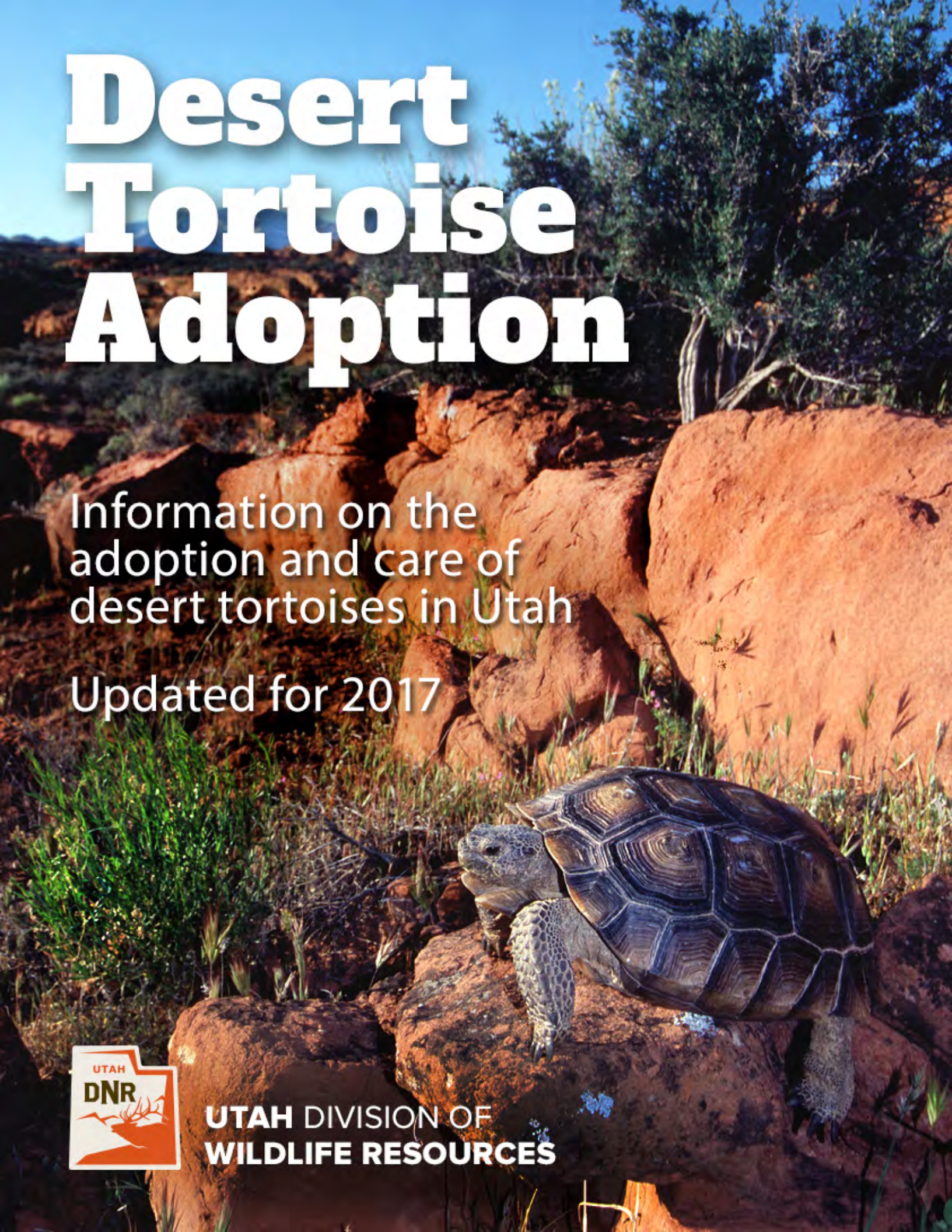

Desert Tortoise Adoption

Information on the adoption and care of desert tortoises in Utah

Updated for 2017

UTAH DNR

UTAH DIVISION OF
WILDLIFE RESOURCES

"Old man turtle ambles along the deerpath, seeking breakfast. A strand of wild rice grass dangles from his pincer-like beak. His small wise droll red rimmed eyes look from side to side, bright and wary and shrewd. He walks on long leathery legs, fully extended from the walnut-colored hump of shell, the ventral skid-plate clear of the sand. His shell is big as a cowboy's skillet, a gardener's spade, a Tommy's helmet. He is 145 years old – middle aged. He has fathered many children and will beget more. Maybe."

-Edward Abbey in *Hayduke Lives!*

"In the beginning there was a great tortoise who supported the world.
Upon him all ultimately rests.
He is all wise and can outrun the hare.
In the night his eyes carry him to unknown places."

-William Carlos Williams

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Electronic and/or updated versions of this booklet may be available online at
http://wildlife.utah.gov/pdf/dt_adopt.pdf

ACKNOWLEDGMENTS

The information provided here is a compilation of booklets, care sheets, journal articles, stories, and discussions from a variety of non-profit organizations, state and federal agencies, universities, veterinarians, and families dedicated to protecting and preserving the desert tortoise. We would like to thank the following individuals and organizations for their assistance and guidance:

Desert Tortoise Group of Las Vegas, NV, Arizona-Sonoran Desert Museum, San Diego Turtle & Tortoise Society, Zackery Zdinak with Life Drawing and Education for the desert tortoise illustration (© 1999 Zackery Zdinak).

Revised June 2017

Utah Division of Wildlife Resources (UDWR)

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INTERESTED IN ADOPTING A DESERT TORTOISE?

THINGS YOU SHOULD KNOW BEFORE ADOPTING A TORTOISE

- Tortoises are long lived (50+ years)
- Tortoises require large, fenced yards (minimum 150 square feet (10'x15'))
- We do not adopt if the tortoise can reach an unfenced pool or pond
- A tortoise requires a secure home that protects it from theft. Housing a tortoise in a front yard may increase the risk of theft, and may not be approved in the application process.
- Tortoises need to hibernate indoors from October/November to March/April
- At times in the spring and fall, a tortoise will need to be kept outdoors in the day and *indoors* at night. You will need to have an indoor space to do so.
- Tortoises need grasses, forbs, and flowers in their diet.
- Tortoises require access to burrows, shade and sunlight.
- Captive tortoises cannot be returned to the wild.
- Tortoises are adopted by the adults where the tortoises will live. *A child cannot be expected to assume full responsibility for care and will not be issued a Certificate of Registration.*
- Tortoises may transmit Salmonella *Always wash your hands after handling and supervise children around them*
- We do not adopt tortoises smaller than 6" (Adoptees are typically 7"-12")
- We do not adopt tortoises to people in Washington, Kane, or Iron Counties *If you move to these counties, you must return your tortoise to UDWR.*
- Teachers: Conditions for tortoises are not suitable in the classroom, but we do adopt to schools with adequate outdoor areas. Contact us for more information about keeping a tortoise at a school.

REASONS WHY PEOPLE ADOPT A TORTOISE

- Just like people, tortoises have their own personality (but don't talk back)
- You'll have the opportunity to care for a threatened species

- It’s like having a desert dinosaur in your own backyard
- Tortoises may hibernate for nearly 5 months out of the year
- You’ll have a pet that may outlive you

FREQUENTLY ASKED QUESTIONS

How do I feed my Tortoise?

- Feed your tortoise every day, or at very least every other day.
- The best foods for tortoises are naturally growing plants in your yard. Make sure there are no poisonous plants in your yard. If your yard does not have suitable or sufficient plants, supplemental feeding is necessary.
- Tortoises need a diet rich in leafy greens such as dandelions, clover, mustard greens, etc. (**avoid lettuce!**). Wash and chop all tortoise food.
- Vegetables such as beans, peas, sprouts, okra, and zucchini can make up 10 – 15% of the tortoises diet, but they must be chopped or shredded into small pieces.
- Whole grains, cereals, and fruit can be fed sparingly, usually as a special treat, less often than once a week.
- Tortoises have different personalities and tastes. Experiment with different foods to find those that your tortoise likes!
- Use favorite treats to make your tortoise familiar with you; he will come "running" when he sees you!
- Do not feed cat or dog food to a tortoise, their protein must only come from plants.

How do I give my tortoise water?

- Tortoises need a constant supply of water. They may not drink every day, but they should be the ones to decide when they do drink.
- Water should be provided in a large shallow dish.
- Water must be kept in the shade to keep it from getting too hot to drink.
- The water dish should be surrounded by stepping stones to make it easy for the tortoise to climb in and out.

Where should my tortoise live?

- We only adopt tortoises to homes that have *at least* 150 square feet (10 ft x 15 ft) of outdoor space for the tortoise to live in during the summer months.
- Tortoises need UV radiation from sunlight for good shell growth. If they cannot be outdoors, they must have a full spectrum reptile light to give them enough UV-A and UV-B light.
- Outdoor space must have both shady and sunny areas for the tortoise to use.
- You must build a burrow for the tortoise to use. Tortoises need a place to hide from the heat and from bad weather.
- Only allow your tortoise to stay outdoors when temperatures are above 55°F at night. Always check the weather report in spring and fall if your tortoise is outside, to make sure the temperature does not get too cold.
- If temperatures are colder than 55°F, **you need to bring your tortoise indoors**. Cold temperatures and frost will make your tortoise sick or even kill it.

Where should my tortoise spend the winter?

- Tortoises spend the winter months hibernating. It is too cold for them to do this outdoors in Utah.
- You need to provide a safe place indoors for them to stay in the winter. Do not allow your tortoise to stay in an outdoor burrow for the winter, no matter how deep it is or they will not survive.
- A plastic opaque (not clear) storage bin that is sturdy and big enough for the tortoise to turn around, but not climb out. Drill extra holes in the lid of the tote to allow better air flow.
- A hibernating tortoise cannot be kept at normal room temperature (60°F or higher). They should be kept at temperatures between 50°F and 60°F.
- Use digital thermometers to monitor temperatures in your tortoise's hibernation container.

