

# ON THE RADAR

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## **GREAT PROGRESS IN BIRD RADAR SINCE DITCHING OF 1549**

### **Introduction & Background**

Great strides towards wide-scale integration of bird radars to help mitigate bird strikes are being made as the aviation community marks the US Airways Flight 1549 ditching in the Hudson River one year ago.

Under the guidance of the late Bruce MacKinnon, a wildlife control specialist and visionary in bird hazard mitigation, Transport Canada was perhaps the first aviation authority to formally bring to the attention of airports advances in avian radar made by 2005, with the issuance of TP 8240 Airport Wildlife Management Bulletin No.36.<sup>1</sup> An overview of those advances was presented at the subsequent Bird Strike 2007 Conference in Kingston, Ontario which Bruce chaired.<sup>2</sup>

Dr. Richard Dolbeer, Science Advisor for USDA Wildlife Services and former chair of the Bird Strike Committee USA, testified at the NTSB 1549 June 2009 Public Hearings<sup>3</sup> that Canada geese have seen an almost four-fold increase in their resident population in less than 20 years; and noted the cost of bird strikes has been estimated at 1.2 billion dollars annually, with 229 lost lives since 1988. He reported that the vast majority of strikes occur near or on the airport, with 69% of reported strikes that caused damage occurring below 500' above the ground. Only 5% of reported strikes have occurred in the vicinity of the 2800' altitude of the 1549 bird strikes. He noted that the chance of a bird strike at night above 500' is much higher than in the day. Dr. Dolbeer indicated that wildlife hazard mitigation efforts should be focussed on airports because this is where most hull losses have occurred and are likely to occur.

Recognizing the increasing bird hazards around airports and recent advances in commercially available avian radar systems which are well suited for situational awareness on and around airports, both the U.S. Federal Aviation Administration (FAA) and the Department of Defense (DoD) launched the largest avian radar assessment programs of their kind in mid-2006 and early 2007, respectively.

### **Avian Radar Assessment Efforts**

#### *Assessment Approach*

Notwithstanding the differences in civil and military airport operations, the FAA and DoD have collaborated extensively to leverage resources and expertise; and to accelerate outcomes. The assessments are science-based, and involve deploying avian radars at multiple airports with varying geography and species. They include both short-term tests designed to measure particular system characteristics and performance criteria, and long-term radar sampling to capture seasonal cycles of bird movements and behaviours. In addition to radar system performance validation, operational assessments involving intended users are carried out to develop use cases and best practices for integrating these new tools into airport environments.

### **FAA Avian Radar Assessment Program**

The FAA Avian Radar Assessment Program is carried out by the Center of Excellence for Airport Technology (CEAT)<sup>4</sup> at the University of Illinois and is headed by Dr. Edwin Herricks.

Accipiter® radars have been running at Seattle-Tacoma International Airport (SEA) and Naval Air Station Whidbey Island since 2007, with subsequent deployments including New York's JFK and Chicago O'Hare (ORD) in 2009.

Participants include USDA and air operations personnel from the airports, along with BASH personnel from NAS Whidbey Island, and CEAT personnel. Technical support and training is provided by Accipiter Radar staff.

Validation at SEA is largely complete and successful. SEA radars are commissioned for operations. Reports have been drafted by CEAT or are in preparation. ORD/JFK will go operational in early 2010.

## **DoD Integration & Validation of Avian Radars Program**

The DoD Environmental Security Technology Certification Program (ESTCP) funded SPAWAR Systems Center (SSC) Pacific, headed by Ms. Marissa Brand, to lead the Integration and Validation of Avian Radar Project (IVAR)<sup>5</sup>.

eBirdRad avian radars (with Accipiter® avian radar processing inside) were deployed at Elmendorf Air Force Base, NAS Whidbey Island, NAS Patuxent River, Marine Corps Air Station Cherry Point, and Edisto Island.

Participants include SSC Pacific, Computer Sciences Corporation, Accipiter Radar, USDA, Navy, Marine Corps and Air Force personnel, CEAT, and a large number of trained bird watchers.

Validation work is complete and successful. The Final Report should be available from DoD in a few months.

## **Accomplishments**

Extensive independent validation efforts to measure the performance of Accipiter® avian radars and confirm the validity of their target information are substantially complete, paving the way for an emphasis on operations in remaining integration efforts. Initial guidance from the FAA to airports on how to acquire and integrate these tools into existing operations is expected in the not too distant future, following completion of operations work and reports.

## **Other Stakeholder Efforts**

With the publicity that came with 1549, and the political awareness and urgency, Aviation Week organized a Bird Strike Prevention Forum<sup>6</sup> in Chicago in May 2009 to bring

together stakeholders. This was followed by the NSTB 1549 Public Hearings<sup>3</sup> in Washington, D.C. in June 2009 and the 2009 Bird Strike North American Conference<sup>7</sup> in September 2009 in Victoria, B.C. These public events brought government, the aviation industry, and other professionals together to share know-how, experience, and ideas; and new organizations<sup>8</sup> dedicated to advancements in wildlife mitigation will ensure collaboration continues to expand.

US Airways 1549 has pointed the spotlight on a complementary bird strike problem: namely, off-airport, higher-altitude bird strikes, where air traffic controllers and pilots must play a greater part. Avian radar publications<sup>9,10</sup> directed to this audience have already begun, and a recent special issue of the Human Wildlife Conflicts Journal<sup>11</sup> focused on bird strikes is timely. **AND SO PROGRESS CONTINUES.....**

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