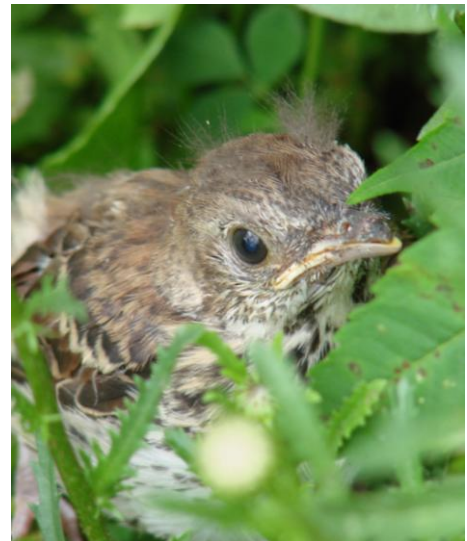
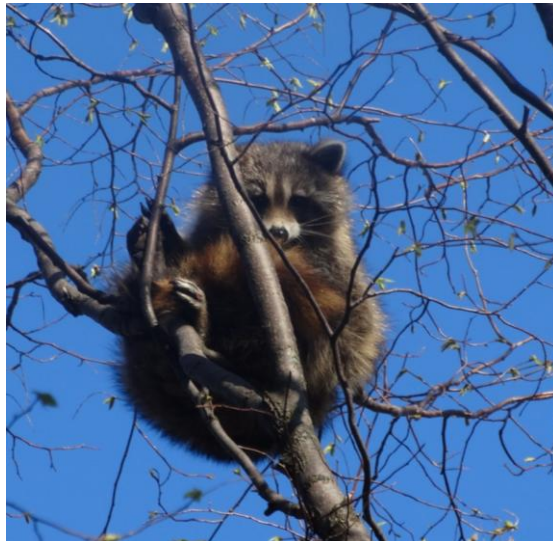


Protocol for **Wildlife Protection** during Construction



City of Ottawa Protocol for Wildlife Protection during Construction

Contents

- PREAMBLE3**
- 1 Introduction3**
 - 1.1 Application of protocol4
 - 1.2 Other Legislative Requirements4
 - 1.3 Wildlife Expertise4
- 2 Best Practices5**
 - 2.1 Project-specific Wildlife Protocol.....5
 - 2.2 Sensitive Timing Windows.....5
 - 2.3 Pre-stressing6
 - 2.4 Site Clearing9
 - 2.5 Construction Site Management10
 - 2.6 Wildlife Encounters.....11
 - 2.7 Wildlife-proofing.....12
 - 2.8 Owner Awareness13
- 3 Conclusion13**
- 4 Additional Resources14**

Tables

- Table 1: Sensitive times for wildlife in various habitats, with recommendations for reducing impacts of construction..... 7

Appendices

- Appendix 1: Example of On-site Reference Handout..... 16

City of Ottawa Protocol for Wildlife Protection during Construction

PREAMBLE

The updated City of Ottawa Protocol for Wildlife Protection during Construction has been developed in response to a direction provided by Council on July 17, 2013, as part of the City's Wildlife Strategy. The protocol is a compilation of best practices that serves as a guide and a common frame of reference for the City and the development industry in addressing wildlife protection during construction. The protocol also serves as a guide and frame of reference for City staff involved in planning and carrying out capital projects or other activities that may affect wildlife and wildlife habitat. The protocol itself is not intended to define new requirements for wildlife protection during construction, nor does the protocol provide for proponents of development a means to not adhere to other applicable legislation such as the *Endangered Species Act, 2007* or the *Migratory Birds Convention Act*. The techniques and methods to provide for wildlife protection will continue to be identified by proponents of development through studies that are required as set out in the Official Plan (e.g., Environmental Impact Statements, Tree Conservation Reports) to meet legislative requirements and with consideration to best practices as compiled within this document. Specific requirements for wildlife protection will continue to be defined by staff in consultation with proponents and their consultants, and included as conditions of approval where appropriate through subdivision, condominium and site plans.

1 Introduction

This protocol is intended to help reduce the direct impacts of development on wildlife that occur during construction. It also provides some guidance on how to help reduce conflicts between residents and wildlife in newly-constructed neighbourhoods, through better wildlife-proofing and awareness. The protocol complements and supports the City's Environmental Impact Statement (EIS) Guidelines, which address impact assessment and mitigation in a more general way during the development planning and review process, and the Tree Conservation Report (TCR) Guidelines, which address impact assessment and mitigation for trees. The protocol promotes best management practices relating to sensitive timing windows for clearing, pre-stressing, site clearing, construction site management, wildlife encounters, wildlife-proofing, and owner awareness.

