Utah Division of Wildlife Resources Desert Tortoise Adoption Program

UTAH'S DESERT TORTOISE ADOPTION BOOKLET

"Hermy" the tortoise
Photo by S. Southerland

UTAH DNR WILDLIFE RESOURCES

Booklet Includes:

- ***Guide to Escape Proofing Yards***
- ***Burrow Building Plans***
- ***Diet Recommendations***
- ***Hibernation Tips***
- ***List of Poisonous Plants***

… & Much, Much More!

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TABLE OF CONTENTS

ACKNOWLEDGMENTS 3
INTERESTED IN ADOPTING A DESERT TORTOISE? 5
THINGS YOU SHOULD KNOW BEFORE ADOPTING A TORTOISE 5
REASONS WHY PEOPLE ADOPT A TORTOISE 5
ADOPTING A TORTOISE 6
THINGS YOU NEED TO DO 6
HOW A TORTOISE "WORKS" 7
BALANCING SUN & SHADE 7
WHY NOT INDOORS? 8
AREA REQUIRED 9
PREPARING YOUR YARD 10
ESCAPE-PROOFING THE YARD 10
Securing Fence 10
Installing a Gate Barrier 10
ELIMINATING & MINIMIZING HAZARDS 11
Tortoise Traps 11
Dogs, Cats, Children, Fertilizers, & Multiple Tortoises 12
BUILDING BURROWS 15
BUILDING A CONCRETE BLOCK TORTOISE BURROW 15
BUILDING A TRASH CAN TORTOISE BURROW 16
PROVIDING WATER 17
HOW TORTOISES DRINK 17
MAKING A PLACE TO DRINK 17
PROVIDING FOOD 19
RECOMMENDED DIET 19
Tortoise Salad 19
Growing Food 21

FOODS TO AVOID 22
CHANGING THE DIET OF A "LETTUCE EATER" 23
MALE & FEMALE TORTOISES 23
SEXING A TORTOISE 24
DETERMINING THE AGE OF A TORTOISE 25
HIBERNATION (BRUMATION) 25
TEMPERATURE & LOCATION 26
THE HIBERNACULA 27
SPRING EMERGENCE 28
MEDICAL PROBLEMS 28
ACCIDENTS & INJURIES 29
RESPIRATORY DISEASE 29
GASTROINTESTINAL PROBLEMS 30
Gut Impaction 30
Salmonella 30
Intestinal Parasites 30
IF YOUR TORTOISE DIES 30
THE DESERT TORTOISE (*Gopherus agassizii*) 31
THE PROTECTED TORTOISE: BACKGROUND INFORMATION 31
Why Shouldn't Wild Tortoises Be Removed from the Desert? 32
What If Someone You Know Removed A Tortoise? 34
Tortoises Wandering in Developed Areas 34
Why Pet Tortoises Should Not Be Released in the Desert 34
LEGALLY OBTAINING A TORTOISE 35
UNWANTED TORTOISES 35
WEB RESOURCES 36
POTENTIAL VETS ALONG THE WASATCH FRONT 37
APPENDIX I (POISONOUS FOODS) 37

ACKNOWLEDGMENTS

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"Old man turtle ambles along the deerpath, seeking breakfast. A strand of wild ricegrass dangles from his pincer-like beak. His small wise droll redrimmed 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 – middleaged. 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

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
- Tortoises need to hibernate indoors from October/November to April
- Tortoises need grasses, forbs, and flowers in their diet
- Tortoises require access to both burrows and sunlight
- Adoption tortoises are former pets and/or have unknown origins
- Tortoises are adopted to the adults* where the tortoises will live

  A child cannot be expected to assume full responsibility for care
- Tortoise, like any vertebrate animal, may transmit Salmonella

  Always wash your hands after handling
- We do not adopt tortoises smaller than 6” (Adoptees are typically 7”-12”)
- We do not adopt tortoises to families living in Washington, Kane, or Garfield Counties

  If you move to these counties, you must return you your tortoise to UDWR

* *Teachers:* Conditions for tortoises are not suitable in the classroom, but we do adopt to schools with adequate outdoor areas. You can prepare your own yard, adopt a tortoise, and let it visit your classroom.

