

CHELONIAN HIBERNATION



tortoises should be maintained at 45-59° Fahrenheit (7-15° Celsius) while box turtles should hibernate at 36-48° Fahrenheit (2-9° Celsius).

Controlled hibernation also allows for regular monitoring of your chelonian during the hibernation season. Watch for eye discharge, nasal discharge, skin lesions, or shell changes. Weigh your chelonian every two weeks for juveniles and every 4 weeks for adults. Weight loss of 8-10% (50g in a 500g animal or 200g in a 2kg animal, for example) during the hibernation season is a cause for concern. Noticing weight loss or other signs of illness as noted above warrants an immediate consultation with an experienced reptile veterinarian. Your veterinarian will assess your chelonian's health and help you wake him or her up safely, if indicated.

Post-hibernation Period

The hibernation period ends in the spring when the outdoor temperature begins to rise. This increase in temperature stimulates your chelonian's body temperature to increase, which in turn, stimulates the metabolism to return to normal. The heart rate and breathing rate increase and they gradually increase their activity level. With this increase in metabolism and activity level, their appetite also returns.

If the hibernation has been done outdoors, it's advisable to let the animals emerge from the shelters on their own schedule. If the hibernation has been controlled, it's suggested to progressively put the box outside for a few hours at a time until your tortoise is completely awake. Use caution to make sure the box is not in an area that is in direct sunlight without access to shade. Make sure that the box is also secure to prevent escape and to prevent access to dangerous animals. Avoid any sudden change in temperature during this transition time.

Once your pet is awake, it is critical to make sure they are rehydrated. Leave fresh water available at all times. Bathing or soaking in warm (not hot) water is recommended during this time. Make sure the water level is lower than your tortoise's head to avoid drowning. Bathing will stimulate them to drink water, as well as to urinate and defecate.

Your turtle or tortoise may start to eat immediately after emerging from hibernation. In other cases, your pet may need 2-3 days to rehydrate before starting to eat. If no appetite is noted within 3-4 days of emerging from hibernation, your chelonian may be ill, and should be taken to an experienced reptile veterinarian immediately.

Should I Hibernate My Juvenile Chelonian?

Hibernation is a fundamental phase of the chelonian life cycle, so there is no reason NOT to hibernate a juvenile chelonian. Allowing your juvenile to hibernate respects his or her natural biorhythms and assists in normal development of all the organs, especially the shell. Avoiding hibernation could cause shell changes, musculoskeletal deformities, or other organ changes (such as liver, kidneys or gastrointestinal tract). Very small or very young chelonians should wait to hibernate for 1-2 months after adults start to hibernate. ALL juvenile chelonians should be hibernated in a controlled indoor enclosure as opposed to an outdoor method. The hibernation preparation and waking processes are the same for both juvenile and adult chelonians.

Additional Reading:

Hibernation. Boyer TH, Boyer DM (2019). In *Mader's reptile and amphibian medicine and surgery* (3rd ed., pp. 168-170). St. Louis, MO: Elsevier.

<https://www.vetstream.com/treat/exotis/reptile/freeform/hibernation>

Regular visits to your reptile veterinarian should be scheduled to check for parasites and other early signs of disease and to promote a long, satisfying relationship with your chelonian (turtles, terrapins and tortoises). For help in finding a reptile/amphibian veterinarian in your area, contact the Association of Reptile and Amphibian Veterinarians (www.ARAV.org) or contact the American Board of Veterinary Practitioners (www.ABVP.com/diplomate)

Published by



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WHAT IS HIBERNATION?

Hibernation is defined as a state of inactivity and a decrease in metabolism. It is characterized by a low body temperature, low heart rate and slower breathing.

Turtles, terrapins, and tortoises (known collectively as chelonians) are ectothermic animals, like all reptiles. This means that they regulate their body temperature based on environmental temperature. As soon as the environmental temperatures decrease, body temperature, heart rate, and all metabolic functions of your chelonian will slow down also. This causes a decrease in or full loss of appetite and a decrease in activity level, which then progresses to hibernation.

Do All Chelonians Hibernate?

No, not all chelonians hibernate. It is very important to know if your pet is a species that can and should hibernate or not. If your pet is not known to hibernate naturally, DO NOT attempt hibernation. This will lead to severe illness and even death.

For temperate climate species (European, some Eurasian and North American chelonians), hibernation represents a fundamental phase of the year. It encourages a normal reproductive cycle and supports natural growth and development. Hibernation also supports and reinforces the immune system. For tropical climate species, hibernation is typically not a natural occurrence.

Depending on the temperature patterns of your area, hibernation can last from 2 up to 8 months.

