

National Best Management Practices for Management of Bat Maternity Roosts in Built Assets

Scope of Application:	<p>This Best Management Practice (BMP) applies to the maintenance and modification of Parks Canada built assets used by bats as maternity roosts. It is part of a suite of Parks Canada tools to manage bats including the <i>Standards for Managing Bats in Protected Heritage Places</i> and the <i>Decision Tool for Dealing with Bats in PCA Built Assets</i> (Annex 1 in the Standard). Adherence to the Standard is mandatory.</p> <p>Specifically, this BMP supports Step 7 of the <i>Decision Tool for Dealing with Bats in PCA Built Assets</i>. It should be used when projects are conducted during April - September¹ at built assets used as maternity roosts. The intent of the BMP is to provide mitigation measures to avoid impacting the breeding success of female bats, and to ensure the habitat will be available to bats for roosting after work is completed. Encounters with individual bats, at any time of the year, should be handled according to Section 1.1 of the <i>Standards for Managing Bats in Protected Heritage Places</i>.</p> <p>Built assets can serve as roosting or hibernating habitat or temporary shelter for bats, especially in areas where suitable natural shelters are limited or absent. Built Assets include buildings, fortifications and infrastructure. Specific examples where bats may be found include buildings, attics, eaves, loose siding, shutters, walls, chimneys, cellars, bridges, canals, wells, tunnels, picnic shelters, outdoor washrooms, kiosks, signs, and other human-made structures.</p> <p>Examples of maintenance and modification activities at built assets include:</p> <ul style="list-style-type: none"> • Repair of building envelope (e.g., windows, roofing, siding, eavestrough) and all associated activities (e.g., painting, pressure washing). • Interior upgrades and renovations (e.g., painting, woodwork, window replacement, insulation). • Expansion of building footprint. <p>This BMP applies to the Little Brown Myotis, Northern Myotis and Tri-colored Bat, all recently added as Endangered species under the <i>Species at Risk Act</i> (SARA) due to the threat of White-nose Syndrome (WNS). In Canada, WNS is</p>
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¹ Field units may choose to use more regionally-relevant dates. These dates must be based on reliable, clearly-established trends using multiple years of monitoring data or on peer-reviewed literature relevant to the region in question.

	<p>currently found in Ontario and eastward (except Newfoundland and Labrador) and in central, eastern and recently western United States. The disease is spreading rapidly and resulting in very high mortality.</p> <p>The <i>Species at Risk Act</i> (SARA) prohibits the killing, harming, harassment, capture or taking of a SARA-listed endangered species, the damage or destruction of its residence and the destruction of any part of its critical habitat. Bats are most vulnerable during summer, when mothers and pups are in maternity roosts (April-September) and winter, when males and females are hibernating (October-April).</p> <p>One or more of the three aforementioned bat species can be found in most Parks Canada protected heritage places south of the tree line. Little Brown and Northern Myotis are found throughout most Canadian provinces and territories except Nunavut. Tri-colored bats are found in the eastern provinces. As such, it is important to adhere to the legal requirements under SARA to protect bats at all Parks Canada built assets. If bats are encountered, assume they are one of the three SARA-listed endangered species unless a bat expert confirms otherwise.</p> <p>If a built asset such as a cellar or tunnel is used by bats for hibernation, generally between October and April, the location may include elements of Critical Habitat under SARA. As such, this BMP will not apply and you must contact Species Conservation and Management staff to determine next steps.</p> <p>There is a three tiered approach to managing bats in built assets used as maternity roosts, ranging from highest to lowest recommendation from both a bat conservation and project management perspective:</p> <ol style="list-style-type: none"> 1. Conducting work outside of the breeding season is the recommended approach and should be chosen when at all feasible. 2. Conducting work during the breeding season and implementing Section 2 mitigation measures #10-17 of this BMP is the second choice option if the first is not feasible. 3. Excluding bats and implementing Section 2 mitigation measures #19-22 should only be considered as a last resort and should be a temporary measure (i.e., exclusions will be removed after work is completed and bats will again have access to the built asset).
Exceptions:	<p>This BMP does NOT apply if the project will have residual effects on bats. The following are examples of excluded projects (refer to Step 8 of the <i>Decision Tool for Dealing with Bats in PCA Built Assets</i> if any of the following applies):</p> <ul style="list-style-type: none"> • Demolition of built assets used by bats. • Alteration of a built asset such that bats can no longer access the asset and use it as a maternity roost after work is completed. • Any activities resulting in negative impacts to the breeding success of female bats (repeated flushing from the roost, abandonment of pups,

