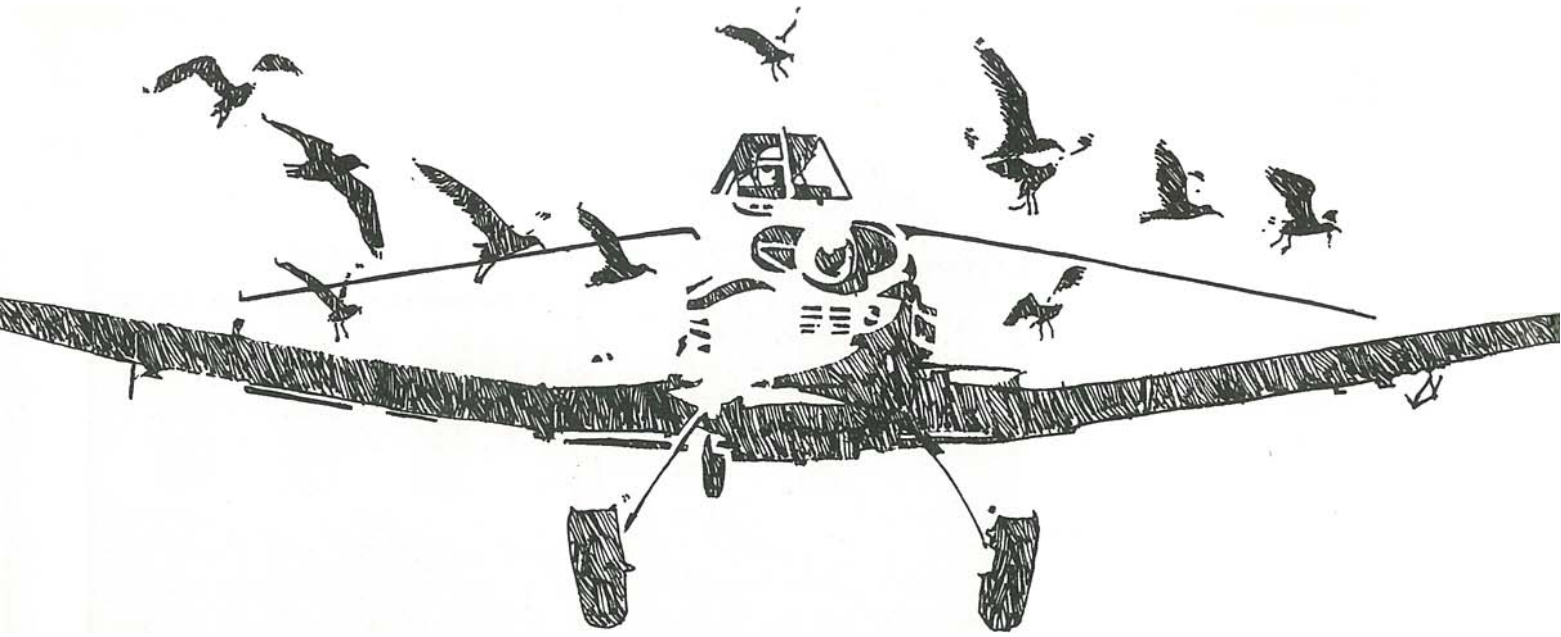


Preventing birdstrikes at airports

Some places just aren't meant to be a naturalist's paradise. For instance, take a large area of open country near one of our major cities and completely strip it of trees. Then cover a goodly amount of it with bitumen.

Next, take the advice of the CSIRO Division of Wildlife Research and make sure it has no water to harbour fish, frogs, or insects. Even puddles must go. Clip the grass short, which evicts its inhabitants and also dries the soil, driving away worms and grubs.

Better still, plant couch grass over the area. Its thin short stems and leaves require practically no mowing and provide very little shelter for insects or mice. Furthermore, its aggressive growth tends to exclude other plants — plants whose seed may provide an animal with food. (Couch's minute, spiky seeds don't seem to be eaten very much.)

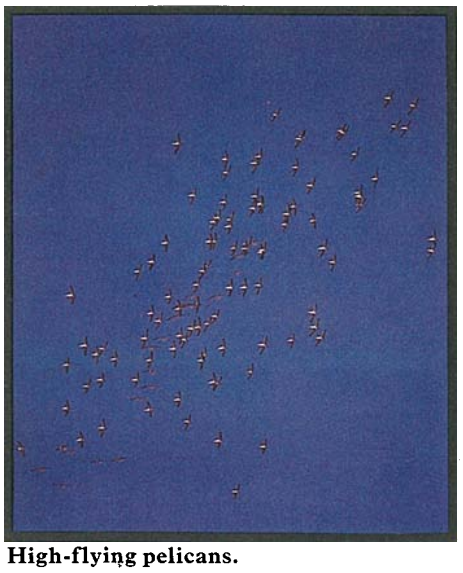
If creatures remain, CSIRO also suggests that you try using insecticides, vermicides, and other poisons. As a final resort, electric-fence units may help.

