

### **What is hibernation?**

Hibernation is a natural response to winter where temperatures are too cold and food is too scarce to sustain reptiles. Hibernation allows them to survive the harsh winter months by slowing their metabolism to the point that they do not need to eat and they burrow into the ground to protect them from the worst of the cold. There are several species of turtles and tortoises commonly kept in captivity that can hibernate such as North American box turtles, mud turtles, and Russian tortoises. Species from warmer climates, such as Redfoot tortoises and Sulcata tortoises, do not hibernate and will get very sick and die if hibernation is attempted. This caresheet is focused on box turtles, though it is applicable to Russian tortoises as well.

### **Is hibernation necessary?**

Hibernation is not necessary if you keep your turtle/tortoise in appropriate warm conditions indoors during the winter. It is recommended for breeding turtles and there may be some long term positive effects on hormone levels and the immune system but it does have risks so these must be weighed to determine if you'd like to hibernate your pets.

### **What are the risks with hibernation?**

Hibernation must be undertaken carefully to make sure your turtle's health is not compromised. Simply turning off the source of heat is not enough! If the temperatures are too low to metabolize food properly but not low enough to induce hibernation (between 50-70°F) your turtle will be caught in limbo and unable to digest any food still in its digestive tract and the immune system will be unable to protect it from illness. These turtles caught in limbo at inappropriate temperatures become very ill and can die.



If your turtle has any underlying illness the immune system is severely impaired during hibernation so illness can overwhelm and kill a hibernating turtle, even if done properly. Signs of illness that should preclude a turtle from hibernation attempts include: swollen/puffy eyes, sleeping during the day, nasal discharge/bubbles, weight loss or low body weight, lethargy, swollen ears, injuries, etc. Turtles with chronic or recently treated respiratory infections are at much higher risk in hibernation so it should be avoided if possible. I do not hibernate babies until they are several years old as a precaution.

### **How do I prepare my outdoor turtles for hibernation?**

The digestive system of turtles needs to be completely empty before hibernation starts or else any remaining food can essentially rot during hibernation. They need to be healthy and well hydrated as well. In the wild turtles stop eating as the weather cools in preparation for impending hibernation season. In Colorado if they are kept outdoors they will start the process of slowing down themselves by not eating as much, but I stop offering food completely during mid to late September and hibernation starts in mid to late October. Turtles should still be fairly active despite not eating. They should be soaked in warm/tepid water at least twice weekly for 30 minutes to make sure they are well hydrated and void waste to empty their digestive system. Once temperatures are consistently below 50°F at night it is time to bring them indoors to start hibernating.

### **Can I hibernate my turtles outside in their enclosure?**

While Colorado is the normal habitat for ornate box turtles, they usually have acres and acres of land to seek out an ideal hibernation location. When limited to their enclosure they may not be able to bury deep enough, have the appropriate sun/shade ratio on the area, have large drifts of snow build up/melt over their limited choices of hibernation locations, and outdoor temperatures can fluctuate rapidly and wildly. It is much safer to hibernate turtles indoors where you can control temperatures and monitor them for health concerns during hibernation.

### **How do I prepare my indoor turtles for hibernation?**

Indoor turtles should be kept at normal temperatures while food is withheld for 2-3 weeks during mid-September. They should still have access to water. The temperatures should then be gradually reduced over the next 2 weeks from 75-85°F at warmest (normal) to around 60°F for a week then around 50°F for a week. Soak them in in warm/tepid water at least twice weekly for 30 minutes to make sure they are well hydrated and void waste to empty their digestive system.

### How do I hibernate turtles indoors safely?

Once your healthy turtles have empty digestive systems, are well hydrated, and have been gradually cooled down to slow their metabolism they are ready to enter hibernation. The area your turtle will hibernate in should remain between 35°F and 45°F at all times. A garage, crawl space, attic, or basement can be suitable as long as temperatures are monitored daily. Turtles can withstand below freezing temperatures for short periods of time but it is very stressful and prolonged periods can cause injury, illness, or death. Hibernating turtles should be moved to a better location if temperatures drop below 35°F.

A refrigerator is actually my preferred location for hibernation! While this sounds unusual refrigerators are designed to maintain around 40°F, which is perfect for hibernation. And they have minimal temperature fluctuations compared to a garage. Temperatures still need to be monitored daily to make sure there are no unsafe temperature spikes. The refrigerator should be calibrated to the appropriate temperature for several days before turtles are added. Though air consumption is much lower while they are in hibernation turtles do still need fresh air. Open the refrigerator door widely at least 3 times a week to exchange the air inside.

*\* Having a turtles around your food is unsanitary and poses health risks so turtles should be in a separate part or completely separate refrigerator than your food.*



\*Thermometer at bottom of fridge  
\*Boxes have holes on the tops and sides

The hibernaculum is the chamber or box in which your turtle hibernates. A small plastic box with a lid and air holes should be filled with moistened organic soil or coco coir. Coco coir (Eco-earth) is readily available at pet stores and plant nurseries. The moisture will keep them from getting dehydrated. (For Russian tortoises, the substrate should be drier than for box turtles, but still damp - allow the substrate to dry out for several days before use.) There should be enough soil that turtles can completely bury themselves and there should be a secure lid to prevent them from crawling out. During hibernation they will move around a little to find the best spot to settle and can try to crawl out even when it's dark and cold.

*\* Make sure no rodents can get into the hibernaculum as they will cause severe injury to hibernating reptiles.*

### How do I know they're okay during hibernation?

As mentioned, temperatures should be monitored daily to make sure it is safely between 35°F and 45°F at all times. A digital scale (kitchen scales work great) that measures in grams (g) will allow you to keep track of weight throughout hibernation, and even out of hibernation. Take a weight at the start of hibernation and then periodically (every 2-3 weeks) throughout hibernation. Taking your turtles out to weigh them also allows you to do a physical inspection to make sure there are no signs of illness (swollen/puffy eyes, nasal discharge/bubbles, looking skinny or shrunken, swollen ears, injuries, etc.). If the weight drops by more than 10% of their starting weight this is an indication that something is wrong, probably illness, and they should be woken up from hibernation. For example, a turtle with a starting weight of 250g should not drop below 225g. In most cases the weight will fluctuate within 2-3% of their starting weight normally. Once they have been weighed and inspected they should be placed back into their hibernaculum.

### How do I wake them from hibernation?

Mid-April in Colorado is generally a safe time to remove your turtles from their hibernaculum and return them directly to their outdoor enclosures. As temperatures gradually warm with the onset of spring they will resume their normal activities and appetites will return relatively quickly. Late spring snow storms still pose a risk, so turtles should be brought indoors during freezing temperatures. If you are keeping your turtle indoors they can be returned directly to their normal habitat and temperatures although they may not choose to bask for the first few days. Continue to watch them closely for signs of illness for the first few weeks after waking them from hibernation. A vet visit is warranted if there are any signs of illness or failure to resume normal activities after 3 weeks at warm temperatures.