# Gopher Tortoise Trapping and Translocation Guidelines

***This document was prepared by the U.S. Fish and Wildlife Service, in cooperation with and input from the States of Alabama, Georgia, Louisiana, Mississippi, Florida and South Carolina; and Gopher Tortoise Council committee members.***

> ***DISCLAIMER**: Gopher tortoise trapping and translocations must be done following proper permitting authority and guidelines from the appropriate regulatory agency. For additional information or assistance please contact the U.S. Fish & Wildlife Service or your state wildlife agency.*

### *Timing*

Tortoises shall only be translocated when the low temperature at the recipient site is forecasted by the National Weather Service (www.nws.noaa.gov) to be above 50˚ Fahrenheit for three consecutive days after release (including the day of translocation). This three-day window of milder overnight temperatures is required to allow the tortoises to settle into the recipient site and to reduce the chance of cold-related stress or mortality. These conditions typically correspond with dates between April 1 and October 15 throughout most of the species' range. Additionally, during summer months, releases should not be made during the hottest part of the day at sites where shade is limited. Heat stress on gopher tortoises being captured and transported for translocation can be reduced or eliminated by assuring that captured tortoises and those tortoises being transported for release are continually in shaded or climate-controlled conditions. Any tortoises injured or killed during capture, handling, or transport must be reported to the appropriate regulatory agency immediately.

### *Inspection and handling of nests*

Before any activities take place during the nesting season (early May through mid-September), the apron in front of each burrow should first be examined for eggs. Nest chambers may be 6-10" below the surface, so thorough inspection is required by manually digging through the soil (no tools). Care must be taken throughout digging and removal of eggs from the nest chamber as gopher tortoise eggs are fragile. As soon as a nest is located, but before excavation begins, fill a container with sand/soil from near the eggs and make egg-sized depressions into the sand. Prior to moving them, and as new eggs are uncovered, use a pencil to place a small "x" on top of each egg to help maintain its orientation throughout the process. Maintaining each egg's orientation is critical because the developing embryo attaches to the inside of the top of the eggshell; either rotating or agitating the egg may dislodge the embryo and kill it. Carefully place each egg in a

depression in the container with the "x" facing up, make sure to remove all eggs from the nest (measuring the approximate depth of the bottom of the nest when completed), and then cover the eggs with more sand. During all transport, minimize sun exposure/overheating and agitation of the container. At the recipient site, locate an existing burrow apron in an open, sunlit area (with no nest present) within the release pen (described below) and excavate to the approximate depth of the original nest. If no burrows exist, dig the nest chamber by hand to the appropriate depth in an open, sunlit area. Place the eggs "x" side up in the new nest in approximately the same orientation as they were originally located, and re-bury them.

***Choosing a capture method***

Tortoises may be captured via bucket traps, cage traps, hand-capture outside burrows, and excavation by hand shovel or backhoe. Capturing gopher tortoises using mechanical excavation (backhoe) is often preferred because typically it is quicker than other capture methods and often leads to lower costs; however, it comes with an increased level of risk to the tortoises. Backhoe excavation of gopher tortoise burrows must be conducted by at least two individuals at all times; the backhoe operator and another person on the ground monitoring the gopher tortoise burrow. All other capture methods can be performed by one person, but may take weeks to complete if the tortoise does not immediately go into the trap; however, many traps can be set at the same time. Prior to any method of capture, examine the burrow with a burrow camera to try to ascertain occupancy. While this is not a definitive method to confirm vacancy, presence of a tortoise can be verified if seen with the camera. Additionally, whichever capture method is used, the burrow should be re-scoped with a burrow camera after a tortoise is captured to check for additional tortoises or commensals still present in the burrow. To minimize the risk of disease transmission, all material used during the trapping and handling of gopher tortoises from the original site (*e.g.*, traps, shovels, burrow cameras, etc.) should be disinfected with a dilute chlorine solution before moving to the next site or recipient site. A 1:20 dilution of 5-6% household bleach is a recommended disinfection solution and must be made fresh weekly.

