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Accident investigators have started their probe into the fatal plane crash in Nepal, which is believed to have been caused by a bird strike shortly after take-off.

Accident investigators have started their probe into the fatal plane crash in Nepal, which is believed to have been caused by a bird strike shortly after take-off.

All 19 passengers and crew onboard Sita Air's twin-propeller Dornier aircraft died in the accident, which occurred on the outskirts of Kathmandu on September 28.

One of the first to comment on today's incident, Philippa Oldham, head of transport at the Institution of Mechanical Engineers in the UK, said: "Although it is too early to say definitively what caused this air crash, suggestions have been made that a bird strike caused a catastrophic aircraft failure.



largest/second largest airports by jet engines. (and) being reported in this case.

“Severe accidents of this type occur when a bird damages a fan blade in the engine that causes adjacent blades to displace, creating a domino effect where all the blades end up being damaged.

“Aerospace engineers recognise this as a safety issue and are developing computer simulations to model the effects and help mitigate against the impact of bird strike.”

According to the US’s Federal Aviation Administration, bird strikes cost the nation’s aviation industry \$600 million each year, while the UK’s Central Science Laboratory estimates the global cost to exceed \$1.2 billion.

Arguably the best-known recent example of a bird strike bringing down an aircraft happened on January 15, 2009 when US Airways flight 1549 ended up in the Hudson River just four minutes after taking off from New York City LaGuardia Airport after colliding with a flock of Canada Geese.

Thankfully, largely due to the heroics of Captain Sully’ Sullenberger, all passengers and crew survived, and were mighty relieved to be able to tell the world about the experience.

In this case alone, a bird that can be bought for less than \$35 had brought down a \$70 million jetliner.

During the past 12 years, American pilots have reported hitting 60,000 birds, and bird strikes have more than doubled at 13 major US airports, based on FAA data released in 2009.

Most bird strikes happen in the airport environment. Four in ten occur while aircraft are taking off or landing and 90% take place within 500 feet (152 metres) of the ground.

About 100 collisions on average happen each year in North America at altitudes higher than 5,000 feet.

While RAdio Detection and Ranging – commonly known as radar – has been around since before World War II, using radar to detect birds began in the late 1960s. Since then, there have been many technological advances, making avian radar systems relatively affordable (\$200,000 to \$2 million, depending on hardware, software, features, for instance).

By comparison, a large bird ingested into the engine of a B747-400 will destroy \$15 million worth of metal and electronic components within a few seconds.

Avian radar

Avian radar systems have been installed and tested at four major civilian

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Since 2007, the FAA and US Department of Defense (DoD) have collaborated on assessing avian radar systems. The DoD has been particularly keen to examine the potential benefits of avian radar due to the high cost of bird-aircraft collisions.

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In September 1995, a \$180-million Air Force E-3 Sentry AWACS was destroyed and all 24 crew killed after Canada Geese flew across the flight path of the 165-ton aircraft shortly after takeoff.

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The birds were sucked into three of the four engines and did massive damage. The pilots were unable to maintain altitude and the E-3 descended into the ground, igniting 125,000 pounds of jet fuel in a huge fireball.

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The FAA and DoD needed to determine exactly how bird radar data could be used operationally and by whom. Historically, users have been mostly biologists hired by airports to conduct surveys to determine which bird species visit the airfield and when, their flight paths, where they feed, how long they stay, and other behaviours, including those at night.

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Government researchers wondered if avian radar targets should be displayed to controllers in tower cabs and other airport personnel. Would the targets become a distraction to controllers and result in information overload at busy times?

Should airline flight operations centres have access to the radar data? How much of the information should airport wildlife control officers be given? There have been many aspects of avian radar that the FAA and DoD have researched.

On the civilian side, the result of the multi-year assessment is an FAA Advisory Circular (AC), 'Airport Avian Radar Systems'. The 60-page draft document is on the FAA's website and stakeholders are invited to submit comments and suggestions.

The AC "is applicable to airport owners and operators, with the resultant programme information impacting air carrier station managers and general aviation operators." Its purpose is to provide "guidance on the use of avian radar systems to supplement an airport's wildlife hazard management program and reduce the potential wildlife threats to aircraft."

AC chapters include – Selection: Describes the factors that must be considered when selecting an avian radar system for a given set of airport conditions and requirements;

Procurement: Discusses the minimum performance standards for airport avian radar systems with the aim of facilitating acquisition;
Deployment: Discusses the process of installing a system in the location best suited to maximize avian radar system capabilities; and
Management: Outlines the effective use of avian radar data using risk management principles.

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Avian radar greatly increases users' ability to observe bird movements on and around the airport; systems can be calibrated to detect birds out to 20 kilometres (12 nautical miles) and up to 10,000 feet.

While bird location accuracy decreases with distance from the radar antenna, it has improved significantly during the past 15 years due to research and development work.

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How accurate is avian radar? Dr Tim Nohara, founding president and CEO of the Canadian firm Accipiter Radar Technologies, says: "A system with at least one dish antenna can detect and track birds in the vicinity of an airport to within one metre and 2.5 seconds of their actual position."

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Nohara explained that recent advances in avian radar systems include:

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- Better bird tracking using predictive programming
- Reduced system latency
- Continuous target data recording
- Centralised target data collection
- Real-time target data distribution to users via local networks and/or the Internet
- Remote and unattended operation
- Automated alerts
- Wide-area coverage
- Integration with other surveillance equipment (airfield cameras, acoustic detectors, for instance)

The number of radar transceivers used at an airport – one to three in most cases – depends on the desired coverage.

More than one antenna is sometimes necessary due to an object such as a building obstructing the transmission of electromagnetic energy from the radar antenna to an area that needs to be monitored.

A multi-transceiver system includes an antenna that rotates horizontally while a second antenna spins vertically thereby providing 360-degree coverage in 3-D.

The FAA states: "Avian radar provides an opportunity to extend observational capabilities to around-the-clock operation and the ability to expand spatial coverage in both distance and altitude. For example, avian radars can be used in a surveillance mode for providing coverage of approach and departure corridors.



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Bird size and movement data logged by an avian radar system provides information for trend assessments and identification of airfield areas that require better wildlife control.

Finally, archived data can be used to critique the effectiveness of wildlife management efforts with the aim of improving airport safety.

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As today's tragic incident shows, the threat of bird strikes is real and it's global, and with bird populations such as Canada Geese growing all the time, it is a danger that won't be going away.

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positively4thstreet • a year ago

I just saw this...I often see that phrase about Canada goose populations growing. There is really no excuse for much growing since urban areas can institute humane egg addling programs to maintain/stabilize their resident goose populations. I will also point out, the state of NY's goose population was actually about 20% less, according to numbers from the NY DEC and Atlantic Flyway Committee, in 2009 when Flight 1549 hit migrating geese than it was in 2003 when there was no serious goose strike. Maybe it's the increasing plane population more than the goose population and planes should be doing a lot more since they don't seem to be taking any responsibility here.

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I will also point out, since Flight 1549 hit migrating geese in 2009, the USDA WS has killed over 5,000 of NYC's geese between 2009 and 2013but the goose strikes in 2013 at JFK Airport were the highest they have been since 1995. Other than that the goose strikes have remained between 0-2 both before and after they have killed thousands of geese. This makes it difficult to put the onus on the goose population.

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