

Bird/aircraft risk reduced

Following is an edited version of an article prepared by Sean McCutcheon for Science Dimension, Vol. 9, No. 3, 1977, a publication of the National Research Council of Canada.

Humans began flying less than a century ago, and almost immediately began colliding with birds, whose primitive ancestors took to the air millions of years ago. Consider the fate of aviation pioneer Cal Rogers, the first man to fly across North America. In 1912, five months after his transcontinental trip, he established another first. A seagull hit his aircraft, jammed his controls and caused him to crash. He became the first person to die as the result of a bird strike.

As aircraft grew in numbers and became faster and larger, the danger posed by bird collisions increased. A bird swept into the intake of a jet can bend, crack or break off fan blades which in turn tear up other engine parts in a destructive chain reaction.

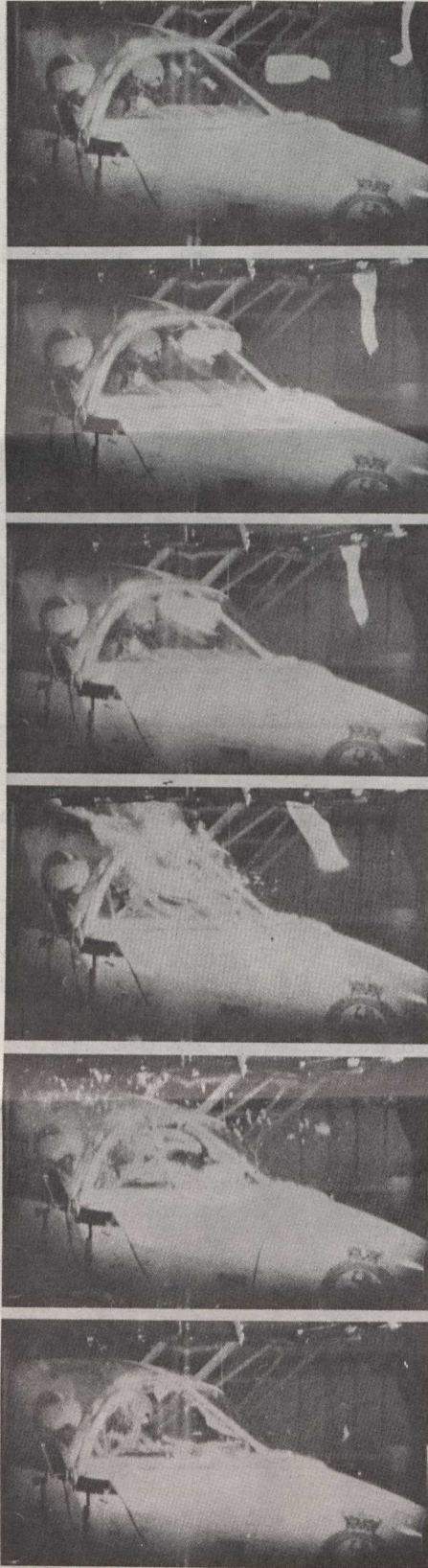
In 1960, a modern aircraft taking off from Boston ran into a flock of starlings, lost three turbine engines and crashed, killing more than 60 people. Two years later, a collision with two swans led to another crash near Washington, D.C., in which 17 people died. Such tragedies focused world attention on the danger of birds.

To generate a mechanism for dealing with the problem in Canada, the National Research Council formed a committee, known formally as the Associate Committee on Bird Hazards to Aircraft, that included representatives from the major airlines, the Royal Canadian Air Force, the Department of Transport, the Canadian Wildlife Service, the aircraft industry and other agencies.

The first solutions sought were engineering ones, such as strengthening aircraft. But the stresses involved in a bird strike can be very large. Though design standards for aircraft now demand great strength, a completely bird-proof plane would need to be as strong as a tank, making it far too heavy to operate economically.

Some solutions found

The committee surveyed airports across Canada as well as abroad. They found abundant sources of food, water, shelter and space, all of which attract birds, and



A dead chicken in a white bag, shot from an air-powered gun, shatters the windshield of an aircraft. Such a collision in the air could lead to a fatal crash.

for each airport they recommended specific changes. "For instance," says Dr. Victor Solman, a biologist with the Canadian Wildlife Service and an original member of the NRC committee, "if you find a garbage dump near an airport — as we often did — you will be sure to find birds feeding there and digesting their dinners on the open spaces of the airfield." Thanks to pressure from the committee, almost all garbage dumps have been moved away from Canadian airports. Other bird-management techniques, suggested by the committee and now regularly used, include cutting down pockets of heavy vegetation, draining ponds, stopping agricultural use of airfields, improving waste disposal and driving away bird flocks with noise makers and fireworks or, at one airport, by reviving the medieval art of falconry.

Results rewarding

It is hard to quantify the effect of these techniques. One indicator, however, is Air Canada's annual bill for repairs to aircraft damaged in bird strikes; despite a substantial increase in flying hours, it has been halved during the lifetime of the committee. Another is the fact that no one has ever been killed in a scheduled commercial flight in Canada because of a bird strike, yet Canadians fly more than almost any other people.

The bird-strike committee has published voluminously — from reports on a radar system developed at the NRC to warn air-traffic controllers of birds, to a handbook entitled, *Bird Hazards to Aircraft*. The committee has spawned mechanisms in companies and agencies involved in aviation for continuing their work. Though all the problems posed by bird strikes have not been solved, the Committee has accomplished its task. With Dr. Solman in the chair, it disbanded at the end of 1976.

"It is more than 30 years since I had my first experience with a bird strike," says Dr. Solman. "The damage done [when his small aircraft collided with a little blue-winged teal] was readily patched. Today, a hefty bird entering the engine of a 747 taking off can cause several hundred thousand dollars worth of damage and endanger the lives of more than 350 people. But thanks partly to the work of our committee, such a strike is unlikely, and its potential effect minimized. It has been a rewarding experience."