can investigate the habitat and food habits of the species and begin the process of reducing, modifying or eliminating the attractants.

In an effort to manage habitats and wildlife species, all military installations are required to develop an Integrated Natural Resources Management Plan (INRMP). The BASH Plan is an integral part of the INRMP. It is a fine line for the natural resource manager when managing



Land uses surrounding an airfield can attract birds and other wildlife species, potentially increasing the risk for a damaging strike. Photo: US Navy

DoD PIF BASH Working Group

<http://www.dodpif.org/bash.htm>

Clemson University Radar Ornithology Lab

<http://www.clemson.edu/birdrad/>

Naval Safety Center

<http://www.safetycenter.navy.mil/aviation/operations/bash/>

Air Force BASH Team

<http://afsafety.af.mil/AFSC/Bash/home.html>

Avian Hazard Advisory System

<http://www.ahas.com/>



the BASH program and the many other natural resource programs on a military installation. The bottom line, though, is that the safety of the military aviator comes first. Management options may include the enhancement of wetland or grassland areas away from the airport area to actually attract wildlife away from the airfield. Habitats immediately adjacent to the runways must be managed in a way to be less attractive to wildlife.

Coordinating Resources

Developing an integrated BASH program at a military airfield requires cooperation and communication. Even with deterrent strategies and environmental modifications, certain species of birds continue to use the airfield environment. Through active communication between all parties involved in day-to-day airfield activities, individuals or concentrations of birds can be detected and avoided. Some birds cannot be deterred from using the airfield, but bird strikes can be avoided through constant observation and advisories provided to pilots. Rather than trying to remove all birds, which is virtually impossible, the airport environment should be managed to allow for safe operations in the presence of a small number of individuals.

Identifying problem species allows financial and human resources to be more effectively targeted. Research is being conducted to identify problem species, as well as species that do *not* pose a significant threat. For example, studies have shown that young Red-tailed Hawks are more frequent strike victims than adult

hawks. By defending their territories, adult hawks prevent young, inexperienced hawks from invading the airport's active airspace and significantly reduce hawk strikes.

Due to continued human population growth and urban development around the country, large, grassy areas on airports and adjacent lands are fast becoming islands of preferred bird habitat; however, reducing the risk of bird strikes and managing for bird species do not have to be mutually exclusive. An effective BASH prevention program is vital for safe air operations, and in some areas can facilitate priority conservation objectives.



An anti-perch device can help reduce the attractiveness of an airfield to raptors.

Photo: Matt Klope

For more information:

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