



1.0

INTRODUCTION

1.0 INTRODUCTION AND POLICY FRAMEWORK

Bird strikes on buildings (including residential, low-rise and high-rise) are the second largest cause of avian mortality in Canada, exceeded only by cats (Calvert *et al.* 2013). With respect to bird strikes on buildings, the highest mortality per building is associated with high-rise buildings (Machtans *et al.* 2013). Estimates of annual mortality rates associated with buildings in the USA alone range from 100 million to 1 billion (Klem 2004; Hager *et al.* 2013), and in Canada range from 16 million to 42 million (Machtans *et al.* 2013).

The Fatal Light Awareness Program (FLAP) Canada is a non-profit organization that addresses the issue of Bird-Window Collisions (BWCs). Since 1993, volunteers have been active in picking up injured or dead birds near areas of frequent BWCs in the Toronto region. About 60% of the birds recovered by FLAP Canada are found dead (these are used for educational and research purposes). Over 80% of the injured birds rescued by FLAP Canada volunteers are rehabilitated and released back into the wild. FLAP Canada is also active in developing policy and monitoring legislation concerning BWCs (FLAP 2013).

Volunteers for FLAP Canada have documented approximately 45,000 BWCs in the Greater Toronto Area (GTA) since record keeping began in 2000. Of these, 899 have been documented in Markham. However, there are fewer volunteers monitoring in Markham and therefore the number of undocumented collisions is suspected to be much higher (Mesure 2013 pers. comm.).



Ovenbird

Photo by Tim Lenz/Creative Commons

Three types of birds reside in Markham: birds that reside year round in the municipality; birds that breed in the municipality during summer but fly south for the winter; and birds that are seasonal visitors.

Migratory birds are at greater risk of injury or death as they occur in very large numbers, and are not familiar with the urban environments that they fly through or settle in to rest and feed.

The majority of avian deaths are a result of impacts with transparent and reflective glass panels or panes; as birds are unable to detect glass, either during the day or at night.

Birds are at risk of collision during the day as they seek food and shelter. Migratory songbirds have an additional risk as they migrate at night, and night time lighting interferes with their flight patterns and may attract them into hazardous areas near buildings.

Findings of a recent study (Gelb & Delaretaz 2009; Hager *et al.* 2013) found that the following were the most important causes for bird strikes:

- A combination of nearby open space, vegetation and large windows (greater than 2m²), amount of glass and light is more predictive of deaths than building height;
- The frequency of collisions is higher along facades that are near extensive exterior vegetation and have either large reflective or transparent windows; and,
- The majority of documented collisions involved migrant species and occurred during the daytime.

At present, Markham has a number of high-reflective glass buildings distributed primarily within business corridors.

With the adoption of the City of Markham's New Official Plan (2013) and the objective to meet the Province's Places to Grow (2005) targets, the future Markham development structure presents new risks of BWCs with the increase of well-lit urban areas and the potential increase of glass buildings within employment and mixed-use neighbourhood areas (as per Official Plan designations).

Building owners have a responsibility under the *Ontario Environmental Protection Act*, and federal *Species at Risk Act* to undertake reasonable measures to protect birds from harm. A recent decision by an Ontario court emphasized that light emitted from buildings causes harm to birds; (refer to **Appendix A** - Applicable Legislation). Moreover, reflected light has the potential to injure Species at Risk that are protected by the federal *Species at Risk Act* or *Ontario's Endangered Species Act*. Taking action to address collisions is considered "due diligence".

Several major municipalities and agencies have taken steps to reduce BWCs, including Toronto, Chicago, New York City, San Francisco, Portland, Calgary and United States Green Building Council (USGBC). Recommendations from Toronto, Chicago, American Bird Conservancy (ABC), New York Audubon, and USGBC are widely adopted by regulation agencies across North America. Refer to **Appendix B** - Best Practices Summary.

Implications for Markham

The City of Markham has been active in creating bird friendly buildings through several initiatives such as the retrofitting of several existing municipal buildings (8100 Warden Avenue, Fred Varley Art Gallery, and Markham Civic Centre), incorporating bird friendly design standards in new municipal buildings (Cornell Community Centre and the future South-East Community Centre in eastern Markham); and encouraging new development to include

existing bird friendly treatments such as the City of Toronto Bird-Friendly Development Guidelines through the Site Plan Approval process (*Planning Act*, Section 41). Refer to **Appendix C** - Markham Retrofit Projects.

1.1 Policy Context

Markham Council has endorsed the preparation of Markham's Bird Friendly Guidelines based in part on two other Markham policy documents: Greenprint, Markham's Community Sustainability Plan (2011) and the City of Markham's New Official Plan (2013).

Greenprint, Markham's Community Sustainability Plan (2011)

The Greenprint, Markham's Community Sustainability Plan (2011), is a long-term plan to address environmental health, economic vitality, social and cultural well-being. The Greenprint is a comprehensive strategy to make Markham one of the most livable and sustainable communities in North America. Within the plan are 12 integrated sustainability priorities that reflect Markham's unique context.

The Bird Friendly Guidelines support the Ecosystem Integrity priority with objectives to develop and support wildlife habitat and to increase biodiversity. Recommendations from the priority have been integrated into the Bird Friendly Guidelines including: adopt Bird Friendly Guidelines for all new and existing buildings; establish a dark sky policy; and work with local partners and the community to establish wildlife stewardship and education programs.

City of Markham's New Official Plan (2013)

The City of Markham's New Official Plan (2013) includes policies that promote the principles of sustainable community development. New growth will be concentrated in centres and corridors in the urban area with emphasis on compact higher density development. The Official Plan contains policies to protect and enhance key natural heritage features and their functions, both within the local context and in the context of the Province, as well as, significant features such as the Oak Ridges Moraine and the Rouge National Urban Park.

The urban design policies in the New Official Plan provide direction for the development of Bird Friendly Guidelines under section 6.2.2.7 to reduce occurrence of bird collisions with buildings for use as part of the development approval process. Section 6.2.3.1 of the Sustainable Buildings and Site Design section also states that it is the policy of Council to apply innovative sustainable design practices and technologies in site planning and building design through the development approval process. The list of sustainable design practices includes requirements for the use of window applications, shades and visual markers to reduce the risk of bird collisions with building facades; and minimizing the impact of lighting from development on the nocturnal environment and night sky. These policies have been considered in the development of the guidelines.



Photo by North-South Environmental Inc.

1.2 Purpose of Report

The Bird Friendly Guidelines study includes a review of background conditions relating to documented bird strikes in Markham, bird migration implications and the development of technical specifications which provides guidance on the types of treatments and techniques that should be implemented in site design, building design and the retrofit of buildings. The study also provides an implementation strategy on actions that the municipality could employ and manage to reduce BWCs. Relevant internal and external stakeholders including landowners, Ontario Association of Architects (OAA), Building Owners and Managers Association (BOMA), Building Industry and Land Development Association (BILD), and the Markham Developers Round Table were provided an opportunity to input into the study. The guidelines will act as a resource to the development industry and planning and urban design professionals and will inform the design of new buildings and also the retrofit of public and private urban spaces and built form.