



Gopher Tortoise

Biology and Conservation

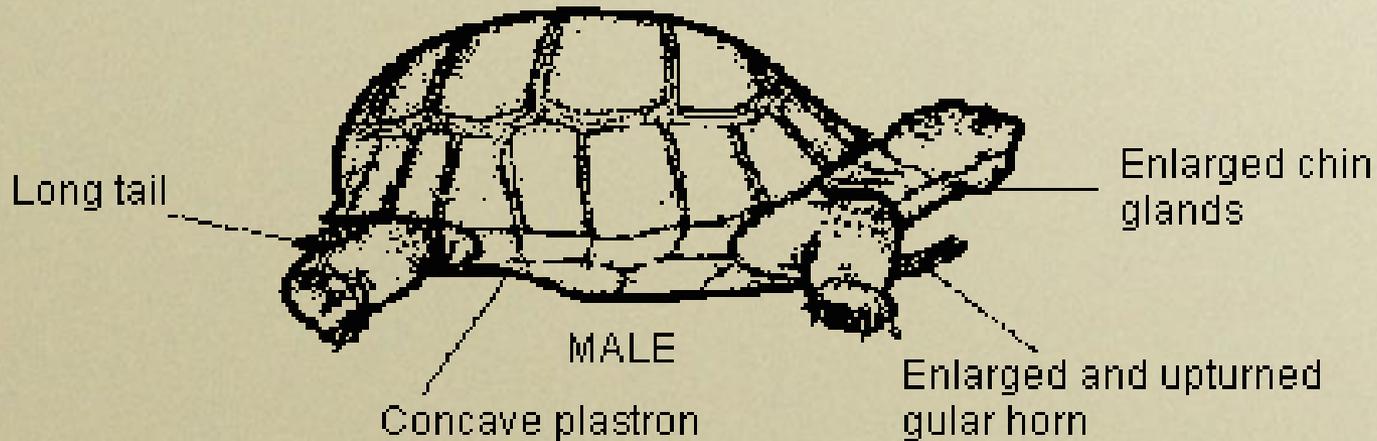
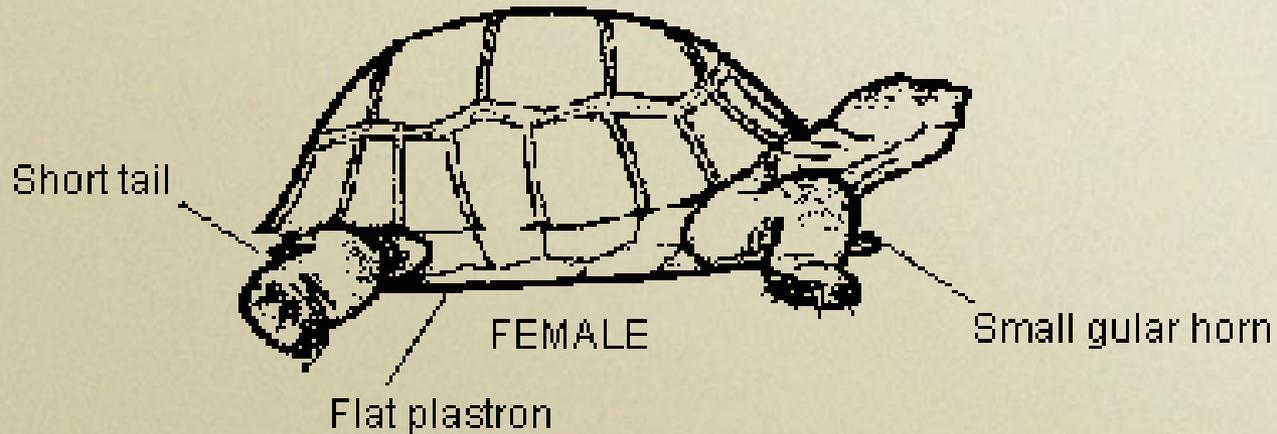


Identifiable characteristics

- Flat Shovel like front feet
- Stubby elephantine back legs
- Round face with non protruding beak
- Brown-gray color



Male or female?



