

13. A Bat Nursery Roost

1) Definition

A *bat nursery roost* means a feature that “houses” an aggregation of female bats and their young. Figure 45 shows a typical hollow tree nursery roost.



Figure 45. Western redcedar bat nursery roost.

2) Importance of a Bat Nursery Roost

A bat nursery roost¹ is where females congregate to give birth and raise their young during the summer. Nursery roosts are typically warm sites, often located on southerly aspects. The heat in these locations aids in thermoregulation of the young while they develop. Nursery roost sites are generally confined areas that help to inhibit predator entry (Figure 46).

Relatively few nursery roosts occur across the landscape, especially roosts with the potential for continued, multi-year use such as those located in hollow trees and rock crevices; therefore, several bat species may use the same nursery roost. Table 44 (extracted from the Bat Hibernaculum chapter – see end of this chapter) outlines the conservation status and distribution

¹ Current terminology differentiates a “nursery roost” from a “maternity roost”: a nursery roost, which is a type of maternity roost, is where females congregate to give birth and raise their young; a maternity roost is a roost used outside the winter period by adult females capable of reproduction (i.e., giving birth or raising young is not necessarily a factor).

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of bat species in British Columbia. Nursery roosts may be used year after year. Continual disturbance while the females tend their young in the nursery roost may result in site abandonment.



Figure 46. Inside a western redcedar bat nursery roost (looking upwards).
(Photo: Suzanne Beauchesne)

An aggregation of females in spring, summer, or autumn is referred to as a “maternity colony.” A colony will have maternity roosts and may also have nursery roosts. The colony may include pregnant females (may not be visibly pregnant early in the season), lactating females with or without young-of-the-year, or post-reproductive females. A maternity colony may consist of a group of females within a single roost (e.g., cave), or a group of females roosting singly or in small groups and maintaining a long-term social relationship (e.g., in crevices within a cliff or boulder field; in a forest stand under sloughing bark of trees).

3) What to Look For

Bat nursery roosts can be natural sites, such as hollow trees, “stub trees,” hollow branches, or behind loose, sloughing bark (Figure 47), as well as rock crevices on warm aspects. Buildings are also used as nursery roosts, typically in the attic or under south-facing metal roofing or shingles where temperatures are warmer. *Note: Only naturally occurring bat nursery roosts are considered wildlife habitat features.*

Nursery roosts are classified as “permanent” or “ephemeral” based on the longevity of site conditions and fidelity of bats to a particular site. A permanent roost is one that is available for bat use over many years and has suitable characteristics (e.g., microclimate, access) that remain stable over time. Examples of natural, permanent roosts include caves, cliffs, and large hollow trees of a slow-decaying species, such as western redcedar. Although mines, bridges, and buildings are also used by bats as permanent nursery roosts, *only naturally occurring roosts are considered wildlife habitat features.* An ephemeral roost is one where the characteristics important to bats (e.g., microclimate) change quickly and (or) unpredictably (e.g., an area under sloughing tree bark).

Inspect suspected nursery roosts cautiously by shining a flashlight into the entrance and looking for evidence of use. Bat droppings (guano) are often present at the base of the entrance and the smell of ammonia from bat urine may be noticeable at recently used roosts. Bat droppings are similar to mouse or rat droppings but are generally not as smoothly formed and have a shiny

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speckled appearance from the remains of insect exoskeletons and wings. At dusk, bats may be seen emerging from, or flying around, the entrance as they leave to forage.



Figure 47. Sloughing bark provides potential nursery roost sites. (Photo: Todd Manning)

Table 49 summarizes what to look for when identifying bat nursery roosts. Table 50 provides information to consider when managing habitats adjacent to a bat nursery roost.

Table 49. Bat nursery roosts: what to look for.

Description of a Bat Nursery Roost
<ul style="list-style-type: none">• Nursery roosts are often located at natural sites such as trees and rock crevices, and occasionally in buildings. Most naturally occurring caves and mine tunnels are too cool for use as nursery roosts. Note: Only naturally occurring bat nursery roosts are considered wildlife habitat features.• Births begin as early as May; although births likely peak from late June until mid-July, annual variation will occur around these dates, depending on spring weather conditions and (or) the geographic location in the province.• Late June to mid-July is the optimal time for reconnaissance searches.• Temperature requirements vary with the bat species; female bats generally select sites with warm temperatures (often located on sunny, southerly aspects), or that facilitate increased warmth from aggregating together, which promotes rapid growth of the young.• Bats using tree roosts prefer trees in older forests that meet many of the following criteria:<ul style="list-style-type: none">○ moderate decay (tree classes 2–5)○ large diameter (> 50 cm dbh Interior or > 70 cm dbh Coast and Interior Cedar–Hemlock zone)○ vertical hollow cavity accessed via a stem scar (Figure 46)○ open, broken top○ extensive woodpecker excavations○ deep stem cracks○ most bark intact but loosening (Figure 47)• Rock crevices used for nursery roosts are usually in warm, inaccessible sites on south-facing aspects.