Sounds draconian? Well, the area we are talking about is simply one of the nation's many airports and airfields. And the blitzkrieg measures advocated are designed to reduce the hazard of 'birdstrike' — the collision of birds with their much larger man-made imitations. These are nearly always fatal to the bird, and sometimes damaging and occasionally disastrous to the aircraft's crew and passengers.

Birdstrikes have been happening ever since men began flying aeroplanes. But only since 1960, when a flock of starlings caused the tragic loss of an Electra and 62 passengers at Boston in the United States, have aviation authorities begun to look seriously at ways of avoiding this danger.

In Australia, the Department of Transport has published figures showing that in 1974 there were 83 confirmed birdstrikes against commercial passenger aircraft in Australia and a further 28 strikes against civilian aircraft. Although none of these incidents resulted in the loss of an aircraft, many caused considerable damage to engines and airframes.

However, last year the pilot and navigator of an RAAF F111 were killed when their aircraft crashed near Evans Head in New South Wales following a birdstrike. In other separate incidents, the pilot of an RAAF Sabre jet was killed and that of a Mirage needed to eject when their planes hit birds on take off.



High-flying pelicans.

Many short-term palliatives for the problem of birdstrike — such as shooting, poisoning, and falconry — have been suggested. But, according to Dr Jerry van Tets of the CSIRO Division of Wildlife Research, the only permanent solution is a policy of ecological sterility.

The Department of Transport has recently published a booklet outlining Dr van Tets' findings, which describes the hazards presented by different birds and gives details of ways to eliminate them. The booklet is the result of research undertaken from 1963 to 1971 at the request of the Department (at that time called the Department of Civil Aviation).

Since birds are near the top of an ecological pyramid — in the mini-ecosystem of an airport — the approach Dr van Tets took was to lop the pyramid off at its base. You eliminate food, water, and habitat as well as you can. No ecological niche for the birds remains.

Take away their food

Systematically cutting off the food chain leading to the birds is pretty drastic, but it also works. For example, the unpaved parts of some aerodromes used to be planted to crops such as wheat, oats, or sorghum. These crops attracted large numbers of pigeons, parrots, finches, and sparrows at sowing and harvesting time. The number of birdstrikes was markedly reduced when crops were replaced by regularly mown grass. At Darwin Airport, the growing of Townsville stylo has been a good move. The low plants don't require mowing and the seeds, which can be

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commercially harvested, are minute and not an important food source for birds.

Another appealing food source for some birds, this time at the very end of Man's food chain, is the local garbage dump. Household refuse at one time used to be dumped near Sydney Airport. Silver gulls on their way to and from the dump used to fly through the runway approaches. Their numbers decreased drastically after the dumping of food waste was discontinued.

Dr van Tets can point to similar incidents involving meatworks, animal yards, fishing wharves, and even picnic areas. In each case the solution was the same — clean it up.

Water attracts . . .

Apart from direct food sources, water is the next greatest attraction for birds, for it can provide a breeding ground for all sorts of aquatic life upon which birds can feed. Ponds, sewage lagoons, and open drains are instant attractions to birds such as pelicans, eagles, and kites — birds that are wont to soar thousands of feet skywards from the body of water whence they have been feeding.

Sewage outfalls into the sea attract birds that feed on the raw effluent released. However, such areas aren't so hazardous from a birdstrike point of view, since they normally only attract albatrosses and similar seabirds, which fly too low to be of concern.

An aircraft's flying speed is lowest just as it is about to land, so although birdstrikes are more common near the ground, they are less damaging, but possibly more dangerous. A solitary high-flying hawk (possibly as high as

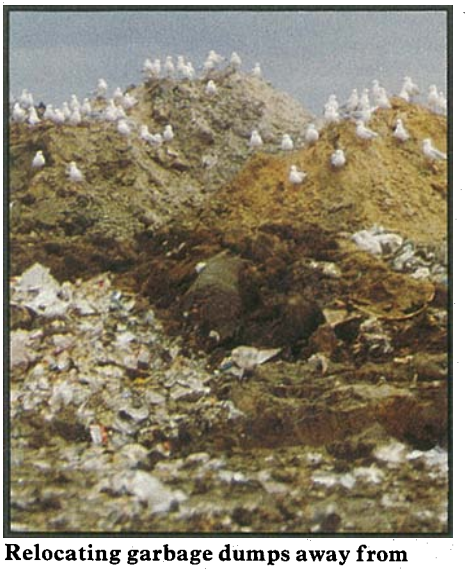
Number of birdstrikes at some of our airports

● main Australian airports

King Island	22	Adelaide	4
Mt Isa	18	Canberra	3
Darwin	14	Sydney	2
Launceston	13	Melbourne	1
Brisbane	5	Perth	1

figures relate to 1969–74 inclusive, they indicate number of strikes per ten thousand commercial aircraft movements

A plane is most likely to hit a bird at King Island (22 strikes per 10 000 aircraft movements). But the actual hazard depends on the type of aircraft and species of bird involved.