REASONS WHY PEOPLE ADOPT A TORTOISE

- Just like people, tortoises have their own personality (but don’t talk back)
- You’ll have an 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
- Tortoises love eating dandelions and clover

ADOPTING A TORTOISE

By reading this booklet carefully, we hope you can find out in advance what is involved in 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 up, eat, 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) 538-4701. The Adoption Committee will need to see recent 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 17)
- Planting a patch of grass with dandelions (highly recommended, Page 21)
- Planting several ornamentals that tortoises eat (Page 22)

Additionally, the Committee may require an on-sight visit to your yard before or after completing the adoption process. 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 up and cool off throughout the day. 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 and avoid heat. The tortoise regulates its temperature by moving to places in its environment that provide the desired effect (Figure 1). Sunshine should be available most of the day so that the tortoise can bask. Basking in the sun to warm its body is necessary to support activities such as foraging and digestion. 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).

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 spends nearly 98% of its time. A snugly fitting burrow is vital to restrict air flow and help the tortoise to maintain 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 protect a tortoise in the desert 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 and maintaining the proper temperature range requires special attention, additional costs, and typically results in the tortoise being confined to a box or terrarium, which is too small for a desert tortoise of any size. Although sunny windows appear to offer adequate heat and sunlight indoors, windows will become too hot and 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 to you 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 nights, overcast, rainy days), 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. Provide an adequate outdoor habitat and your tortoise will respond naturally to whatever the weather offers.

AREA REQUIRED

Tortoises, need more area than most people realize. The wild adult tortoise may use 100 acres or more. Give the entire yard to your tortoise if you can. 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 tag to the left of the drill hole. Identification 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 fences (chain link or chicken wire), including fencing around your pool, install a permanent, secure, continuous, 18-inch-high baseboard, which can 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. 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. No light should show through.

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.
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 from wind, a caught toe, a hasty gesture, or a persistent tortoise. The wood should rest on a brick or concrete footing so light will not show through under the base of the barrier and the tortoise cannot dig out. This barrier is vital to prevent escape when you are using the gateway or if the gate is accidentally left ajar.

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, and odds and ends. Cycles and power equipment are especially dangerous. Stack wood piles so the sides are vertical, too steep to climb. Prevent collapse if a tortoise burrows under stacked wood, 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.

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, a pool surrounded by a rock wall can be climbed by a tortoise; AVOID AREAS THAT CAN BE CLIMBED. Tortoises do not swim or float for long if they fall in a pool. If this occurs and the tortoise appears to be dead, it may still be alive, remove from 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, 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 5). Remember dogs are naturally predators and tortoises can easily become prey.

Figure 5. Mr. T (left) and Marithe' (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).

How to introduce a dog: Let the dog smell the tortoise thoroughly. Reassure the dog of your affection during the initial encounters. Let the dog help you find the tortoise and praise the dog for doing so. Also let the dog know, in a kind but firm manner, that certain behaviors are not allowed: shoving, picking up, barking, licking the face, and continually causing the tortoise to pull in its head when the dog approaches.

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. Be prepared to return the tortoise to the UDWR if this happens.

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.

Children. Handling by a small child can result in serious injury or immediate stress to a tortoise. 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 6). 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 6. Sarge meets his new family. These guys show that you can enjoy a tortoise without holding or carrying them (Photo by C. Mellon).

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) when tortoises are active. Do not use snail bait, weed or pest sprays, or systemic poisons.

Multiple Tortoises. The UDWR does not allow reproduction of adopted tortoises. Generally, only one tortoise will be adopted per family. However, in years with many tortoises and few applicants, we will let families with females have a second female.

Male tortoises do not get along well with others. Fighting will occur because most yards are too small for more than one male (Figure 7). Fighting can lead to injury, death, or constant stress. The situation may never change as long as the two can reach each other, so they must be permanently separated. Females seldom fight. Due to species specific parasites, behaviors, requirements, and general size differences, your desert tortoise should not be kept with other species of tortoise.

Figure 7. 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

Adapted from the ARIZONA-SONORAN DESERT MUSEUM GUIDE

BUILDING A CONCRETE BLOCK TORTOISE BURROW

1) After leveling the den site, layout the burrow using 6 concrete blocks (8"X 8"X16"). Other materials such as slump block or adobe brick can be used as long as you end up with similar dimensions. However, adobe readily crumbles when tortoises dig against them.

(Photos by Arizona-Sonoran Museum)

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. 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 burm at the entrance to direct any water away.

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 Sawsall, grinder or similar tool. The bottom, which can form the back of the den, can be either left intact or removed.

(Photos by Arizona-Sonoran Museum)

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.

A variety of other supplies can be used to construct tortoise burrows (e.g., dog igloos, large PVC pipe, 5-gallon buckets). Regardless, 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 36).

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 8). Don't be too alarmed.

Figure 8. 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 or 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 on grass, hose it well into the lawn.