1.1 Application of protocol

This protocol may be used to guide wildlife protection planning in plans of subdivision, plans of condominium, and site control plans for properties that include or are located adjacent to wildlife habitat, including:

- areas of tall grass;
- shrubs;
- trees or woodlands;
- watercourses;
- wetlands; or,
- complex features such as rock piles, junk heaps, or vacant structures.

Applicants will be advised of the protocol's relevance to their site at pre-consultation.

If a proposed development requires an Environmental Impact Statement or a Tree Conservation Report under the policies of the Official Plan, any recommendations in the EIS/TCR related to mitigating impacts to wildlife from construction activity will be expected to meet or exceed the standard of protection established in this protocol. The recommendations from the EIS/TCR will be used by City staff during the development review process to develop conditions of approval for the project.

This protocol also provides useful information for City staff and members of the public, which can be referred to when planning other projects and activities, such as the development of single lots under a building permit, the construction of new infrastructure, or in non-development related vegetation clearing.

1.2 Other Legislative Requirements

This protocol provides guidance on best practices to protect Ottawa's wildlife during construction and related activities. There are several legislative requirements for the protection of various species or groups of wildlife (e.g., provincial *Fish and Wildlife Conservation Act, 1997* and *Endangered Species Act, 2007*; federal *Species at Risk Act*, *Migratory Birds Convention Act*, and *Fisheries Act*). It remains the responsibility of the property owners and their agents to ensure that their actions comply with all applicable legal requirements.

1.3 Wildlife Expertise

Project proponents will typically rely on professional biologists or environmental consultants to advise them with respect to wildlife. Other potential sources of information and advice on wildlife include wildlife service providers, wildlife rehabilitators and other local experts, as well as relevant agency staff (e.g., Ministry of Natural Resources and Forestry, Canadian Wildlife Service). Links to various sources of additional information that may be useful in wildlife protection planning are provided in Section 4 of this protocol.

Wildlife rehabilitators provide care for orphaned or recuperating wildlife, with the aim of returning them to the wild when they are able to care for themselves. Rehabilitators must receive authorisation from the Ministry of Natural Resources and Forestry (and/or Environment Canada, for migratory birds) on an annual basis. There are very few authorised rehabilitators in the Ottawa area (see links in Section 4). By making pre-arrangements with wildlife rehabilitators, as recommended in this protocol, project proponents can help rehabilitators to

determine whether local capacity exists to handle their potential needs. Rehabilitators and other local experts can also advise proponents on ways to avoid injuring or orphaning wildlife, thus reducing the need for rehabilitation. Similarly, pre-arrangements should be made with local veterinarians to ensure that they are able to treat injured wildlife.

2 Best Practices

2.1 Project-specific Wildlife Protocol

For some projects where an EIS has identified large areas of wildlife habitat, or particularly sensitive areas of wildlife habitat, a project-specific wildlife protocol may be needed to ensure that the recommendations in the EIS are appropriately implemented during construction. The following information should be clearly conveyed to the on-site staff as part of the project-specific wildlife protocol, via notes on plans, handouts and/or on-site briefings:

- Schedule for pre-construction activities such as inspections for wildlife, installation of protective fencing, pre-stressing, and on-site briefings for contractors;
- Description of wildlife mitigation measures to be used during construction, including;
 - Identification of any natural areas, trees or other features to be retained;
 - Placement and specifications of required protection measures (e.g., fencing, signs);
 - Phasing and direction of site clearing activities;
 - Any recommendations regarding internal access routes for vehicles and other heavy equipment, vehicle parking, materials staging and stockpiling, fuel storage and handling, etc.; and,
- Guidance on how to deal with wildlife encounters, including any species at risk that may be present, and arrangements for dealing with injured or orphaned wildlife. This guidance should be summarized in a handout suitable for quick reference by on-site staff (see example in Appendix 1).

When a project-specific wildlife protocol is needed, it should typically be developed close to or following approval of the project, when the plans have been finalized and more information on scheduling is available. For projects involving early servicing or other site preparation activities in advance of approval, the EIS consultant should provide appropriate advice on wildlife protection measures prior to the commencement of on-site activities. This can be done in conjunction with the Tree Conservation Report requirements, where applicable.