Life history

- Live to be 40-60 years old
- Adult gopher tortoises average 10 inches long
- Slow to reach sexual maturity
 - Between the ages of 9 and 21



Nesting

- Breed March-October
- Females lay one clutch a year
 - 5-7 eggs
 - Warm sunny place
- High predation on nest and juveniles
- Juvenile's shell stays soft for up to 7 years



Behavior

- Active 60° to 95°
 - Foraging, burrowing
- Bask in sun to increase body temp
- Mate and nest in summer
- Refresh burrow in fall
- Rest all winter



Habitat

- Lives in high and dry sandy landscapes with plenty of sun exposure
- Only tortoise species in North America to occur east of the Mississippi River



Gopher tortoise habitats



Diet

- Herbivores
 - Low-lying vegetation
 - Broadleaf grasses, wiregrass, gopher apple, prickly pear cactus, blackberry, blueberry, and many more
- Opportunistic
- Travel up to 160 ft for food



The burrow

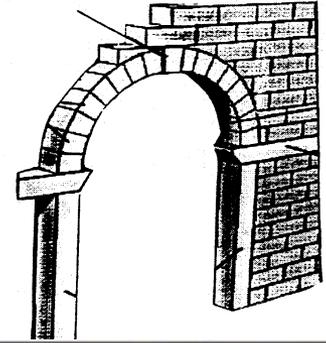
- Average 7 feet deep and more than 15 feet long
- A tortoise can have more than one borrow within its home range
- The openings to gopher tortoise borrows are distinctly half-moon shaped
 - The size of the opening is proportional to the size of the tortoise