- Tortoises should be soaked in a warm bath for 20-30 minutes before hibernating. Repeat this soaking once a month during hibernation to keep the tortoise hydrated.
- Only a healthy and plump tortoise should hibernate. A sick, injured, or underweight tortoise can die during hibernation.

What if my tortoise can't hibernate?

- If your tortoise can't hibernate due to illness, injury, or being too skinny, then you must provide safe and comfortable indoor conditions for it to spend the winter.
- It should be kept indoors in temperatures between 75°F and 85°F.
- Give the tortoise 13 to 14 hours of light with a full-spectrum UV-A and UV-B reptile light source.

What are tortoise health problems?

- Injuries are common problems that affect your tortoise's health.
    - Keep your tortoise away from dogs and other animals, until you are sure they will not harm the tortoise.
    - Do not keep two male tortoises in the same enclosure.
    - Keep your tortoise's outdoor space free from hazards.
    - Keep the space secure to prevent your tortoise from escaping.
- Tortoises that tip over on their back are in grave danger. The weight of internal organs will push on their lungs making them slowly suffocate. Don't create places in the enclosure where tortoises can fall or tip over.
- Keep tortoises separate from swimming pools or other deep water. They can easily drown.
- Upper respiratory tract disease (URTD) is a common ailment of captive tortoises. At any sign of a runny nose, or blocked nostrils a tortoise should be treated by a veterinarian.
- Remember that a sick or injured tortoise should not be allowed to hibernate! It can be fatal if they do!

ADOPTING A TORTOISE

By reading this booklet carefully, we hope you will gain a better understanding of what is involved when adopting a tortoise. The tortoise is a gentle animal that will roam your yard in search of flowers and tender shoots to eat. Although it spends a great deal of time in its burrow each day, it will come out to warm, eat, drink, and explore. If you have never kept a tortoise before, you can look forward to pleasant surprises, among them, a great appetite and more personality than you would expect from a reptile.

THINGS YOU NEED TO DO

Please read this entire booklet, taking special note of the *Eliminating & Minimizing Hazards* section on Page 11, to understand the basic needs of tortoises. Then, if you want to go ahead with adoption, call 801-538-4828. Once your application is received, the Adoption Committee will require you to e-mail us (tortoise@utah.gov) photos of your yard that illustrate how you have addressed the following topics:

- Escape-proofing your yard (Page 10)
- Removing hazards (Page 11)
- Building burrows (Page 15)
- Providing a shallow water dish and adequate cover (Page 18)
- Planting a patch of grass with dandelions (highly recommended, Page 22)
- Planting several ornamentals that tortoises eat and hide in (Page 23)

Additionally, the committee will require on-sight visits to your yard after completing the adoption process and viewing the proper photos to solve any issues before making the visit. We reserve the right to refuse adoption to any applicant

HOW A TORTOISE "WORKS"

BALANCING SUN & SHADE

The area you set up for your tortoise must provide the range of temperatures that the tortoise needs to warm and cool throughout the day. Tortoises in the wild remain active across a wide range of temperatures (65-105°F). One of the tortoise's major adaptations to living in the desert is not a tolerance of heat but the ability to dig a burrow to avoid heat. The tortoise regulates its temperature by moving to places in its environment that provide the needed temperature (Figure 1). Sunshine should be available most of the day so that the tortoise can bask. Basking in the sun allows a tortoise to warm its body and is necessary for foraging and digestion. In addition to the burrow, some areas of shade should be available. Ideally, a patchwork of shade and sunshine is needed to provide your tortoise the wide range of temperatures they need.

Figure 1. "Red Rock" the tortoise utilizes burrow to avoid heat and basking spot to absorb heat. Tortoises need both burrows and basking areas to regulate their body temperatures (Photos by UDWR). Note: Painting the shell of your tortoise is not allowed, as paint may be toxic.

To prevent overheating, the tortoise moves to a place where the temperature is cooler than its body. This place should be cooler than any above ground shade. Such a place is an underground burrow, where a tortoise may spend up to 98% of its time in the desert. A snug fitting burrow is vital to restrict major air flow, which helps the tortoise maintain the proper body temperature. Since one tortoise

cannot pass another in a snug burrow, each tortoise must have its own burrow. Otherwise, one tortoise might be forced to remain too close to the opening for adequate protection from the heat or cold. Dog houses, sheds, and children's wading pools do not provide enough insulation and shouldn't be used in your yard.

WHY NOT INDOORS?

There are major health and life risks associated with forcing your tortoise to remain indoors, particularly if the tortoise is younger. Artificially supplying the needed ultraviolet B radiation (e.g., full spectrum reptile light) and maintaining the proper temperature range requires special attention, additional costs, and typically results in inadequate space for the tortoise (i.e., confining the tortoise to a box or terrarium). Although sunny windows appear to offer adequate indoor heat and sunlight, windows may become too hot and generally filter ultraviolet B, which is needed for proper development and growth. Setting the tortoise outside for few minutes each day will not satisfy the needs of the animal. Unfortunately, the results of improper housing will become obvious only after several months or years, at which point the tortoise may die or have irreversible health problems (Figure 2). In the event of extreme prolonged weather (e.g., cold [<55°F] nights, overcast, rainy days), you must bring your tortoise inside for the duration of the poor weather. Otherwise, you should leave your tortoise outside during the summer months.

Figure 2. Two examples of tortoises fed lettuce diets and kept indoors. The collapsed shell (left) is caused by a calcium deficiency. Reversing such the negative effects of an improper diet may not be possible. However, the pyramid shape (right) can be reversed assuming the tortoise is fed a strict forb and grass diet. Do not feed your tortoise lettuce (Photos by Desert Tortoise Group and Cassie Mellon).

The desert tortoise is native to the southern Utah desert. It is logical and easier in the long run to take advantage of the available summer climate. You will be required to provide adequate outdoor facilities for your tortoise as part of the adoption approval process. Provide an adequate outdoor habitat and your tortoise will respond naturally to whatever the weather offers (see Figure 19 for temperatures of Utah's major cities).

AREA REQUIRED

Tortoises need more area than most people realize. The wild adult tortoise may use 100 acres or more. If possible, give the entire yard to your tortoise. A large area will reduce stress on your tortoise and will be much more interesting for you as you see how the tortoise uses different parts of the yard throughout the day and the seasons (late spring-summer-early fall; Figure 3).

Figure 3. The ideal backyard designed for desert tortoise includes a dry area for burrow (white arrows), shallow walk-in water feature (black arrows), access to both shade and sun, and a variety of edible plants and grasses for browsing (Photo by UDWR, Jo Lynn Campbell, and Thomas Mayer).

PREPARING YOUR YARD

ESCAPE-PROOFING THE YARD

Securing Fence

To make your yard escape-proof, "fencing" is NECESSARY. Also remember: **Never tether a tortoise!!** The shell of a tortoise is sensitive to touch and rough treatment. Hammering, drilling, or using other tethering devices can cause permanent physical damage to your pet (Figure 4). A tortoise will try to get through a fence if it can see through or under the fence. At most, this may lead to escape, injury, or death, and at the least will result in constant fence pacing, frustration, and stress.

Figure 4. "Lucky Lucy" was not so lucky before her adoption. Never tether a tortoise, drilling can cause permanent physical damage. Note the unique identification (ID) tag to the left of the drill hole. ID tags are glued to the shell of each tortoise before adoption. Tags may need to be replaced as they may shed with scute (Photo by C. Mellon).

To eliminate the hazards associated with chain link fences install a permanent, secure, and continuous 18-inch-high baseboard, which should be made of wood or brick. The 18-inch baseboard around the chain link or chicken wire fence will prevent necks and legs from becoming entangled. A tortoise should not be able to climb over, see under or through the baseboard. Small cracks or gaps less than ¼ inch are OK, but wider gaps should be covered up. Where there is a wood fence, you will need to secure boards so they overlap the bottom of the fence and continue into the ground a few inches to prevent digging out.

Installing a Gate Barrier

A barrier across the gate opening is very important. Install an 18-inch high barrier across the base of the gate opening so that, when the gate is open, the tortoise

cannot see or pass through the opening and people can step over (Figure 5). The recommended design allows the barrier to be slid up and removed if a large or heavy item must go through, but it must be replaced immediately. Wood merely pressed against the gate opening tends to fall with wind, hasty gate closing, or a persistent tortoise. The wood should rest on a brick or concrete footing so the tortoise cannot see under the bottom of the barrier and the tortoise cannot dig out. This barrier is important to prevent escape when you are using the gate or if the gate is accidentally left open.

Figure 5. Installing a gate barrier is an important part of securing your backyard. When the gate is open, the barrier should act as a visual and physical barrier for the tortoise, but should be low enough (18") for people to step across. Gate barriers, if installed correctly, can be slid up and removed when moving large items into the yard (e.g., lawn mowers, garbage cans). (Photo by Desert Tortoise Group.)

ELIMINATING & MINIMIZING HAZARDS

Tortoise Traps

You may be surprised by the trouble a tortoise can get into. Unlike cats and dogs the tortoise cannot cry out when struck, hurt, or in a life-threatening situation. Eliminate traps by putting them out of the tortoise's reach or surrounding them with an 18" upright barrier with a smooth face that the tortoise cannot climb, see through, or knock over.

Items along edges. A tortoise likes to walk the edges of the property. It will attempt to climb over items in its way and may get caught or tip over on its back.

Trouble spots in the yard. A tortoise may tip over when climbing on stored items, wood piles, wire mesh, or odds and ends. Bicycles and power tools are especially

dangerous. Stack wood piles so the sides are vertical, too steep to climb. Prevent collapse if a tortoise burrows under stacked wood and support the stack on at least two pieces of lumber that run from one end of the stack to the other. Additionally, walls made of keystone blocks provide toe holds that allow a tortoise to climb. The tortoise may fall back when climbing, or once at the top may be unable to climb down and become stranded in the sun. The attempt to climb up or down may end in a fall. An overturned tortoise usually cannot right itself on concrete or other hard surfaces and may die of overheating, especially if it is in direct sunlight.

