Getting to Know Oregon's Bats

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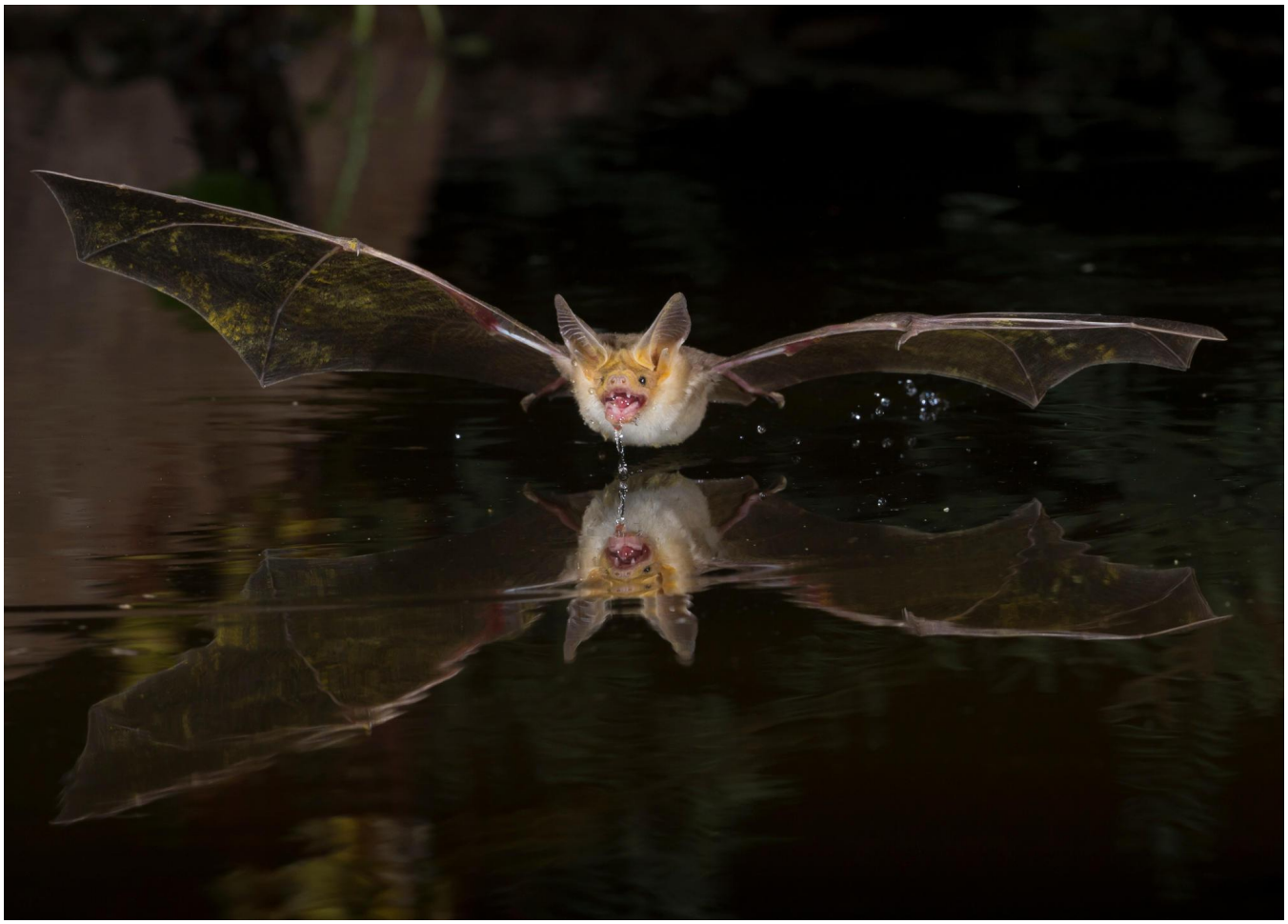

The Pallid Bat is a large pale bat with huge ears. They have large eyes and dog-like faces. Pallid bats emerge at night to feed and are found in southwestern and eastern Oregon.

Credit: Tom, Adobe Stock

Bats are mammals with amazing talents. These small, furry creatures have mastered the art of flight. Moreover, they navigate by sound, eat enormous volumes of insects, and can be found on every continent except Antarctica. Yes, many people fear bats due to concerns about disease or vampirism. There are no vampire species in the U.S., and although bat populations can harbor rabies, transmission to humans is rare.

