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Towards Multi-stakeholder Cooperation in Wildlife Management

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Brief Bio

Brian has been consulting in wildlife management since 1989. He co-authored a strategy for the management of the Canada Goose in Greater Toronto and has been involved in wildlife management projects for municipalities, airports and at wildlife attractants.

Towards Multi-stakeholder Cooperation in Wildlife Management

Abstract

Wildlife management at airports presents a myriad of challenges. Familiar to many in the field, is the outwitting of wily coyotes, the outsmarting of persistent birds and the outflanking of troublesome deer. Deterrents to barriers, dogs to pyrotechnics, habitat management to habitat removal, an array of increasingly effective measures can be used as part of integrated wildlife management programs to meet the challenge of increasing suburban wildlife populations and their interactions with air traffic.

On or off the airfield, the objectives of all stakeholders will not be consistent with best management practices for wildlife management. This is increasingly likely outside of the immediate airport environment – the next front for effective wildlife management.

This presentation discusses the efforts of a publicly owned Canadian regional airport (Peterborough Municipal Airport, Ontario) to manage its wildlife. This is related in the context of addressing various local, provincial and federal viewpoints, policies and regulations along the way. Provincially significant wetland habitat, provincially rare birds, locally significant plants, federally protected fish and fish habitat, a private proposal for a waste water lagoon, municipal storm water management requirements and public interest all demanded consideration.

Overview

The City of Peterborough is located approximately two hours drive northeast of the City of Toronto in southern Ontario. The City is served by the Peterborough Municipal Airport which is a 180 hectare site located approximately three kilometres south of the City of Peterborough itself. The airport is located within the Township of Cavan-Milbrook-North Monaghan (i.e., outside of the City limits).

The airport is a publicly-owned regional facility that features a 5,000’ paved runway (09/27) and an 1800’ seasonal turf runway (13/31). Over 99% of landings and takeoffs are accommodated on 09/27. The runway is rated as a non-precision instrument approach.

The airport provides facilities for public and private aviation. This includes scheduled and chartered passenger and freight services, corporate aviation and general aviation. PMA typically receives between 16,000 and 30,000 itinerant movements of air traffic per year, which in a recent

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year included 66% jet traffic, 18% turbine and 15% piston. These movements include light single and twin engine piston aircraft, twin turbo prop commuter aircraft, large twin engine passenger aircraft (up to HS748/F27 size) and corporate jet aircraft. MEDEVAC and occasional Hercules C130 use the airport as well as numerous local flight training movements. The airport generates approximately C\$18 million in economic activity and sustains the equivalent of 208 full-time jobs.

There are plans for expansion of services provided at the facility. A full-length taxiway, upgraded lighting, paved tie-down areas, additional commercial space and associated taxiways and internal roads are planned.

Land use in the immediate vicinity of the airport is largely rural in nature with low-density habitation. A major highway (Hwy. 115) is located to the northwest and a golf course is located to the north of this highway. A sod farm abuts the southwest part of the airport and a sanitary landfill is located to the east of the site.

On and around the airport property are large areas of swamp forest and upland moist forests of varying age and quality. Within the proposed airport expansion area is about 5.0 ha of open marsh, several ponds, treed swamp and additional successional upland forest. A major river (the Otonabee River) lies to the immediate east and a tributary to this river (the Cavan Creek) bisects the southwest corner of the property. Much of the non-developed portions of the property lie within the regulatory floodplains of these two surface water features. Part of the proposed expansion area includes several pockets of the Peterborough Airport Provincially Significant Wetland Complex that lie adjacent to the runway and the taxiway. The wetland provides habitat for a range of flora and fauna, including fish species.

Land use activities are guided by the Official Plans (OPs) of the County of Peterborough (the upper tier municipal government) and the Township of Cavan-Milbrook-North Monaghan. The County OP designates the airport lands as Rural, and adjacent lands as Rural and Agricultural. The Township OP designates the airport lands as Airport Industrial and Environmental Protection. The adjacent lands are designated mostly as Agricultural, Environmental Protection and Agricultural Restrictive.

Coincident with plans for the airport’s expansion, Transport Canada is about to revise the Canadian Aviation Regulations to ensure an adequate and comprehensive approach to wildlife management in and around airports in Canada. The new regulations will set forth planning, training, reporting and alerting obligations with respect to wildlife hazards. Plans to expand the airport provide an opportunity to further enhance wildlife hazard management which will be timely in view of the new regulations.