2.2 Sensitive Timing Windows

The greatest disruption to wildlife generally occurs when a site is cleared, removing the existing habitat. The timing of site clearing should be carefully considered, because the impacts to wildlife will be greater during sensitive times of the year. During the winter, overwintering and hibernating wildlife may be physically unable to escape from the site, or may freeze or starve to death if forced to leave their dens and food caches. In the spring and summer, most species are more mobile, but mothers will be laying eggs or bearing young. The most profound impacts to wildlife occur when they are displaced from their habitat at such critical times during their life cycle. Table 1 identifies sensitive times of the year for various habitat types and wildlife. This information can be used to determine what time(s) of year may be sensitive at a particular site, based on which types of habitat and wildlife are actually

present. Where possible, site clearing should be planned to occur outside of the applicable sensitive time(s); otherwise, additional mitigation measures should be employed to reduce the impacts.

These timing windows are provided for guidance only, and should not be relied upon in cases where legislated restrictions apply (e.g., under the *Endangered Species Act, 2007*). The federal *Migratory Birds Convention Act* prohibits the unauthorized killing or harassment of migratory birds and the disturbance or taking of their nests and eggs, but does not refer to specific timing windows. The Canadian Wildlife Service (Environment Canada) provides information on how to avoid impacts to migratory birds and their nests during construction, including the timing of bird breeding seasons in Canada (see list of Additional Resources in Section 4.0 below) in order to assist proponents in their project planning; however, these are not legislated dates, and the federal prohibitions apply throughout the year.

All sites should be inspected by a biologist prior to clearing, to identify any potential wildlife issues (e.g., hibernating animals or nursing mothers and their young, etc.) and to inform or adjust mitigation planning as needed. The timing and scope of this inspection will vary depending on the type and extent of habitat to be affected, the availability of existing information about the wildlife on the site (from an EIS or other sources), and the anticipated timing for site clearing. Table 1 includes recommendations for specific habitat searches that should be included in the scope of the EIS, where applicable, or the site inspection. For more information about the timing of site inspections and associated pre-stressing activities that should occur prior to clearing, see Section 2.3, Pre-stressing below.

In cases where site clearing needs to occur during sensitive times of the year (and no regulated restrictions apply) additional mitigation measures may be needed to reduce impacts to wildlife. Potential mitigation measures include:

- More intensive pre-stressing to encourage resident wildlife to leave the site;
- Installation of appropriate nesting boxes around the periphery of the site, to compensate for nesting sites (e.g., cavity trees, squirrel dreys) that will be removed;
- In some cases, where winter food caches will be lost and other sources of food are scarce, supplemental food sources may need to be temporarily provided in safe locations away from the work space;
- Retention of qualified agents to provide on-site monitoring during site clearing, and/or on-call advice and assistance;
- Pre-arrangements made with wildlife rehabilitators and qualified veterinarians to ensure appropriate care of orphaned or injured wildlife.

2.3 Pre-stressing

“Pre-stressing” is a term used to describe actions taken to encourage wildlife to move away from a site prior to the onset of construction. Common methods of pre-stressing include having one or more people walk the site while talking loudly or playing loud music, or placing pieces of cloth or other objects that carry a strong human scent into animal dens. To be effective, these measures may need to be combined and repeated several times over the course of two to three weeks. Some common pre-construction activities, such as surveying, or installing protective fencing, can contribute to pre-stressing. In urban areas where wildlife are already accustomed to human presence, pre-stressing using human sounds and scents may be less effective; other repellants may be needed.

Table 1: Sensitive times for wildlife in various habitats, with recommendations for reducing impacts of construction*

Habitat Type	Wildlife	Sensitive time(s)	Recommendations
Grasslands and old fields	Migratory birds and raptors Small mammals and other wildlife Note: several Species at Risk birds use grasslands and open habitats; consult Ministry of Natural Resources and Forestry (MNRF).	April through mid-August (breeding season for most species) Mid-October through March (for overwintering woodchucks, if present)	Reduce potential wildlife usage by mowing outside of breeding season, then maintain as mowed grass until on-site work begins. Woodchucks, if present, may persist on mowed sites. Avoid impacting burrows during sensitive times for this species, where possible.
Shrubs or trees (growing as individuals or in small clumps or hedgerows)	Migratory birds and raptors Small mammals and other wildlife	The following only apply if wildlife are actually using the habitat: March through mid-August (breeding season for most species) Mid-October through March (for cavity trees or other den sites)	Retain a biologist to inspect habitat. If no active nests or dens are present, clearing should be done within a few days of inspection (during sensitive times of year, clearing should occur the same day if possible).
Thickets or woodlands	Migratory birds and raptors Mammals and other wildlife Note: several Species at Risk use thicket, edge and woodland habitats; consult MNRF.	March through mid-August (breeding season for most species) Mid-October through March (for overwintering wildlife)	Do not clear during sensitive times of the year, unless mitigation measures are used to reduce risks to wildlife. The Canadian Wildlife Service does not support relying on inspections for migratory bird nests in such habitats, due to the difficulty of locating all nests and the risk to the birds.
Complex features (e.g., piles of	Mammals and other wildlife (e.g., snakes)	March through July (breeding season for most	Retain a biologist to inspect habitat prior to removal. In cases where