Bats provide essential pollination, seed dispersal and other ecological services. They play a vital but unsung role in

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our ecosystems, economies and lives, eating volumes of insects to benefit our society, including agriculture and human health. Bat populations and entire species are under severe and immediate threat and need our help.

This publication focuses on the 15 species of bats in Oregon. Learn their distribution, habitat needs, their significant ecological roles in the environment, the threats they face, what to do if you encounter a bat and how we can support our furry flying friends.

Ecological and economic significance

Bats play a crucial role in all the ecosystems they inhabit worldwide, and these roles differ depending on their diets. Insectivorous bats help keep harmful insect populations in check. A single little brown bat can eat more than 1,200 mosquitos, or 50%–100% of their body weight, in a single night! That means they prevent serious threats to ourselves, pets, livestock and the food that supports us. A recent study analyzing the agricultural benefit of bats found that bats provide between $4 billion and $50 billion in value to U.S. agriculture each year because of decreased damage and the need to use pesticides on crops. This contribution is significant across the many crops that form such a vital industry in Oregon. Finally, bat waste, or guano, is exceptionally high in nitrogen and makes an excellent fertilizer.

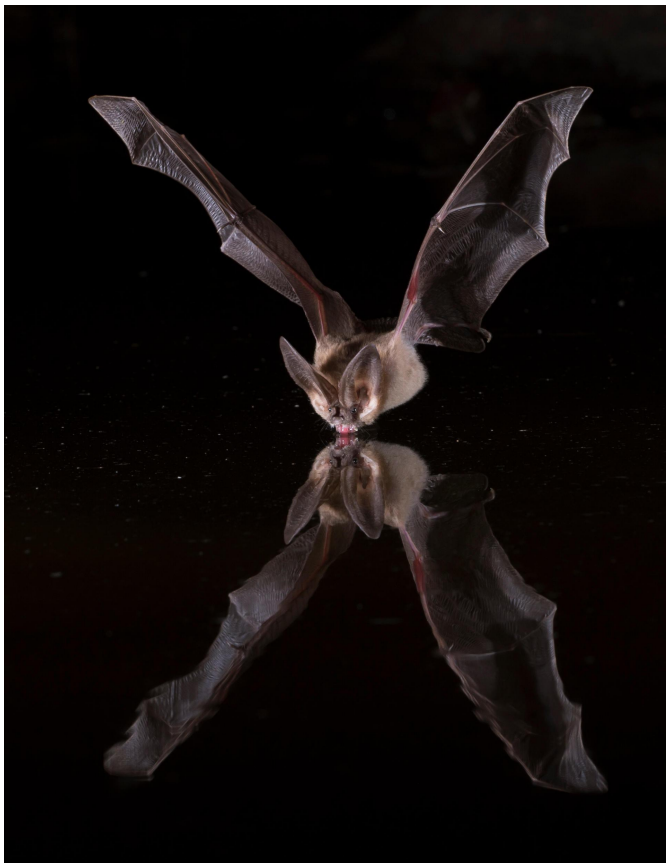
Oregon's bat species

- California myotis
- Western small-footed myotis
- Long-eared myotis
- Little brown bat
- Fringed myotis
- Long-legged myotis
- Yuma myotis
- Hoary bat
- Silver-haired bat
- Canyon bat
- Big brown bat
- Spotted bat
- Townsend's big-eared bat
- Pallid bat
- Brazilian free-tailed bat

See snapshots of each species from the Oregon Department of Fish and Wildlife (https://myodfw.com/wildlife-viewing/species/bats).

The little brown bat can be found throughout Oregon in a wide variety of habitats. They can typically be found around lakes, ponds or streams.

Credit: Igor Cheri, Adobe Stock



The Pallid bat can be seen late at night and feeds primarily on the ground, eating large beetles, crickets and even scorpions. These bats can walk on the ground and have immunity to a scorpion's sting.

Credit: Tom, Adobe Stock

Description and distribution

Bats are mammals. They have fur, are warm-blooded, give birth to live young, and nurse their young. They belong to the order Chiroptera, which means “hand-wing,” because the bones in a bat’s wing are finger bones. Bats are long-lived for their body size; some live up to 30 years.

Bats are the only mammals able to fly. They are also one of the few mammals that use echolocation, enabling them to navigate and hunt for their prey at night. They echolocate by releasing a high-pitched sound from their mouth or nose. Bats then listen for the echo of that sound off objects to gauge specific characteristics about them. Interestingly, most bats have excellent eyesight, despite the common phrase “blind as a bat.”