Wildlife Hazards

In southern Ontario increasing wildlife species that pose important risk elements to aircraft safety include:

- Turkey Vulture *Cathartes aura*

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- Wild Turkey *Meleagris gallopavo*
- Canada Goose *Branta canadensis*
- Mallard *Anas platyrhynchos*
- Ring-billed Gull *Larus delawarensis* and Herring Gull *Larus argentatus*

- White-tailed Deer *Odocoileus virginianus*
- Coyote *Canis latrans*

There are other species groups of concern (e.g., hawks, blackbirds and swallows). However, most of the above listed species continue to increase in southern Ontario and pose relatively greater threats on account of their size, abundance and/or behaviour. In addition, there are some other species that are increasing rapidly and that may appear in the future as important risk factors (e.g., Sandhill Crane *Grus canadensis*).

As part of its ongoing wildlife management efforts and in preparation for changes to the regulations and standards in the Canadian Aviation Regulations, the airport has been assessing wildlife hazards and taking steps to reduce risks. Table 1 provides an overview of the wildlife hazards that have been identified at Peterborough Municipal Airport.

Table 1. Primary Wildlife Hazards

Species/Group	Assessment
Canada Geese	• Transient and breeding birds, mostly using the wetland areas, rapidly growing population in central Ontario
Other waterfowl	• Some breeding in local swamps (Wood Duck <i>Aix sponsa</i>) and a very few in wetland areas (Mallard and Blue-winged Teal <i>Anas discors</i>)
Gulls	• Common in the landscape, feeding in agricultural lands, sod farm, at a nearby landfill and occasionally on the airfield environment and within approach and takeoff areas
Wild Turkey	• Rapidly increasing, recently seen at airport edge
Raptors and Turkey Vulture	• Occasional, Northern Harrier <i>Circus cyaneus</i> may breed. Vultures may use landfill site, occasional in airport environment
Blackbirds, Killdeer, Snow Buntings, sparrows and other perching birds	• Numerous, all season, flocking blackbirds in the fall; Killdeer breeding around site (three to five pairs); buntings form occasional flocks during winter
Swallows	• Mostly summer and early fall; breed in airport buildings
White-tailed Deer	• Numerous in the landscape; deer use both the airfield itself and the surrounding swamps, year round
American Beaver	• Abundant in the landscape. Active in wetland areas creating and maintaining habitat that attracts wildlife hazards
Coyote, Red Fox	• Common in the landscape. Both occur regularly
Turtles	• Common, two species in wetlands; found nesting airside and have been observed on runway

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Although data are probably insufficient to calculate accurate strikes per 10,000 aircraft movements, it is known that since approximately 1985 there have been a variety of wildlife strikes reported. These have included the following:

-) \$300,000 worth of engine damage to a Jetstream 31, caused by the intake of a gull;
-) \$25,000 worth of damage to the engine of a Mitsubishi MU-2, caused by the intake of a “sparrow”; and
-) \$10,000 worth of damage to the airframe of a Cessna 150, caused by a deer strike.

There have been other strikes, not all of which have been reported (seven recorded), that have involved species such as swallows and sparrows. Table 2 summarizes measures that have been initiated to address wildlife hazards.

Table 2. Primary Wildlife Hazards and Management Responses

Species/Group	Measures Initiated	Potential Future Efforts
Canada Geese	<ul style="list-style-type: none"> • Lethal control • Pyrotechnics and other harassment 	<ul style="list-style-type: none"> • Fill in primary nesting habitat
Other waterfowl	<ul style="list-style-type: none"> • Filling of ponded water airside • Pyrotechnics and other harassment (chasing, horns) • Overwiring of some ponds 	<ul style="list-style-type: none"> • Fill in primary brood habitat in wetlands • Engineered overwiring of all storm water ponds
Gulls	<ul style="list-style-type: none"> • Harassment • Removal of earthworms and use of wormicide 	<ul style="list-style-type: none"> • Encouraging the establishment of effective bird control at the landfill
Wild Turkey	<ul style="list-style-type: none"> • Harassment, deer fence may provide some deterrence 	<ul style="list-style-type: none"> • Encourage local hunting
Raptors and Turkey Vulture	<ul style="list-style-type: none"> • Turf management 	<ul style="list-style-type: none"> • Encouraging the establishment of effective bird control at the landfill
Blackbirds, Killdeer, Snow Buntings, sparrows and other perching birds	<ul style="list-style-type: none"> • Turf management • Removal of nearby brush, ditch clearing, tree removal • Harassment 	<ul style="list-style-type: none"> • Improvements in rough grass management
Swallows	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Persistent removal of nests • Reduction of access points for species that use buildings
White-tailed Deer	<ul style="list-style-type: none"> • In August 2001 an electric deer fence was installed around most of the airside perimeter (cost approximately \$40,000) • Seasonal hunting is encouraged in forested areas around the airport 	<ul style="list-style-type: none"> • Maintain current efforts

