



## **Guidelines for Activities Occurring Within Occupied Gopher Tortoise Habitat**

### **Mississippi**

#### **GENERAL SPECIES INFORMATION**

The gopher tortoise (*Gopherus polyphemus*), federally listed as a threatened species, is associated with areas that have well-drained, sandy soils appropriate for burrow establishment, ample sunlight for basking and nesting, and understory vegetation suitable for foraging (i.e., grasses and forbs). Gopher tortoises prefer “open” longleaf pine-scrub oak communities that are thinned and burned every few years. However, they commonly inhabit marginally suitable habitat (e.g., pastures, road rights-of-way) and existing maintained utility transmission rights-of-way as well. Habitat degradation (lack of thinning or burning on pine plantations) and conversion to agriculture or urbanization have contributed to the decline of that species.

Gopher tortoises excavate and use more than one burrow for shelter beneath the ground surface. Burrows, which may extend for more than 30 feet (9.1 m), provide shelter from canid predators, winter cold, and summer heat. Gopher tortoise burrows are the habitat and center of normal feeding, breeding, and sheltering activity, and they represent the general boundaries of a home range. Home range area tends to vary with habitat quality, becoming larger in areas of poor habitat (Auffenberg and Iverson, 1979). Habitat occupied by gopher tortoises is generally represented as a 2.5-acre area with a radius of 186 feet around any active burrow. A burrow is considered active if the burrow apron is maintained and has fresh dirt, tracks, or scat. An inactive burrow is one that maintains its half-moon shape but does not have fresh dirt or other evidence of recent activity. An abandoned burrow is one that has lost its shape and/or is covered with spider webs or leaf litter, or it is occupied by another burrowing species (e.g., armadillo). The best method of determining burrow occupancy is to scope the burrow with a specialized camera (Note: this type of survey may only be conducted by permitted biologists).

Tortoises mostly forage on foliage, seeds, and fruits of grasses and forbs, generally in an area of about 186 (probably a shorter distance, like 25 feet) feet surrounding each burrow. Gopher tortoises are active above ground during the growing season when daytime temperatures range between 75 and 87 degrees Fahrenheit (°F) (McRae et al., 1981; Butler et al., 1995). Daily active periods usually are unimodal in spring, followed by bimodal periods (early to mid-morning, middle to late afternoon) during the hotter temperatures of summer (McRae et al., 1981). Daily activity above ground becomes significantly reduced by the end of the growing season during October with cooler temperatures. Tortoises take shelter within their burrows during the dormant season, become torpid, do not eat, and rarely emerge except during periods of warm days to bask in sunlight at the burrow entrance. Tortoises become active again during April.

If possible, activities within gopher tortoise occupied habitat should be planned to occur during the dormant season (i.e., October through April) when tortoises are least likely to be encountered above ground. The following activity-specific protocols should be strictly followed throughout the year to reduce the likelihood of affecting gopher tortoises, their habitat, or their burrows.



## FOOD PLOTS/GARDENS

Tortoises are attracted to vegetable and flower gardens and deer feeding plots. The only way to keep a tortoise out of a garden is to put up a fence, which should be tight against the ground, and does not need to be very high since tortoises cannot climb fences very well.

Additional information regarding gopher tortoises, life history, management practices, etc. can be found at the Ashton Biodiversity Research & Preservation Institute website.

<http://www.ashtonbiodiversity.org/pdf/GopherTortoiseMngtInYard.pdf>

## MOWING ACTIVITIES

1. All burrows should be temporarily marked and protected against collapse by vehicular equipment by a minimum 25-foot radius buffer. This is to prevent potential entombment of gopher tortoises.
2. Suppression of woody vegetation and heavy herbaceous encroachment is beneficial habitat management for gopher tortoises. Accordingly, vegetation clearing within 25 feet of a gopher tortoise burrow may be conducted but with hand tools (i.e., weed trimmer, push mower).
3. In specific cases where the hand tool restriction imposes additional costs and time required to maintain mowed areas, the specific provisions for mowing operations with bush-hog or rotary cutters within 25 feet of active and inactive gopher tortoise burrows during the dormant season only (October through April) are as follows:
  - The path of the tractor and mower will be directed so that tires do not cross directly over the burrow entrance, burrow apron, or plane of the underground burrow. However, tractors and mowers of sufficient width can be backed or pulled directly over the burrow apron, entrance, and its underground plane by straddling the wheels on either side of the burrow and apron.
4. Whenever possible, mowing should be conducted in the winter to reduce the likelihood of gopher tortoises being active above ground. If practical, mowing should be planned for cloudy days when the temperatures are coolest. This will reduce the probability of encountering a tortoise on the surface.