Swimming pools and fish ponds. Pools and ponds must be fenced if the tortoise will have access. A wrought iron fence is not enough. The bottom 18" must be covered with a firm, smooth material that prevents the tortoise from seeing through or climbing. Additionally, some rock walls surrounding swimming pools can be climbed by a tortoise; AVOID AREAS THAT CAN BE CLIMBED. Tortoises do not swim or float for long if they fall into water. If this occurs and the tortoise appears to be dead, it may still be alive, remove it from the water and contact a veterinarian immediately. Take the proper precautions to eliminate access to pools or ponds.

Dogs, Cats, Children, Fertilizers, & Multiple Tortoises

The family dog. Expect the family dog to be curious, jealous, aggressive, and/or playful. Any of these responses may lead to the death of the tortoise or its being continually stressed. Do not trust puppies with tortoises. Even an older dog that is gentle with people can severely injure or kill a large tortoise in a few minutes. You should be prepared to watch constantly, until you KNOW whether or not the dog can be trusted (Figure 6). Remember dogs are naturally predators and tortoises can easily become prey. It is also important to secure the area where your tortoise lives so your neighbors' dogs cannot get in and harm it. Unfortunately, dog attacks on tortoises are common and can be fatal.

With a little concentrated attention from you during the first few days, the dog should satisfy its curiosity, learn from you the behavior that is not allowed, and that

there is no reason to be jealous. This is important if the dog is to be trusted when you are not home. The dog may become very protective of the tortoise or may lose interest entirely. However, some dogs may want to play with or gnaw on the tortoise, particularly if the tortoise is small. **You are required to return the tortoise to the UDWR if this happens.**

Figure 6. Mr. T (left) and Marithé (right) lounge with their canine counterparts. Tortoises can co-habitat with other domestic animals as long as they are supervised to ensure there is no aggression from the dog/cat (Photos by Jason L. Jones and Cindee Jensen).

Cats, ferrets, rats, and birds. Typically a tortoise is not active enough to hold a cat's interest for long. However, cats, ferrets, rats, and birds can inflict serious injury if allowed access to a tortoise. Use caution and common sense when allowing pets to interact, particularly those that are natural predators.

Tortoises and Children. Handling by a small child can result in serious injury or immediate stress to a tortoise. Tortoises do have the ability to feel touch on their shells. The shell of a tortoise may break if dropped. A child should be willing to enjoy watching how the tortoise spends its day, rather than carrying the tortoise (Figure 7). If it is necessary to pick up a tortoise, an adult should pick up the tortoise by holding it in the same position as it stands. Remember to support the feet (Figure 8). Salmonella can be present in tortoise feces and urine. While it is not common for land tortoises to transmit the

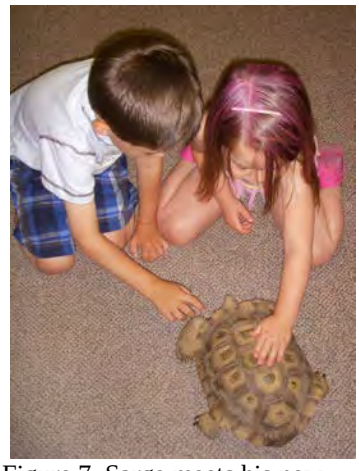


Figure 7. Sarge meets his new family. These kids show that you can enjoy a tortoise without holding or carrying them (Photo by C. Mellon).

disease, it is important to supervise small children around tortoises. Make sure that they don't touch their eyes, nose, or mouth, after handling a tortoise, without first washing their hands. Also make sure that children don't come into contact with tortoise droppings or urine.

Fertilizers & poisons. Dry fertilizer can be deadly. Tortoises may accidentally eat fertilizers while grazing or may drink it in solution from puddles at the base of shrubs. We suggest you use liquid fertilizer (such as Miracle-Gro) in targeted areas and only when tortoises are inactive. Do not use snail bait, weed or pest sprays, or systemic poisons.

Figure 8. If you have to pick up a tortoise, approach the tortoise from the front, pick it up support the plastron (shell underside; right) and the legs and feet if necessary (left). Only adults should pick up or carry tortoise. Always use two hands. (Photos by J.L. Jones.)

Multiple Tortoises. The UDWR does not permit any breeding of desert tortoises in captivity. To do so is unlawful. Generally, only one tortoise will be adopted per family. However, in years with many tortoises and few applicants, we may allow adopters with females to adopt a second female.

Male tortoises do not get along well with other males. Fighting will undoubtedly occur as most yards are too small for more than one male (Figure 9). Fighting can lead to constant stress, injury, or death. The situation may never change as long as the two tortoises can reach each other, so they must be permanently separated. Females seldom fight. If you have two tortoises in the same area, you must provide a separate burrow for each of them. Due to species specific parasites,

behaviors, requirements, and general size differences, your desert tortoise should not be kept with other species of tortoise.

Figure 9. Male tortoises fighting in the wild. Because male fighting commonly leads to injury, death, constant stress, multiple males cannot be adopted to the same home (Photo by ©Jeff Foott, Discovery Communications, Inc.).

BUILDING BURROWS

Because the tortoises adopted in Utah experience a wider range of temperatures during summer months, burrows should be constructed by burying cinder blocks, or a trash can, under dirt or soil. Regardless of design, you must be able to physically reach in and remove the tortoise from the burrow at all times. During colder nights (<60°F) your tortoise may excavate deeper into a burrow; when temperatures are critically low (<55°F) you must bring tortoises indoors (see Figure 19 for temperatures of Utah's major cities). Thus, the inside temperature of the burrow must be kept above 55°F. In contrast, to keep the burrow from becoming too warm, it should not face west, where the sun may directly enter the burrow during the hottest time of the day. Ideally, it would face Northeast or Southeast.

A variety of other supplies can be used to construct tortoise burrows (e.g., dog igloos, large PVC pipe, 5 gallon buckets). The burrow should be dug down at an incline (not a hole) so the tortoise can further escape the heat of surface shade temperatures. Burrows must remain dry throughout the summer. Make sure not to build it too close, or on top of, sprinkler heads. Make sure to create a ridge/ramp (15-20° angle) of compact soil in front of the burrow along with a roof/overhang to help keep out flowing water. If built correctly, the tortoise will go up the outside of the berm and down the inside, directly into the burrow. For additional burrow building information see Web References (Page 40).

The following photos and accompanying text were adapted from the *Arizona-Sonoran Desert Museum Guide*.

BUILDING A CINDER BLOCK TORTOISE BURROW

1) After digging down the den site, layout the burrow using 6 concrete blocks (8"X 8"X16"). Other materials such as slump block or brick can be used as long as you end up with similar dimensions. The tunnel of the burrow should be at a minimum of 24" long/deep.

2) For large adults an extra course of 4" thick block can be used to give more headroom.

3) A piece of ¾" outdoor or treated plywood (40" long X 32" wide) should be laid over the blocks (to their outer edges).

4) Cover the den with a layer of 6-8" of dirt to provide adequate insulation. The inside temperature of the burrow should not be less than 55 F. Large rocks placed along the outside edge of the blocks can be used to help prevent erosion.

5) The final product. The den should be protected from runoff water by creating a small berm at the entrance to direct any water away. Inspect and maintain the burrow periodically to prevent collapse of the roof.

BUILDING A TRASH CAN TORTOISE BURROW

1) Using a 15-20 gallon metal trash can (plastic cans will collapse under the weight of the dirt), cut in half using a Sawzall®, grinder or similar tool. The bottom, which can form the back of the den, can be either left intact or removed. Again, this should be at least a 24” tall trash can.

2) The half trash can should be set on ground level or slightly dug in (Be careful not to create a hole/depression that will fill with water).

3) Before adding soil, rocks can be placed around the outside of the can to help reduce erosion.

4) 6-8" of dirt should be placed over the can to provide good insulation against extreme temperatures. The dirt will settle and should be checked several times during the first season to make sure the burrow is well protected.

PROVIDING WATER

HOW TORTOISES DRINK

You never know when a tortoise needs a drink, so keep fresh water in a shallow, shaded dish at all times. A tortoise drinks by immersing its mouth and nose and swallowing repeatedly for as long as 15 minutes (Figure 10). Don't be too alarmed.

Figure 10. Red Rock and Lucky Lucy enjoy their respective drinking holes. Tortoises require some shallow water source for drinking in their enclosures. (Photos by UDWR and J.L. Campbell.)

Tortoises often urinate during or after drinking and eating. Along with watery urine, they may pass a white-to-lavender substance. It may look gritty or like curdled milk. This is normal. Flush the urine from the water dish immediately. If urination occurs on the lawn, simply hose it into the lawn (consider it free fertilizer). Urine and feces both can contain Salmonella, make sure to wash your hands if you come in contact with either.

MAKING A PLACE TO DRINK

The water dish should be at least 5' from any part of the shelter or burrow. Do not put the dish where parts from plants (i.e., leaves, fruit) will fall in the water. Use a new, plastic or porcelain dish, like those put under flower pots. Do not use clay based dishes. Clay dishes are porous and grow mold. The dish should be at least

18” inches in diameter for the tortoise to get in and soak and about 1½” deep (no deeper than 2”).

Ideally, the dish should be surrounded, about one foot out in all directions, with stepping stones, bricks, or ornamental rocks so the lip is even with the ground. To fill or clean the dish, leave it in place and flush with a hose or bucket. If you tilt the bricks slightly away from the dish, mud and debris will flow away when you flush it.