	<p>restricted access in/out, change in temperature or ventilation requirements).</p> <ul style="list-style-type: none"> Any project or activity impacting a bat hibernaculum. <p>Consult the Species Conservation and Management Team:</p> <ul style="list-style-type: none"> To conduct further analysis should any of the above exceptions apply to the project. To determine whether conditions can be met to obtain a Health and Safety Exception under SARA or a SARA Authorization to damage or destroy a Residence if bats are using the location for breeding and impacts cannot be mitigated. To determine next steps if bats are using the location for hibernation since it may include elements of Critical Habitat under SARA. To address any uncertainty regarding potential adverse effects to bats or how to apply the <i>Decision Tool for Dealing with Bats in PCA Built Assets</i>. To address impacts to bats unrelated to maternity roosts. <p>Note: All other natural resource and cultural resource impacts must be addressed in combination with other BMPs or through another environmental impact analysis (EIA) pathway. Some or all of the mitigation measures in this BMP may be used to prepare a BIA or DIA.</p>
Approved geographic area of application:	This BMP is intended for use in all Parks Canada administered protected heritage places.

Effects Assessment and Mitigation

Components of the environment that may be affected:	<p>SARA-listed Little Brown Myotis, Northern Myotis, and Tri-coloured Bats:</p> <p>Maternity roosting bats and individual roosting bats can be negatively affected by work including:</p> <ul style="list-style-type: none"> Direct mortality or injury to roosting females, pups or individual males. Mortality or distress caused by disturbance to roosts; changes in ventilation; paint fumes, odours or toxins from project work; and excessive noise or light disturbance. Blocked access to roost sites.
Mitigation Measures:	<p>1) General</p> <ol style="list-style-type: none"> During breeding season and on the fringes of breeding season, the presence/absence of bats in the built asset must be confirmed, within two weeks of commencing work. Use of acoustic monitoring equipment is recommended. Presence/absence checks must be completed by qualified individuals familiar with bat ecology and bat roosts within the ecoregion of the built asset. If such an individual is not available in the field unit, an