Bats are nocturnal, meaning they are most active at night or during twilight. They use day roosts that provide safety while they sleep.

Bats can regulate their body temperature through daylight hours. They often use night roosts for breaks between hunting bouts to rest or to consume larger prey. Some bat species roost singly. Others switch tactics with the change of seasons. As weather and food conditions change seasonally, some bat species migrate; others remain in an area year-round by hibernating.

Much remains to be learned about each species’ complex ecology and how the changing climate will affect them and their habitats.

Some bat species mate in spring, while some mate in fall or during winter hibernation. Because of that variability, juvenile bats are born from mid-spring through July. Some species form large nursery colonies in the thousands to care for their young, while others roost singly. Bats typically give birth to only one offspring each year, but a few can produce multiple young. A newborn bat requires at least a month to grow and develop the ability to fly and feed independently. Management actions to evict or exclude bats are only allowed from late August until early fall. This timing allows young bats to exit a bat-proofed structure while preventing those seeking winter roosts from occupying the structure.

Bats can be found across Oregon. Twelve of the 15 species are found west of the Cascade Mountain range, and all 15 can be found east of the Cascades. However, each bat species will be found in the habitat types or vegetation communities that provide its specific seasonal needs, such as, insect species or size, resting sites or breeding sites. Many of Oregon’s bats are Oregon Conservation Strategy Species (//oregonconservationstrategy.com/), or species needing habitat protection in order to be sustained. Bats are at risk for many reasons, such as habitat loss, predation and diseases.

Oregon’s bat species are all insectivores, meaning they eat insects. They use echolocation to catch insects as they fly in midair. Some species combine echolocation and listening for sounds made by certain organisms to glean or pick prey off of foliage, the ground or other objects. Each bat species has preferences for insects with a unique shape, size and texture. Bats also require large volumes of water, especially while pregnant and nursing. Drinking sources can include streams, lakes, ponds, rivers or even agricultural water troughs. Bats swoop down to the water and sip while flying over the surface.

When insects become unavailable during cold seasons, some bat species migrate south, where insects are available year-round. Others hibernate. When bats hibernate, they spend long periods in torpor by decreasing their heart rate, respiratory rate, blood pressure, immune response and more. Bats can use shorter bouts of torpor year-round to deal with temperature shifts that would otherwise cost them energy. Bats hibernate in caves, mines, rock crevices, under cracked or sloughing bark, in unoccupied portions of buildings and sometimes under leaves. The cold, humid spaces in which bats hibernate are called hibernacula.

California myotis is a dark brown to blond bat with dark ears, and feeds on moths and flies.

Credit: Nathan, Adobe Stock

Threats to Oregon's bats

Like many wildlife species, habitat loss is the most significant threat to bats. The best way to protect bats and keep them out of human-occupied spaces is to preserve their natural habitat. Tree-roosting bat species typically require large, dead or dying trees that have developed cavities, craggy bark seams or cracks. Without these trees, bats have fewer options for roosts and hibernacula. They will move to the next best thing: attics, basements and other manufactured structures with fewer roost options.

You can support bats by leaving snags and old trees on your property, making a bat-friendly garden that produces pesticide-free insects, setting up bat boxes or providing a safe water source.

Another threat bats face is predation by pets. Cats are notorious bat hunters, just as they prey on birds, small mammals and reptiles. In most of the world, cats are non-native, invasive predators. Native species do not recognize cats as dangerous and have no behavioral avoidance tactics. Cats kill and sometimes eat bats, from small bats in the U.S. to seed-dispersing, fruit-eating flying foxes of the South Pacific. This creates a significant risk to populations. The best thing you can do is keep your pets inside. This protects bats in your area. It also decreases the risk that your cat, other pets, or you might contract rabies, other wildlife-borne diseases or parasites. A "catio (https://abcbirds.org/catio-solutions-cats/)" can provide cats a safe way to enjoy the great outdoors without endangering native wildlife. This way, they avoid the life-threatening risks outdoor cats face. Outdoor cats can get infections and diseases that may result from fights, interactions with other cats, encounters with loose dogs or vehicle collisions.