*NOTE: The information in this Table can be used to determine what time(s) of year may be sensitive at a particular site, based on which types of habitat and wildlife are actually present. Where possible, site clearing should be planned to occur outside of the applicable sensitive time(s); otherwise, additional mitigation measures should be employed to reduce the impacts. The recommendations provided do not address Species at Risk requirements under the *Endangered Species Act, 2007*. For situations involving Species at Risk, regulated timing restrictions, mitigation measures or compensation requirements may apply (consult the Ministry of Natural Resources and Forestry for more information).

Table 1: Sensitive times for wildlife in various habitats, with recommendations for reducing impacts of construction*

Habitat Type	Wildlife	Sensitive time(s)	Recommendations
rock or wood, stone walls, derelict vehicles, junk heaps, etc.)		species) October through March (for overwintering wildlife, including snakes)	presence of wildlife is confirmed or uncertain, disassemble slowly, outside of relevant sensitive time(s), to reduce potential impacts and allow wildlife time to relocate.
Vacant buildings or other structures	Some birds Small mammals and other wildlife (e.g., snakes) Note: some Species at Risk, including barn swallows and little brown bats, use buildings and other structures; consult MNRF.	March through mid-August (breeding season for most species) Mid-October through March (for overwintering wildlife)	Retain a biologist to inspect habitat prior to removal. In cases where presence of wildlife is confirmed or uncertain, demolition may need to be done in controlled stages, outside of relevant sensitive time(s), to reduce potential impacts and allow wildlife time to relocate.
Wetlands and waterbodies	Migratory birds, including waterfowl Mammals Aquatic reptiles and amphibians Fish Note: many Species at Risk use wetlands and other aquatic habitats; consult MNRF.	March through August (breeding season for most species); note that this includes regulated in-water timing restriction for warmwater fishes (March 15 to June 30) August through October (emergence of hatchling turtles, if turtle nests are present) Mid-October through March (for overwintering wildlife, including turtles)	Do not clear during sensitive times of the year, except in cases where exclusion fencing or other mitigation measures can be used to reduce risks to wildlife. Exclusion fencing can be useful when working in or around these habitats, to prevent wildlife (especially turtles) from entering work areas. Fish and other highly aquatic wildlife such as turtles and frogs may need to be relocated prior to commencing work (permits required from MNRF for relocation).

*NOTE: The information in this Table can be used to determine what time(s) of year may be sensitive at a particular site, based on which types of habitat and wildlife are actually present. Where possible, site clearing should be planned to occur outside of the applicable sensitive time(s); otherwise, additional mitigation measures should be employed to reduce the impacts. The recommendations provided do not address Species at Risk requirements under the *Endangered Species Act, 2007*. For situations involving Species at Risk, regulated timing restrictions, mitigation measures or compensation requirements may apply (consult the Ministry of Natural Resources and Forestry for more information).

Timing and frequency of pre-stressing activities will vary depending on the site context, the amount of information known about wildlife at the site, and the proposed schedule for site clearing. Suggested site inspection and pre-stressing schedules are as follows:

- For sites with good wildlife information and/or little habitat to be affected, that will be cleared outside of any applicable sensitive timing windows (low risk of impacts): one site inspection combined with pre-stressing within a few days prior to clearing.
- For sites with poor wildlife information and/or larger areas of habitat being affected, that will be cleared outside of any known sensitive timing windows (moderate risk of impacts): first site inspection 2-3 weeks in advance, with pre-stressing and follow up inspections as needed based on results; final inspection/pre-stressing on the day before clearing for each phase.
- For sites that will be cleared during sensitive times of the year (high risk of impacts): first site inspection 3+ weeks in advance with multiple pre-stressing and follow up inspections; final inspection/pre-stressing on the day before clearing for each phase.

Note: for sites located within or adjacent to existing developed areas, nearby residents should be informed about the onset of pre-stressing activities and the potential for increased encounters with wildlife dispersing from the site. Sources of information on avoiding conflicts with wildlife should be provided (see Section 4). The City's Noise By-law needs to be respected.

2.4 Site Clearing

Vegetation removal (including mowing of tall grass) and other site clearing activities should proceed in phases, generally moving from the most disturbed part of the site (closest to existing development) towards the least disturbed part of the site. Even on small sites that can be cleared in a single day, it is important to follow this pattern in order to "herd" wildlife out of the site into adjacent undisturbed habitat, or towards the nearest habitat. Some examples of possible scenarios are provided below. Site clearing should be timed to avoid disturbance of habitat areas during sensitive times of the year (see Section 2.2) where possible.