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 will fall in the water. Use a new, red clay dish glazed or unglazed, like those put under flower pots (no plastic). The dish should be wide enough for your largest tortoise to get in and soak, and about 1½"

deep. If the water would be over the heads of your smaller tortoises, cover the bottom with pebbles or pottery shards.

Surround the dish to about one foot out in all directions with stepping stones, bricks, or ornamental rocks so the lip is flush with them. To fill or clean the dish, leave it in place and flush it 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 9. 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 9). 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). Tortoises are NOT aquatic, only provide shallow water for drinking (or soaking: Figure 10).

Figure 10. 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 may be impractical to duplicate the grass, forb, and wildflower diet of the wild tortoise in your backyard. Therefore, you should make a conscious effort to ensure proper nutrition from other sources (Table 1).

RECOMMENDED DIET

All plant material is 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 very minimum every other day.

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*, Page 21) – 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 11.)
2) **Other "vegetables":** 10-30% of the diet, a variety weekly – flowers from zucchini, roses and hibiscus, squash, zucchini, sweet potato, bell pepper, broccoli, 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 11. 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 (60-80% of Diet)	Other "Veggies" (10-30% of Diet)	Grain & Fiber (<10% of Diet)	Fruits: not every week (<5% of Diet)
Bermuda Grass	Rose/Hibiscus Flower	Whole Grain Breads	Figs
Dandelions	Sprouts	Natural Bran Cereals	Papaya
Mulberry Leaves	Zucchini		Apples
Turnip Greens	Grated Carrots		Peaches
Mustard Greens	Bell peppers		Plums
Cilantro & Parsley	Squash		Grapes
Bok Choy	Peas & Beans		Strawberries
Grape/Hibiscus Leaf	Chopped Broccoli		Bananas (w/ Skin)
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.			

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 call (702) 739-8043.

Growing Food

Tortoises naturally forage, so providing food that you grow in your own yard is fun, easy, and important. Common Bermuda grass is preferred. Tortoises usually do not eat hybrid grasses. Plant a patch of food at least 9 square feet. Keep grass as short as you can; long grass can cause choking. Transplant dandelions

and clover throughout the grass, as they are some of the most nutritious and easily grown plants you can offer. The yard must be 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 nearly complete list 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 37). There may be deficiencies you need to start correcting aggressively (See Figure 2).

MALE & FEMALE TORTOISES

Tortoises are natural loners. They do not need other tortoises for "company." In fact, in the average size yard, a female will not be able to get away from the male and the constant courting of a male may be very stressful and debilitating for a

female. Because the desert tortoise is a federally listed species, the UDWR does not adopt male and female tortoises to the same house. We strictly prohibit the captive breeding of desert tortoise.

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 flat. Males begin to develop a concave plastron near the tail. A female's plastron remains almost flat throughout life (Figure 12).

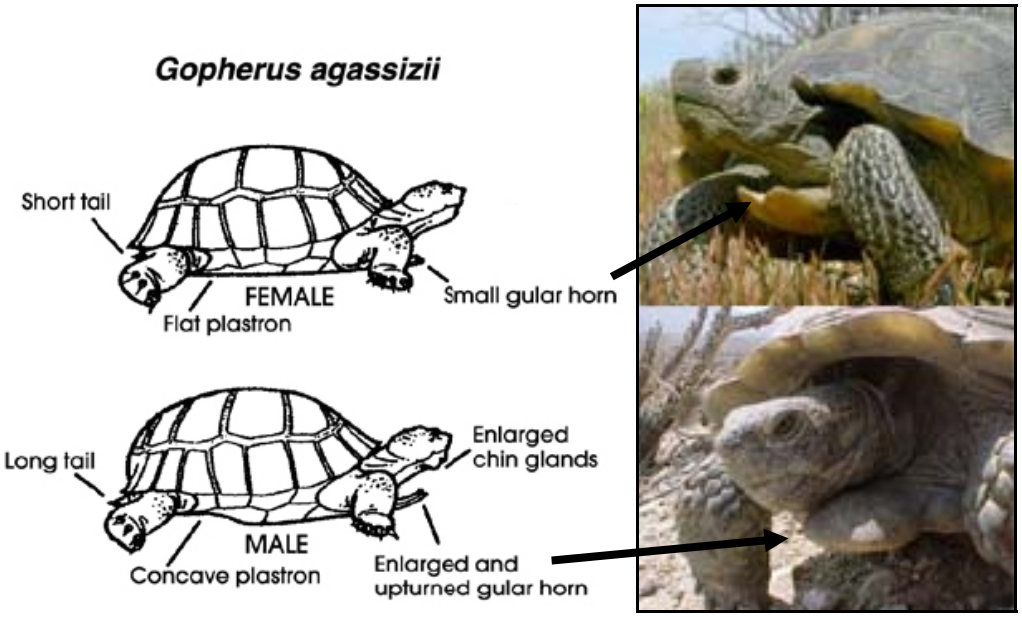


Figure 12. Sexing a mature tortoise is relatively simple. Male tortoises have an enlarged and upturned gular horn under the chin (diagram and photos, bottom), an enlarged chin gland on each side of the lower jaw, and have a more concave plastron near their tail (diagram). In contrast, females have shorter 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 change by region and year, both wild and domesticated tortoises can develop 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 definite measure of age (Figure 13).