Table 50. Information to consider when conducting primary forest activities near a bat nursery roost.

Information to Consider
<ul style="list-style-type: none">• Permanent nursery roosts should receive a higher level of protection and management than ephemeral roosts. Actively manage landscape areas with ephemeral roost habitat to maintain and recruit suitable amounts of roost habitat over time. Focus management decisions on protecting permanent nursery roosts from degradation, disturbance, or loss.• Establish a forested retention area centred around confirmed nursery roosts.• Where available, retain multiple trees close to one another (e.g., a wildlife tree patch) as alternative roost sites.<ul style="list-style-type: none">○ Valuable tree characteristics include: loose sloughing bark, hollow vertical cavities, deep stem cracks, large diameter (Interior: > 50 cm dbh; Coast and Interior Cedar–Hemlock (ICH) biogeoclimatic zone: > 70 cm dbh).• Avoid blasting, removing rock or talus, or constructing new roads within the retention area.• Avoid harvesting or salvaging trees within the retention area.• When harvesting adjacent to the retention area, retain an open, residual stand structure. Possible retention strategies:<ul style="list-style-type: none">○ Retain some large-diameter defective trees; ideally, these are trees with hollows, stem cracks, broken tops, woodpecker cavities, or loose bark, and are usually of low merchantability.○ Retain veteran trees, especially those which extend above the main canopy.○ Preferred roost trees on the Coast and southern Interior include western redcedar, Douglas-fir, western hemlock, and white spruce; in central and northern Interior, trembling aspen is frequently selected for roosting.• If operating areas contain cliffs, or rock outcrops with openings or crevices (especially those which have sunny aspects), include these in a wildlife tree patch (these sites are typically inoperable); most suitable cliff or rock outcrop sites are usually at lower elevations, especially in the ICH biogeoclimatic zone.• Minimize disturbance adjacent to known nursery roost sites during critical times, generally May–September (i.e., when young are born and reared).• Because many nursery roost trees are either dead or decayed, they are often targeted by firewood cutters. Place a “Wildlife Tree Sign” on known and potential nursery roost trees near public roads to educate the public on their high ecological value.

4) Regional Information – Kootenay Boundary

In this section, we provide specific timing windows and guidance on disturbance buffers for the Kootenay Boundary Region. This information may vary from provincial guidance and may not be applicable outside of the Kootenay Boundary Region because of regional specificity.

Bats occur throughout the Kootenay Boundary Region, although habitat types and nursery roost characteristics vary with species (Table 51). Nursery roosts occurring within a species’ range are restricted by topographic features, not vegetation type. Bats are sensitive to disturbance. Table 52 provides suggested minimum buffer sizes. Additional protection or alternative measures may be needed, depending on the nature of the disturbance, existing landscape and cover, or other factors.

Bats begin roosting and preparing for parturition at the beginning of May, with most having given birth by the beginning of August. This creates a potential *sensitive period of May 1–August 31*.² Based on site observations, the length of this sensitive period can be refined.

² Best Management Practices for Bats in British Columbia (2016).

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Table 51. Characteristics of natural bat nursery roosts in the Kootenay Boundary Region.³

Species	Biogeoclimatic Zone ⁴					Nursery Roost Characteristics*		
	PP	IDF	MS	ICH	ESSF	Trees	Rock Crevices, Outcrops	Cliffs
Pallid Bat	X					D	N	Y
Townsend's Big-eared Bat	X	X		X		Y (big)	N	Y
Big Brown Bat	X	X	X	X		D	Y	Y
Spotted Bat	X					N	N	Y
Silver-haired Bat	X	X	X	X	X	T, L	N	N
Hoary Bat	X	X	X	X	X	D, L	N	N
Californian Myotis	X	X	X	X	X	D	Y	N
Western Small-footed Myotis	X	X				N	Y	Y
Long-eared Myotis	X	X	X	X	X	D, stump	Y	Y
Little Brown Bat	X	X	X	X	X	D	Y	Y
Northern Myotis				X		D	N	N
Fringed Myotis	X	X				D	Y	N
Long-legged Myotis	X	X	X	X	X	D, stump	Y	Y
Yuma Myotis	X	X	X	X		D	Y	N

* D = dead/dying; L = live; T = in furrows on the surface of tree bark; Y = yes; N = no; S = sometimes; R = rarely; P = potential (known to do so elsewhere; not known for British Columbia). "Big" tree roosts include large, hollow trees.

³ Best Management Practices for Bats in British Columbia (2016).

⁴ A Field Guide for Site Identification and Interpretation for the Nelson Forest Region (1992); PP = Ponderosa Pine; IDF = Interior Douglas-fir; MS = Montane Spruce; ICH = Interior Cedar-Hemlock; ESSF = Engelmann Spruce-Subalpine Fir.