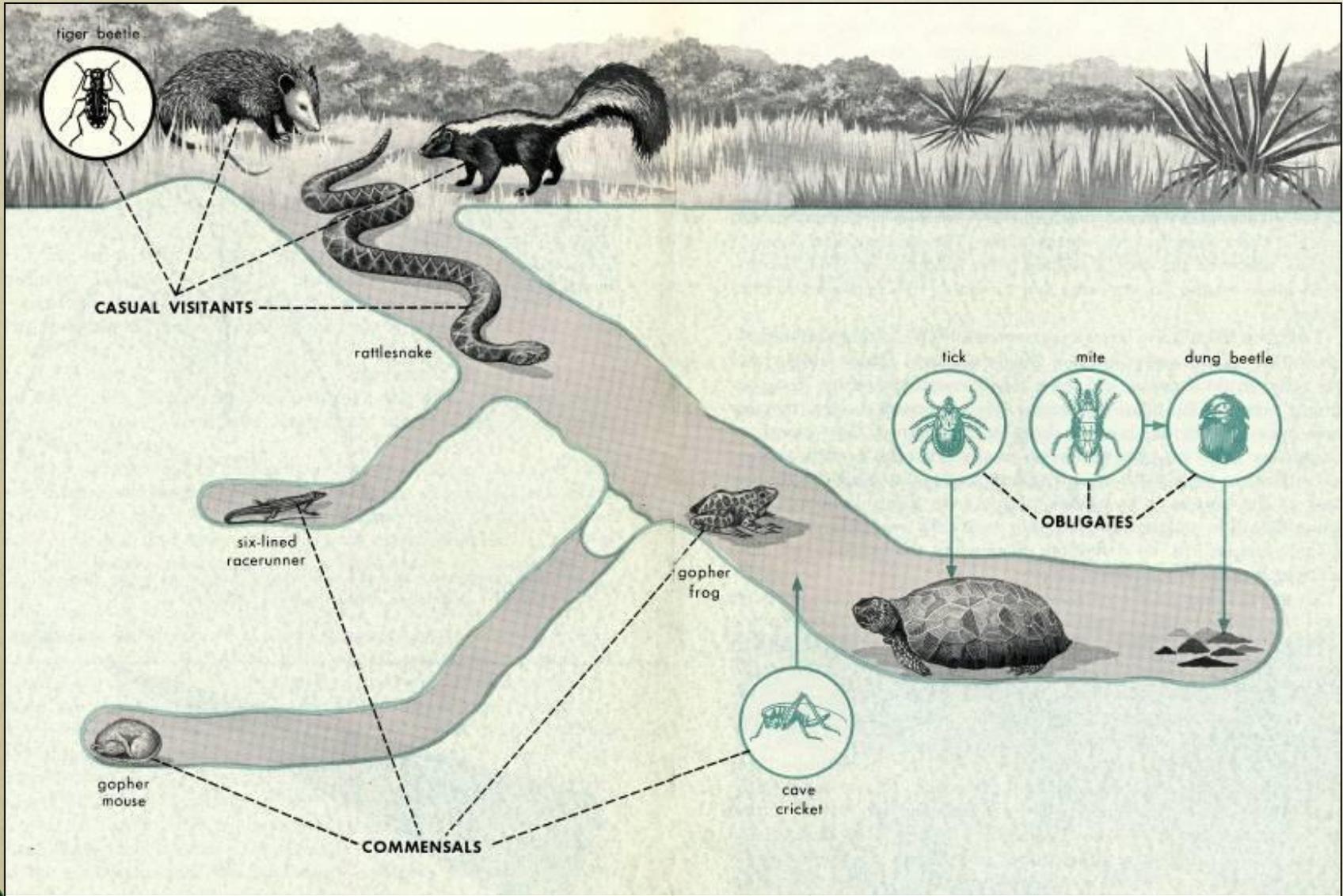


Keystone species

- The gopher tortoise is considered a keystone species
 - Their burrows provide homes for over 350 commensal species
 - A decrease in gopher tortoise population is expected to decrease the population of other species, some of which are also listed species