***Mechanical excavation***

To prevent injury to tortoises during backhoe excavation, the backhoe bucket must have a smooth cutting edge that lacks teeth (long prongs). It is recommended that burrow excavations be performed by a backhoe operator with previous experience or training in excavating gopher tortoise burrows. A flexible tube or hose must be inserted into the burrow to ensure that the burrow path is not lost and to indicate the distance to the end of the burrow or to the tortoise. Throughout the excavation process, the burrow will be frequently inspected to ensure that the tortoise has not moved to a position where it might be injured by the backhoe or shovel. The last 1-2 feet of the burrow will be excavated by hand using shovels and small hand spades. Burrow excavation is not complete until the

burrow terminus is reached and all side chambers are found and completely excavated. If the end of a burrow is reached without capturing a tortoise, the soil must be thoroughly probed in all directions to try to locate a tortoise that may have dug beyond the end to escape capture. If the excavation of a burrow is interrupted for any reason before the tortoise is captured and excavation cannot resume that day, an open burrow tunnel path must be left so the tortoise can exit the trench or a bucket or cage trap must be set at the entrance to the burrow at the bottom of the trench. The excavation should be resumed as soon as safely possible to lessen the possibility of a newly created burrow or a roaming tortoise. Hatchling and juvenile burrows (burrow width <5") may be hand excavated or carefully mechanically excavated.

***Traps***

If bucket or cage traps are used, the traps must be shaded and checked twice per day—once in the morning and once in the late afternoon, and they must remain in place for at least 28 consecutive days or until the resident tortoise is captured, whichever occurs first. All traps must be closed if at any time during the 28-day trapping period the forecasted low temperature is below 50˚ F, and the trapping period shall restart at day 1 when a trap is closed for any reason. For bucket traps, dig a hole just outside of the burrow entrance that is large enough to accommodate a 5-gallon bucket placed flush with the ground level. Drainage holes must be drilled into the bottom and lower sides of bucket traps to prevent rainwater from accumulating in the bucket and potentially drowning the tortoise. Cover the bucket opening with paper or cloth and a small amount of soil (for camouflage) to create a pitfall trap for a gopher tortoise. Alternatively, a mesh wire cage trap may be used, either homemade (*e.g.*, "flap trap") set over the burrow entrance; or commercially available (*e.g.*, Havahart ®) that is set directly in front of a burrow to capture the resident tortoise. Both pitfall and cage traps must be completely shaded (using burlap, other cloth, plywood, and/or vegetation). It is possible that other state- or federally-listed, or at-risk species may be encountered during trapping activities. Any of these species found in traps should be photographed to provide unequivocal identification, and if no guidance already exists regarding appropriate disposition of these animals, the Service and/or appropriate state agency should be contacted immediately.

***Marking and data collection***

All trapped or excavated gopher tortoises must be individually marked, measured, weighed and given a health assessment. Care should be taken to clean all marking and measuring instruments with a dilute chlorine solution (as described above) to prevent transmission of pathogens between animals. Marking is preferred by drilling holes in, or using a triangular file to notch one (or a combination of) the eight rear-most marginal scutes (the four right ones and four left ones) and the two right and left front marginal scutes, following a numbering system approved by the permitting/management authority

(see Figure 1). Drilling or notching should be carefully undertaken to avoid injury to the limbs or head. Also, holes should be drilled closer to the marginal edge (without breaking through the edge) rather than higher up on the scute. For adult tortoises, Passive Integrated Transponder (PIT) tags may be used as a different method for uniquely marking individuals. PIT tags are small microchips that can be injected into a tortoise's hind leg using a clean, hand-held applicator and following manufacturer's guidelines. Alternatively, PIT tags may be affixed to the carapace of tortoises (any age) using epoxy, trying to avoid applying epoxy across the gap between adjacent scutes. Juveniles (<130 mm carapace length) cannot be marked using a drill because of their pliable shells; instead, a triangular file or sharp scissors must be used to carefully notch the appropriate scutes.

