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DC-10 INCIDENT AT JOHN F KENNEDY INTERNATIONAL AIRPORT

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Bird Hazards at John F. Kennedy International Airport -- The Problem and Suggested Remedies

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INTRODUCTION

On November 12, 1975, a DC-10 was lost at John F. Kennedy International Airport because of bird strikes. The Overseas National Airways jet with 139 people on board collided with many gulls on takeoff roll when the aircraft was accelerating past 100 knots. The time was 1310, the runway was wet, and visibility was 15 miles (24.14 km). The gull flock, estimated at about 100 birds, apparently was on the runway, and a gull (or gulls) was ingested into number 3 engine, which exploded and separated from the aircraft. Abort procedures were initiated and the aircraft was stopped near the end of the 14,572-foot (4.44-km) runway. All 139 people aboard, ONA employees, survived the accident. The aircraft was destroyed by fire.

Our post-accident inspection revealed the remains of 13 immature herring gulls (Larus argentatus), and two immature and seven adult great black-backed gulls (Larus marinus). Feather remains recovered from the number 3 engine indicated that at least one great black-backed gull had been ingested. This species may weigh as much as 4-1/2 pounds (2.04 kg).

Subsequent to the incident and at the request of the Federal Aviation Administration, the U.S. Fish and Wildlife Service conducted an ecological study of bird hazards at JFK to provide a basis for recommendations to alleviate JFK bird hazards.[1] This paper briefly presents and discusses the results of our investigation which was carried out during the winter of 1975-76.

THE PROBLEM

JFK has had serious bird problems because there are many area features that are highly attractive to birds--nearby garbage dumps that attract thousands of gulls; the close proximity of Jamaica Bay, an area that attracts thousands of birds of many species; and airport habitat that attracts and supports a variety of species.

Gull Flocks and Garbage

We consider gulls to be the major hazard to aircraft operations at JFK because of their large size, flocking behavior, and large concentrations throughout the year in the Jamaica Bay area. These populations consist of herring gulls, great black-backed gulls, and ring-billed gulls (Larus delawarensis). Some 500,000 gulls migrate through the New York metropolitan area every fall, and up to 200,000 gulls may overwinter in the area, the largest concentration of gulls on the Atlantic Coast (personal communication, William H. Drury, Jr.; Kadlec and Drury 1968).[2] These large gull populations occur and thrive, to a great degree, because of the abundance of food in the form of garbage in the New York area. The bird problem at JFK is mainly a gull problem, caused principally by the close proximity of two large garbage landfills that attract thousands of gulls. The Edgemere landfill, located on the Rockaway peninsula, is about 7,000 feet southeast, and the Fountain Avenue fill is located about 17,000 feet west of the airport.

Starlings, Roost, and Food

Starlings (Sturnus vulgaris) are of high potential hazard to aircraft. Some 10,000 starlings fly over the runways at dusk to roost in

conifer trees in the terminal area. At dawn, the birds return to their feeding grounds, again flying over runways. At least 1,000 starlings have been observed feeding at both Edgemere and Fountain Avenue dumps. Starlings in scattered small flocks have been observed feeding in the bayberry (Myrica sp.) bushes near a runway.

Waterfowl, Jamaica Bay, and Pools

Greater scaups (Aythya marila), canvasbacks (Aytha valisineria), black ducks (Anas rubripes), mallards (Anas platyrhynchos), American wigeons (Anas americana), brants (Branta bernicla), and Canada geese (Branta canadensis) also are considered potential hazards to aircraft because they use airport water areas and occur mainly in the fall and winter in large concentrations adjacent to the airport. These waterfowl species feed and rest on the mudflats and the water of Jamaica Bay. Black ducks and mallards have been observed resting in the pot-hole pools located in grassy areas on the airport.

Shorebirds and Tidal Flats

Several species of shorebirds (Charadriidae and Scolopacidae) commonly occur on the tidal flats adjacent to the airport during the spring and fall migration periods. At high tide, many of these birds fly to the grassy strips alongside the taxiways and runways.

