

Gopher Tortoise

Conservation & Forest Management

Photo by:
ASHLEY SMITH



The Gopher Tortoise

The gopher tortoise (*Gopherus polyphemus*), a land turtle found in the Southeastern United States, descended from tortoises originating in western North America nearly 60 million years ago. Historically at least 23 tortoise species existed in North America, but currently only five species remain. The range of the gopher tortoise extends from eastern Louisiana through the southern portions of Mississippi, Alabama, and Georgia. Florida is also included in the gopher tortoise range, along with the very southwestern portion of South Carolina. In Alabama, the gopher tortoise is found in the lower third of the state where its habitat needs are met.

These docile reptiles play a major role in the longleaf pine ecosystem. Understanding this species, its habitat needs and applying proactive conservation practices may increase survivability for this species of conservation concern.

Keystone Species

Keystone species are vitally important to the health of an ecosystem. Removal of a keystone species can lead to reduced survival rates for many other species. Gopher tortoises serve as a keystone species of the longleaf pine ecosystem providing critical habitat for approximately 360 different species of mammals, birds, reptiles, amphibians and invertebrates that spend all or a portion of their lives in active or abandoned gopher tortoise burrows. Some species, referred to as gopher tortoise commensal species, are completely or largely dependent on these burrows for survival. Indigo snakes, pine snakes, gopher frogs, gopher crickets and many other species seek refuge in the burrows created by the gopher tortoise in sandy coastal plain soils. As land uses change, either from rural to urban areas or from one forest type to another (affecting the species and its habitat), gopher tortoises may not be able to endure the alterations. Scientists estimate that populations of the species declined at least 80 percent in the past 100 years.



Photo by: MARK BAILEY



Photo by: BILLY POPE

Some species are dependent upon gopher tortoise burrows for survival, such as the gopher frog and Eastern indigo snake.

Gopher Tortoise Habitat

Covering approximately 60 percent of Alabama, the Coastal Plains (Upper and Lower) physiographic region is the state's largest. In the upland areas of the region, preferably in well-drained, deep sandy soils, gopher tortoises make their homes. With stubby, strong elephantine back legs and shovel-like forelimbs adapted for digging, hard-shelled gopher tortoises burrow into the ground seeking shelter from extreme temperature fluctuations, fire and protection from potential predators. Gopher tortoises easily excavate burrows (approximately 6 feet deep and 18 feet long) in sandy soil. Soil type is the single most reliable indicator for potential gopher tortoise habitat.

These terrestrial turtles live their entire lives (approximately 40-80 years) on land, foraging predominantly on grasses, forbs, fruits and other non-woody plant material growing close to the ground. Dew and moisture content in forage plants provide most of the water tortoises need for survival, though opportunistic tortoises have been observed drinking from groundwater run-off after a rain. Because the plant material on which they feed grows best in ample sunlight beneath an open tree canopy, gopher tortoises tend to live in fairly open pine or mixed pine-hardwood stands. The cold-blooded gopher tortoise utilizes sunny, open spots for basking and nest construction, and burrows for shelter and protection. Gopher tortoise burrows keep a fairly constant temperature, offering respite from extremes of cold and heat. A gopher tortoise can use multiple burrows within a single season, and will remain in the same general area for decades if habitat conditions remain suitable.

Best Management Practices

Sustainable forest management has been defined as the environmentally appropriate, socially beneficial, and economically viable management of forests for present and future generations. Simply defined, sustainable forestry considers future generations in current decision-making. Forest landowners can positively contribute to the conservation of gopher tortoises through best management practices. Investing time and thought into forest management plans proves prudent to the success of any well-managed forest. ***For sites where gopher tortoises reside, evaluate land management objectives, current site conditions and research management activities; choose appropriate management activities.***



Photo by: BILLY POPE

Ideal gopher tortoise habitat includes sandhills, flatwoods, dry prairies, xeric hammocks, longleaf pine forests, pine-mixed hardwoods and coastal dunes. Moist soils in low-lying areas do not offer preferable habitat.

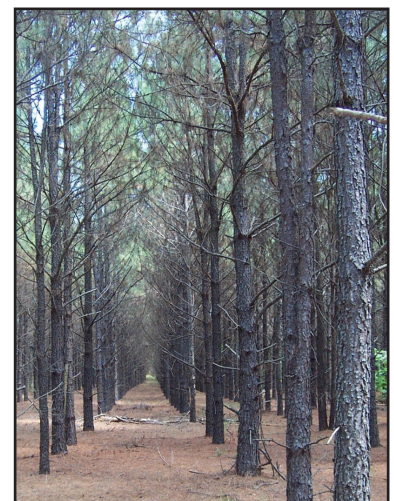


Photo by: DAVID STEPHENS

A closed canopy pine stand, as shown above, is considered unsuitable habitat for gopher tortoises and numerous other wildlife species.



Photo by: BILLY POPE

Prescribed fire is a safe way to apply a natural process, ensure ecosystem health, and reduce wildfire risk. Prescribed burning is the SINGLE most important habitat management tool used to maintain suitable gopher tortoise habitat. Many resources are available to assist landowners in prescribed burning.

www.aces.edu/pubs/docs/A/ANR-0331/index2.com
www.alpfc.org



APRON AREA

**BURROW
ENTRANCE**

Photo by:
USFWS

Several practices can enhance the condition of natural communities and benefit gopher tortoises. The most beneficial and cost-effective habitat management activities include prescribed burning and timber thinning. These management tools increase the amount and diversity of ground cover used for gopher tortoise forage and provide open, sunlit sites for tortoise basking and nesting. An overview of the various practices is included below. For additional information, seek the advice of a professional forester and/or wildlife biologist.