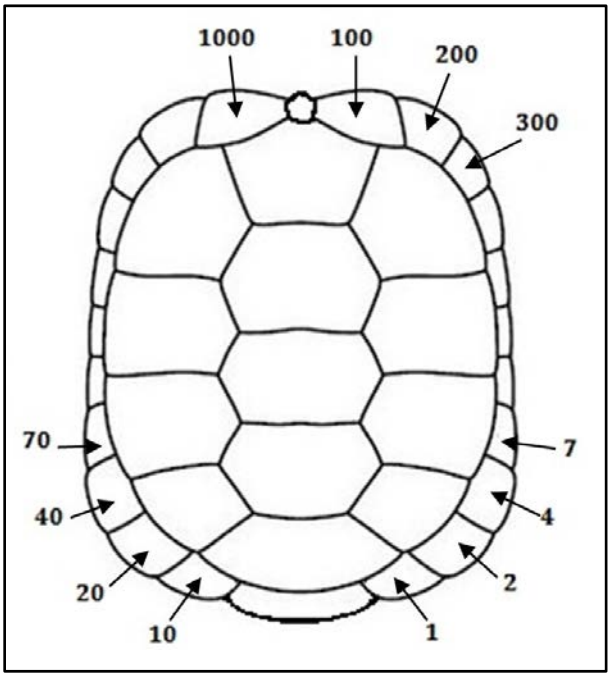


Figure 1. Sample gopher tortoise marking system

Data collected should include the age class, sex (if determinable), and identification number of the tortoise, as well as straight-line carapace length, plastron length, width, weight, and photographs of the carapace and plastron. Additional measurements may be taken (see Figure 2). As a general rule, tortoises <130mm carapace length should be considered juveniles; those with carapace length 130-220mm should be considered subadults; and those with >220mm carapace length are considered adults (mature). Adult male tortoises, in comparison to females, have a concave plastron, a wider anal width relative to the anal notch, and a longer gular projection (see Figure 2). On the data sheet(s), the project site and recipient site should be recorded along with the results of a basic health assessment. The health assessment should consist of a basic physical examination of any apparent injuries or trauma, the posture/behavior of the tortoise, and examinations of the eyes, nostrils, skin, muscle mass, and shell.

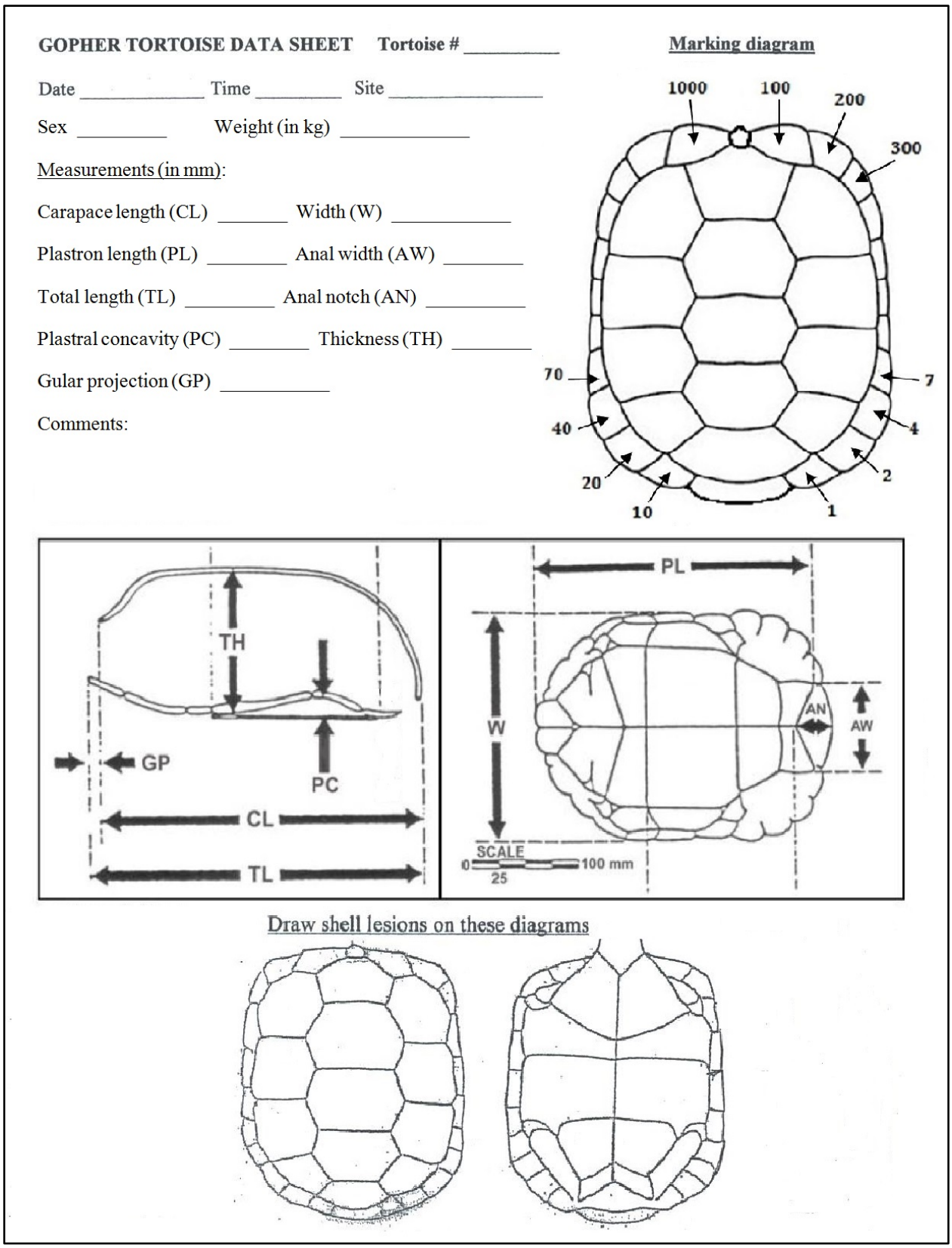


Figure 2. Sample gopher tortoise trapping/capture data sheet.