Other Birds and Airport Habitat

Small passerine birds, such as snow buntings (Plectrophenax nivalis), and Lapland longspurs (Calcarius lapponicus) winter at the airport. These open-country species feed and rest in the sandy and short-grass areas of the airport. Large flocks of mourning doves (Zenaida macroura) occasionally fly low over runways to feeding grounds in grassy areas.

Ring-necked pheasants (Phasianus colchicus) inhabit the heavy brush and grassy areas on the airport. Occasionally, a pheasant will fly low over the runways and taxiways.

Pigeons (Columba livia) feed on the airport, and many of them roost in hangars. Incidental to aircraft hazard, pigeon droppings deface and accelerate deterioration of aircraft, buildings, and equipment.

Sparrow hawks (Falco sparverius), marsh hawks (Circus cyaneus), rough-legged hawks (Buteo lagopus), snowy owls (Nyctea scandiaca), and short-eared owls (Asio flammeus) occur on the airport. These raptors generally hunt in the vicinity of runways, crossing them on occasion, particularly early in the morning and late in the afternoon. These birds prey on rodents, rabbits, and small birds. Some hawks may even nest on the airport.

Bird Attractants

Birds occur on airports for food, water, shelter, safety, nesting, loafing, and roosting, and for resting during migration. There are many attractants to birds at JFK.

Vegetation.--Most of the vegetation on the airport is composed of beach grass (Ammophila sp.), beard grass (Andropogon sp.), and forbs, which are maintained in a lawn-like condition. Dense growths of common reedgrass (Phragmites communis) make up about one-fifth of the tall vegetation; these robust plants grow to a height of several feet, primarily in low moist spots. Goldenrods (Solidago sp.), sunflowers (Helianthus sp.), and other composites are found mixed with the tall grasses. Scattered bayberry bushes also are present. A few scattered trees and shrubs, primarily black locust (Robinia pseudoacacia), and cherries (Prunus sp.) occur at

the northwest portion of the airport. Starlings, blackbirds, mourning doves, and other species use airport vegetation for feeding, nesting, and roosting.

Hundreds of exotic Austrian pine (Pinus nigra) trees have been planted for decorative purposes in the Chapel Pool - passenger terminal area. Starlings use these pines as roosting sites.

Water.--Water in rain puddles, drainage ditches, streams, pools, and ponds attracts birds for bathing, drinking, or loafing. Also, water areas are apt to provide a variety of bird foods, such as pondweeds, small fish, tadpoles, frogs, insect larvae, and other invertebrates. Small bodies of water also provide drinking places for mammals.

A 2-acre Chapel Pool is the only man-made impoundment at the airport. It is highly attractive to gulls. Immediately following rainfall, many temporary pools of water form on the automobile parking lots adjacent to Chapel Pool, in depressions of taxiways, along runways, and on roofs of certain airline terminal buildings. Many ponds and nearby marshy areas also are located in grassy areas at the eastern end of the airport between runways. These marshy areas are highly attractive to birds and mammals; one area contains a muskrat (Ondatra zibethica) house.

Storm sewer outlets.--Storm sewer outlets occur around the periphery of the airport. They attract numerous gulls, shorebirds, starlings, and waterfowl.

Tidal flats.--The south, southeast, and southwest edges of JFK airport border Jamaica Bay. The beach and nearby mudflats attract many gulls and shorebirds, particularly at low tide. When the mudflats are

covered at high tide, many gulls rest on promontories such as a sand spit located directly east of the approach pier of a runway, the pier itself, and the approach pier to an abandoned runway. Gulls fly over critical airport airspace (e.g., runways, approaches), and congregate on the airport.

Buildings.--Several facility buildings, hangars, and equipment sheds provide nesting, resting, and roosting sites for pigeons, starlings, and house sparrows (Passer domesticus).

