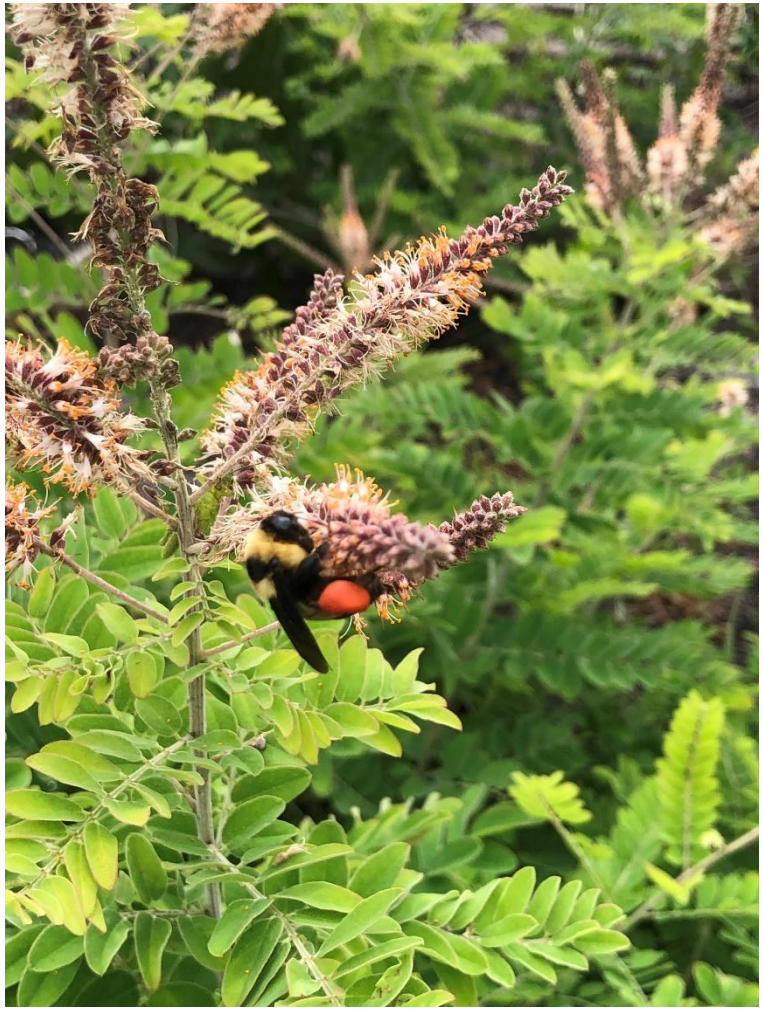
Prescribed Fire for Wildlife Values

Diversity of Longleaf Forests

- Global hotspot for biodiversity for both plants and animals

- Longleaf pine forests provide habitat for:

  - ✓Nongame species
  - ✓Endangered, Threatened and At-risk species
  - ✓ Native pollinators
  - ✓ Game species



Approximately 60% of southeastern amphibian and reptile species found in longleaf forests

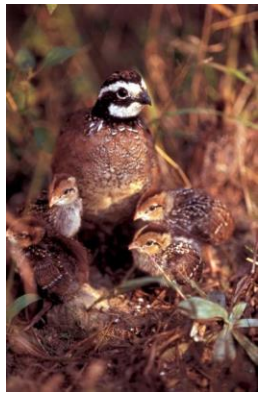
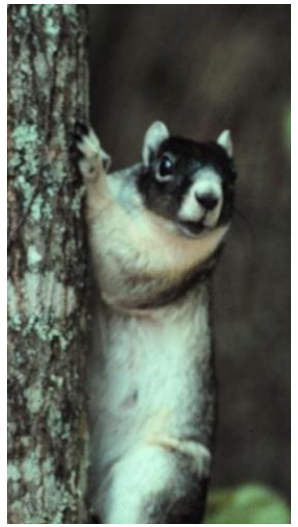
Habitat for more breeding birds than any other southeastern forest type

~ 36 mammal species








Diversity of Wildlife in the Longleaf Ecosystem

Specialists

- Depend on the longleaf ecosystem through all phases of life
- Are not found, or are not viable, in other systems
- Especially vulnerable to habitat loss

Generalists

- Utilize the longleaf ecosystem for all or parts of their life; pass through
- Exist in other habitats; not confined to longleaf
- Species range includes longleaf

Basic Needs of Wildlife

FOOD

Forage (strategies can change seasonally)

WATER

Essential for all species, sometimes may come via forage

COVER

Shelter from predators and weather, roosting, loafing, nesting sites

SPACE

Must have adequate habitat structure and arrangement to fulfill the other basic needs

Maintaining and managing longleaf cover

1 Week after Burn

- **Silvicultural techniques**
- **Prescribed fire**

6 months post-fire

Benefits of Prescribed Burning for Wildlife

- Stimulates plant growth which provides food and cover
- Recycles nutrients
- Sets back succession for better cover
- Stimulates germination of seeds in the soil
- Stimulates flowering and seed production of many native species

Prescribed fire, Habitat, & Wildlife

Considerations:

- What is your focal wildlife species or suite of species?
- What are their habitat requirements?