Scenario 1: The work space directly abuts a natural area or open space that will be protected and retained.

Site clearing activities should begin at the far side of the property from the retained natural area and proceed towards it. The goal is to ensure that any wildlife within the work space can retreat into the retained natural area without having to cross cleared lands.

Scenario 2: There is an existing natural connection (stream corridor, hedgerow or other natural linkage) between the work site and a nearby natural area.

Site clearing activities should be phased to funnel wildlife towards the existing connection. Areas of habitat within the work space should not become isolated from the connection until the final stages of this process.

Scenario 3: The site includes one or more isolated areas of habitat to be cleared, with no existing connection to other natural areas nearby.

One or more open “escape routes” between the habitat and the edge of the site should be maintained until the final phases of vegetation clearing are completed. These escape routes should be defined on the site with fencing to ensure they stay open, and to help channel wildlife movement. Clearing should begin at the far side of the habitat and proceed towards the designated escape route.

In all cases, each area to be cleared should be inspected (and, if necessary, pre-stressed) by the project biologist one more time the day before clearing, to determine whether any trees or other habitat features are still being used by wildlife. Any occupied trees/features should be flagged for temporary retention for at least one additional day, to allow wildlife a last chance to move out. In cases where occupancy is uncertain, the same precaution should apply. If they do not leave on their own, then it may be necessary to have a professional wildlife service provider relocate them, in accordance with applicable laws (e.g., *Fish and Wildlife Conservation Act, 1997* for most commonly encountered wildlife species). Relocation is not an option for some species; for example, if a migratory bird is nesting on site, a protected buffer zone may need to be established and maintained until the birds are finished nesting (the width of such buffer zones varies depending on the species, and should be determined by the project biologist in consultation with Environment Canada). This may affect the phasing or overall schedule for site clearing and subsequent on-site activities.

Any fencing between the work space and the natural habitat to which wildlife are being directed during site clearing must allow for wildlife passage; otherwise, wildlife may be unable to escape from the site. Acceptable fencing options are those which provide low gaps at the bottom of the fence to permit passage by small to medium species, and which are no more than 1.2 m high for larger species such as deer to leap over. Plastic snow fencing can be used, if suitable gaps are provided at intervals along the bottom edge (these can be cut out, or natural gaps caused by uneven terrain at the base of the fence). Once the work space has been cleared, these gaps should be closed or a more secure perimeter fence can be installed to reduce the risk of wildlife returning to the site.

2.5 Construction Site Management

Construction sites are normally managed to promote safety, efficiency and legal compliance. Site management is a key factor in reducing the overall environmental impact of the project, by controlling the risks of environmental contamination, soil compaction, and damage to trees and other natural features intended for retention. It also helps to reduce the risks to wildlife, by controlling the activities on-site that could directly or indirectly harm them.

All personnel should be briefed about wildlife protection measures at the outset of the project, in order to ensure that these measures are clearly understood and appropriately implemented. The briefing needs to provide an overview of the mitigation measures that are being used at the site, as well as instructions on what to do if and when wildlife are encountered during the work. It should also include information on any species at risk that may be present, and what to do if one is seen. A laminated handout summarising key information on wildlife protection should be kept on-site at all times for reference by staff (see example of a handout in Appendix 1). The handout should be tailored to suit the needs of each specific project, but should address the following subjects:

- General provisions – e.g., do not harm, feed or unnecessarily harass wildlife; drive slowly and avoid hitting wildlife where possible; keep site tidy and secure
- Species at risk – basic identification tips and recommendations (needs to be modified to address species most likely to be encountered at the site)
- Contact information for:
 - Project biologist / wildlife service provider
 - Ministry of Natural Resources and Forestry, Kemptville (for species at risk)
 - Wildlife rehabilitators and veterinarians (for orphaned or injured wildlife)

The management of the site needs to specifically address how to avoid attracting wildlife to the work space. Although on-site activities will generally discourage wildlife from entering the work space during the day, they may be drawn to the site at night (or on weekends) if it appears to provide sources of food, water or shelter. The following common attractants should be controlled or eliminated:

- Food wastes and other garbage – effective mitigation measures include waste control (prevent littering); keeping all trash secured in wildlife-proof containers, and prompt removal from the site (especially in warm weather).
- Water – effective mitigation measures include ensuring proper site drainage to limit standing pools of water; fencing off temporary storm ponds and other waterbodies within the work space (and not permitting wildlife access to any potentially contaminated waterbodies); and, use appropriate sediment and erosion control measures to protect the quality of surface water adjacent to or downstream of the work space.
- Shelter – effective mitigation measures include covering or containing piles of soil, fill, brush, rocks and other loose materials; capping ends of pipes where necessary to keep wildlife out; ensuring that trailers, bins, boxes, and vacant buildings are secured at the end of each work day to prevent access by wildlife.

