



IS IT A BIRD? IS IT A...

A foul-up with our fine feathered friends can cost you dearly. Phil Shaw outlines what aerodrome operators can do to reduce the risks of bird strike.

Imagine it's Christmas Eve and you're hurtling down the runway for takeoff at Gold Coast airport in an Airbus A300 when one engine fails without warning.

The pilot in command reversed thrust and ended up on the piano keys right at the end of the runway. Fortunately there were no injuries or further damage to the aircraft.

Qantas estimated the 1995 incident cost the business and its insurers \$8 million, including the engine replacement, downtime and the cost of changing schedules.

Global accident and incident data show that collisions with birds and other wildlife have resulted in 195 fatalities

since 1988. Insurers estimate bird strikes cost civil aviation around \$US1.2 billion annually.

Some commentators believe that future court decisions could see damages awarded against operators of bird attracting industries such as landfills or seafood processors, as well as the regulatory authorities that permit land use near aerodromes that attracts birds.

Over 90 per cent of bird strikes happen at or near aerodromes. That's because most birds tend to fly fairly close to the ground – where aircraft takeoff and land. Aerodrome operator therefore must take a high level of responsibility for managing the risk of bird strike.

It is mainly the large and flocking spe-

cies of bird that present the biggest problems. The species to watch out for vary depending on climate, habitat and land use.

Aerodrome operators should put into place a bird management strategy, ideally guided by biologists experienced in assessing bird strike risk.

To build a good bird management strategy you should:

- Gather bird strike information by encouraging reports from all possible sources, including airlines, aircraft owners, pilots, engineers, air traffic control, operations and safety officers
- Do regular bird counts on the aerodrome to determine locations, species and numbers

- Assess each species according to risk and rank them in order of priority
- Assess each location on the aerodrome according to risk and rank locations in order of priority
- Develop action plans to manage each high risk species. You should consider bird “attractors” on and off the aerodrome that may need to be modified. Options such as distress calls to disperse particular species could be useful in combination with the usual array of pyrotechnics and live shot
- Develop action plans to manage each high risk location at the aerodrome. Look closely at water bodies (creeks, drains, ponds, depressions that fill after rain etc) that can be netted or filled to remove whatever is attracting the birds. Often the most important habitat for birds at an aerodrome is grassland. Grass should be cut short (say 100 mm) or long (say 300 mm), depending on the results of trials and experience.
- Consider putting together a bird management committee made up of the aerodrome operator and staff, tenants, air traffic control, fire service, airline operators (including safety departments and local ground staff to assist with bird strike reporting when pilots are unaware of strikes) and local authorities such as councils, that are primarily responsible for land use in the vicinity of the aerodrome

Gold Coast airport responded rapidly and decisively to the Christmas Eve 1995 bird strike. The bird ingested was an Australian White Ibis, which – at around 2 kg – is known to cause significant damage in about 41 per cent of strikes.

White Ibis often fly in flocks, with potential to disable more than one engine. They also ride thermals to high altitudes and so can collide with aircraft well beyond the airport fence. Ibis are now a common scavenger at many city parks and landfills throughout Australia, and their urban populations are growing exponentially.

The Gold Coast Airport enlisted the support of local councils and National Parks and Wildlife Services across two states, local green groups, wildlife sanctuaries and others to develop a management program aimed specifically at the Ibis.

THE TOP FIVE HAZARDS

1



Eagles

Eagles are large birds that cause damage in more than half the occasions they are reportedly struck. As a high flying bird that thinks it is “king of the skies”, the eagle is less inclined than some other species to make way for aircraft.

2



Ibis

Ibis are a relatively large, flocking species whose urban populations are on the rise. Expect Ibis to be an increasing problem for aerodromes.

3



Ducks

Ducks are relatively large, flocking birds that are generally attracted to the wetter part of aerodromes. Aerodrome tenants have been known to feed ducks – a practice that should be discouraged.