Mammals.--Field mice (Microtus sp.), Norway rats (Rattus norvegicus), rabbits (Sylvilagus sp.), and black-tailed jack rabbits (Lepus californicus) occur on the airport. These mammals are food sources for avian predators and feral dogs that occur on the airport. Carcasses of mammals also attract gulls.

Waste paper, garbage, and food scraps.--During the time of this study, waste paper and garbage were strewn on the airport. In some instances, employees of airlines had thrown garbage on hardstand areas. Employees were observed feeding food scraps to gulls and other birds at the airport. Waste paper, garbage, and food scraps attract birds.

RECOMMENDATIONS

The most effective method of discouraging birds from frequenting JFK airport and vicinity is to make the airport as unattractive to birds as possible, using bird patrols, modifying airport habitats, and changing land-use in the airport area. Thus, the following recommendations are made:

1. Maintain an agressive and vigilant shotgun patrol, using two or

more vehicles and operating 7 days a week from dawn to dusk 365 days per year to repel gulls and other birds from the airport.

2. Communicate with the City of New York concerning the severe problem created by the Edgemere and Fountain Avenue landfills that are food sources for birds that are hazards to aviation safety. Make every effort to influence the City of New York to: (a) close nearby garbage landfills or operate them so they will not be primary gull food sources; (b) prohibit the development of proposed landfills near the airport; and (c) pursue modern methods of solid-waste disposal (e.g., the resource recovery systems presently in use at Saugus, Massachusetts).

3. Drain the Chapel Pool and develop alternative landscaping that will be unattractive to birds.

4. Drain and fill all ponds and marshy areas on the airport, and fill all depressions on the parking lots.

5. Remove two out of every three pine trees on the airport, particularly in the Chapel Pool - passenger terminal area.

6. Remove all bayberry bushes, stands of Phragmites, scattered trees, and other vegetation used for feeding, roosting, and nesting.

7. Evaluate, with the assistance of expert consultants, plant species that would be suitable for use on the soil types found on JFK. These should be species that are unattractive to birds, mammals, and insects, and that present no undue fire hazard.

8. Institute and enforce regulations to ban the feeding of birds on the airport.

9. Institute and enforce regulations and/or housekeeping measures that will eliminate litter and garbage on the airport.

10. Trap or shoot all pigeons, ring-necked pheasants, cottontail rabbits, black-tailed jack rabbits, muskrats, and free-running dogs on the airport. (Consult local and State laws for permission to remove these animals.)

11. Trap or poison small rodents.

12. Remove the old pier extending into Jamaica Bay.

13. Extend drainage outlets farther into Jamaica Bay by several hundred yards.

14. Arrange for the routine and immediate removal of all animal carcasses found on the airport.

15. Modify hangars and other airport buildings to eliminate ponding of water on roofs, and to discourage nesting and roosting of pigeons, house sparrows, starlings, and other birds.

16. Consult with ornithologists/ecologists about ways of lessening the attractiveness of the airport/Jamaica Bay beach to gulls and shorebirds.

17. Hire a full-time wildlife biologist/ornithologist to develop, implement, and direct all bird-management programs and activities at JFK.

18. Maintain accurate and complete records of: (a) bird/plane strikes; (b) activities of shotgun patrols; (c) unusual bird movements and habits; and (d) related bird observations.

19. Provide routine training to bird patrols and all other personnel involved with the bird problem at JFK.

20. Develop an Airport Bird Management Plan for JFK, documenting actions to be taken and target dates when appropriate.

Reducing bird hazards at JFK, as well as at other airports with

similar problems, takes motivation, money, and time. JFK has instituted habitat alteration and bird patrols that, hopefully, will reduce bird hazards. The situation, however, will require constant vigilance and persistence.

REFERENCES CITED

[1] U.S. Fish and Wildlife Service. 1976. An ecological study of Kennedy International Airport and vicinity with recommendations to alleviate bird hazards to aircraft operations. 8 pp. [Processed.]

[2] Kadlec, J. A., and W. H. Drury. 1968. Structure of the New England herring gull population. Ecology 49(4):645-676.