Figure 11. A water pavilion provides the tortoise with access to cool, shallow drinking water, while providing additional shade to the tortoise and keeping the water dish free from contamination (the awning can be constructed from a variety of materials; Photos by J.L. Campbell and Desert Tortoise Group).

The water dish needs permanent shade. If left uncovered and shallow enough to be safe, the water may become too hot to drink. This problem is easily remedied with the use of a 4'x4' cover with 12" legs (“water pavilion”) that will shade the water all day (Figure 11). The cover should keep out leaves, which may contain toxins, from soaking in the water dish and contaminating the water.

Alternatives to the water dish can be used, including shallow (less than 2”) streams and waterfalls (Figures 3 & 8). Remember, desert tortoises cannot swim, only provide shallow water for drinking (or soaking; Figure 12).

Figure 12. Lilly soaks up the warm water. In addition to drinking, tortoises may soak in their dishes (Photo by Krissy Wilson).

PROVIDING FOOD

The tortoise is a **vegetarian**. It is possible, but may be impractical, to duplicate the grass, forb, and wildflower diet of the wild tortoise in your backyard (see Appendix II). Regardless of your yard's design, you should make a conscious effort to ensure the proper nutrition from food sources (Table 1).

RECOMMENDED FOODS

All plant material must be washed, chopped (a food processor is recommended), and thoroughly mixed. This will ensure a balanced diet in that all food items will be eaten, rather than just the favorite or tasty ones. Prepare enough for 4 to 7 days, store in the refrigerator between feedings, and serve at room temperature. We recommend feeding your tortoise daily or, at the very minimum, every other day. The food should be placed on grass, a place mat, or concrete NOT on dirt or soil as they may ingest the dirt and have digestive blockages.

Tortoise Salad

Ingredients: Each meal should contain a portion of the following five categories:

1) **Calcium-rich greens:** 60-80% of the diet, two or more items per feeding (see *Growing Food* [p. 22] and Appendix II [p. 45]) – native-edible plants, common Bermuda grass, turnip greens, mustard greens, bok choy, dandelions, parsley, cilantro, mulberry leaves, prickly pear pads (without spines), grape leaves, hibiscus leaves, escarole (chard, kale, and collards should be used sparingly, see Page 22), and alfalfa hay or pellets (soak before offering). (See Table 1 and Figure 13.)
2) **Other "vegetables":** 10-30% of the diet, a variety weekly – flowers from zucchini, roses and hibiscus, squash, zucchini, sweet potato, bell pepper, peas, beans, okra, grated carrot, sprouts. Note: Hard vegetables need to be shredded because a tortoise does not chew its food; it bites and swallows. Chunks of food can cause choking or injury.

3) **Grain/fiber:** Optional, no more than 10% of the diet – whole grain breads and natural bran cereals.
4) **Fruits:** Offer periodically (not every week) – figs, papaya, apple, peaches, plums, strawberries, bananas (with skin), and grapes.
5) **Vitamin/mineral supplementation:** Supplementation is advised because vitamin and mineral deficiencies are common in captive tortoises. However, fat-soluble vitamins (A, D, E and K) and calcium can be easily *over-supplemented.* To avoid over-supplementation, provide a varied diet of vitamin/calcium rich foods (Table 1). If needed, supplement only twice a week to balance the diet. Use powdered calcium carbonate (e.g., cuttlebone shavings) or calcium gluconate. Mix 1 part vitamin and 2 parts calcium. Protein should only be supplied as a plant-based source (NEVER give dog or cat food to a tortoise!).

Figure 13. Hermy ingests dandelions (top left), Mr. T goes for clover (top right), and Nevada tortoises ponder ornamental flowers and cactus (bottom left-right); these are prime examples of food easily grown at home (Photos by Sarah Southerland, J.L. Jones, and Desert Tortoise Group).

Table 1. Recommended food items for a captive desert tortoise (the recommended percentage of the diet is included in parentheses).

Calcium Rich Greens (75-90% of Diet)	Other "Veggies" (10-15% of Diet)	Grain & Fiber (<10% of Diet)	Fruits: not every week (<5% of Diet)
Native- Edible Plants*	Rose/Hibiscus Flower	Whole Grain Breads	Figs
Bermuda Grass	Sprouts	Natural Bran	Papaya
Dandelions	Zucchini	Cereals	Apples
Mulberry/Grape Leaves	Grated Carrots		Peaches
Turnip Greens	Bell peppers		Plums
Mustard Greens	Squash		Grapes
Cilantro & Parsley	Peas		Strawberries
Bok Choy	Beans		Bananas (w/ Skin)
Grape/Hibiscus Leaf	Okra		Pears

Use powdered calcium carbonate or calcium gluconate supplementation to help prevent vitamin and mineral deficiencies. However, avoid *over-supplementation.* Natural sources from varied diet are the best choice, with minimum to moderate vitamin/mineral use twice a week to balance the diet. Mix 1 part vitamin and 2 parts calcium. Protein should be supplied as a plant-based source. *Appendix II: Native- Edible Plants

A comment about canned, frozen, and other commercial tortoise diets: canned or frozen foods contain preservatives and are generally less nutritious and are higher in sodium than fresh greens; in spite of claims that commercial diets are complete and balanced, they may not be. A popular commercial diet for tortoises is MegaDiet®, the Tortoise Group's name for Zeigler Brothers' tortoise diet mix. MegaDiet® is an inexpensive, easy-to-use tortoise chow. Although MegaDiet® is considered a "complete food" source, we strongly recommend growing plants and providing other fresh food items. Because MegaDiet® contains necessary vitamin/mineral supplements, offering additional supplements with MegaDiet® can be harmful, not helpful. For more information or to order MegaDiet® check online at www.tortoisegroup.org.

Growing Food

Tortoises naturally forage, so providing food that you grow in your own yard is fun, easy, and important. See Appendix II (p. 45) for a list of edible, native plants that you can grow. Tortoises usually do not eat hybrid grasses, but will consume

common Bermuda grass and alfalfa. Plant a patch of food at least 9 square feet (3'x3'). Keep grass as short as you can; long grass can cause choking. Transplant dandelions and clover throughout the grass, as they are among the most nutritious and easily grown plants you can offer. Keep the yard free of weed and pest killers.

Ornamentals. Some ornamentals that tortoises eat include gazania, Mexican evening primrose, verbena, ivy geranium, hollyhock, rose petals, Hall's honeysuckle, young grape leaves, mallow, dianthus, purple hearts, dichondra, aptenia, coreopsis, desert willow flowers, petunia, pansies, portulaca, nasturtium, sow thistle, and the young pads of spineless cactus (*Opuntia ficus indica*).

Poisonous plants. Some plants to avoid include Chinaberry tree (*Melia* spp.) leaves and fruit, tomato plants, rhubarb leaves, pyracantha, and oleander (for a list of poisonous plants see Appendix I).

FOODS TO AVOID

Lettuce. Tortoises will accept many grocery store greens and vegetables, but if allowed, tend to eat lettuce only. There is no reason to offer any kind of lettuce (e.g., iceberg, romaine). A tortoise cannot get the nutrients it needs no matter how much lettuce it eats. Even Romaine lettuce consists of mostly water (Even nutritious vegetables are about 86% water). Additionally, lettuce provides excessive potassium, which can build to toxic levels as bladder water passes back into the system carrying with it potassium. At some point, tortoises need to have water that is not attached to a plant. Drinking water helps the tortoise flush the bladder and rid the system of excess potassium. Deficiencies and deformities are common results of lettuce diets.

No dog or cat food. Dog and cat food may cause digestive problems and shell deformities because the fiber content is too low for tortoises. NEVER feed dog or

cat food to a tortoise!

Avoid spinach and beet greens; avoid excessive broccoli, kale, cabbage, and chard. Spinach, beet greens, and chard in excess can bind calcium in the food and make it unavailable to the tortoises. Tortoises need a fair amount of calcium. Too much broccoli, collards, and kale can interfere with the functioning of the thyroid gland.

Avoid commercial mixtures developed for other turtles.

Avoid excessive fruits. Do not offer fruits with frequency (i.e., not every week). Fruit is not a natural part of tortoise diet. If you have fruit trees, try to keep fruit picked up and away from the tortoise.

CHANGING THE DIET OF A "LETTUCE EATER"

If your tortoise will eat only lettuce, you should mix smaller amounts of lettuce with grasses, forbs, and flowers, increasing the quantity of the recommended foods with every feeding. Be patient. It's safe to assume that the tortoise will not starve before accepting nutritious food if you have grass, dandelions, and other ornamentals available. If needed, take the tortoise to a vet (see *Potential Vets Along the Wasatch Front*, Page 40). There may be deficiencies you need to start correcting aggressively (See Figure 2).

MALE & FEMALE TORTOISES

In the average size yard, a female will not be able to get away from a male. The constant courting of a male may be very stressful and debilitating for a female. Because we prohibit captive breeding and the tortoise is a federally listed species,

the UDWR does not adopt male and female tortoises to the same house.

SEXING A TORTOISE

Sexual differences become quite evident when the shell is about 7" long. Until that size, the plastron (lower shell) of both sexes is relatively flat. Males begin to develop a concave plastron near the tail. A female's plastron remains almost flat throughout life (Figure 14).