	<p>external specialist is required. Results must be documented and provided to the designated Parks Canada contact² prior to work commencing.</p> <ol style="list-style-type: none"> 2. All on-site personnel must review the mitigation measures and any special requirements with the designated Parks Canada contact before work begins. 3. If a bat is found in a built asset while work is taking place, stop work and notify the designated Parks Canada contact. Leave the bat to exit on its own; ensure it has access to the outside via open door(s) and/or window(s). The designated Parks Canada contact will need to evaluate whether the bat is passing through or using the location as a maternity roost to determine next steps. 4. If the bat does not leave the asset in a reasonable amount of time, safely capture and release it outside following the instructions in Appendix 1. Generally, handling bats should be avoided if at all possible, this method of capture and release should be a last resort option. Note: This mitigation applies to individual bats; physical removal of multiple bats to prepare a site for work is not permitted. In this case, approved exclusion techniques would be required. 5. If dead or injured bats are found, leave them as found and report it immediately to the designated Parks Canada contact. Qualified Parks Canada staff should safely collect (i.e., wear gloves) dead bats to be tested for WNS as per section 1.1.4 of the Parks Canada <i>Standards for Managing Bats in Protected Heritage Places</i>. Injured bats should be assessed by the appropriate regional wildlife authorities. 6. Chemical pesticides and repellants must never be used directly on bats or in maternity roosts, whether bats are present or not. 7. No traps of any kind are to be used at maternity roosts, whether bats are present or not. 8. Bat access points (entry and exit) and building ventilation to maternity roosts must be retained to enable future use by bats. For example: <ul style="list-style-type: none"> ○ Spray insulation must not be used in structures where bats are present; access points cannot be easily maintained and fumes may have a negative impact on bats. ○ When installing roof insulation, ensure that bat access points are retained; keep the insulation a minimum of 10 cm from the eaves to help ensure access and to maintain building ventilation. ○ When installing insulation within the cavity walls of a building, start from the bottom of the cavity wall and work upwards to ensure any bats which may still be remaining are given the chance to escape. If feasible, leave a gap at the top of the cavity wall for bats. ○ Access points must be created as close as possible to the original ones, and care taken to ensure that corresponding gaps are inserted into any roofing felt or membrane. ○ At a minimum, at least one entry/exit point, the one most used by the bats, must be available following completion of the project.
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² This would be whoever it is within the field unit with authority and mandate to make decisions on bat management (e.g., for National Historic Sites and Parks, Resource Conservation Manager/staff; for the Historic Waterways, the Waterway Environmental Assessment Officer; and for Jasper, Banff, Lake Louise, Yoho and Kootenay National Parks, the Integrated Land Use Policy and Planning Manager. Identify who this is in Section 4: Supplementary Mitigations.

NOTE: Continuity of membranes and air barriers is crucial to building envelope performance. Where maintaining existing bat access points significantly compromises the integrity of the building envelope, make provisions in the building envelope design to maintain modified bat access points. Submit any proposed changes to existing bat access points to the designated Parks Canada contact for approval.

2) Work undertaken at the location of an active maternity roost (April - September³):

Scenario 1: Work takes place in a part of the built asset separate from the roosting bats (e.g., in a room adjacent to the space where mothers and pups are roosting) and/or nature of the work is non-invasive and will not cause disturbance⁴.

9. Implement General mitigations #1-8.
10. A notice clearly identifying areas used by bats must be erected and maintained at the built asset for the duration of the work period.
11. Inspect the immediate work area prior to commencing work each day to identify presence of bats.
12. Contain and dispose of any contaminated, toxic or hazardous materials immediately as it may affect the maternity roost. Remove to an approved facility as soon as possible.
13. Bat access (exit and entry) to the roost and ventilation requirements must be met at all times. Refer to mitigation #8.
14. Minimise vibration, noise and light to the maximum extent possible. For example:
 - Limit use of machinery and turn off machinery when not required.
 - Combustion equipment, such as generators, pumps, and vehicles should not be parked or operated close to the roost.
 - Conduct work during daylight hours and use red lights if work must be conducted in the evening.
 - Avoid artificial lighting around maternity roosts and alternative roosts especially light shining directly on the roost, its access points and the flight paths away from the roost.
 - If it is absolutely necessary to have lights on near the access points of the roost, switch lights off at bat emergence time and during peak bat activity times (dusk and dawn) or dim lights (e.g. to 30% power) for periods of the night to reduce illumination and spill.
 - Minimise clearing and grubbing activities near the roost.
 - Avoid human presence or activity directly under the roost entry point(s).
15. Minimise odours, fumes and dust to the maximum extent possible. Consider the following if feasible and appropriate:

³ Field units may choose to use more regionally-relevant dates. These dates must be based on reliable, clearly-established trends using multiple years of monitoring data or on peer-reviewed literature relevant to the region in question.

⁴ Disturbance can result from any activity (e.g., noise, light, significant changes in temperature or ventilation) that alters the behavior an individual or group of bats (e.g., flushing from the roost, mothers abandoning pups).