Relocating garbage dumps away from coastal airports will greatly reduce the hazard that flocks of silver gulls create for aircraft.

Most-commonly struck birds

	total number of strikes 1971–77 inclusive
hawks	420
plover	226
silver gull	120
galah	58
wading birds	38
others	133
unknown	745

Even small depressions in the tarmac known as 'bird baths' are undesirable, because insects and seed remains accumulate in them.

9000 feet) can be as hazardous as a low-flying flock of gulls. Contrary to opinion, aircraft in Australia are most frequently damaged by hawks, not gulls.

. . . even in small amounts

Water from heavy rainstorms flushes worms, grubs, and mice out of their subterranean burrows and makes them easy prey for birds. Thus Dr van Tets emphasizes that the airport must be very well drained. Even small depressions in the tarmac known as 'bird baths' are undesirable, because insects and seed remains accumulate in them.

Just the mere wetness of the tarmac can attract worms, snails, and assorted insects, especially at night. Waterfowl frequently land on wet runways at night, mistaking the glistening surface for water. The poor grebe cannot take off from land and is occasionally found helpless at dawn by runway inspectors.

On the other hand, dry pavements attract birds looking for some warmth. Black kites have been seen spreading themselves out on very hot runway pavements, presumably trying to rid themselves of lice in their feathers. And on hot days, mirages — only hinting of water — are enough to attract insects and birds. It's hard to win all the time.

Abolish their homes

Water is also attractive to birds simply seeking refuge, not food. The starlings that collided with the ill-fated Electra were coming in to roost in the reed beds of an aerodrome pond. After the crash the reeds were removed and the starlings went elsewhere to roost.

Thousands of gulls used to come to Sydney Airport in the evening to spend the night standing in shallow water, probably to avoid cats and dogs. The water came from sprinklers used to settle fine ash that was being spread as part of a land reclamation effort. The gulls were forced to roost elsewhere when the method was discontinued and the wading pools were drained.

Ideally, Dr van Tets advises, aerodrome ponds should be drained or filled in. An alternative would be for them to have steep sides lined with concrete and their surface covered with a mat of water hyacinth to deter waterfowl.

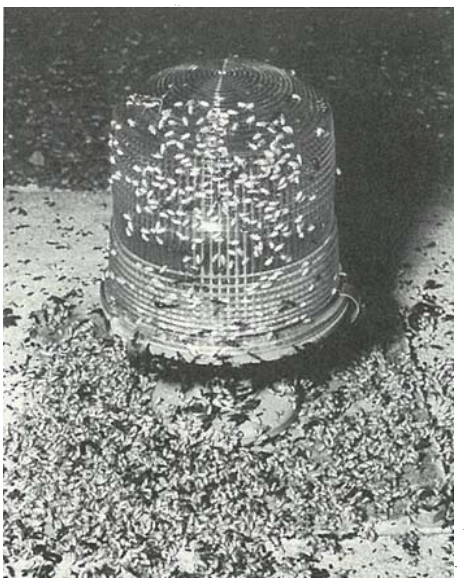
Other measures include the use of yellow sodium lights instead of white lights to discourage insects from congregating around them. Making the navigation lights orange (as they once were in Australia) instead of the internationally standard white would also help. The removal of nesting sites in airport buildings is another recommendation.

Are all these measures worth while? The Department of Transport obviously thinks that many of them are. It has appointed a wildlife biologist to investigate birdstrike hazards at airports and to recommend control measures.