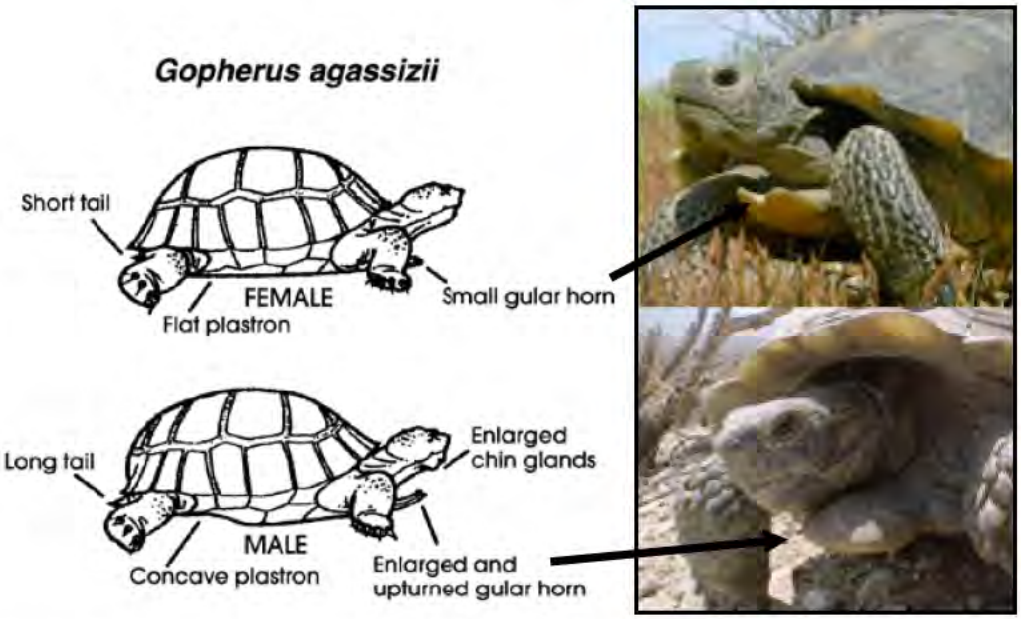


Figure 14. Sexing a mature tortoise is relatively simple. Male tortoises have an enlarged and upturned gular horn under the chin (diagram and photos, bottom), an enlarged chin gland on each side of the lower jaw, and have a more concave plastron near their tail (diagram). In contrast, females have shorter tails and longer rear nails (Diagram by Desert Tortoise Group; Photos by U.S.G.S./Ken Nussear (female tortoise)).

DETERMINING THE AGE OF A TORTOISE

Unless the date of hatching is known, accurately determining the age of a wild or captive tortoise is not possible. Several techniques exist to estimate age (e.g., counting scute rings, measuring body size/mass, comparing shell wear) but the

results vary widely. Because growth rates can vary by region and year, both wild and domesticated tortoise can develop anywhere from zero to seven growth rings per year. The number of growth rings depends upon food availability and habitat constraints. For this reason, counting growth rings is not a good measure of age (Figure 15).

Figure 15. Growth rings are not necessarily valid estimates of age. Their number varies by region and year (Photo by J.L. Jones).

Desert tortoises are long lived and in captivity often live beyond 50 years. Wild tortoises in the Sonoran and Mojave deserts can reach the age of 55.

HIBERNATION (BRUMATION)

YOU MUST HIBERNATE DESERT TORTOISES INDOORS during the winter months. Tortoises that are not hibernated properly may starve or dehydrate, despite the presence of food and water. In their natural habitats in southern Utah, tortoises hibernate from October until April. Factors that control their hibernation behavior are photoperiod (daylight) and temperature. As the fall season approaches, the length of the day shortens and behavioral changes take place in your tortoise over a period of weeks. Tortoises will stop eating, dig more, and move around less. Be sure to offer a drink and a soak in the water dish or basin. Tortoises in Utah MUST BE BROUGHT INDOORS before the first 55°F or colder night (see Figure 19 for temperatures of Utah's major cities). We recommend that you monitor weather forecasts throughout late spring and early fall and make sure to bring your tortoise indoors if the overnight low is 55°F or less. Tortoises are "cold-blooded" and do not produce their own heat. Several days of cold

temperatures, particularly frost, can kill a tortoise. Even in a deep burrow they cannot survive the winter in northern Utah and must be brought indoors. In general, captive tortoises in Utah should not be left outside when temperatures are below 55°F.

HYDRATION

Before placing a tortoise into hibernation, make sure to provide a warm bath (using the plastic bin discussed below) and soak the tortoise in approximately 1½" of water (less if a juvenile) for 20-30 minutes (Figure 16). Soaking the tortoise before hibernation will help the tortoise excrete all remaining materials out of their digestive tract (they should not be digesting material when in hibernation) and sufficiently hydrate the tortoise for a month.

Figure 16. Tortoises must be hydrated before and throughout (monthly) hibernation. A simple rubber/plastic tote can be used for this purpose. If the tortoise is an adult soak in 1 ½" of warm water for 20-30 minutes. (Photo by J.L. Jones.)

Once a month during the hibernation period, bring the tortoise out of the box and soak it in warm water (1½" deep) for 20-30 minutes. If you use the recommended plastic tote/box, you can soak the tortoise directly in the hibernacula bin. Make sure you remove all water and dry out the plastic tote/box before placing the tortoise back into hibernation. Additionally, you can bring the tortoise out on the floor in the house where sun is shining, allow the tortoise to bask, and offer it food and water. Most likely the tortoise will not eat or drink; food should only be offered during the early spring months before emergence. Place the tortoise back in its box in its hibernation area.

TEMPERATURE & LOCATION

During hibernation most indoor temperatures are too high; above 60°F is too warm to effectively slow the metabolism and conserve fat reserves at a time when tortoises stop eating. By spring, such a tortoise may die or is likely to be debilitated and dehydrated. Temperatures between 55°F and 60°F are ideal for hibernation; a digital thermometer should be frequently used to verify that this temperature is achieved. However, even a dormant tortoise may emerge on occasion expecting to bask or drink (see HYDRATION).

We recommend placing the tortoise in a colored (not clear) plastic tote that is sturdy and large enough to prevent the tortoise from climbing out, while still providing enough room to allow the tortoise to turn around (e.g., 16”x24”x16”; Figure 17). The box should be at least twice as long as the tortoise, 2-3” taller, and just wide enough for the tortoise to turn around. Regardless of the box used, you need to provide sufficient ventilation (i.e., drill holes in lid and around top of container), but prevent excessive drafts. The box should be kept off the floor and away from drafts and rodent invasion. However, if such a box is kept some distance off the floor (i.e., high on a shelf), the tortoise may fall out and injure itself. Note: In attempting to climb out of the box, a tortoise may fall onto its back and be unable to right itself. If this happens out of your sight and hearing, the tortoise will suffocate as its internal organs press against the lungs, which are located just under the upper shell. Check your hibernating tortoise with frequency.

Substitutes for an indoor burrow may be too cold, too warm, too dry, or dangerous. For example, a storage shed or unattached garage will be too cold in winter. If the tortoise is free to walk about, it may become caught among stored items or come to rest in the path of vehicles. Construct a hazard-free indoor hibernaculum for winter hibernation and keep your tortoise contained.

Figure 17. Tortoises must be placed in a secure hibernation bin (right). We recommend using a colored (not clear) plastic or rubber tote (16"x24"x16") with a secure lid (left). To provide adequate ventilation, drill a couple dozen holes (¼") into the lid and around the upper rim of the container. Additionally, the bin can be used for transferring the tortoise or hydrating the tortoise through hibernation. (Photo by J.L. Jones.)

THE HIBERNACULA

1) We recommend using a large plastic tote (Figure 17). Tortoises may escape from or destroy cardboard hibernacula, cardboard boxes should not be used to hibernate your tortoise (Figure 18).

Figure 18. Keep an eye on hibernating tortoises. Hibernacula can be easy to escape from. This tortoise is breaking out of cardboard hibernacula (Photo by J.L. Jones).

2) Place thermometer in the box, but out of reach from the tortoise, which will stir and walk around inside the box. Check the thermometer (a digital indoor/outdoor thermometer works best) frequently to ensure the best temperature range is met (40-55°F).

3) Before placing the tortoise in the box/tote, drill several dozen holes (¼" diameter) along the top side of the tote and on the lid to allow air flow. Place it slightly above the floor where it won't fall if the tortoise tries to climb out. Make it a convenient location for you to check the tortoise and temperature frequently.