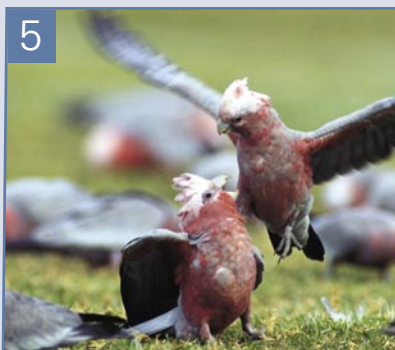
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Bats (flying-foxes)

Although a flying mammal rather than a bird, flying-foxes are frequently struck at Australian aerodromes. They move out in thousands from camps at last light and return at dawn. Where food supplies are available on the other side of an aerodrome (often a seasonal occurrence) they can be quite a hazard to aircraft that are landing or taking off.

5



Galahs

Galahs can be attracted in very large numbers to aerodromes and their surroundings. They search for seeds and water and tend to fly erratically. Appropriate grass and weed management is essential on the aerodrome. Nearby attractions such as silo spillages must be well controlled.

Photos: Australian Photolibrary

WHAT PILOTS CAN DO

If there are flocks of birds on or near flight strips, you should insist that safety staff clear the area before you takeoff or land. You might have to put up with a delayed takeoff or a go-around, but that's better than losing an engine.

Some pilots mistakenly think that they can "plough through" expecting birds to shift out of the way. Unfortunately that doesn't work.

A flock of small birds can stop an engine just as easily as a large bird. In New York gulls have brought down a DC-10, and in Coffs Harbour, NSW, over 100 gulls have been collected in a single strike.

Where possible, choose departure or descent profiles or runways that avoid known bird or flying fox congregations. If you think the chance of a bird strike is high, you could consider flying at a lower speed (the impact force of a bird strike is proportional to the aircraft speed squared).



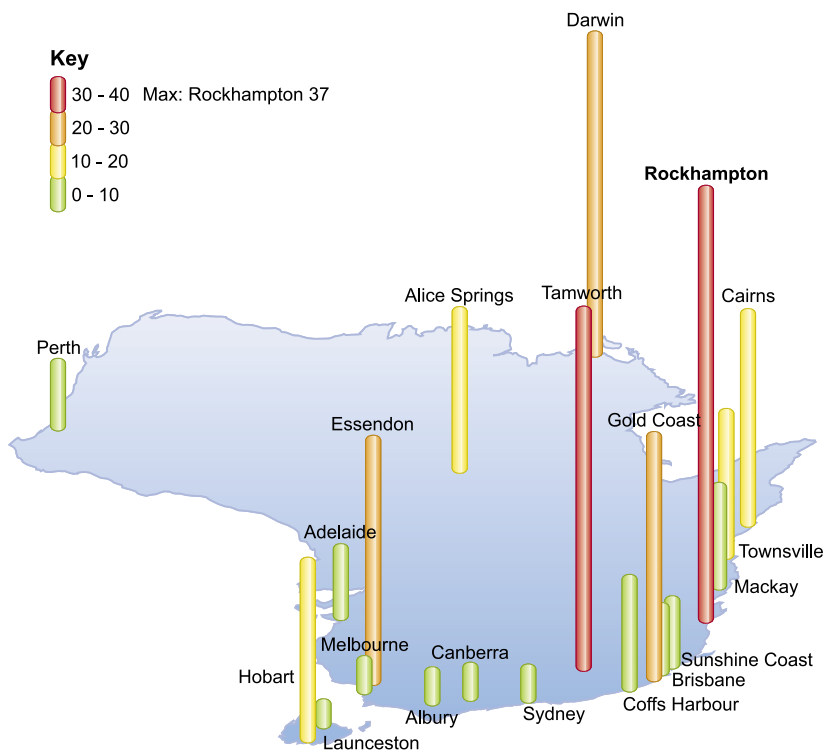
Photo courtesy of Wildlife Damage Control

Turkey trouble: This CRJ recently hit two wild turkeys during takeoff. One hit the windshield, causing the damage above, and the other was sucked into the right engine.

Bird strikes must be reported to the Australian Transport Safety Bureau under the Transport Safety Investigation Act (2003) – even if there is no damage to the aircraft. Bird and other wildlife strikes must be reported to the Australian Transport Safety Bureau within 18 hours or 72 hours depending on the severity of the occurrence. For online reporting go to atsb.gov.au/aviation/m3vco6t/notiffrm.cfm.

Strike reports are valuable safety information. They help analysts work out which aerodromes are at greatest risk, what species cause the most damage, and what times of the year and day are most hazardous.