Table 52. Guidance on disturbance buffers for a bat nursery roost.

A Bat Nursery Roost – Guidance on Buffers
<ul style="list-style-type: none">• Establish a 100 m radius buffer around a bat nursery roost to avoid direct disturbance.• Where multiple roosts are identified as a maternity colony (e.g., a cluster of tree roosts), measure the 100 m radius as a line drawn around the outer perimeter of all nursery roosts.• Establish additional protection outside the buffer to avoid disturbances that may affect the functionality of the nursery roost.• Acceptable activities within the buffer or additional protection area vary with the potential impact level of the disturbance.<ul style="list-style-type: none">○ Low-impact disturbances (i.e., livestock attractants, activities on foot, small groups, visual screening present; examples include layout, cruising, reconnaissance): Acceptable in the additional protection area all year, and within the buffer outside of sensitive timing windows, although extra caution is required immediately adjacent to the roost.○ Medium-impact disturbances (i.e., light mechanized activities, larger groups/duration, no visual screening; examples include fence building, spacing, planting): Acceptable in the additional protection area outside of sensitive timing windows; not acceptable within the buffer during sensitive timing windows but may be acceptable outside of sensitive timing window if the activity does not degrade the habitat.○ High-impact disturbances (i.e., mechanized activities; examples include road construction, falling and yarding, landing sites): Possibly acceptable within the additional protection area outside of sensitive timing windows with review from a bat biologist; not acceptable within buffer at any time.

5) Additional Information

A Field Guide for Site Identification and Interpretation for the Nelson Forest Region, Land Management Handbook No. 20:

<https://www.for.gov.bc.ca/hfd/pubs/docs/lmh/lmh20.htm>

BC Species and Ecosystems Explorer – Species Summaries for Bats:

<http://a100.gov.bc.ca/pub/eswp/search.do?method=reset>

Best Management Practices for Bats in British Columbia:

<http://a100.gov.bc.ca/pub/eirs/viewDocumentDetail.do?fromStatic=true&repository=BDP&documentId=12460>

Karst Management Handbook for British Columbia:

<http://www.for.gov.bc.ca/hfp/publications/00189/Karst-Mgmt-Handbook-web.pdf>

Identified Wildlife Management Strategy – Additional guidance concerning the management of any *Forest and Range Practices Act* species at risk associated with a bat hibernaculum:

<http://www.env.gov.bc.ca/wld/frpa/iwms/accounts.html>

Species at Risk Public Registry – Additional information for bat species:

http://www.registrelep-sararegistry.gc.ca/species/default_e.cfm

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Table 44. Bat conservation status and distribution by region in British Columbia.⁵
(extracted from the Bat Hibernaculum chapter).

Species	Conservation Status (COSEWIC/ British Columbia)	Region							
		Cariboo	Kootenay Boundary	Northeast	Omineca	Skeena	South Coast	Thompson Okanagan	West Coast
Pallid Bat (<i>Antrozous pallidus</i>)	Threatened/ Red-listed		X					X	
Townsend's Big-eared Bat (<i>Corynorhinus townsendii</i>)	Not assessed/ Blue-listed	X	X				X	X	X
Big Brown Bat (<i>Eptesicus fuscus</i>)	Not at risk	X	X	X	X	X	X	X	X
Spotted Bat (<i>Euderma maculatum</i>)	Special Concern/ Blue-listed	X	X					X	
Silver-haired Bat (<i>Lasionycteris noctivagans</i>)	Not at risk	X	X	X	X	X	X	X	X
Eastern Red Bat (<i>Lasiurus borealis</i>)	Not assessed/ Red-listed			X			X	?	
Hoary Bat (<i>Lasiurus cinereus</i>)	Not at risk	X	X	X	X		X	X	X
Californian Myotis (<i>Myotis californicus</i>)	Not at risk	X	X			X	X	X	X
Western Small-footed Myotis (<i>Myotis ciliolabrum</i>)	Not assessed/ Blue-listed	X	X					X	
Long-eared Myotis (<i>Myotis evotis</i>)	Not at risk	X	X	X	X	X	X	X	X
Keen's Myotis (<i>Myotis keenii</i>)	Not assessed/ Red-listed	X				X	X	?	X
Little Brown Myotis (<i>Myotis lucifugus</i>)	Endangered/ Not assessed	X	X	X	X	X	X	X	X
Northern Myotis (<i>Myotis septentrionalis</i>)	Endangered/ Blue-listed	X	X	X	X	X			
Fringed Myotis (<i>Myotis thysanodes</i>)	Not assessed/ Blue-listed	X	X				?	X	?
Long-legged Myotis (<i>Myotis volans</i>)	Not at risk	X	X	X	X	X	X	X	X
Yuma Myotis (<i>Myotis yumanensis</i>)	Not at risk	X	X			X	X	X	X

⁵ Modified from Best Management Practices for Bats in British Columbia (2016).