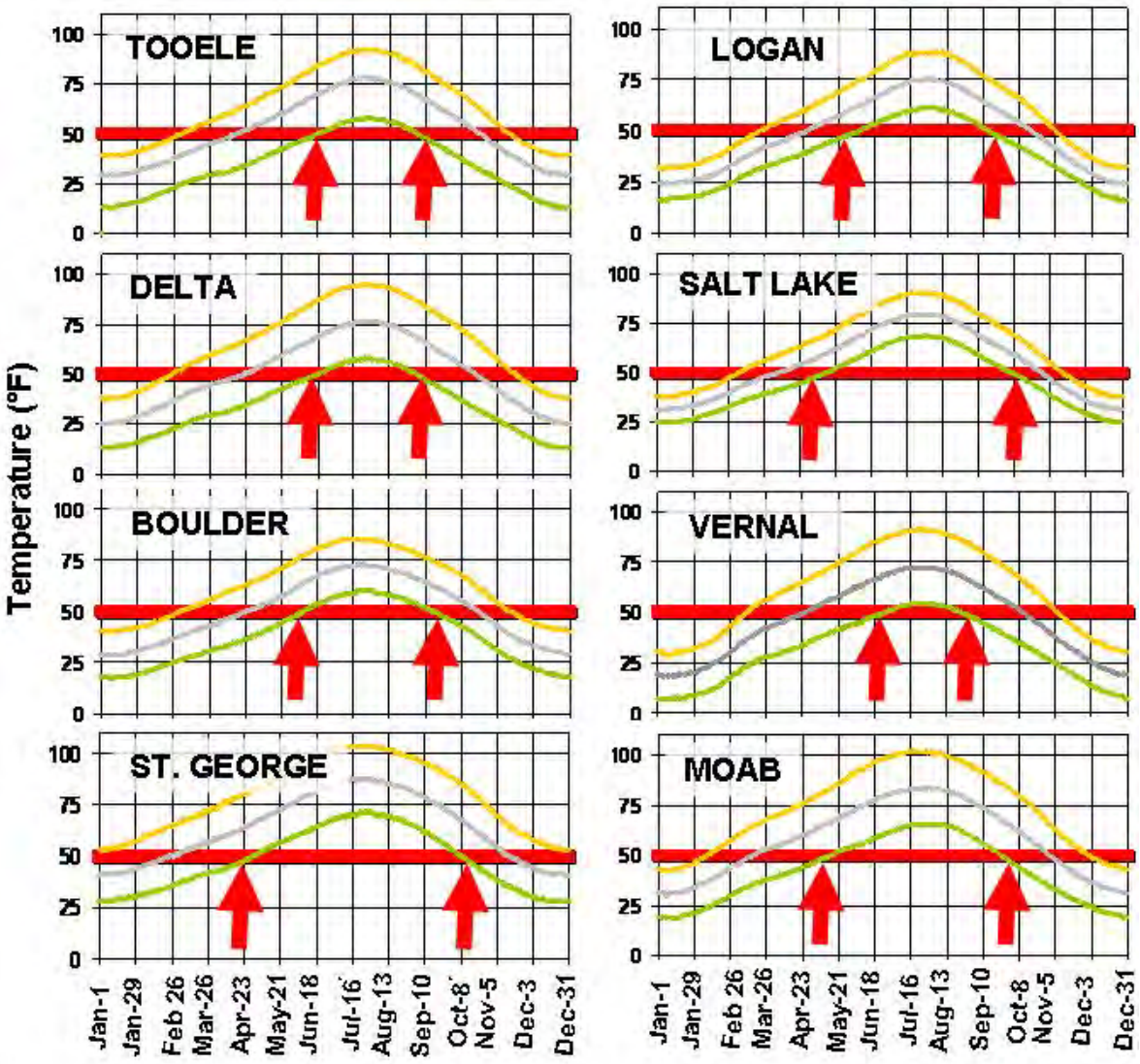
SPRING EMERGENCE

In March and April, the tortoise will begin stirring with increasing frequency and will need to come out of hibernation and allowed to bask for a few hours. At this point, you may not want to return the tortoise to the hibernacula, but instead allow it access to your yard (assuming temperatures are greater than 65°F in the shade; see Figure 19 for temperatures of Utah's major cities). In general, your tortoise should not remain in your yard overnight when temperatures are below 55°F, even if an outside burrow is present. Allow the tortoise to drink and/or soak in shallow water. Once the temperatures permit, the tortoise can be left outdoors for another season.

Eating and other activities may not start for days or weeks. However, offer the tortoise a drink and soak it in lukewarm, shallow water (see HYDRATION) and offer food. Dry the tortoise well after soaking. When the tortoise starts walking about and eating plants: Start regular feeding schedule.

The date that a wild tortoise begins to hibernate in the fall or emerges from hibernation in the spring varies with each tortoise and may change from year to year. It may have little to do with the amount of daylight in 24 hours or the increasing temperatures, and more to do with the tortoise's biological clock. Similarly, captive tortoises will vary in their hibernation dates from year to year.

Depending on where you live, the tortoise may only have a few months every year to live entirely outdoors. Consult the temperature diagrams (Figure 19) to determine the estimated length of time that temperatures will permit your tortoise to live outdoors. Regardless of where you live, when night time temperatures reach below 55°F, the tortoise must be placed indoors. When daytime high temperatures drop below 65°F the tortoise should remain indoors both day and night.



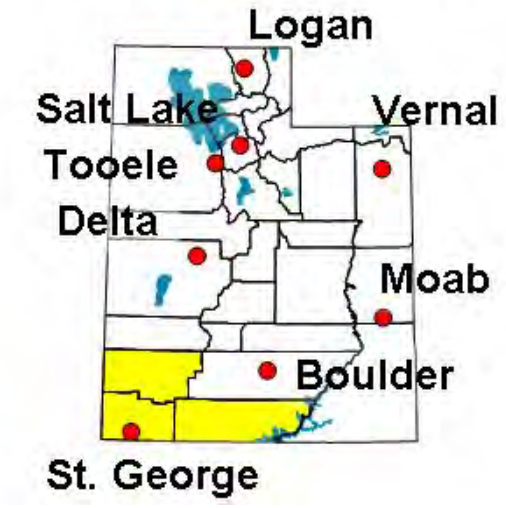


Figure 19. Graphs showing the average (1971-2000) high (orange), mean (grey), and low (green) temperatures for Utah cities (map inset) with desert tortoises present (captive or wild). Daytime and nighttime temperatures below 55°F (red line) require adopters to bring tortoises indoors. These graphs should help adopters in estimating the length of time (between red arrows) tortoises may be able to remain outdoors. Note: adopters must check forecast routinely to ensure tortoises are not left outdoors in temperatures below 40°F. In most cases temperatures from nearby cities (e.g., Salt Lake) can be used to estimate neighboring city temps (e.g., Provo). The map shows county boundaries in black and cities (graphed) as red dots. Tortoises cannot be adopted to homes in the highlighted (yellow) counties (Iron, Kane, & Washington counties).

MEDICAL PROBLEMS

Please refer to the list of veterinarians we have provided (updated January, 2014. All of these veterinarians claim to have experience treating tortoises. If you need additional assistance please call us at 801-538-4746.

ACCIDENTS & INJURIES

The most common accidents that result in death or injury are preventable. They include dog attacks, attempts to climb or get through wire fencing, tipping over, getting caught when climbing over stored items, falling into swimming pools, and being hit by a car because the yard was not secure and the tortoise escaped (Figure 20). Although tortoises are thought of as "tough" or "resilient," you must seek veterinary help whenever your tortoise sustains an injury. Even superficial wounds should be treated, because infection can be more of a threat than the injury.

Figure 20. This Arizona tortoise (above) was found with ribbon tethered around his left leg. The foot was amputated, but the tortoise nearly lost its entire leg. "Patches" and "Speedy" (middle and below) were both near road casualties; both are reminders that vehicles and tortoises do not mix. Close your gates and put in barriers. (Photos by J.L. Jones, C. Mellon, and B. Beard).

RESPIRATORY DISEASE

Upper respiratory tract disease (URTD) is common in captive tortoises and may be fatal if left untreated. Signs include runny or blocked nostrils, difficulty breathing, runny eyes, puffed lids, and loss of appetite (Figure 21). URTD is communicable among tortoises and has led to the decline of wild populations.

Figure 21. Upper respiratory tract disease (URTD) signs include runny or blocked nostrils. This tortoise has a bubble emerging from the nostril, indicating URTD (Photo by Desert Tortoise Group).

Predisposing causes are usually stress related and may include improper diet, excess humidity, and overcrowding. Antibiotics may eliminate the symptoms and prevent pneumonia and death. URTD can become chronic and difficult to treat. Some tortoises live a long and otherwise normal life but remain carriers of URTD. We suggest early veterinary treatment to provide your tortoise with the best possible outcome.

GASTROINTESTINAL PROBLEMS

Gut Impaction

Soil and pebbles are sometimes eaten by both pet and wild tortoises. The need for minerals may be one reason. However, excess consumption of substrate may lead to gut impaction, which can be common with captive tortoises.

Intestinal Parasites

Intestinal parasites are a problem for tortoises and their impact on health only increases when the tortoise eats p food items (e.g., sweet fruits, frozen veggies). Parasites can cause weight loss, poor appetite, vomiting, diarrhea, and a lack of activity. If you think your tortoise may have parasites, have your tortoise checked by a veterinarian. To control the severity of infestation and reduce the chance of re-infestation, collect the droppings (scats) often and discard them.

Salmonella

ALWAYS wash your hands after handling a tortoise. Washing hands can help prevent the spread of Salmonella that can be present in or on any vertebrate animal, including tortoises. Although desert tortoises are not known as major vectors of Salmonella, practicing proper hygiene will safeguard against its spread. Because small children are at higher risk for contracting Salmonella, they should not handle tortoises, or only do so under close supervision of an adult and promptly wash their hands afterward. Do not allow children who have handled a tortoise to touch their nose, eyes or mouth until they have washed their hands. Practice proper hygiene and avoid touching your eyes or mouth after handing a tortoise. Make sure to clean up droppings and urine frequently, especially indoors.

IF YOUR TORTOISE DIES

When this unfortunate event occurs, we respectfully request that you immediately contact the UDWR. Although you have adopted the desert tortoise into your family, it is still the property of the State of Utah and must be returned to the UDWR. Due to its' federal status, we require that the deceased tortoise be returned back into our possession. You can rest assured that your former adoptee will provide us with information about the internal workings of a desert tortoise, as well as increase our understanding of the causes of mortality, which may help to preserve and protect wild populations.

THE DESERT TORTOISE (*Gopherus agassizii*)

THE PROTECTED TORTOISE: BACKGROUND INFORMATION

The desert tortoise (*Gopherus agassizii*) was listed as Federally Threatened under the Endangered Species Act in 1990. Range-wide declines of their populations are associated with habitat degradation, disease, predation, and human-related mortality and collection.

The desert tortoises inhabiting Utah are at the northern most extent of their range in Utah's southwestern deserts (Figure 22). Utah's population was considered one of the most dense and healthy, but fires in 2005 burned almost 15,000 acres, killing many tortoises and causing a population decline. Red Cliffs Desert Reserve, established in 1996, protects over 62,000 acres of habitat and has been established for preserving wildlife populations, including the desert tortoise, from potential threats posed by rapid development and habitat loss in Washington County, Utah (Figure 23).

Figure 22. The geographic range of the desert tortoise (*Gopherus agassizii;* adapted from Stebbins, 1985). The portion of the geographic range where populations are federally listed is shaded.

Figure 23. Desert tortoise numbers are decreasing largely due to habitat loss. The rampant destruction of habitat has resulted in the need to set aside wildlife reserves, like the Red Cliffs Desert Reserve near St. George. These reserves act as important biological study areas, where radioed tortoises (above) provide insight into how many tortoises exist and the habitat they use (Photo J.L. Jones).

