



Gopher Tortoises: 'Digging In' at Geneva State Forest

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Back in the 1920s, land that is now Geneva State Forest (GSF) was clear-cut by Jackson Lumber Company. At that time, it was common practice to clear-cut timber and not replant due to the availability of mature pine stands and the cost associated with replanting activities. Rather than paying taxes on property that had little value, Jackson Lumber Company chose to donate this 7,120 acres to the State of Alabama in the early 1930s. The area was then replanted by Civilian Conservation Corps workers during the Depression era.

In the present time, the acreage is managed primarily for timber as a source of revenue to fund Alabama Forestry Commission (AFC) activities. AFC lands at Geneva State Forest have always been managed for native longleaf pine on a 75-year rotation. Active management during the past 20 years or so has included activities such as thinnings, prescribed fires, and final shelterwood harvests to naturally regenerate the longleaf ecosystem. The resulting habitat has been beneficial for the local population of gopher tortoises. Continuation of these management activities should bolster these local tortoise populations and decrease habitat fragmentation.

Geneva State Forest is home to approximately 400 tortoises, making it currently one of the densest populations on state or federal land in Alabama. Living as long as up to 80 years or so,



A burrow with a well-defined trail to a feeding area in typical gopher tortoise habitat.

gopher tortoises are dry-land turtles that are well adapted for their fossorial lifestyle. They have stubby, elephant-like hind feet and flattened front feet with large toenails for digging. Gopher tortoises favor dry, sandy ridges with open stands of pine (especially longleaf), turkey oak, and other scrub oaks. Where habitat is of low quality, they also frequent open areas around road shoulders, food plots, and rights-of-way with well-drained sandy soil.

The tortoises dig long sloping burrows up to 30 feet long, extending to 9 feet below the surface. Burrows typically have a characteristic 'D' shape, with a flat bottom and rounded arched top and sides – much like the gopher itself – and are typically only wide enough for the tortoise to turn around in. These burrows provide shelter not only for the gopher tortoise, but are also used by more than 360 species of mammals, birds, reptiles, amphibians, and invertebrates which include gopher frogs, Eastern indigo snakes, diamondback rattlesnakes, and gopher crickets. While gopher tortoises tend to avoid sharing burrows with their own kind, they are known to readily cohabitate with many other animals. Several of these co-existing species are already listed as threatened/endangered or are proposed for listing for protection under the Endangered Species Act.

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Prescribed burning maintains the understory of the longleaf habitat at Geneva State Forest in a condition that is highly beneficial to many nongame species, including gopher tortoises, as well as game species such as deer and turkeys.

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This tortoise was marked with a 'V' just below its head on the edge of the carapace.



Gopher tortoises feed on grasses and other plant material near the ground. Feeding trails are often visible leading from the burrow's sandy apron to foraging areas. Eggs are laid in or near the burrow apron in May, June, and July, then hatch in about 80-100 days.

Young tortoises are about the size of silver dollars. The nest is very vulnerable to predation by crows, raccoons, opossums, foxes, skunks, and other animals.

A recent addition to the harvesting regime at Geneva State Forest is to exclude heavy equipment from being operated within 15 feet of a known tortoise burrow.

Research has indicated that heavy equipment may collapse a burrow, entombing any occupants. Unlike mature tortoises, young tortoises are incapable of digging out of a collapsed burrow, and as mentioned previously, these burrows are shared by several species which are listed as threatened or endangered. Therefore, known burrows are flagged prior to logging activities and operators are requested to notify GSF staff of any unmarked burrows that are discovered during the logging process. This minimally invasive requirement on logging activities should benefit tortoise populations, as well as other burrow dwelling species. It is just one example of potential management activities that may preclude the need to provide protection under the Endangered Species Act for the tortoise in the 'eastern range.'

Gopher tortoises west of the Mobile and Tombigbee rivers in Alabama were listed as a threatened species in 1987. The U.S. Fish and Wildlife Service (Service) released a work plan in 2016 for listing additional species for protection under the Endangered Species Act. This work plan reported fiscal year 2023 as the timeframe to either propose rules for listing the gopher tortoise in its eastern range as threatened/endangered or propose notice of a 'not warranted for listing' finding. Cooperation between public and private forest landowners with the Service in the 'eastern range' may allow them to obtain the best available scientific data regarding tortoise populations throughout the states of Alabama (east of the Mobile and Tombigbee rivers), Florida, Georgia, North Carolina, and South Carolina. Hopefully, current efforts to enhance the longleaf pine ecosystem in south Alabama and other coastal plain regions will pay dividends to tortoise populations and preclude the need to list the gopher tortoise as a threatened/endangered species in its eastern range.

To allow tortoises from another county to be moved to Geneva State Forest, a four-acre enclosure was constructed by personnel from the Alabama Forestry Commission and Wildlife & Freshwater Fisheries Division (of the Alabama Department of Conservation and Natural Resources). Although tortoises are not routinely translocated, development and loss of habitat had created a situation in which biologists believed the tortoises would have perished without this action. This enclosure was constructed in an area void of tortoises, but within suitable habitat.

Constructing the enclosure was fairly labor intensive, costly, and required trenching the perimeter of the 'silt fence' to a depth of approximately 12-16 inches to keep tortoises from escaping. Research indicates that translocated tortoises have a much higher survival rate when initially placed in an enclosure for a period of at least six months. This soft release technique keeps them from immediately leaving the area and 'heading back home' which often results in some form of mortality.

Each tortoise was uniquely marked by filing a 'V' into the edge of the carapace in a known location and given an identification number. This allows GSF personnel and wildlife biologists involved in tortoise management to identify it if captured at a later date.

Alabama Forestry Commission and Wildlife & Freshwater Fisheries personnel conducted a prescribed burn on January 30, 2017, in the unit containing the tortoise enclosure. The fencing material was burned up for the most part so as not to create a barrier to the tortoises when they emerged from the burrows in the spring. Hopefully, the tortoises will continue to live life in and around the area of the former enclosure. Prescribed burning on a two to three-year rotation minimizes woody species such as yaupon, and enhances herbaceous ground cover favored by gopher tortoises.

This cooperative effort between the Alabama Forestry Commission and Wildlife & Freshwater Fisheries is a stellar example of the forestry and wildlife management communities working together for the benefit of a species that was once widely distributed throughout Alabama's lower coastal plain. Future forest management activities at Geneva State Forest will continue to include activities that are beneficial to gopher tortoises and many other species (some of which are also threatened or endangered) that utilize open pine stands and sandhill habitats. 🌲



Enclosure site immediately following a prescribed burn.