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American Beaver	<ul style="list-style-type: none"> • Dam removal • Trapping programs 	<ul style="list-style-type: none"> • Increase scope of the trapping program • Plans to reduce open marsh habitat • Include beaver baffles in new storm drainage system
Coyote, Red Fox	<ul style="list-style-type: none"> • Harassment 	<ul style="list-style-type: none"> • Reduction in prey base
Turtles	<ul style="list-style-type: none"> • Removal of animals found airside 	<ul style="list-style-type: none"> • Plans to fill in main summer habitats • Potential to create nesting areas away from airside

In addition, wildlife management activities currently undertaken include a variety of other measures. A daily log is maintained and daily inspections (including nighttime spotlighting) of the airport environment for wildlife hazards, at both fixed and random times are undertaken. This includes inspections by foot and by truck, as well as runway inspections prior to the arrival of incoming scheduled flights. UNICOM aeronautical radio advisories are provided to aircraft as required.

The wetlands, especially the open water marshes, that are located adjacent to the airside areas have been a chronic source of wildlife activity (George Johnston, Airport Manager, pers. comm., June 2002). This has primarily been waterfowl and deer related. However, other problem species at this site directly originate from the ponds (e.g., beavers, blackbirds, turtles). The general level of wildlife use associated with these wetland features can also be expected to contribute to use of the airfield by a range of other species identified as potential hazards, including Coyotes, Red Foxes and raptors. Because of the kinds of wildlife they attract, surface water features are known to be particularly hazardous features to have on airport property.

Further reductions of wildlife hazards at the airport will, in part, be contingent on the elimination of open water marsh adjacent to the airside areas and the engineered overwiring and maintenance of any surface water features that may need to remain for stormwater management purposes.

Stakeholder Views

During the process of developing the airport’s approach to expansion and wildlife management a number of stakeholders have participated either directly in the process or have raised related issues. In the following paragraphs selected stakeholders are highlighted where their concerns or interests directly interact with wildlife management issues.

0. Federal Government

- Transport Canada

Transport Canada (TC) regards all wildlife on airports as a potential safety hazard and supports the minimization of potential hazards. TC partnered with the airport in the installation of an Electrobraid® deer fence, which has been very successful in reducing deer incursions into the runway area.

- Department of Fisheries and Oceans

The proposal to fill in the wetland areas and associated ponds adjacent to the wetland resulted in a finding that fish habitat loss may result in a Harmful Alteration Destruction or Disruption under the Federal *Fisheries Act*. As a result, the Canadian Environmental Assessment Act (CEAA) was triggered, which requires that the proposal be circulated to other federal departments, in addition

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to the development of a plan when a HADD is identified by DFO to compensate for this loss of fish habitat.

- Environment Canada

Under CEAA, Environment Canada was asked to review the proposal under the existing Federal Wetland Policy and the Migratory Birds Act. The Federal Wetland Policy requires minimization of habitat loss and mitigative and/or compensatory measures where loss can not be avoided. In addition, Environment Canada requested that the yet-to-be-proclaimed *Species at Risk Act* be included in the mitigation and compensation plan. This potentially applied to the Least Bittern (considered to be rare in Ontario) which was observed at the wetland ponds during July.

2. Province of Ontario

The Ontario Wetland Evaluation System identifies the most important wetlands that should be protected from incompatible land uses. It does not provide for compensation of wetland loss, but focuses on avoidance and, in special circumstances, mitigation for projects such as pipelines and highways. The wetlands on the airport property have been designated a “provincially significant wetland” (PSW) by the Ontario Ministry of Natural Resources. This designation protects the wetlands on the property from development when an application is made under the *Planning Act* of Ontario. Although a *Planning Act* application may not be necessary for the airport expansion, and some questions were raised regarding jurisdiction on the lands (i.e., federal versus provincial) this PSW designation played a key role in the elevation of the importance of the wetlands.