Because wild and captive tortoises are protected in different ways by various local, state, and federal laws, this package has focused on the desert tortoise of Utah. In addition to being protected under federal law, tortoises in Utah are also protected under state law. Without a special permit, no one is allowed to touch, disturb, collect, or harm a wild tortoise or to disturb a tortoise burrow. Tortoise remains cannot be collected. Tortoises, wild or domesticated, dead or alive, along with their eggs are not to be bought or sold. However, through the UDWR's adoption program, you may be allowed to possess a desert tortoise in the State of Utah through the foster program application process.

Why Shouldn't Wild Tortoises Be Removed from the Desert?

It is against the law to collect a wild tortoise without a permit. Poaching tortoises from the wild is a major factor in their population decline. Tortoises often cross roads through the undeveloped desert (Figure 24). Tortoises seem to follow the old adage "not all who wander are lost." They know where they're going. There is no need to "rescue" them unless they are in danger from heavy or fast traffic. If it is safe for you to stop, approach the tortoise from the front, pick it up, hold it level and move it several yards beyond the side of the road or inside any fencing in the direction the tortoise was heading.

Wild tortoises tend to urinate when picked up because they are frightened. The tortoise has stored water for use over many months. When you pick up, touch, or harass a tortoise this water can easily be lost and the tortoise may eventually die of dehydration before the next rain. So, think twice about moving a tortoise unless it is in immediate danger from vehicles.

What If Someone You Know Removed a Tortoise?

If someone you know has recently removed a tortoise from an undeveloped desert or a road through undeveloped desert, in Washington County, the first step is to call the UDWR Washington County Field Office (435-879-8694) or Salt Lake Office (801-538-4746). Do not release the tortoise or keep it for personal use. **It's the**

law. Keep the tortoise indoors until picked up. Put it in a box with solid sides and a loose lid to allow for proper ventilation and so it cannot see out. The box should be tall enough that the tortoise cannot climb out. Place the box in a quiet spot away from other pets (e.g., dogs, cats, ferrets, other tortoises) so as not to increase the stress associated with captivity. Check on the tortoise with frequency until the UDWR picks up the tortoise.

Tortoises Wandering in Developed Areas

If you find a tortoise wandering in a developed area outside of Washington County, it is probably an escaped pet; if the tortoise is found within a developed area in Washington County, it may be an escaped pet or a wild tortoise displaced from a development site. **Regardless, do not release the tortoise into the desert. Do not keep it for yourself or give it away.** Take it home, put it in a box inside your house (see above) and call the UDWR immediately, in Washington County 435-879-8694 or any other county 801-538-4746. **The tortoise must be turned over to the UDWR. It's the law!**

Figure 24. Desert tortoises frequently cross roads in the Mojave and Sonoran deserts. It is illegal to handle tortoises, but if you see one crossing the road and can safely move it out of harms way, please do so. Tortoise crossing signs are becoming more prevalent in areas with tortoise populations, (i.e., Snow Canyon State Park). Use caution when driving in tortoise habitat. (Photo J.L. Jones).

Because the UDWR keeps permanent records of adopted tortoises, we can locate the owner. If the owner does not claim the tortoise and it passes the health test, you may be able to adopt it after your yard has been prepared and you have filled out the proper documents. The UDWR can guide you in preparing for and adopting these tortoises.

Why Pet Tortoises Should Not Be Released in the Desert

It's illegal. In addition to unauthorized releases being just plain illegal, it is also cruel to the tortoise. Once a tortoise is kept as a pet, it loses its ability to fend for itself in the wild. Those that are released usually die slowly from starvation, dehydration, or exposure. Additionally, a released tortoise can transmit unknown diseases and parasites to wild tortoise populations. For example, Upper Respiratory Tract Disease (URTD; see Page 29, Figure 21), is common and often fatal in wild tortoises and has led to the decline of several wild desert tortoise populations.

Another reason to not release pet or recently found tortoises is that they will compete with other, wild tortoises for limited resources. Because of decreasing and degrading habitats, the desert tortoise is listed as a threatened species. Human impacts such as development, mining, livestock grazing, and off-road vehicle usage have decreased the amount and quality of the tortoise's natural habitat every year. Because the desert recovers very slowly, even from small disturbances, degradation accumulates and the habitat supports progressively fewer animals. Thus, a displaced or once captive tortoise has a slim chance of surviving in its new desert territory and may spread disease to wild populations.

LEGALLY OBTAINING A TORTOISE

In Utah, you must obtain a Certificate of Registration from the UDWR to legally have a desert tortoise in your possession, for more information call 801-538-4746 or 801-538-4701, or email tortoise@utah.gov.

UNWANTED TORTOISES

Tortoises adopted from the UDWR are registered and tracked. Do not give your tortoise to another person. If you can no longer keep your tortoise, you must return it to us. Friends or family may care for the tortoise after they have successfully completed the application process. More than one adult can be named on a COR, if you anticipate that you may want a family member to take

over caring for your tortoise in the future, you can have them listed on the COR. If you move within Utah, you may take your tortoise with you (unless you move to Washington, Kane, or Iron County). However, you must promptly notify us of your new address. If you move outside of Utah, you may take your tortoise with you, provided it is legal to possess it in the state you are moving to. Some states may also have specific importation requirements for reptiles and wildlife. If your destination state does not permit possession of a desert tortoise, or you are not able to meet the importation requirements, you must return the tortoise to the UDWR Desert Tortoise Adoption Program prior to moving (Figure 25). If your destination state allows, you must meet all of their requirements as well as the requirements listed in this booklet in order to obtain a desert tortoise outside of Utah.

Figure 25. Taking tortoises out of the wild removes important individuals and genes from wild populations. Plenty of tortoises, like Mr. T, need good homes. Help out by adopting. If you don't want your tortoise, do not release them into the wild, instead contact UDWR and we'll find them a good home (Photo J.L. Jones).

WEB RESOURCES

Supplemental information pertaining to the desert tortoise can easily be found on the web. Nevada, Arizona, and California offer adoption programs and informative web information regarding captive tortoises and their care. If you have any questions, or need additional resources, please call us at 801-538-4746 or email tortoise@utah.gov.

Utah Division of Wildlife: http://wildlife.utah.gov
Utah Division of Wildlife Tortoise Booklet: http://wildlife.utah.gov/pdf/dt_adopt.pdf
Nevada Tortoise Group: http://www.tortoisegroup.org
Arizona Sonora Desert Museum: http://www.desertmuseum.org/programs
Arizona Game & Fish: http://www.azgfd.gov/w_c/captive_tortoise_care.shtml
California Turtle & Tortoise Club: http://www.tortoise.org
Desert Tortoise Council: http://www.deserttortoise.org

POTENTIAL VETS ALONG THE WASATCH FRONT

Below, are a few exotic veterinarian clinics located along the Wasatch Front. The following exotic veterinarian clinics treat desert tortoises:

Wasatch Exotic Animal Clinic (Dr. Harris), 1892 East Fort Union Blvd, Salt Lake City, UT 84109 Phone: 801-943-3367

Parrish Creek Veterinary Clinic, 86 N. 70 W., Centerville, UT 84014
Phone: 801-298-2014

Creekside Animal Hospital, 12720 Pony Express Rd., Draper, UT 84020
Phone: 801-565-1263

Riverwoods Pet Hospital, 3820 N. University Ave., Provo, UT 84604
Phone: 801-224-2233

North Cache Veterinary Service, 191 W. 100 N., Richmond, UT 84333
Phone: 435-258-2190

Southeast Valley Veterinary Hospital, 10572 S. 700 E., Sandy, UT 84092
Phone: 801-571-8050

APPENDIX I: POISONOUS PLANTS

(Compiled by the *San Diego Turtle & Tortoise Society*)

The following list was compiled from a variety of poison plant lists that have been previously printed in many forms. The purpose of this list is to make you aware of the plants that are potentially dangerous to pets and humans. Every effort has been made to further identify these plants, but in some cases, only the name of the plant is known, along with the fact that some portion of the plant is dangerous. Even though you may have noticed your pet eating some portion of a plant herein listed without any noticeable harmful effects, this does not preclude the possibility of danger. Please check your yard and attempt to distinguish the poisonous plants and isolate them from your pets and children. For emergency information, call your local poison information center. Plants are listed by common name (CAPITALS), species or family name if known (*italics*), and portion of plant that is thought/known to be hazardous for consumption.