While all personnel need to be aware of the wildlife protection measures, one or more people should be specifically tasked with ensuring that those measures are properly implemented, by performing the following duties:

- Checking the work site (including previously cleared areas) for wildlife, prior to beginning work each day;
- Regularly inspecting protective fencing or other installed measures to ensure their integrity and continued function; and,
- Monitoring construction activities to ensure compliance with the project-specific protocol (where applicable) or any other requirements.

For simple, low-risk projects, construction staff may be able to undertake this work (with help from contracted professionals if any issues arise). Large-scale or complex projects may benefit from the presence of a part or full time specialist such as an environmental officer, biologist or wildlife service provider, particularly during site clearing. Professional expertise is strongly recommended in cases where site clearing is being carried out during sensitive times of the year.

2.6 Wildlife Encounters

Ideally, the mitigation measures described above would allow all local wildlife to vacate the site before it was cleared, and no wildlife would return until the project was completed. In reality, however, it is very likely that wildlife will be encountered on-site at some point during the construction process. Wildlife may return to the site after dark, seeking the habitat that used to

be there. They may also be attracted to the site if it appears to provide food, water or shelter, as previously described in Section 2.5. Proper site management will reduce the risk of wildlife trying to move back onto the site, while daily inspections before work begins will reduce the risk of harm to any wildlife that has wandered in overnight.

Any wildlife encountered during site clearing or subsequent construction activities should be allowed to exit the site on their own, via safe routes. Construction staff should not attempt to capture or handle most kinds of wildlife, unless an animal is in imminent peril or is injured and cannot wait for rescue by qualified personnel. Improper handling can result in injuries to both workers and wildlife, and may in some cases contravene provincial or federal legislation. Removal and relocation of mammals, in particular, should only be done by qualified wildlife service providers working in accordance with applicable laws (i.e., *Fish and Wildlife Conservation Act, 1997*).

If young birds or mammals are discovered on a site, contact the project biologist, a wildlife rehabilitator, or other wildlife expert for advice. In most cases, they should be left alone. The mother is very likely nearby and will return if given the chance. For primarily nocturnal species like raccoons and skunks, she may wait until evening to move her family to a safe location.

Useful equipment for wildlife encounters:

- Work gloves, to reduce the risk of injury from bites or scratches
- Push broom for gently redirecting small mammals, reptiles or amphibians
- Clean (uncontaminated) towels or blankets and assorted containers such as plastic sweaterboxes, cat carriers, and a large bin or garbage can for capturing and transporting injured or orphaned wildlife (note: small cardboard boxes or unwaxed paper bags are best for small birds)

Scratches and bites from animals, whether domestic or wild, can result in serious infections and/or transmit diseases. Immediate medical treatment should be sought for any person injured by an animal.

2.7 Wildlife-proofing

Wildlife can cause significant property damage and even health and safety issues when they seek shelter in, on or under buildings. Wildlife-proofing measures have been developed to address these problems, but many of these measures are typically installed by building owners in response to an issue, rather than being installed proactively during the construction of the building. The Ontario Building Code (OBC) does not address the subject of wildlife-proofing in great detail. It does require that sources of natural ventilation (other than windows) be constructed to provide protection from insects and weather, and that outdoor air intakes and exhaust outlets should be screened to prevent entry of animals and insects. However, these requirements alone may not protect a building from wildlife determined to find a way in. The most common access points are through vents, chimneys, roofs and eaves; wildlife will also frequently seek shelter underneath porches, stairs and raised decks.

Builders and contractors are encouraged to go beyond the requirements of the OBC and provide their clients with additional built-in protection against wildlife. This could include upgrading materials to use more wildlife-resistant metal components instead of plastic. Heavy screening or other exclusion measures could be installed to keep wildlife out of crawl spaces under porches or exterior stairs, including below grade to deter digging animals. Quality

assurance programs should include checking for any loose external fittings or gaps that could allow access by wildlife.

