B.S.C.E 15/W.P 24.

THE AIRPORT BIRD PROBLEM

SCARING DEVICES

In civil air transport, 60% of the bird strikes on aircraft occur on and immediately around airports.

Most of these incidents occur during the critical phases of takeoff and landing, at altitudes of less than 150 meters.

These bird strikes imperil the safety of aircraft operations.

During takeoff, the ingestion of birds by a jet engine often leads to a brutal loss of thrust, or even complete flameout.

This phenomenon can be highly dangerous in the case of two-engine aircraft equipped with large engines mounted underwing.

Bird strikes on propeller-driven aircraft, less frequent in the engine area, can, however, be just as dangerous.

Acceleration stops and returns to base, with fuel dumping, are the frequent results of aircraft collisions with birds.

The damages suffered are of many different kinds, from simple dents in the airframe to the partial or complete destruction of jet engines.

The imperatives of flight safety thus impose a maximum reduction in the risks of bird strikes on aircraft.

Since May 1979, a circular from Direction de la Navigation Aerienne has defined the attributions of the different agencies in fighting this menace to the safety of civil aviation.

birds were placed under the responsability of the runways office, the fire and rescue service, local control or the Air Transport Gendarmerie.
air traffic

The presence of birds judged to be dangerous leads the local controllers to warn the flight crews, as well as the agency responsable for scaring them away from the airport: the runways office, fire and rescue service or gendarmerie.

It is true that the first action to take to fight this menace is to locate the birds on the airport grounds that pose a risk of accident.

Birds Observation

Often difficult, this task can be effected from the control tower, from well-chosen observation stations, or by patrolling the runways with a light vehicle when the traffic allows. These inspections must take place especially in the early morning, before the first flight operations, and as often as a potential danger related to the presence of large gatherings of birds appears.

It is essential to verify, before any movement of aircraft, that the runways and flight paths are free of birds,

Any bird or any group of birds on the runway in use must be signalled to the flight controllers. And it is especially important to locate the species that like to land on hard surfaces:

Black headed gulls, which gather in large numbers on most European airports in the winter.

Herring gulls, much larger and concentrated especially on coastal airfields. Note the characteristic brown plumage of the young birds.

Diurnal birds of prey, like the Black kite, with dark plumage and forked tail.

Domestic pigeons, urban birds presenting

Valuing Risks

On the other hand, birds on the sides of the runways and especially even farther away are not always dangerous. Of course, everything depends upon the species, the number of individuals, their precise position and their behavior.

Thus several tens of crows feeding some thirty meters from the edge of the runway can be tolerated, and we can say that this species becomes very accustomed to the presence of their "big brothers," the aircraft.

For other species, the same number of individuals, in the same location, constitute a real potential danger. This is the case of the wood pigeon characterized by white markings on its neck and wings,

the lapwing very characteristic by their well-developed crest,

birds of prey, like the Montagu's harrier with narrow and pointed wings,

or the buzzard, of heavier appearance, with plumage quite variable among different individuals.

These highly mobile birds are susceptible of crossing the runway at any time.

In all cases where the birds present are judged to be dangerous, the local air-traffic controllers shall be alerted.

They will then warn the flight crews, using brief, clear and precise terminology:

"Gathering of birds near threshold 25"

"Danger of encountering birds on 03."

"Risk of encountering birds at 300 feet

Scaring Procedures

Their operators then put into use the scaring devices available on the airport:

- Electroacoustic system
- Pyrotechnics devices
- Shot-guns

Electroacoustic System

This method, based on a biological stimulus, consists [illegible] recorded distress calls.

The broadcasting equipment, loaded in a Plyce vehicle, includes:

A magnetic-tape [illegible] having the particularity of being able to play endless cassettes.

A power amplifier (40 to 120 watts, according to the model).

One or two loudspeakers, fastened to the vehicle's roof.

This high-fidelity sound system is powered by two 12-volt batteries, which must be carefully monitored.

A battery charger, also carried in the same vehicle, will help to keep it ready for use.

This method works very well against gulls and crows.

However it is much less effective with starlings and especially [illegible].

For species not harmful to crops, like pigeons and birds of prey, other means must be used: Pyrotechnical devices

- Smooth-bore sawed-off shotgun
- 12-caliber pistol
- and tear gas cartridges.

Shotguns and pistols must be handled with care.

In particular, never transport loaded weapons in [illegible].

And NEVER fire a weapon from the interior of a vehicle.

Before firing, it is essential to check that the barrel is not obstructed, especially in the case of a sawed-off shotgun.

The pyrotechnical method consists in projecting a shell-cracker, towards the birds, that explodes with a loud noise at the end of its trajectory.

The range is about 120 meters, the effect is immediate, and lasting in the case of such game birds as pigeons and lapwings.

Shotgun

Finally, there is the possibility of real firing, using a shotgun armed with birdshot cartridges. This can be highly effective against birds that cannot be scared away.

Directions for action.

The employ of these three methods on an airport necessitates the greatest prudence when the aircraft traffic is heavy.

A badly directed flight of birds toward the runway in service can be highly dangerous and the cause of a serious accident - the exact opposite of the effect sought.

It is therefore essential to act correctly, taking into account numerous factors, and especially the time available to the employee charged with the task of dealing with the unwanted birds.

In practice, a controller, at his own initiative or when informed by a pilot, signals birds on or near the runway to the aerodrome control service.

For species that react to distress calls, the acoustic-scareoff vehicle is immediately brought into action.

First, the operator must approach the birds and stop his vehicle 50 meters from the edge of the runway, if possible with wind in the back.

After having loaded the correct cassette into the sound system, operate the system for 30 seconds.

The birds will generally overfly the vehicle and the runway will be immediately clear.

To reinforce the acoustical effect, fire an explosive cartridge at the birds as they overfly the vehicle or have taken wing to flee.

When the runway area is completely free of birds, go inform the tower, but remain in place at least 5 minutes to ensure that the runway remains clear.

For species not having a distress call, harmless or offensive pyrotechnical means shall be used.

In this case it is also necessary to approach the birds to within firing range, that is to about 50 meters from them, then

FIRE two or three shell-crackers, first at the birds on the ground, then behind the fleeing birds in flight.

Do not forget to recover the empty shells, especially from the runway.

And to verify that the runway remains clear, before so informing the tower.

If the birds do not go away, or if they return very quickly, use the same techniques, but at that time with a hunting gun and birdshot cartridges.

Remember that only species whose destruction is authorized by ministerial decision can be fired upon with live ammunition.

Furthermore, the dead bodies must be recovered because they may draw birds of prey to the area.

Such bird-scareoff operations must be effected each time that groups of birds judged potentially dangerous are present ...

for example seagulls or pigeons on the sidebank of a runway.

In coordination with local air-traffic control, wait for a break of traffic of at least five minutes duration before intervening.

Such tactics, repeated several times a day, especially during the morning, will incite the birds to no longer frequent the runways and adjacent areas.

Chase birds away from airports and airfields once and for all? This would require a miracle method that everyone is looking for.

Lasers, strobe lights, microwaves, synthetic sounds, repulsive products and other methods are all still in the research stage.

For the present, on airports the acoustical-scareoff vehicle with an operator also disposing of pyrotechnical means remains the best available solution for combatting the bird problem.

We have presented to you a first overview of scareoff techniques, part of a series of presentations concerning the bird problem in aviation.

It remains to be seen what actions can be taken at the level of the airport environment to make it inhospitable to birds.