Prescribed Fire

Ideal gopher tortoise habitat can be maintained with routine prescribed burning and is one of the most cost-efficient and effective management tools available to landowners. Prescribed fire as a forest management tool effectively accomplishes a number of management objectives including fuel reduction, ecological restoration and improved wildlife habitat. Prescribed fire proves beneficial in managing invasive species, controlling pests, providing access, and/or improving aesthetics. By increasing the diversity of grasses, forbs, legumes, fruits/seeds, stimulating forage production, and creating openings in closed canopy forests, prescribed fire benefits gopher tortoises. Numerous wildlife and game species benefit from prescribed fire, including deer, turkey and quail. Lands not receiving regular prescribed fire may require additional management techniques to attain similar benefits.

Timber Thinning

Thinning, a planned silvicultural management tool, reduces the number of trees and the basal area in a stand. While landowners typically use thinning for the concentration of available site resources to the remaining trees for increased economic returns, overall stand health and wildlife implications are additional considerations. In pine stands, tree canopy usually grows denser over time; resultantly, less sunlight reaches the ground. When trees are thinned or removed, the canopy is opened and more sunlight is allowed to reach the forest floor, stimulating growth of young plants.



Photo by: ERICHA NIX

One of the most important aspects of gopher tortoise ecology is the burrow. Protect burrows by marking well and staying clear of the burrow opening and apron.



Photo by: USFWS

Open pine forests allow sunlight to reach the forest floor. Gopher tortoises bask in the warmth of the sun and forage on plants in the understory.

Vegetation Management Alternatives

If barriers are present that prevent the use of prescribed burning, alternatives include the following:

- **Mowing** – Lands dominated by large pastures and fields can be maintained by mowing or bush hogging. Mowing or bush hogging provides an alternative when and where prescribed burning may not be applicable. Additionally, the effectiveness of disked fire lines can be increased by mowing strips along fire lines prior to prescribed burns. To avoid injuring gopher tortoises, set mower blades at least 18 inches above the ground.
- **Mulching or Shredding** – Mulching or shredding may be used to reduce excessive shrubs and young undesirable hardwood trees in the woods. Following this technique with a prescribed burn promotes soft stemmed plant growth and reduces the risk of accumulating a thick mulch-like material. Mulching or shredding may be used as a pre-treatment to areas being planted and restored with native ground cover.
- **Roller Chopping** – For lands with excessive shrubs and vegetation (heavy fuel load) that may create unsafe conditions during prescribed burns, roller chopping can reduce the undergrowth. Chopping often proves preferable to mulching or shredding, both of which can leave a dense mat of material that may hamper desirable ground cover growth. Whenever possible, a prescribed burn should follow on lands that have been roller chopped.
- **Herbicides** – Herbicides can be used to treat and control excessive understory and invasive exotic plants such as kudzu and cogon grass. Invasive exotic plants often reduce native plant growth, restrict gopher tortoise movement, and interfere with other habitat management practices. Select herbicides that target problematic plants without significantly reducing native, soft-stemmed plants.

Site Preparation

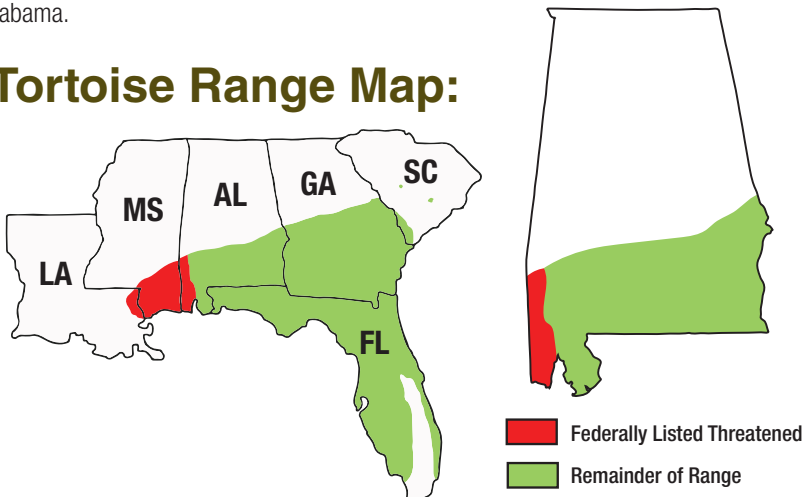
While site preparation provides favorable conditions for pine survival and growth, protection of the burrow system and maintenance of forage plants is key. Root-raking, bedding and piling (heavy mechanical site preparation methods) should be avoided on sites with evidence of gopher tortoises. Insure that site preparation methods best match the conditions for the site. Improving stand maps may limit inappropriate activities in gopher tortoise habitat.

Legal Protection

The gopher tortoise is legally protected throughout its range. In the western portion (Louisiana, Mississippi, and Alabama west of the Tombigbee River and Mobile River), it is federally listed as threatened under the Endangered Species Act. This means it is fully protected and cannot be harmed directly or indirectly, or interfered with in any way. In the eastern portion of the range (the rest of Alabama, Florida, Georgia, and South Carolina), the gopher tortoise is protected by the states, although it has been designated as a candidate species for federal listing. Scientific Collecting Permits are required to possess or study the gopher tortoise in Alabama.

Gopher Tortoise Range Map:

In Alabama, the gopher tortoise is state protected throughout its eastern range, and federally protected in the western portion of the range.



For questions concerning forest management activities, seek professional foresters and wildlife biologists to provide technical assistance for wildlife considerations.

Contact Information:

Alabama Department of Conservation and Natural Resources

334-242-3465

www.outdooralabama.com

Additional Resources:

https://www.fws.gov/endangered/esa-library/pdf/Handbook_Gopher_Tortoise.pdf

www.gophertortoisecouncil.org

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