Buildings which feature large windows or other expanses of glass may need a different type of wildlife-proofing. These buildings can pose a risk to birds, which may not recognise the glass as a barrier. Many birds are injured and killed in collisions with glass each year, especially during spring and fall migration. Several major cities across North America, including Toronto and Vancouver, have introduced bird-friendly design guidelines to address this issue. FLAP Canada also provides advice on how to reduce risks to birds on its website (see Section 4, Additional Resources, below). Architects are encouraged to consider the potential risks to birds when designing buildings with glass exteriors or large banks of windows, and to take steps to reduce those risks.

2.8 Owner Awareness

Once construction has been completed, the potential conflicts between people and wildlife living in the new development can generally be best handled through education. “Owner Awareness Packages” are commonly required as a mitigation measure for new developments in or adjacent to natural areas. These packages are intended to inform residents about the environmental significance and sensitivities of the natural areas, and also to provide guidance on how to avoid having (or causing) problems, including conflicts with wildlife. There are many available sources of information to draw upon when assembling such packages (see Section 4). The finished product may consist of a simple brochure or one-pager, or may be a more comprehensive handbook. It should include:

- Basic information about common wildlife that may be expected to occur in the area;
- Information about any species at risk that residents should be aware of, and the legal protections associated with these species;
- Information on potential implications of allowing pets to roam unattended (including possible impacts to pets and/or wildlife, as well as legal restrictions under municipal and provincial regulations);
- Recommendations for maintenance of any wildlife-proofing measures included in the building;
- Suggestions on other ways to avoid or reduce human-wildlife conflicts; and,
- Sources of additional information.

3 Conclusion

By following this protocol and planning ahead for wildlife protection, project proponents should be able to reduce construction-related impacts on Ottawa’s wildlife, remain compliant with federal and provincial legislation, and help residents to avoid problems with wildlife in the longer term.

4 Additional Resources

City of Ottawa – information on Ottawa’s wildlife and conflict avoidance at <http://ottawa.ca/en/residents/water-and-environment/animals-ottawas-wildlife>

Environment Canada (Canadian Wildlife Service) – information on avoiding incidental take of migratory birds at <http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=C51C415F-1>

Environment Canada (Canadian Wildlife Service) – general nesting periods of migratory birds in Canada at <http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1>

FLAP Canada – information on how to reduce building-related risks to birds, including links to various cities’ bird-friendly design guidelines, at <http://www.flap.org/index.php>

Government of Canada – Species at Risk Public Registry, including information on all federally listed species at risk, at <http://www.registrelep-sararegistry.gc.ca/default.asp?lang=en&n=24F7211B-1>

Ministry of Natural Resources and Forestry – information on Species at Risk in Ontario at <http://www.ontario.ca/environment-and-energy/species-risk>

Ministry of Natural Resources and Forestry – contact information for authorized wildlife rehabilitators at <http://www.ontario.ca/environment-and-energy/find-wildlife-rehabilitator>

Ministry of Natural Resources and Forestry – illustrated instructions on safe handling of turtles, snakes, amphibians and birds, as well as directions on appropriate relocation and reporting of species at risk encounters, in the “Ontario Species at Risk Handling Manual: For Endangered Species Act Authorization Holders” at http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_tx_sar_hnd_mnl_en.pdf

Ministry of Natural Resources and Forestry – Species at Risk Branch Best Practices Technical Note on Reptile and Amphibian Exclusion Fencing, at http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_tx_rptl_amp_fnc_en.pdf

Ottawa-Carleton Wildlife Centre – information on commonly encountered species and conflict avoidance at <http://wildlifeinfo.ca/index.html>

Ottawa Humane Society – emergency response for injured wildlife, guidance on common wildlife issues, and information on wildlife service providers at <http://www.ottawahumane.ca/protection/wildlifeissues.cfm>

Ottawa Stewardship Council – Species at Risk Handbook for Ottawa at <http://www.ottawastewardship.org>

Rideau Valley Wildlife Sanctuary – wildlife rehabilitation centre; information on what to do for apparently orphaned or injured wildlife at <http://www.rideauwildlife.org/index.html>

Wild Bird Care Centre – wild bird rehabilitation centre; information on avoiding conflicts with birds and what to do for apparently orphaned or injured birds at <http://wildbirdcarecentre.org/index.php>

Appendix 1: Example of On-site Reference Handout

General Provisions:

- Watch out for wildlife while driving, and avoid hitting them, provided that it is safe to do so.
- Ensure sediment and erosion control measures (i.e., silt fencing) and other protective measures are in place prior to beginning work. Inspect them regularly, and particularly after storm events, to ensure their continued effectiveness.
- Prior to beginning work each day, check for wildlife by conducting a thorough visual inspection of the work space and immediate surroundings.
- Restrict all activities, vehicles and materials to the designated work space. Do not disturb areas identified for retention.
- Secure stockpiled materials, vehicles and structures against wildlife entry.
- Litter and other waste materials must be appropriately contained and promptly disposed of.
- Do not feed any wildlife or leave food out where it could attract them.