KEYSTONE SPECIES



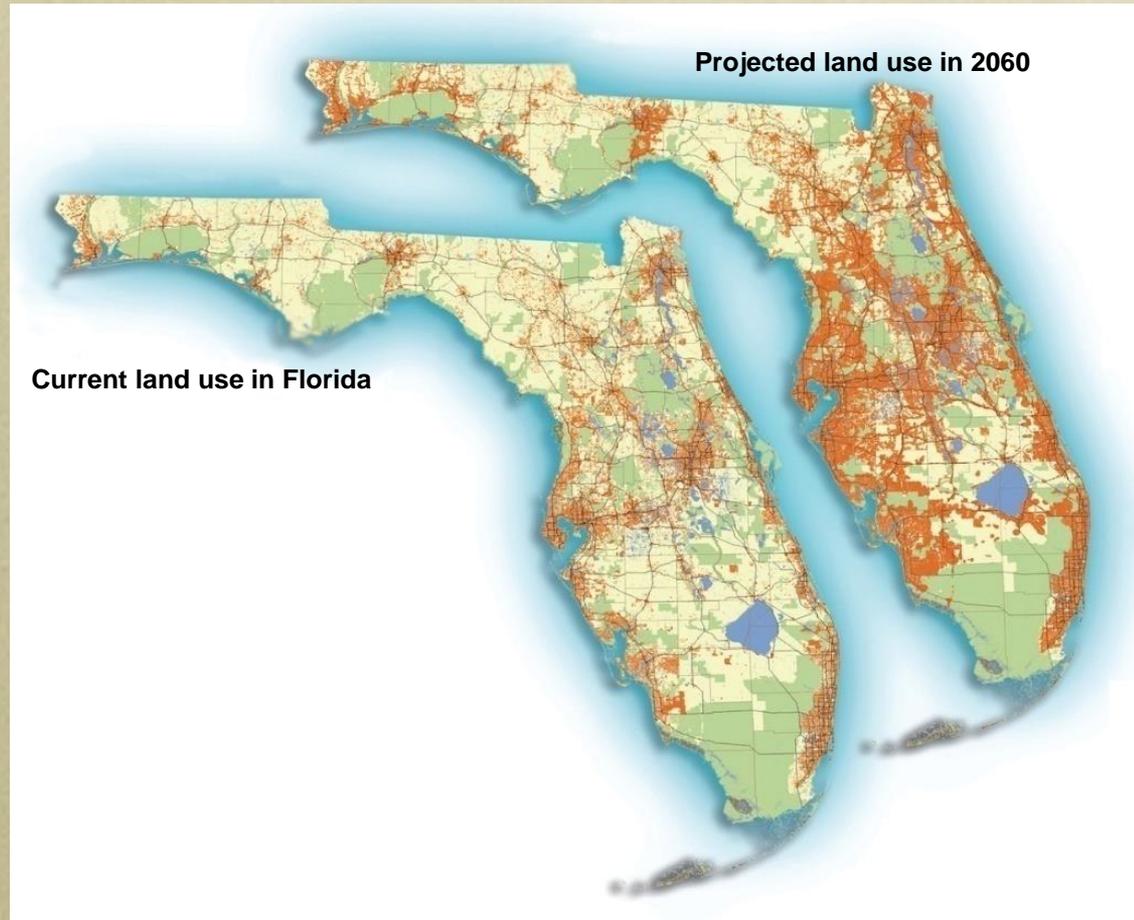


(Auffenburg 1969)



Why are populations declining?

- Habitat loss
- Fragmentation
- Degradation
- Disease
- Illegal harvest



These maps show Florida as it is today and how it could look in 2060, if its population doubles.



Upper Respiratory Tract Disease (URTD)

- Symptoms include discharge from the nasal passage or eyes, swelling of the eyelids or area around the eyes, or reddened third eyelid
- Identified as a potential threat and linked to large die-offs on several public lands in Florida



Illegal Harvesting



Management plan (approved 2007; revised 2012)

- Goal - *To restore and maintain secure, viable populations throughout Florida so the species no longer warrants listing*
- Objectives include minimize loss of tortoises, increase and improve habitat, restoring populations where they are depleted, and maintaining the tortoise as a keystone species
- Suite of conservation strategies and actions including regulation, permitting, and law enforcement



What actions are being taken?

- Permitting
- Local Government Coordination
- Law Enforcement
- Habitat Preservation
- Habitat Management
- Population Management
- Disease Management
- Incentives
- Monitoring
- Education and Outreach
- Volunteer Programs
- Future Research



Photo Courtesy of www.floridastateparks.com



Permits

- Permits are required for the humane relocation of gopher tortoises off land that is scheduled for development.
- Routine activities that do not disturb tortoises or their burrow will not require a permit



Tortoise-wise community program

- Conserving tortoises in neighborhoods
- Landscape with native plant species
- Keep dogs away from burrows and tortoises
- Help tortoises across roadways



For more information on the gopher tortoise

- Visit MyFWC.com/GopherTortoise
- For specific questions please call the Gopher Tortoise Management Plan Office at (850) 921- 1030



Slide 1

No notes

Slide 2

Unlike other turtles, the gopher tortoise has claws and does not have webbed feet. It's flat, shovel-like front feet are used for digging and their short, elephantine back feet are used to brace themselves. Their shell is their skeleton. It hardens at about 7 years of age and acts as protection. Gopher tortoises can not fully enclose themselves in their shell like box turtles.

Slide 3

You will notice that the males have a concave plastron (underbelly). This is the easiest way to tell the difference between sexes. Males also have a more prominent gular at the front of their plastrons, used for fighting over mating competition.

Slide 4

Gopher tortoises are slow growing and very long lived. They can live to be 40-60 years old. An adult tortoise will grow to about 9-11 inches long and weigh up to 15 pounds. Females are slightly larger than males. Sexual maturity is reached anywhere from 9-21 years of age, depending on their location. The rate of their growth depends on the climate they live in. For example, a tortoise living in South Florida will mature sooner than one in South Carolina due to the temperature differences.

Slide 5

The breeding period for tortoises is March-October. Females lay their eggs in a warm, sunny place, usually the apron (a mound of sand near the entrance) of her burrow. Eggs are about the size of ping pong balls. Mothers do not care for the young once the eggs hatch. There is very high predation rate on the eggs and juveniles, so only a few hatchlings will reach adulthood. Females could have a productive nest as seldom as once every ten years, which contributes to a slow population growth.

Juveniles are yellow orange and are less than 5 inches long. Their shell remains soft for up to seven years.

Slide 6

Tortoises are cold blooded and rather dependent on the weather outside, especially the sun. At temperatures from 60-95 degrees Fahrenheit tortoises will actively forage or clean out their burrows. They bask in the sun on the apron to warm their bodies. Since they mate and nest during the summer, they spend fall refreshing their burrows and rest during winter. The low temperatures of the colder months prevent them from being out of their burrow often or even at all.