White-nose Syndrome is another threat facing bats across America. WNS is a fungal skin infection transmitted among hibernating bats. It originated in Europe but was brought to North America via travelers. White fungus enters the skin membrane on hibernating bats' muzzles, ears and wings. The fungus can damage the wing tissue enough to cause holes. The irritating skin infection can disrupt hibernation, deplete fat storage, and cause dehydration and electrolyte imbalance, leading to death.

Since 2007, at least 6 million bats across the United States and Canada have died from WNS. It is more commonly transmitted in bats that hibernate in large groups than in species that exhibit more solitary forms of hibernation. The disease was first documented in the northeastern United States and has spread to 28 states and five Canadian provinces. The disease is mainly spread in the U.S. from bat to bat, but humans can also transmit it. Scientists think cave explorers picked up fungal spores on their hiking boots and gear. When the cavers entered new caves, the spores were released. WNS has not yet been detected in Oregon, but multiple cases have been observed in Washington.

After visiting a cave, thoroughly sanitize your boots and gear to protect Oregon's bats. WNS can cause odd behavior in bats, such as flying during the day or in cold temperatures. Seek help for bats that appear emaciated, on the ground, lethargic, friendly or overly aggressive.

Wind energy also poses risks to bats. Progress is being made through turbine management, and ongoing innovations may soon allow us to reduce potential risks even further.

Managing safety for bats, humans and homes

Bats are amazing creatures, and it is rewarding to see one out in the wild, whether flying over the glow of a campfire or hunting around streetlamps. However, not all bat interactions are positive—especially when you find them acting strangely or in your home.

When encountering a bat at close range, on the ground, or acting strangely, treat it as though it is rabid. According to the Centers for Disease Control and Prevention, only one to three people contract rabies annually in the United States. While the risk is small, it is important to be cautious.

Exercising immediate caution can prevent infection, or even death, in yourself, your children and your pets. It is important to note that you cannot tell if an animal has rabies just by looking at it. The best way to avoid getting rabies from a bat is to avoid all physical contact.

If you find a bat behaving strangely, remember that a disease or injury is likely causing the behavior. Rabies causes bats to become lethargic or aggressive, lose their appetite and their ability to fly. This weakness is why many sick and injured bats are found on the ground. It creates an opportunity for pets to pick at it and contract whatever disease the bat has. Pets can contract rabies if their vaccination is not current.

A healthy wild animal will never willingly be held or captured. If a bat allows you to pick it up, something is wrong with the bat. Teach children never to touch wild animals. What they mistake as friendliness in a bat is simply injury or disease-related helplessness.

If you find a bat in your home and you are unsure if any direct scratches or bites have occurred, immediately contact your primary care physician and county health department for assistance. You may be instructed to bring the bat in for testing. While awaiting test results, you may begin post-exposure rabies vaccine prophylaxis. This treatment is vital unless the bat tests negative for rabies. All members of the household should undergo treatment if unsure of their exposure. If there is any chance a pet came into contact with the bat, call your veterinarian immediately to check the pet's current vaccination. The vet may advise a precautionary booster dose.