For health and safety reasons, and for protection of animals, removal and relocation of mammals must only be done by qualified and properly equipped personnel. Call the wildlife service provider [NAME] at (613) XXX-XXXX for assistance.

For injured wildlife, call the Ottawa Humane Society Emergency Services at (613) 725-1532. For injured birds, call the Wild Bird Care Centre at (613) 828-2849.

Scratches and bites from animals, whether domestic or wild, can result in serious infections and/or transmit diseases. Seek medical treatment immediately for any person injured by an animal.

Wildlife Encounters:

- **Do not harm any wildlife.** Many species are protected under provincial and/or federal legislation. Legal protection of egg-laying species applies to their eggs as well. Penalties for contravening these Acts can be severe.
- **Stand back** and allow the animal to leave the site. Wildlife may be encouraged to move away from the work area by shouting, waving of arms, clapping of hands or gentle redirection using a push broom. Contact project biologist / wildlife service provider for assistance if needed (e.g., if young animals are found). Do not unnecessarily harass any wildlife.
- **Turtles** may need to be helped to safety. Our most common species, Painted and Snapping Turtles, are protected under the Fish and Wildlife Conservation Act, 1997. If one of these turtles is found in the work area, it can be gently removed to a safe location nearby. Wear gloves, or use a broom to steer the turtle into a bucket or other container. Handle with care to avoid injury to the turtle or yourself, particularly when dealing with Snapping Turtles, which may bite or scratch. Turtles may also wet themselves when handled.
- Most of Ottawa's **snakes** are protected under the Fish and Wildlife Conservation Act, 1997. None of them are venomous, but bites may cause infections. Some produce a foul-smelling musk when handled, instead of biting. Snakes will usually try to escape or hide when disturbed, and only defend themselves when trapped. If a snake is found in the work area, it should be gently herded out to a safe location.
- **Stop work immediately** if any species protected under the Endangered Species Act, 2007 are seen in or near the work site (see attached sheet for tips on identifying some commonly encountered species). Take a photograph if possible, to confirm the sighting, and contact the project biologist at (613) XXX-XXXX and the Ontario Ministry of Natural Resources and Forestry – Kemptville District, at (613) 258-8204 or sar.kemptville@ontario.ca. Additional measures to avoid impacts may be required by the Ministry before work can restart.

Commonly Encountered Species Protected under the Endangered Species Act, 2007

For more information on Ottawa's species at risk, refer to <http://www.ottawastewardship.org>

Barn Swallow

Dark metallic blue above, buff to orange below. Long, deeply forked tail and pointed wings. Very quick and agile in flight. Cup-shaped nests built of mud and plant fibres on buildings and other structures, including bridge supports and culverts.



Male



Female



Nest

Bank Swallows are similar in shape to Barn Swallows, but do not have such long, deeply forked tails. They are dull brown above and white underneath, with a brownish band across the chest. They nest in burrows dug in exposed soils on steep slopes (e.g., sand pits, fill piles).

Blanding's Turtle

Bright yellow chin and throat. Highly domed, speckled shell up to 28 cm (11 in) in length.

Eggs small, oval and white. Usually less than 12 eggs per nest.



^ Photo courtesy of R. van de Lande

Bobolink

Males black with white back and cream hood during spring and summer breeding season. Females and non-breeding males streaky brown. Nests on the ground in open grasslands and hayfields.



All photos by A. MacPherson unless otherwise specified.

Butternut

Also known as White Walnut. Each leaf has several pairs of leaflets on either side of the main stalk, and one leaflet at the tip. Leaves and twigs grow in an alternating pattern along the branches. The nuts resemble limes or lemons in shape, and have greenish-yellow fuzzy rinds covering a hard, brown, ridged shell.



Butternut tree (centre)



Butternut leaves and fruit

Opened shell of butternut (without rind)



The closely related Black Walnut, which is not a species at risk, has round nuts like tennis balls. Its leaves are very similar to Butternut's leaves, but the terminal leaflet at the tip of each leaf is often much smaller than the other leaflets, or missing entirely. Ash trees may also appear similar to Butternut at first, with very similar leaves, but ash leaves and twigs grow in opposite pairs rather than alternating.

Eastern Meadowlark

Streaky grayish-brown bird with bright yellow front marked by black "V." Short tail has white edges on each side. Nests on the ground in open grassy areas; often seen perching on fence posts or shrubs.



All photos by A. MacPherson unless otherwise specified.