Figure 13. 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 may live beyond 50 years. Wild specimen in the Sonoran and Mojave deserts can reach 55 years of age.

HIBERNATION (BRUMATION)

Desert tortoises MUST HIBERNATE INSIDE 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 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 INSIDE into a frost-proof shelter before the first 32°F or colder night. Tortoises are “cold-blooded” and do not produce their own heat. Several degrees of frost can kill a tortoise. Even in a deep burrow they cannot survive the winter in northern Utah and MUST BE BROUGHT INSIDE. In general, captive tortoises in Utah should not be left outside when temperatures are below 50°F.

TEMPERATURE & LOCATION

During hibernation most indoor temperatures are too high; 65°F or above 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 40°F and 55°F are better and a 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 “Once a month…” below).

The tortoise should be placed in a box that is sturdy and large enough to prevent the tortoise from climbing out, while providing enough room to allow the tortoise to turn around. 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. An insulated box such as a styrofoam ice chest packed with shredded paper or straw and covered on the outside with blankets or newspapers provides adequate protection. Regardless of the box used, you need to provide sufficient ventilation, 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.

Once a month (at least) during the hibernation period, bring the tortoise out of the box and soak it in warm water (1½“ deep) for about 20 minutes. Additionally, you can bring the tortoise out on the floor in the house where some sun is shining in and allow the tortoise to bask, offering it food and water. Place the tortoise back in its box in its hibernation area.

Substitutes for an indoor burrow are likely to be too cold, too warm, too dry, or dangerous. For example, a storage shed or unattached garage may 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. Keep your tortoise contained when hibernating and construct a hazard-free indoor hibernacula for winter season.

THE HIBERNACULA

Figure 14. 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).

1) Use a cardboard, styrofoam, or large tupperware box with several sheets of newspaper on the bottom. Do not use towels – toenails tangle in towels. Tortoises may escape from cardboard hibernacula, be aware (Figure 14).

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

3) Keep the lid partly open 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). In general, your tortoise should not remain in your yard overnight when temperatures go below 50°F, even if an outside burrow is present. Allow the tortoise to drink and/or soak in shallow water. Then, 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 a drink and soak in lukewarm, very shallow water. Dry the tortoise well afterward. When the tortoise starts walking about and eating plants: start feeding with frequency.

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 internal (biological) clock. Similarly, captive tortoises will vary in their hibernation dates from year to year.

MEDICAL PROBLEMS

Please refer to the list of veterinarians we have provided (updated May 5, 2009), all of these veterinarians have experience treating tortoises. If you need additional assistance please call us at (801) 538-4701.

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 15). Although tortoises are thought of as "tough" or "resilient," we suggest you 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 15. This Arizona tortoise (above) was found with ribbon tethered around his left leg. The foot was amputated, but this tortoise nearly lost it's entire leg. "Patches" (below) was found already patched up, presumably a near road casualty. (Photos by C. Mellon and J.L. Jones).

RESPIRATORY DISEASE

Upper respiratory tract disease (URTD) is common in captive and displaced tortoises and may be life threatening. Signs include runny or blocked nostrils, difficulty breathing, runny eyes, puffed lids, and loss of appetite (Figure 16). URTD is communicable among tortoises and has led to the decline of several wild populations. Predisposing causes are

Figure 16. 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).

usually stress related and may include improper diet, excess humidity, and crowding. Antibiotics may eliminate the signs and prevent pneumonia and death. The condition may become chronic. Some tortoises live a long and otherwise normal life but remain carriers of URTD. We suggest early veterinary help.

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 hidden problem for tortoises and their impact on health only increases when the tortoise eats unhealthy food items (e.g., sweet fruits, frozen veggies). If you think your tortoise may have parasites, have your tortoise checked by a veterinarian. To control the severity of infestation and 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 any vertebrate animal, including tortoises. 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. Avoid touching your eyes or mouth after handing a tortoise.

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 considered 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 17). 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

Figure 17. 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.

established for preserving wildlife populations, including the desert tortoise, from potential threats posed by rapid development and habitat loss in Washington County, Utah (Figure 18).