Slide 7

Gopher tortoises live in hot, dry, upland habitats where the soil is sandy enough for them to dig their burrows in. Vegetative grounds and minimal tree cover is ideal so that plenty of sun can get through the canopy. Periodic fires help to keep their environments suitable so that the canopy does not get too dense and plants for food do not grow too tall.

Slide 8

Some examples of good gopher tortoise habitats include: sandhill or xeric oak; pine flatwoods; long-leaf pine forests; dry prairie; xeric hammock; and coastal grasslands and dunes.

Slide 9

Gopher tortoises are herbivores eating mostly grasses and low growing vegetation, including fruits and legumes. Some of their favorites include blueberries, wiregrass, stinging nettle, and prickly pear. Tortoises will look for specific species of plants during different stages in their lives, for example during pregnancy, maturation, etc., for different nutritional needs.

Slide 10

The gopher tortoise burrow is an important addition to the ecosystem within which gopher tortoises live. It provides mild temperatures and humidity all year for those residing in it.

Slide 11

The gopher tortoise is a “keystone species”. The term “keystone” is a metaphor derived from the structure of an arch. The “keystone” refers to the center stone in the arch, removal of which will eliminate support for the remaining stones and likely collapse the entire structure. The gopher tortoise burrow is home to over 360 commensal species who utilize it for shelter. If the tortoise is removed, the burrows are removed, and some or many of these species’ populations would decline in correlation with the tortoise’s. So removal of the tortoise could be detrimental to the entire ecosystem. Some examples of commensal species are the gopher frog, eastern indigo snake, Florida pine snake, and the Florida mouse, and hundreds of invertebrates.

Slide 12

A burrow is like an apartment complex. There can be up to ten other species living in just one tortoise burrow, some of which depend on it for food, shelter, and protection. The tortoise rarely gets anything out of sharing his home but most of these other creatures could not survive without him. The temperature in the burrow is naturally regulated. During winter it keeps its inhabitants warm and provides refuge during hot summer afternoons. Burrows also provide a safe refuge for tortoises and commensals to escape fires (natural or prescribed).

Slide 13

This map here shows a comparison of what Florida looks like today, versus what it could look like in 2060 if the human population growth rate remains the same. Increases in development and human population will continue to cause habitat fragmentation and degradation. Additionally, disease and illegal harvest have also contributed to the gopher tortoise population decline.

Slide 14

URTD is a disease that tortoises contract through contact with each other. Tortoises may not show symptoms and it is highly contagious. This is one reason why it is important that only professionals relocate tortoises to avoid introducing an infected tortoise into a healthy habitat.

Slide 15

At one time gopher tortoises were considered a source of food. They are sometimes referred to as Hoover Chickens, because they were a source of protein when people couldn't afford another. They were also collected for tortoise races, which usually led to them being placed into the wrong environment if returned to the wild at all. It is now illegal to take or harass a tortoise or its shell, a nest or a burrow.

Slide 16

The original plan was approved in 2007. The first 5 year revision was approved in September 2012. The ultimate goal of the management plan is to restore and maintain secure, viable populations of gopher tortoises so that they will no longer need to be listed.

Objectives:

- Minimize loss
 - Increase habitat
 - Restore populations
 - Maintain as a keystone species
-

Slide 17

Here are a few actions that are being implemented to help achieve the management plan goal.

Slide 18

The FWC issues permits to individuals and companies when a project they want to complete will disturb a tortoise or its burrow. The landowner or project manager must get any tortoises properly relocated before taking any action on the project site. Routine activities like lawn maintenance that might disturb a tortoise or a burrow do not require a permit.

Slide 19

One way residents may become involved in gopher tortoise conservation is to work toward establishing a “Tortoise wise community”. The best way to reach this goal is to keep the community informed about conservation efforts, volunteer opportunities, and gopher tortoise biology facts in general. Download the Florida Gopher Tortoise Smartphone app to become an educated and involved citizen scientist!

Slide 20

No notes.