

Bat House BMP

A Summary of Best Management Practices for Bat Houses in the USA and Canada

Effective use of bat houses to replace lost building-roost habitat requires **multiple structures** strategically placed to provide a **wide range of roost conditions** to support reproduction of local bat species. Design, construction, colour, exposure to sun, height, surrounding habitat, maintenance and **responsibilities of stewardship** are important considerations.

Four-chambered bat boxes on poles or on buildings



An example of a bat house is a bat box (shown above). Microclimate: the unique environmental conditions (temperature and humidity) provided inside a bat house.

Key Considerations for Bat Houses

Purpose: Bat houses are artificial roosts often used by females of colony-forming, building-roosting bats like Little Brown and Yuma Myotis, and Big Brown Bats. They should **not** be used to replace good forest management practices like retaining and recruiting large, old trees.

Reproductive needs of bats: To raise young, bats need warm roosts (often these are quite hot 35-39°C), though roost requirements vary with species, reproductive stage, and daily weather conditions. Temperatures inside a roost vary with number of bats, size of cavity, and the amount of sun exposure during the day.

Big Brown Bat



Little Brown Myotis



Yuma Myotis



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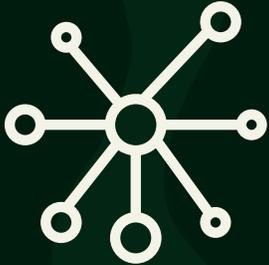
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Guidelines for Effective Bat House Deployment

Provide Multiple Options

- Offer several roosts close to one another (100m or less apart) to facilitate frequent roost switching. The objective is to create a "roosting area" similar to how bats would naturally have used forests (where a colony would rotate among multiple tree roosts in an area).
- Avoid reliance on a single bat box. Use multiple bat boxes, each providing a different suite of microclimates (e.g., different sun exposures, exterior colours, and venting). Or build a 'bat condo', a very large bat house with many chambers capable of housing thousands of bats.
- The optimal number of bat boxes is unknown, but ideally, the minimum is three: with at least one designed to reach warm temperatures (e.g., south, east, or west-facing) and another with enough shade to avoid the hottest parts of the day (e.g., east or north-facing). Especially at sites where temperature and/or humidity can be very high, north-facing or highly shaded boxes may be beneficial.



© Charles Francis

Understand Your Bats' Needs

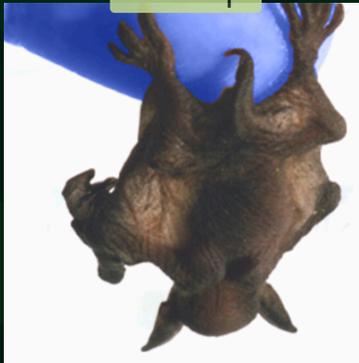
- Groups of bats are typically "maternity" colonies where adult females raise their babies or "pups" (most species only give birth to one pup each year). Bat houses are typically designed to attract maternity colonies in summer.
- Male bats, non-reproductive bats, bats migrating through the area, or bats fattening for winter hibernation, are likely to have different roost needs and/or preferences. These bats often prefer roosts with cool daytime temperatures so they can use torpor during the day.

Rocket Box



© Cory Olson

Bat Pup



© Christian Gronau

Bat Condo



© Dan Taylor/BCI

Placement for Microclimate Management & Success



- Ensure there are both warm and cool bat box options. Bat houses (boxes, condos) can be made warmer by increasing sun exposure, and using darker stains. Houses can be made cooler by having more shade, a northern exposure and/or use lighter stain.
- Position bat houses near existing bat boxes or lost roosts to support displaced colonies.
- Install at least 3 metres above the ground to prevent *domestic cats* (and other predators) from hunting bats.



Bat boxes on trees should not be cluttered by branches: these can obscure entry/exit, and increase the risk of predators perching near the exit or gaining access to the box.



© Cory Olson

Monitor Overheating Risks

- In hot climates, be sure to mount boxes in both sunny and shady locations, and in close proximity to each other. Shade may need to be constructed (e.g., adding sunshades, awnings, or reflective covers).
- Don't alter or remove a bat house known to be used by bats—even if it overheats. It may be an important roost when temperatures are cooler. Instead, add some cooler roost options into the immediate area.
- Consider newer designs: self-venting, thermal stability, or solar heat-dumping design features.
- When overheating occurs, bats need to be able to easily move to a cooler roost. Some innovative designs connect sunny and shady roosts with an enclosed bypass for bats to crawl (e.g., between North- and South-facing back-to-back boxes on a pole).

Bat boxes were shaded by a temporary cover during a heatwave event.



© Juanita Thomson

Long-Term Stewardship

Maintenance

- Regularly inspect bat houses for damage, pest infestations (e.g., wasps), and cleanliness. Do this after bats leave in autumn.
- Replace or repair structures to ensure continued availability. Re-stain exterior surfaces and re-seal seams with appropriate materials, as needed (avoid the active season and allow time for fumes to dissipate).
- Consider availability of stewards for long-term upkeep.



© John Saremba

Bat houses are best with many chambers.

Adapt Design to Colony Size

- Large colonies (1,000+ bats): Build bat condos or mini-condos for greater capacity and diverse conditions. Mini-condos are “super-sized” bat boxes.
- Smaller colonies (<1,000 bats): Use multi-chamber bat boxes (rocket boxes & 4-chamber nursery boxes or larger); mount on poles or buildings; mount side-by-side or back-to-back to create thermal gradients.

Construction & Design Considerations

- Use appropriate designs. Size matters: tall multi-chambered boxes are best.
- Ensure durable watertight seals (caulking/construction adhesive with wood screws).
- Do not apply screening/mesh onto roosting surfaces - physically roughen surfaces instead. Do not use treated lumber to build bat houses.

Community & Ecology

- To avoid disrupting local bat communities, don't install bat houses in natural areas where bats use tree or rock crevice roosts. Bat houses can favour species that prefer them, potentially impacting those that rely on natural features as roosts. Bat houses are best used to replace lost building roosts in urban areas.



Best Management Practices for the Use of Bat Houses in US & Canada

For the **full report & detailed BMP** with further considerations see:

<https://wcscanada.org/resources/best-management-practices-for-the-use-of-bat-houses-in-the-us-and-canada/>