## FOREST MANAGEMENT PRACTICES

Forest management practices that may affect gopher tortoise feeding, breeding, and shelter – positively or negatively – are those that affect burrows, soils, herbaceous vegetation, and understory and overstory vegetative cover. Silvicultural practices that may affect these attributes include chemical and mechanical operations, planting and stocking density, and prescribed fire. The normal silviculture and management of longleaf pine production for poles, pilings, and saw logs, with frequent prescribed fire, is highly compatible with the gopher tortoise, relative to more dense or closed loblolly and slash pine production in plantations on



converted sites. Accordingly, the following provisions should be adhered to during forest management activities within occupied gopher tortoise habitat:

1. Mechanical operations: Mark and protect active and inactive gopher tortoise burrows with a 25-foot radius buffer to prevent potential burrow collapse and the entombment of tortoises by the operation of mechanical equipment (e.g., skidders, loaders, feller-bunchers, plowing fire-lanes, etc). Do not place or operate logging decks within 186 feet of an active or inactive burrow, the area where tortoises normally forage from their burrows. Do not sheer, root-rake, disc, bed, or create windrows in habitat occupied by tortoises, which is represented as a 2.5-acre area with a radius of 186 feet around any active burrow.
2. Herbicides: Use prescribed fire for site preparation and stand improvement. For foliar herbicide application to control shrubs and small hardwoods, use imazapyr, glyphosate, and/or triclopyr by directed ground spray if prescribed fire is not feasible or is ineffective due to inadequate fuel loads, unmanageable smoke hazards, prescribed fire permit bans and restrictions, or low expected mortality due to the size, density, and cover of shrubs and hardwoods. Do not aerially apply these or other herbicides.
3. Planting density: For artificial regeneration, do not plant more than 500 seedlings per acre.

Generally, suitable habitat for the gopher tortoise is defined as pine or pine-scrub oak dominated stands with an average pine basal area less than or equal to 70 square feet per acre, less than or equal to 70 percent coverage of overstory and midstory woody plants, less than or equal to 15 percent shrub cover, and greater than or equal to 25 percent herbaceous cover (native grasses and forbs) on optimal soils and greater than or equal to 50 percent herbaceous cover on other appropriate soils.

#### **RESIDENTIAL/COMMERCIAL DEVELOPMENT, ROAD CONSTRUCTION**

Activities within occupied gopher tortoise habitat that are not covered in the above sections should be coordinated with the Service's Jackson, Mississippi Ecological Services office (David Felder, 601-321-1131) before any ground disturbing activities occur. Such activities include, but are not limited too, new residential/commercial development, roads, new oil and natural gas pipeline, oil drilling. Also, federally funded activities within occupied gopher tortoise habitat, or activities that require a federal permit such as an Army Corp of Engineers Section 404 Clean Water Act permit should also be coordinated with the Service.



## LITERATURE CITED

Auffenberg, W. and J.B. Iverson. 1979. Demography of terrestrial turtles. Pp. 541-569. *In* M. Harless and H. Morlock (eds.), *Turtles: Perspectives and Research*. John Wiley and Sons. New York.

Butler, J.A., R.D. Bowman, T.W. Hull, and S. Sowell. 1995. Movements and home range of hatchling and yearling gopher tortoises, *Gopherus polyphemus*. *Chelonian Conservation and Biology* 1:173-180.

McRae, W.A., J.L. Landers, and J.A. Garner. 1981. Movement patterns and home range of the gopher tortoise. *American Midland Naturalist* 106: 165-179.

## Contact Information:

David Felder, Section 7 Biologist  
U.S. Fish and Wildlife Service  
6578 Dogwood View Parkway  
Jackson, MS 39213  
Office: 601-321-1131  
Cell: 601-720-6458

Matt Hinderliter, Lead Recovery Biologist  
U.S. Fish and Wildlife Service  
6578 Dogwood View Parkway  
Jackson, MS 39213  
Office: 601-321-1132

Kathy Shelton/Tom Mann  
MS Department of Wildlife, Fisheries, and Parks  
2148 Riverside Drive  
Jackson, MS 39202  
Office: 601-354-7303