	<ul style="list-style-type: none"> ○ Seal off the work area. ○ Install air filtration units. ○ Use environmentally safe and non-toxic construction materials (i.e., paint, sealant, wood). <p>16. If altering the landscape (e.g. vegetation maintenance, clearing activities) around a maternity roost is absolutely required, ensure linear features such as tree lines and hedgerows are maintained to support bat navigation, foraging area and cover from predators.</p> <p>17. The Environmental Surveillance Officer and/or other designated Parks Canada contact must monitor bat behaviour for the duration of work and ensure pups are not abandoned by their mothers. If work causes bats to leave the built asset, work must stop immediately and be modified to ensure their return.</p> <p>Scenario 2: <i>Last Resort Option</i> - Disturbance to the maternity roost cannot be avoided or minimised, either through the nature of work or location, therefore, exclusion techniques and alternative roost habitat (bat houses) is required.</p> <p>18. Implement General mitigations #1-8.</p> <p>19. Ensure that Parks Canada approved alternative roost habitat and exclusion techniques are implemented in advance of the arrival of bats in April for the breeding season.</p> <p>20. Alternative roost habitat⁵ must be built and located in approved locations <i>before</i> the exclusion process is implemented to encourage use by bats. The alternate habitat should be installed in the spring, ideally a season prior to work commencing. Refer to Appendix 2 for guidelines on alternative roost habitat.</p> <p>21. Follow Bat Conservation International guidelines for humane bat exclusion (Appendix 3). To avoid unnecessary injury or death to bats:</p> <ul style="list-style-type: none"> ○ Implement one-way exclusions to prevent bats from entering the building and to encourage use of alternate habitat. ○ Exclusion techniques must be implemented when bats are confirmed <i>not</i> to be present (i.e., <i>before</i> the start of the reproductive season in April). ○ Qualified Parks Canada or external bat experts must evaluate success of exclusion techniques at least 2 weeks prior to work commencing. ○ Work must not proceed unless exclusion techniques have been successful. ○ Ultrasonic devices, smoke, traps, or chemical repellants (e.g., pesticides, aerosol sprays, moth balls) must never be used to exclude bats from structures. <p>22. Alternative roosts can be left up after work is completed, but the original roost site must also be available for bat use after the work has been completed.</p>
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⁵ Alternative roosts (e.g. bat boxes) are not a universal solution and are not to be interpreted as a suitable, one-to-one replacement for roosts. This type of compensatory mitigation should only be considered once all avoidance and minimization options have been exhausted. Only a small percentage of alternate roosts are successfully occupied, so the risks of non-adoption by bats must be minimized by careful design and site selection that mimics the original roosting conditions, particularly thermal properties and access.

3) Supplementary Mitigations

In the application of National BMPs, supplementary mitigations will likely be required to ensure all potential impacts are mitigated. Include any site-specific mitigation measures in this section (e.g., the designated Parks Canada contact within the Field Unit for issues regarding bats). NOTE: if the number of supplementary mitigations is considerable in extent and nature, it should be determined whether a Field Unit specific BMP or another EIA pathway is better suited to address the impacts.

In this circumstance, the relevant BMP should be indicated in the EIA Requirement Checklist, with a note that application of the BMP will be supplemented through the addition of mitigation measures to address project or site-specific requirements. All relevant mitigations and project-specific clarifications should be included as terms and conditions in any permits and authorization documents (e.g., contracts) for the project.

Supplementary mitigation measures may be included here:

References:

Bat Conservation International. 2018. *Bats in Buildings: Removing a Single Bat*. Retrieved 4 May, 2018, from <http://www.batcon.org/resources/for-specific-issues/bats-in-buildings/removing-a-single-bat>

Bat Conservation Trust. 2012. *Bats and Buildings-Bats and the Built Environment Series*.

California Department of Transportation. 2004. *California Bat Mitigation Techniques, Solutions, and Effectiveness*.

Parks Canada. 2018. *PCA Standards for Managing Bats in Protected Heritage Places*.

Stone, E.L. 2013. *Bats and lighting: Overview of current evidence and mitigation guidance*.

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