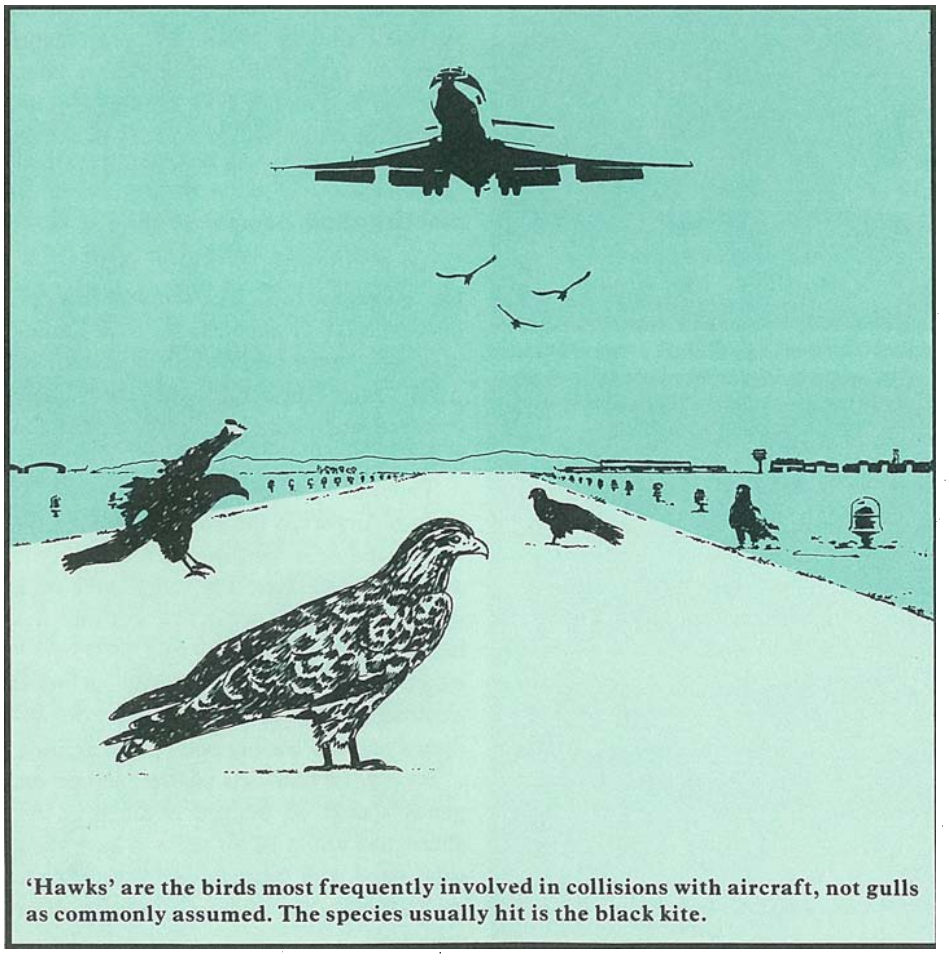
Alternatives don't work

The alternatives to ecological sterility just don't work, according to Dr van Tets. Scaring the birds away with scarecrows, noises, gunfire, and other pyrotechnics is only a short-term measure. After all, if jet aircraft movements fail to scare birds away, nothing else is likely to do so. Scare tactics may work for a day or so, which is why we regularly read reports of a new gadget that is apparently successful. But the resident birds soon become familiar with it, and may even begin to use it as a perch. As Dr van Tets comments, after some time the gadgets quietly disappear into storerooms (there to annually baffle stock-takers).

Shooting, poisoning, and trapping are similarly short-lived in their effectiveness.



White runway lights are now an international standard, but they attract more insects — and hence birds — than the orange lights once used in Australia.



'Hawks' are the birds most frequently involved in collisions with aircraft, not gulls as commonly assumed. The species usually hit is the black kite.

If jet aircraft movements fail to scare birds away, nothing else is likely to do so.

The dead birds are sooner or later replaced by others. Poisoning requires skill to protect non-target animals, and the victims must be collected. At one airport they weren't, and the dead plovers attracted scavenging hawks, which were more hazardous to aircraft than the plovers had been.

Because of the development of insecticide resistance, extermination of the birds' insect prey by using chemical sprays is not a desirable solution in the long term. Insecticides are better used in dealing with plague outbreaks.

A variety of bird repellents — usually mixtures of tars and irritating chemicals — is marketed for keeping pigeons and other birds away from buildings. They are singularly unsuccessful, according to Dr van Tets. Similarly futile is the stringing up of thin metal wires over ponds and drains, since they do little to permanently deter birds.

If these palliative measures don't work, perhaps we could make aircraft resistant to birdstrikes? Much is being done to strengthen airframes — apparently specifications now call for aircraft to withstand penetration by a 4-pound chicken at 400 knots — but to fully protect aircraft against the heaviest birds (10 kg or so) at speeds of more than 300 knots is considered impossible.

It remains that the best permanent solution is to remove from near airports any food and shelter that are likely to attract birds.

Lest this solution always appear as a Man-versus-bird confrontation, Dr van Tets points out that at some airports the best strategy may be one of working with nature. He suggests that huge flocks of scavenging birds can be used to clean out an airport food 'larder' in a couple of days. As an attraction to them, long annual grasses can be cut all at the one time, or short grasses can be deliberately flooded to flush out ground dwellers. Better that these birds come and go quickly than hang around all year.

Nevertheless, all things considered, airports are no place for wildlife. Aircraft safety is the prime consideration.

More about the topic

'Guide to the Recognition and Reduction of Aerodrome Bird Hazards.' Australian Department of Transport. (Australian Government Publishing Service: Canberra 1977.)