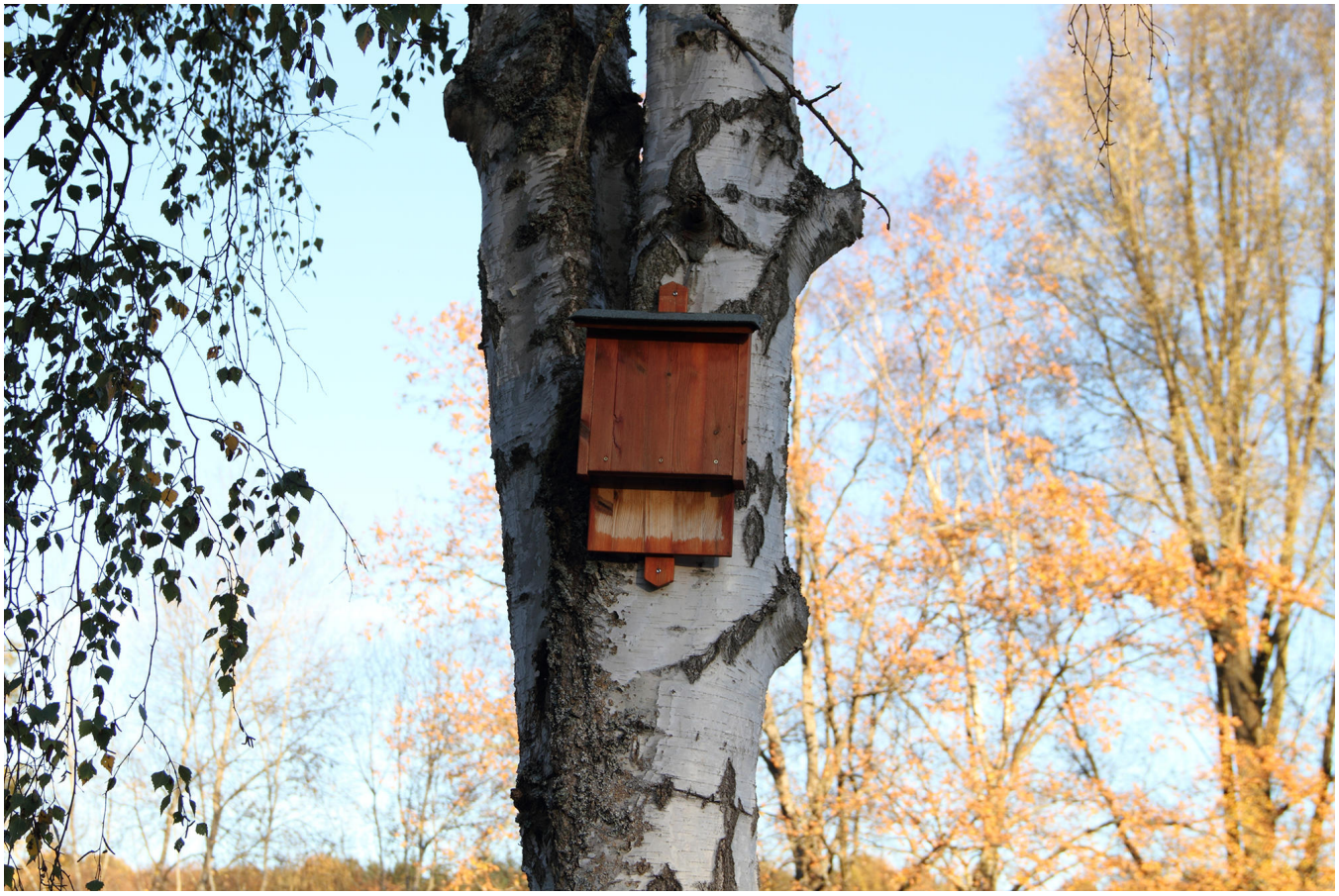
To safely capture a bat indoors, find a container like a box, jar or can large enough to cover the bat, along with a piece of cardboard or other rigid, thin and flat material. Put on thick leather gloves, slowly approach the bat, place your container over it and then carefully slide the cardboard under the container to keep the bat inside. Use tape to securely seal the bat inside the container and punch holes to allow airflow. For more information on precautions, visit the Center for Disease Control's Rabies (https://www.cdc.gov/rabies/animals/bats/index.html#:~:text=If%20you%20are%20in%20your,public%20health%20agency%20for%20assistance) site.

Another plausible reason for odd bat behavior is WNS, which causes hibernating bats to awaken. You may find them dead or emaciated on the ground. Even if you suspect the bat may be suffering from WNS, always assume that the bat may be rabid. Treat every bat encounter with extreme caution. Whenever you encounter an oddly behaving or dead bat in Oregon, report the sighting or incident to the Oregon Department of Fish and Wildlife (https://www.dfw.state.or.us/wildlife/health_program/WNS/reporting.asp) or call the department's Health Lab at 866-968-2600. This provides vital information for managing wildlife and monitoring potential disease outbreaks.

The best way to prevent bats from entering your house is to "bat-proof" it. Bats will commonly enter the home through chimneys, joints in siding, large exterior beams, trim, building corners, pipes, porches, gaps under shingles, where walls meet eaves and roof edges. The process of eviction and exclusion begins with identifying every opening a bat might enter., This is challenging because most bats can easily fit through an opening the width of a dime or nickel. Blocking all but one final opening creates a one-way exit "valve" that will allow the bats to exit but prevent their re-entry. Once the bat is gone, you can block that last entrance. Although commercial "bat valves" are available, sometimes all that is needed is a square of lightweight screening or bird netting over that last entrance.