Pre-hibernation Period

As soon as the environmental temperature decreases, hibernating species of chelonians will gradually slow down their metabolic activity to prepare themselves for hibernation. At this point, **it is critical to make sure your pet is healthy.** Take your pet to an experienced reptile veterinarian at this time. Your veterinarian will check your pet for any signs of illness, dehydration, parasites, and infections. It is important to bring a fresh fecal sample for this visit. If any abnormalities are seen during this examination, your veterinarian may recommend not to hibernate your pet this year.

For about 2-3 weeks before hibernation, chelonians will naturally slow down eating. They will also gradually decrease their activity level and can be seen awake for just a few hours of the day during the hottest times. During this pre-hibernation period, it is important to make sure your tortoise stays hydrated. Leave fresh water available at all times. Bathing or soaking in warm (not hot) water is recommended during this time. Bathing will stimulate them to drink water, as well as to urinate and defecate. Bathing frequency can vary but is typically recommended once every 3-7 days. While bathing or soaking, make sure the water level is lower than your tortoise's head to avoid drowning.

Where Do I Hibernate My Chelonian?

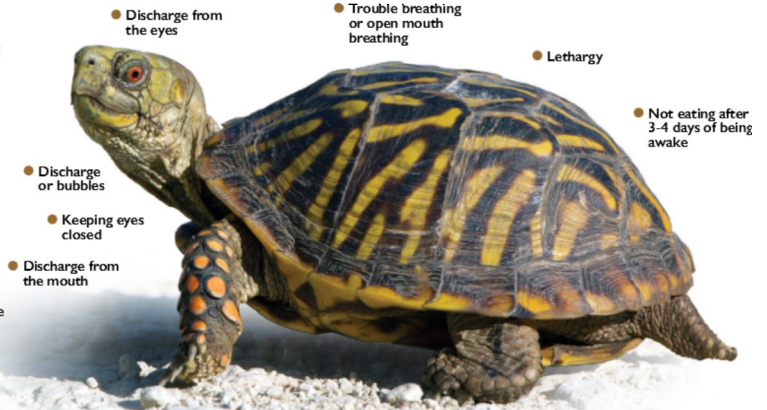
Chelonians can be housed for their hibernation period indoors in a controlled environment, or if suitable, can be housed "naturally" outdoors. Deciding on where to let your turtle or tortoise hibernate depends on

WHAT TO WATCH OUT FOR FOLLOWING HIBERNATION

Your chelonian should be bright and alert. Normal activity, including eating, drinking, urinating, and defecating should begin within a few days.

Even with proper care before and during hibernation, your chelonian can emerge from hibernation ill. Seek immediate help from an experienced reptile veterinarian if any of the following are noted:

● Your turtle or tortoise does not awaken completely



NOTE: Most, if not all, reptiles and amphibians carry Salmonella bacteria in their intestinal tract and intermittently or continuously shed these bacteria in their feces, so they are unsuitable pets for very young children and those with compromised immune systems. Good hygiene must always be practiced around all reptiles and amphibians, including chelonians (turtles, terrapins and tortoises). For more information, please see the handout, Salmonella Information for Reptile Owners at <http://arav.org/salmonella-bacteria-reptiles>.



the overwintering temperatures in your area, availability of secured protection from predators, protection from flooding in the burrow, and the space and substrate itself.

Outdoor hibernation is more "natural" and does not require maintenance. This may be appropriate for freshwater turtles that are housed in a large deep pond. Many freshwater turtles (cooters, musk turtles, sliders, and more) hibernate at the bottom of the ponds. If the temperature stays cold enough, the animals can remain in the pond for the entire hibernation season. Many species can still breathe under water; even if the surface of the water freezes.

Land tortoises that hibernate outdoors will dig a deep hole, or burrow, under the soil. They will choose a secured location under structures, leaves, bark, bushes, etc. They can spend the entire hibernation season in that place if the temperature stays appropriate.

Outdoor hibernation has many dangers associated with it. Some of these dangers are flooding of the burrow, freezing temperatures inside the burrow, and non-secure locations that are susceptible to predator attacks. In addition, chelonians hibernating outdoors

cannot be monitored for weight loss or signs of illness. For these reasons, controlled hibernation in a secured indoor enclosure is recommended.

Mimicking a "natural" hibernation environment indoors is the goal for controlled hibernation. This includes managing the temperature and humidity of the hibernation box.

Fresh water turtles can be placed in a small box suitable for holding water. The water level should barely cover the carapace, or top of the shell. Land tortoises are placed in a dry and secure box. Plastic storage containers with air holes or glass terrariums work well for this purpose. Substrates of hay or peat covered with leaves or bark can be used for your tortoise to burrow into. Make sure the level of the substrate covers the top of the shell.

Once the hibernation box is prepared, place it in a controlled temperature area of the house. Garages, attics, or balconies work well for this purpose. The goal is to maintain the temperature as close to the natural hibernation temperature as possible. Make sure that you know the appropriate hibernation temperature range for YOUR chelonian before allowing hibernation. For example, desert