Some clinical signs of upper respiratory disease to watch for include: nasal discharge; congested breathing; severely eroded nostrils (nares); sunken eyes; eyes/eyelids severely swollen or reddened, with discharge; poor muscle mass and emaciated (abnormally thin) appearance (see Wendland *et al*. 2009 for additional health evaluation procedures). If a potentially-ill or injured tortoise is discovered, that tortoise must be isolated from other tortoises; and a wildlife rehabilitation facility/veterinarian must be contacted, as well as, the appropriate regulatory agency to discuss further action.

***Holding and Transport***

Gopher tortoises must be held in shaded conditions and in individual containers that are large enough to allow the tortoise to turn around. To help prevent dehydration, especially during times of drought, tortoises should be soaked for 20-30 minutes before transport in just enough water to cover the container bottom and to allow the tortoise to easily drink or soak. Moist soil from the burrow may be used to cover the bottom of the bin. Hay, straw, or shredded paper are other acceptable materials to place in the bin. Gopher tortoises must not be held more than 72 hours after capture—and preferably not more than 24 hours. Tortoises must be transported within covered, well-ventilated areas of vehicles (not in open trucks) and should be kept at moderate temperatures (*i.e*., 70-85˚ F). Containers should be marked with the identification number and sex of the tortoise, and should be disinfected with a dilute chlorine solution after each use.

***Release***

To ensure successful translocation, gopher tortoises must be released into secure enclosures containing appropriately-managed habitat on suitable soils at the recipient site. All enclosures must provide abundant open, sunlit areas; areas with full shade; and plentiful, diverse, herbaceous forage. Enclosures should be designed in a way and constructed of a material that prevents the passage of all sizes of tortoises (such as silt fencing or flashing) and without 90 degree corners (circular design is preferable). The enclosure must be large enough to allow for stocking rates of up to 4 gopher tortoises per acre (including any resident tortoises and taking available ground cover into consideration). Tortoises must be released into either existing abandoned burrows or excavated starter burrows. Naturally-occurring burrows will be inspected with a burrow camera to confirm (to the greatest extent possible) that they are unoccupied before releasing tortoises. Where no abandoned burrows exist, starter burrows should be dug at a 30-40˚ angle in suitable soils with (sharpshooter) shovels, post hole diggers, or power augers to the greatest distance possible (ideally 3 feet or longer). It is important that the roof of the starter burrow should be close to the same height as the depth of the shell of the animal to be placed therein. This can be difficult to do with post-hole diggers, so sharpshooter shovels are recommended over conventional shovels for creation of broad,

relatively flat tunnels. Enclosures shall be monitored at least once a week for the first month and at least once a month afterward to check for structural integrity and for any issues regarding the safety and welfare of resident tortoises. In rare cases, enclosures may be constructed that are large enough to be a permanent home to the resident tortoises and will not need to be opened. In all other cases, tortoises must remain in the enclosure for 9 to 12 months; at the end of the confinement period, the enclosure fencing will be removed or otherwise opened to allow for free movement of tortoises across the site.

### *Literature cited*

Wendland L, Balbach H, Brown M, Diemer-Berish J, Littell R, Clark M. 2009. Handbook on gopher tortoise (*Gopherus polyphemus*) health evaluation procedures for use by land managers and researchers. US Army Corps of Engineers, Washington, DC, 82 pp. (https://erdc-library.erdc.dren.mil/xmlui/bitstream/handle/11681/20165/CERL-TR-09-1.pdf)

### *Other sources used to develop these guidelines*

Florida Fish and Wildlife Conservation Commission. 2008 (revised 2017). Gopher Tortoise Permitting Guidelines; Tallahassee, Florida. (http://myfwc.com/license/wildlife/gopher-tortoise-permits)

U.S. Fish and Wildlife Service. 2012. Standard Gopher Tortoise Relocation Guidelines. 3 pp.