2. Conservation Authority

In southern Ontario, Conservation Authorities fulfil a regulatory role in flood control and have a mandate to promote good stewardship of natural resources. In addition to its regulatory role in the protection of floodplain lands the Otonabee Region Conservation Authority also provided comments on storm water management on the airport lands, other natural heritage issues, and was interested in the relative frequency of birdstrikes at the airport.

2. Development Consultants Acting for the Adjacent Landowner

An open waste water lagoon was proposed by a local developer close to the northeastern end of the runway. Consultants for the proponent offered a position that the lagoon would not pose an important source for hazardous wildlife.

2. Naturalist Community

Local naturalists have voiced concern over the potential loss of wildlife attributes. This could include regionally rare plants, orchids and other plant species of local interest and other wildlife that may use the wetland (e.g., Least Bittern, waterfowl etc.).

Solutions

The City of Peterborough has commissioned various studies in preparation for the airport expansion. Ecological surveys were undertaken which included an assessment of wetland features and functions in order to respond to the regulatory, agency and stakeholder concerns. This included a detailed assessment of key attributes, rare flora and fauna and other features that would be affected by the airport expansion and described the net effects both on wildlife attributes and hazard reduction. This document also provided a summary of wildlife hazards and actions to reduce wildlife use of the airport.

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The Federal CEAA requires the development of a compensation plan as a result of the potential for impact to fish habitat as well as the potential loss of wetland functions. This is being undertaken in conjunction with a plan to enhance wetland habitat and compensate for impact to fisheries in an integrated plan. These activities are planned to occur off-site. This approach also is also sensitive to the provincial policy that prohibits loss of wetland function although up to 5.0 ha of Provincially Significant Wetland may be removed as a result of airport expansion.

Concerns for the potential presence of the provincially rare Least Bittern led to species-specific searches for this species. None were present during investigations and habitat for the species was found to be marginal at best. It was postulated that the previous July records for this species at the airport represented post-breeding dispersal from more suitable breeding habitat elsewhere.

Discussions with the Conservation Authority continue regarding the potential for changes to flood capacity. In the event that storm water management facilities are required on the property they will be designed to reduce wildlife use (e.g., incorporate engineered overwiring). It has also been suggested that some of the interesting or regionally rare plant species located within the expansion area be salvaged and relocated to nearby sites.

The application for an open design waste water treatment facility (post treatment holding lagoon) adjacent to the airport but within the lands regulated by the Airport Zoning Regulations was denied by Transport Canada on the grounds that waste facilities attractive to birds were not permitted within the regulated lands

Lesson Learned

The Peterborough Municipal Airport is diligently reducing risks resulting from wildlife use of the airport. However, this must include careful communication with the agencies and stakeholders that may be affected.

A recurrent theme in discussions with various stakeholders was that the risk (based on reported strikes per 10,000 flights) appeared to be acceptably low. Sufficiently low, that there appeared (to them) to be no need to create an impact to the areas’ natural features and functions. After further discussions, some stakeholders still remained skeptical. This attitude suggested in part that a lack of reliable wildlife strike data undermines the argument that this subject is regarded as a serious safety issue by the airport.

In addition, these rather abstract “bottom line” numbers did little to bring together the whole picture of increasing populations of species of high risk, increasing numbers of aircraft flights and the concomitant risks to human safety.

In the Peterborough example, actions intended to directly manage wildlife (i.e., filling of wetlands) triggered responses regarding many non-hazard issues (e.g., rare flora) and attracted the attention of stakeholders or regulators who are not frequently exposed to wildlife strike issues.

Bringing wildlife strike risks and management issues at airports to a wider constituency will be essential as wildlife management moves in earnest outside of the immediate vicinity of the airport.

To facilitate cooperation, the identification of potential hazards and mitigative strategies must be addressed at an early stage in the planning process. This will help to avoid late and unexpected

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developments that inevitably create adversarial situations. This must involve a high level of awareness of issues at the municipal planning level, as well as the education of regulators and reviewers in the broader stakeholder constituency.

Those who seek to raise the safety bar must be prepared to demonstrate that the industry itself is fully engaged. Risk assessments, full reporting of strikes and comprehensive wildlife management plans at airports will be a positive step forward in this regard.

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