Figure 18. 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, sold, or taken across state lines. However, through the Division of Wildlife'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. Tortoises often cross roads through the undeveloped desert (Figure 19). 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.

Figure 19. 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 that have protected tortoise populations, like the Snow Canyon State Park. Use caution when driving in tortoise habitat (Photo J.L. Jones).

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 underdeveloped desert or a road through undeveloped desert, in Washington County, the first step is to call the UDWR Washington County Field Office (435-688-1426). Do not to 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 in 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) 688-1426 or any other county (801) 538-4701. **The tortoise must be turned over to the UDWR. It's the law!**

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, unknown diseases and parasites can be spread to wild tortoise populations. For example,

Upper Respiratory Tract Disease (URTD; see Page 29, Figure 16), is common and often fatal in pet 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 tortoise in your possession, for more information call (801) 538-4701.

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. If you move within Utah, you may take your tortoise with you (unless you move to Washington, Kane, or Garfield County). However, you must promptly notify us of your new address. If you move out of Utah, you must give the tortoise back to us (Figure 20).

Figure 20. 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 (801) 538-4701.

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

POTENTIAL VETS ALONG THE WASATCH FRONT

Below, we have listed a few “exotic” veterinarian clinics located along the Wasatch Front. Exotic vet clinics generally know more about reptiles than traditional clinics. The following vets have experience with desert tortoise:

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

Ben Lomond Animal Clinic, 1380 N. Hwy 89, Ogden, UT 84404
Phone: 801-782-9679

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

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

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

Wasatch Exotic Animal Clinic, 2675 Parleys Way, Salt Lake City, UT 84109
Phone: 801-485-4736

APPENDIX I (POISONOUS PLANTS)

Compiled by the SAN DIEGO TURTLE AND TORTOISE SOCIETY

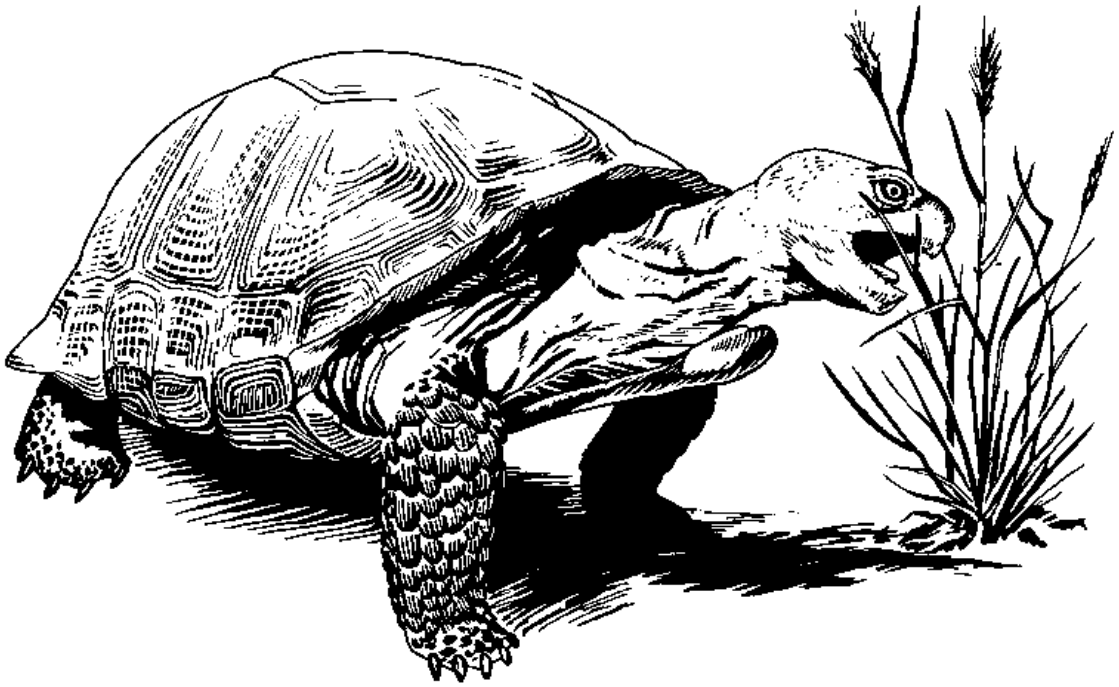
The following list was compiled from a variety of poison plant lists that have been previously printed in many forms. The purpose of this list is to make you aware of the plants that are potentially dangerous to pets and humans. Every effort has been made to further identify these plants, but in some 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.

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, 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



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