ACOKANTHERA, fruit and flowers
ACONITE (Monkshood), roots, flowers and leaves
ANEMONE, wildflower
AMARYLLIS (*A. Belladonna*), bulbs contain alkaloids
ANGEL TRUMPET TREE (*Datura arborea*), flowers and leaves
APPLE SEEDS, see CHERRY LAUREL
APRICOT SEEDS, see CHERRY LAUREL
ATROPA BELLADONNA, all parts, especially black berries
AUTUMN CROCUS, bulbs
AZALEAS, RHODODENDRON, all parts are fatal
BANEBERRY, Doll's Eyes, red or white berries, roots and foliage
BEACH PEA (*Lathyrus maritimus*)
BETEL NUT PALM, all parts
BITTERSWEET (*Solanum celastrus, dulcamera*), berries
BLACK LOCUST, bark, sprouts and foliage are poisonous
BLEEDING HEART, (Dutchman's Breeches), foliage and roots
BLUEBONNETS (*Lupinus*), all parts
BOTTLEBRUSH, flowers
BOXWOOD (*Buxus sempervirens*), all parts
BUCKEYE HORSECHESTNUT, sprouts and nuts
BUTTERCUP, all parts
CALADIUM, all parts
CALLA LILY, all parts
CAROLINA JESSAMINE, flowers, leaves and sap
CASSAVA (*Euphorbiacea*), roots
CASTOR BEAN (*Ricinus communis*), seeds are fatal!
CHERRIES (wild and cultivated), twigs and foliage are fatal!
CHERRY LAUREL (*Prunus*), all parts very dangerous; contains hydrocyanic acid
CHERRY SEEDS, see CHERRIES above

CHINA BERRY TREE, berries are poisonous
CHRISTMAS BERRY (Toyon), berries are poisonous
CHRISTMAS ROSE (*Helleborus niger*), all parts, especially leaves
COLUMBINE (*Aquilegia*), all parts
COMMON PRIVET, black or blue wax-coated berries and leaves
CROCUS, all bulbs
CROTON (*Euphorbiaceae*), inside are safe, outdoor plants are dangerous
DAPHNE, the berries are fatal!
DAFFODIL (narcissus), bulbs may be fatal
DEATH-CAMAS (*Sygadenus veneous*), all parts poisonous, root is deadly!
DEADLY NIGHTSHADE (*Solanum nigrum*), all parts unripe fruit and foliage
DELPHINIUM (Larkspur annual), all parts
DESTROYING ANGEL (*Amanita phalloides*), (Death Cap), all parts
DIEFFENBACHIA (Dumb Cane), all parts, especially the sap
DOGWOOD (*Cornus*), fruit slightly poisonous
ELDERBERRY, leaves shoots and bark
ELEPHANT EARS (*Colocasia*), (Taro), entire plant and fruit are dangerous
ENGLISH IVY (*Hedera helix*), berries
EUPHORBIA (Spurge, Crown of Thorns, Poinsettia), leaves and flowers
FALSE HELIEBORE (*Veratrum*) all parts are poisonous and the root is deadly!
FOXGLOVE (*Digitalis purpurea*), whole plant can be fatal
FLY AGARIC (Fly Amanita mushroom), whole plant
FOUR O'CLOCK, whole plant
GELSEMIUH (Carolina Jessamine), whole plant
GOLDEN CHAIN, seeds and pods may be fatal
HELIEBORE (*Ranunculaccea*), all parts
HEMLOCK ROOTS (*Conium* and Cicuta, Tsuga), all parts
HENBANE, all parts
HOLLY (*Ilex aquifolium*, *opaca* and *vomitoria*), leaves and berries
HORSE CHESTNUT, all parts
HORSETAIL REED, all parts
HYACINTH BULBS, can be fatal
HYDRANGEA, whole plant
IMPATIENS (Balsam, Touch-Me-Not, Snapweed), whole plant
IRIS, underground stems
IVY, all parts
JACK-IN-THE-PULPIT (*Arisaema triphylla*), root is irritant and astringent
JASMINE, YELLOW, all parts
JATROPHA (Purge Nut, Curcas Bean, Peregrina, Psychic Nut), seeds and oil
JERUSALEM CHERRY (*Solanum pseudocapsicum*), fruits and leaves
JESSAMINE (*Gelsemium sempervirens*), berries are fatal
JIMSON WEED (*Datura stramomium*), (Thorn Apple), all parts
LAMBKILL (*Kalmia angustifolia*), (Sheep Laurel), leaves
LANTANA CAMARA (Red Sage), green berries are fatal
LARKSPUR (Delphinium), foliage and roots are dangerous, seeds may be fatal!
LAURELS (*Primus* varieties), all parts are fatal!
LILY-OF-THE-VALLEY (*Convallaria majalis*), all parts
LOBELIA (Cardinal flower), all parts
LOCOWEED, all parts
LUPINE (*Lupinus*), seeds
MACHINEEL, all parts

MARIJUANA (*Cannibis*), all parts
MAY APPLE (*Podophullum*), all parts
MESCAL (Peyote), all parts
MILKWEED (*Asclepias*), all parts
MISTLETOE, berries are fatal!
MOCCASIN FLOWER (*Cypripedium spectabiles*), (Lady Slipper), all parts
MOCK ORANGE (*Primus caroliniana*), all parts
MONKSHOOD (*Aconitum, ranunculaceae*), foliage and fleshy roots
MOONSEED, berries may be fatal
MORNING GLORIES (*Ipomea*), all parts
MOUNTAIN LAUREL (*Kalmia latifolia*), young leaves and shoots are fatal!
MUSHROOMS and TOADSTOOLS (wild types)
NARCISSUS BULBS (Daffodil) can be fatal
NATAL CHERRY (*Solanum*), berries
NICOTIANA (wild and cultivated), leaves
NIGHTSHADES (European Bittersweet, Horse Nettle), all parts, especially unripe berries
OAKS, foliage and acorns
OLEANDER (*Nerium oleander*), foliage
PEACH SEEDS, see Cherry Laurel
PEONY (*Paeconia*), all parts
PERIWINKLE, whole plant
PHILODENDRON, leaves and sap
PINKS (Sweet William, Carnation, Dianthus), all parts
PLUM SEEDS, see Cherry Laurel
POKEWEED (*Phytolacca*), (also called Pokeberry), roots are dangerous
POINSETTIA (*Euphorbia pulcherrima*), leaves and sap are fatal!
POISON HEMLOCK (*Canium maculatum*), all parts are fatal!
POISON IVY (*Rhus radicans*), all parts
POISON OAK (*Rhus diversiloba* and *Rhus toxicondendron*)
POISON SUMAC (*Rhus radicans*), all parts
POPPY, all except California poppies are dangerous
POTATO, sprouts and foliage are fatal!
PRIVET (*Ligustrum*), leaves and fruits
RANUNCULUS, all parts
REDWOOD, wood chips are poisonous to fish, turtles and other aquatic animals
RHODODENDRON (Azalea), all parts are fatal!
RHUBARB (*Rheum rhaponticum*), leaves and leaf blade are fatal! Only the stems are cooked for human consumption.
ROSARY PEA (Jequirity Bean, Crab's Eye, Precatory Bean), seeds commonly called "beans" are fatal!
ROSEMARY, leaves of certain varieties are harmless, others are poisonous
SAGE, leaves of certain varieties are harmless, others are poisonous
SCOTCH BROOM (*Cytisus scoparious*), seeds
SENECIO, whole plant
SKUNK CABBAGE (*Lysichitum*), roots
SNAPDRAGON (*Antirrhinum*), all parts
SQUIRREL CORN (*Dicentra canadensis*), all parts
STAR-OF-BETHLEHEM (*Crnithogalum*), all parts
STRANOMIUM, all parts
SWEET PEA, stems
TANSY (*Tanacetum*), all parts

TARO (*Calccasia*), (Elephant's Ear), stem and leaves
TIGER LILY (*Lilium tigrinum*), all parts
TOADSTOOLS, see Mushrooms
TOBACCO PLANTS, all parts
TOMATO, foliage and vines
TULIP BULBS
TRUMPET VINE, all parts
VENUS FLYTRAP (*Dionaea*), all parts
WATER HEMLOCK (*Cicuta maculata*), all parts, especially the root, are fatal!
WILD BLACK CHERRY (*Prunus serotina*), (Chokeberry, Rum Cherry), the withered leaves are very poisonous!
WISTERIA, seeds and pods
YELLOW JASMINE, all parts
YELLOW OLEANDER, all parts, especially kernels of the fruit
YEWS (*Taxus*), foliage and berries

APPENDIX II: NATIVE-EDIBLE PLANTS

(Compiled by Therese Meyer, UDWR)

The following list was compiled from a publications and discussions with desert tortoise biologists. The purpose of this list is to make you aware of native plants you can grow in your backyard for tortoises to consume. Although this list is not comprehensive, it represents a number of plants available from native plant nurseries and through the Utah Native Plant Society.

Species Name(s)	Common Name(s)	Reference
Astragalus nuttallianus	Small-flowered milkvetch	1
Opuntia basilaris & *O. polyacantha*	Pricklypear cactus pads & flowers	1, 2, 3
Erodium cicutarium	Filaree, storksbill, & alfilaria	1, 2
Krameria parvifolia	Range ratany	1
Tridens pulchellus (aka *Erioneuron pulchellum* or *Triodia pulchella*)	Fluffgrass	1
Plantago purshii & *P. patagonica*	Woolly Plantain	1
Baileya multiradiata	Desert marigold, desert baileya	3
Sphaeralcea ambigua, munroana, parvifolia, & rusbyi	Globemallow	3
Oenothera caespitosa & *O. primiveris*	Desert (or evening) primrose	3
Abronia fragrans, mellifera, nana & villosa	Desert sand verbena	3
Eriophyllum wallacei	Woolly daisy	3
Muhlenbergia porteri	Mesquite grass or bush muhly	2
Encelia farinosa & *E. frutescens*	Brittlebush or button brittlebush	2
Prunus persica	Pink peach blossoms	2
Taraxacum officinale	Common dandelion	2
Penstemon sp.	Penstemons	3

1– Minden, R.L. 1980. Investigations of the desert tortoise (*Gopherus agassizii*) on the Beaver Dam Slope, Washington County, Utah. Utah State Division of Wildlife Resources 80-21. 2– Woodbury, A.M., R. Hardy. Studies of the desert tortoise, *Gopherus agassizii*. Ecological Monographs, Vol 18. 3– Ann McLuckie personal communications 2010.

For more information on desert tortoise ecology, diet, and status check out these sites:
Grover and Falco 1995 report online at: http://www.fs.fed.us/rm/pubs_int/int_gtr316.pdf
San Diego Zoo's Desert Tortoise fact sheet online at:
http://library.sandiegozoo.org/factsheets/desert_tortoise/desert_tortoise.htm#web_resources

NOTES

Date of Tortoise Adoption:_____

Certificate of Registration (COR) Number:_____

Tortoise (PIT Tag) Identification Number: _____

Tortoise Weight at Time of Adoption: _____

Tortoise Length & Width at Time of Adoption: _____