Securely yet loosely tape the net at the top and sides, allowing a bat to squeeze out the bottom but barring it from re-entering. Timing is a critical consideration: Bat evictions and exclusion can only be performed outside breeding, birthing and nursing season. Otherwise, juvenile bats too young to exit will be trapped inside and cut off from their mothers, their only means of support. The optimal bat exclusion season is late August through early November.

If the project is beyond your scope, consider getting an estimate from a trained and licensed Wildlife Control Operator. See the Oregon Department of Fish and Wildlife (https://www.dfw.state.or.us/wildlife/license_permits_apps/wildlife_control_operator_contacts.asp#WCO_Contacts). As with any contractor, get a written scope of work with the estimate, proof of insurance and references. It is not effective to trap and relocate bats, given their homing and fast-flying abilities.



A bat nest box is placed on a tree.

Credit: maho, Adobe Stock

What can we do for bats?

Adding a water source is an excellent start to welcoming bats to your property. Set up a large water trough with edges and a ramp in case bats or other small animals fall in. Escape ramps can be as simple as a plank secured to one edge of the tank, rough enough to allow an animal to climb out.

While insectivorous bats may not readily eat plants and flowers, their presence is essential to a bat's habitat because they attract insects that Oregon bats feed on. We can help them by providing plant and insect habitats free of pesticides. Some ideas include chives, borage, mint, marjoram, lemon balm, sweet rocket, evening primrose and soapwort. All of these plants are easy to grow in home gardens.

Bats prefer to live in old snags and trees with peeling bark. Keeping old and dying trees provides habitat for bats. If they pose property or utility threats, consider hiring a professional arborist to evaluate for cabling, bracing, or other ways to maintain the tree's structure.

We once thought it was beneficial to provide insect-attracting lights for bats. But now we know that turning off lights and reducing light pollution is much more beneficial to bats and other wildlife, such as migrating birds.

Besides supplementing and protecting the natural environment, bat boxes can be a wonderful way to support local bat populations. But manage your expectations. We can make the offer, but it may not be accepted. Studies have shown that bat boxes should be 2 feet tall and 14 inches wide, with a 3- to 6-inch landing area beneath the box. The inside should have multiple chambers for the bats to occupy, spaced ¾ inch apart. Boxes for nursing colonies should have several chambers. They should be larger than most boxes, as many nursing colonies can consist of thousands of bats. While the boxes should be wooden, the bats will need something to grip while inside. Line the inside of the box with rough wood or mesh to add texture to them. If you live in a colder climate, paint the boxes a dark color. That will better retain heat from the sun and keep the bats warm during the night. If you live in a warmer climate, paint the box a lighter color and add ventilation slits. Bat colonies themselves can generate much heat. Avoid covering the slits with mesh, as this can confuse and trap the bats and prevent heat from being released.

Bat boxes are most successful when they are placed appropriately. More bats will use boxes if they are placed where other necessary resources are nearby: within ¼ mile of freshwater sources like streams, lakes and ponds, or near agricultural fields, edges of forests and where insects are available. Bat boxes should be placed 15 feet above ground or higher, with several feet of clearance. Attached them to a substrate that allows a mother to climb back up to the box when retrieving a fallen pup. The placement should receive direct sunlight for multiple hours. If your goal is to attract a maternity colony, place multiple bat boxes back-to-back on the same pole. This creates more room for bats and gives them more options. Bat Conservation International (https://www.batcon.org/about-bats/bat-houses/) provides excellent tips on bat house construction and news of bat conservation around the world.

Resources

Bat Conservation International (https://www.batcon.org), including valuable sections on bat houses, gardening for bats, and other ways to support your local bats. (https://www.batcon.org/about-bats/bat- houses/)

Kunz, T.H. and M.B. Fenton. Editors. 2003. *Bat ecology*. University of Chicago Press.

North American Bat Monitoring Program (https://sciencebase.usgs.gov/nabat/#/results)

Oregon Department of Fish and Wildlife (//myodfw.com/wildlife-viewing/species/bats)

For more information on keeping bats out of your house, visit https://wdfw.wa.gov/sites/default/files/publications/00605/wdfw00605.pdf (https://wdfw.wa.gov/sites/default/files/publications/00605/wdfw00605.pdf).

This publication incorporates much of the material formerly offered by three out-of-print products: *Create Roosts for Bats in Your Yard*, EC 1555, by Sommer Chambers and Nancy Allen, *Little Brown Bat*, EC 1584, by Laura Schumacher and Nancy Allen, and *Bats in the Garden*, EC 1611E, by Burr Betts.