Safety researchers have tried to develop strobe and pulse landing lights for aircraft to deter birds. Results of trials are inconclusive to date.



Bird strikes: Frequency of bird strike incidents reported to ATSB in 2003.

They trained safety staff in better dispersal and removal techniques, filled depressions and reshaped creeks and drains. A trial was conducted into grass lengths and long grass (mown at 300 mm) was found to greatly reduce attraction of Ibis and other species such as Masked Lapwings (plovers).

Off-airport initiatives included dispersing Ibis from the Gold Coast tip and reducing the food supply in parks and wildlife sanctuaries through a public education program. Airport workers and others broke the Ibis breeding cycle by disturbing roosts with spotlights and distress callers and removing eggs and nests.

Numbers of Ibis at the Gold Coast Airport are down by 75 per cent and no further strikes to Ibis have occurred since 1995.

Pyrotechnics is used at many aerodromes to disperse birds. It is generally fired from a shot gun and explodes over a

bird flock's heads. Live shot is sometimes used to cull birds and reinforce other methods. It is a recommended part of any good bird management strategy, but should only be used judiciously by well-trained staff.

Other ways of dispersing birds include the use of portable or vehicle-mounted distress callers, trained dogs, birds of prey, remote-controlled aircraft and lasers for dispersal at night.

Long, thick grass has been shown to reduce the numbers of many hazardous birds at some aerodromes. It works because it is more difficult for birds to feed on insects and other invertebrates in the soil. Birds feel less secure because they can't keep an eye out for predators. Trials should be conducted to find the ideal mowing height, because long grass can also attract snakes, rodents and small mammals that can attract birds of prey – replacing one set of hazardous bird species with another, potentially more hazardous group.

Modification of creeks and drains reduces the number of water birds such as ducks. It is better to have steep-sided and deep drains than shallow ones. Steep and deep drains make it difficult for birds to wade or bottom feed. Water bodies can be netted or impediments to birds landing can be placed on the water surface.

Growing thick, dense vegetation can also limit bird access but can also encourage some species to nest. In some

places, retention ponds are filled with large rocks through which water percolates in an effort to disturb birds. At Baltimore International Airport in the US large flood plain storage areas have been covered by suspended concrete car parks to keep birds away.

It is clear that in the near future, aerodrome operators will be required to adopt more formal risk management procedures, and bird strike risk management will be no exception. This is likely to involve the assessment of professional bird surveys and a review of bird strike data to classify bird species according to risk and allow aerodrome operators to direct their resources with precision to projects most likely to reduce risk.

Radar maps: Overseas, where migratory bird species are a significant problem, radar is being adapted to give real-time information to pilots on where bird flocks are and their direction of movement.

Germany, for instance, has receivers scattered across the country to produce electronic maps showing bird densities. Military pilots use these maps to avoid areas of high bird density during high-speed, low-level operations.

Migratory birds aren't the same threat in Australia, but radar could help aircraft avoid flying foxes – a problem for aircraft in tropical Australia.

As aerodromes become better at managing bird attraction at the aerodrome itself, there will be an increased emphasis

on ensuring that land uses in the vicinity of aerodromes are compatible. There is talk of legislating against landfills, wetlands, seafood processing plants and other bird attracting operations within certain distances of an aerodrome.

There is a growing trend for operators and their insurers to seek compensation from parties that have not complied with their duty of care.

Charges of involuntary manslaughter were brought against the airport authorities at le Bourget airport in Paris in 1995 after a Dassault Falcon 20 business jet crashed on takeoff after striking lapwings (like our plovers). The bird strike destroyed the left engine, and all 10 on board died in the crash. Some airport staff were found to have failed to perform routine bird-scaring before the accident.

At Pula airport, Croatia, in 1996 a Boeing 737 engine ingested gulls on takeoff. The pilot aborted the takeoff without injury or further damage to the aircraft. However, some time later airline insurers claimed reimbursement from the airport for the damage compensation paid to the airline.

Aerodromes that put some effort into managing the risk of bird strike might find that it's a worthwhile long-term investment.

Phil Shaw is principal biologist for Ecosure Pty Ltd, a consulting company that provides airports and airlines with bird strike advice (www.ecosure.com.au).



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