

Making Retreats for Western Box Turtles

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Wild Western box turtles are obligate burrowers, spending the bulk of their life underground. The above-ground world can be hostile, challenging a turtle with temperatures and fluctuations in temperature that can be stressful, air that may be too dry (nearly always so in New Mexico), and where terrestrial and aerial predators may be close by. Vegetation can also be sparse and offer little thermal relief in some areas of the species range. These turtles preferentially if not exclusively use burrows dug by other animals (mostly Bannertail kangaroo rats in New Mexico). Box turtle activity is mostly confined to daylight hours, and it's too hot

during the active season for these small reptiles to dig a deep enough burrow from scratch before they would succumb to hyperthermia.

While pet Western Box Turtles may not have all the challenges of a wild turtle, they still need and seek underground burrows, spending most of their time there. Totally above-ground retreats/huts are NOT an acceptable substitute. Above-ground huts offer little relief from surrounding air temperatures and humidity level – which can register in the single digits in NM during the summer. Providing underground burrows in slightly moist soil offer attractive

retreats that can satisfy the needs of a turtle to feel safe, and also help the animal meet its need to conserve moisture and stay comfortably within its thermal tolerances.

Steps to creating burrows:

1. Select the sites for each burrow. A pen should include a few burrows with different levels of sun exposure to provide different thermal options. Multiple burrows also give turtles living with other turtles a choice to separate out or share space. Box turtles are solitary by nature and do not always get along well with pen mates.
2. Once the sites are selected for burrows, prepare / amend the soil beneath and immediately adjacent to the sites as needed. The soil should be:
 - a. *at least 1 ft deep* (depth should extend at least half a foot below frostline for hibernation)

- b. *friable* (easily diggable by a turtle but hold shape) – (Note: the soil will compact over time; check it periodically, especially in the early fall, to make sure it remains easily diggable.)
- c. *able to hold moisture*, but also *drain well*

[Loam soil](#) meets the above requirements.

3. Obtain material for burrow roof— thick bark slabs, half hollow logs, forked branches 4” in diameter or greater, or plywood (no sharp edges) if no natural wood is available.
 - a. Avoid using pavers (natural stone or concrete), terra cotta pots, roofing tiles, or any sort of bricks to construct burrow roofs or supports (see p.5 for an alternative support structure).



These items can abrade shells. The chances of abrasion are greater in pens with multiple turtles where shoving can occur. However, even solitary turtles can easily damage their shell grinding it against a hard roof as they pass under the roof if the burrow entrance is shell-height.

4. Place the bark roof on top of the soil, nestling it in a bit if necessary for stability. It can be left bare in summer or covered with a gently sloping mound of dirt and/or mulch for added insulation. Aged

shredded hardwood free of dyes and any other chemical is an ideal mulch. In New Mexico, consider using [GardenTime Composted Mulch & Soil Conditioner](#) sold through Lowe's or obtain high quality, inexpensive mulch through [Soilutions](#) in Albuquerque.

Top-dressing the roof with soil and mulch depends on whether you want to leave it permanently in place or be able to lift the roof up periodically to check on the occupants.



A curved piece of cottonwood bark slightly nestled into the soil makes a simple but effective burrow. In winter it is covered in local-sourced shredded, aged wood mulch and leaves to increase insulation and muffle quick temperature fluctuations and temperature extremes.

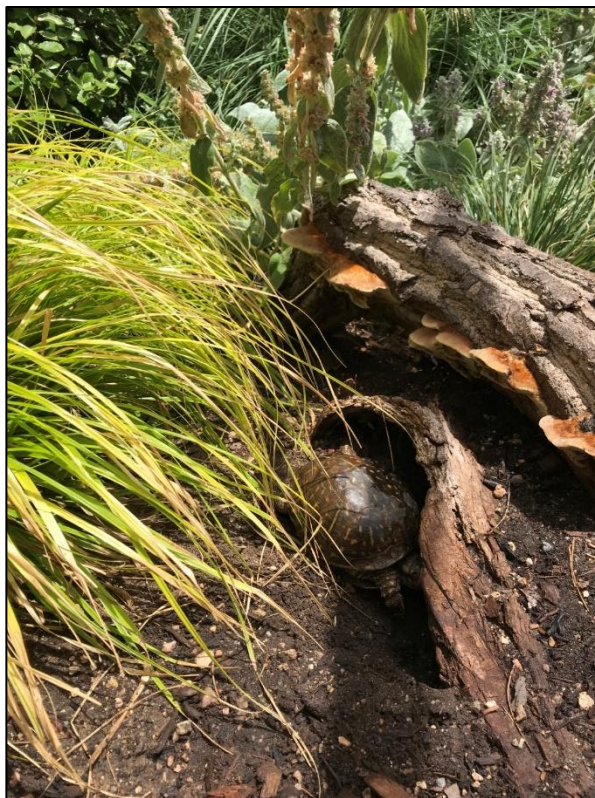


This bunker was created from a large forked branch with a roof made from a piece of thick bark overlaid with soil and mulch.

5. Reach beneath the roof on one or two sides and pull out a fist of soil. You are creating an entrance to a future burrow. Let your turtles do the rest. There is no need to enlarge the hole beyond fist-size or dig out any soil beneath to create a cavern. Turtles like a tight fit. They will usually stay shallow during the spring and summer, digging down deeper as soil temperature drops.
6. In the fall when it begins to get chilly and the turtles have stopped spending time at the surface, cover the burrow sites, including the ground a foot out from the burrows themselves in several inches of mulch and several inches of fluffy leaf litter. Add in more leaves as needed to compensate for loss due to

decomposition and wind removal over the winter months. These top dressings will help the soil retain moisture, reduce temperature swings, and retard the rate of temperature rise in the soil in the spring. The dressing will also help guard against premature emergence due to a few days of usually warm weather in early spring.

7. Keep the soil slightly moist over the winter to reduce the chance that turtles will become dehydrated. Soil moisture will raise the humidity enveloping the turtle which in turn will reduce moisture lost through respiration and skin evaporation. Also soil moisture will help to muffle temperature swings in the soil.



Box turtles show a preference for tight spaces, and being able to view the world from beneath some sort of roof – “a room with a view.”

Open-Frame Bunker

If you want to provide a frame to support a natural wood or lumber roof, one option is an open frame made of plastic wood secured with deck screws. It will not rot in the ground, and will stand up well against deterioration from UV exposure. The bunker frame pictured below measures 24 in L x 16 in W with 6 in legs. While you can use any size frame, making the legs any longer just increases the work of digging out

enough dirt to bury the structure nearly flush to the ground.

An open frame is preferable to a solid-wall structure; the former allows animals to dig-in / dig-out from all sides. No one turtle can block entry/exit from the bunker, and any turtle can essentially extend the living space sideways if the roof extends beyond the frame or dig downwards into the soil, assuming the substrate has been properly prepared.



The roof over this bunker has been covered with dirt and dressed with mulch. Turtles enjoy basking in late afternoon sun on top. When the bunker was initially installed, the underlying soil became too dry, so about a dozen 3/8-in in holes were drilled through the bark roof to allow water to percolate through. It solved the problem.



Western Box Turtles enjoy resting temporarily in tight spaces they dig out under plants. For more information on enriching a pen with vegetation, see “Planting Box Turtle Outdoor Habitats” at boxturtlefacts.org.