Fire Influences Habitat

Results are highly dependent on:

- Burn frequency
- Time of year (seasonality)
- Rotation of burns across the landscape
- Scale (acres)
- Intensity

Table 2. Fire Prescriptions for Specific North Carolina Wildlife Species

Species	Fire Frequency (Years)	Purpose	Concerns
White-tailed deer	3-5	Improve browse production and nutrition	Fawns
Northern bobwhite **	1-3	Improve nesting and feeding cover; increase food	Nests *
Wild turkey	2-5	Improve nesting and feeding cover; increase food	Nests
Grassland songbirds **	2-3	Improve nesting and feeding cover; increase food	Nests *
Shrubland songbirds	3-5	Improve nesting and feeding cover; increase food	Nests *
Eastern cottontail	3-5	Improve food and cover	Nests *
Small mammals	1-5	Improve food and cover	Slow-moving animals
Reptiles **	1-5	Improve habitat	Slow-moving animals
Amphibians	3-50	Improve habitat	Slow-moving animals
Butterflies **	1-3	Increase diversity of wildflowers (nectar sources)	None

** Leave unburned spots for nest sites and places to escape from predators.*

*** Animals that may prefer habitat conditions created by growing season burns.*

https://content.ces.ncsu.edu/using-fire-to-improve-wildlife-habitat

Benefits of Fire – Post-fire

-- Fire removes duff

-- Burns away leaf litter on the forest floor

--Exposes insects and seeds

Prescribed Burning for Wildlife

-- Frequent fire reduces woody stems and increases herbaceous plants and grasses.

-- Burning creates patchiness

-- Grasses, legumes, and other herbaceous plants germinate for quail, turkey, and songbirds.

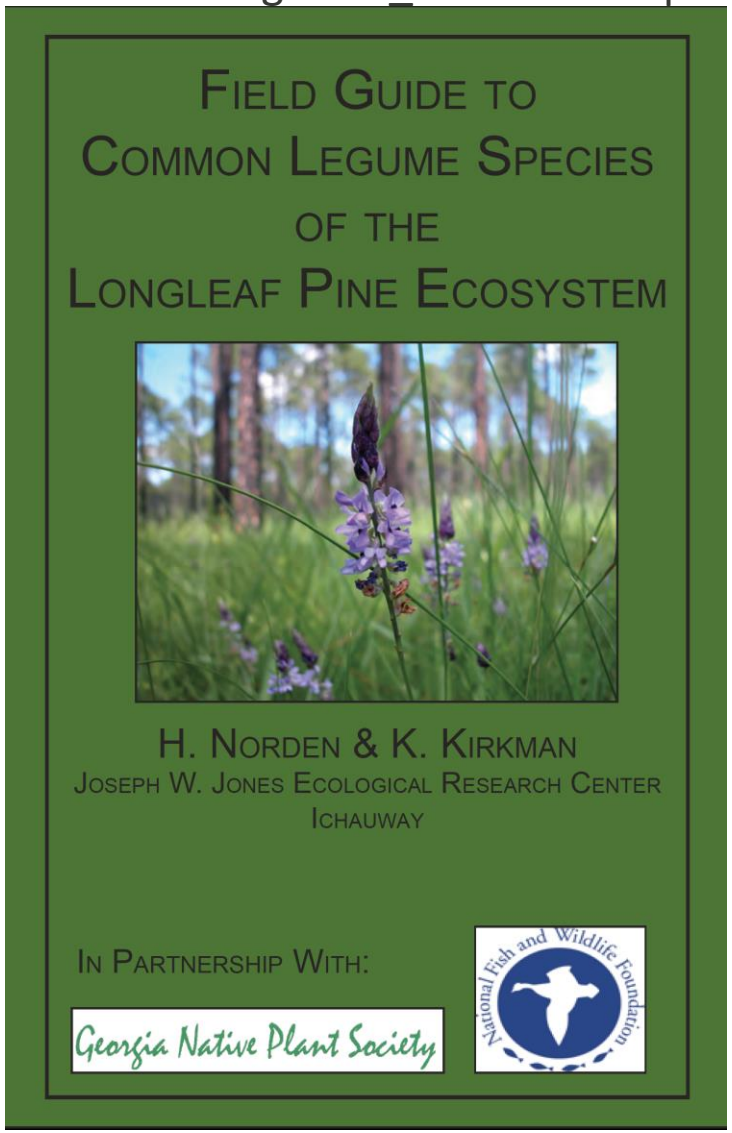
--Many shrubs produce more fruit 2 - 5 years after a fire

Legumes, an important food source

https://www.nclongleaf.org/pdfs/FieldGuideLegumes_JonesCenter.pdf

- Found in xeric to wet sites
- Foliage eaten by white-tailed deer, gopher tortoises, rabbits, and more
- Seeds: bobwhite quail, wild turkey, small mammals, and songbirds

<u>Examples:</u>
beggarweeds (*Desmodium* spp.)
lespedezas (*Lespedezas* spp.)
goat's rue (*Tephrosia virginiana*)
sensitive briar (*Schrankia microphylla*)
butterfly pea (*Clitoria mariana*)



Reptiles and Amphibians

- About 170 species of reptile and amphibian are found in the range of longleaf pine.
- Many are threatened, endangered, or candidates for federal listing

Ecology of Amphibians and Reptiles

- **<u>Foraging strategies</u>**
- Herbivores
- Detritivores
- Filter feeders
- Predators

- **<u>Live in a variety of habitats</u>**
- Arboreal
- Aquatic
- Fossorial (burrowing)
- Surface dwellers

Amphibians

Amphibians need both upland and wetland habitat.
Ephemeral wetlands, small ponds, and Carolina bays are all important breeding habitat

Tiger salamander

Many types of wetlands in longleaf:

- Bogs
- Ephemeral pond/wetland
- Carolina bays
- Clay-based depressions
- Lime sinks

Wetlands can become fire suppressed

- Thick, dense midstory
- Little herbaceous groundcover
- Overabundance of shrubby plant species resulting in:
  - shorter hydroperiods
  - Changes in water chemistry/temperature
  - Hinders amphibian movement from upland to breeding pond or vice versa

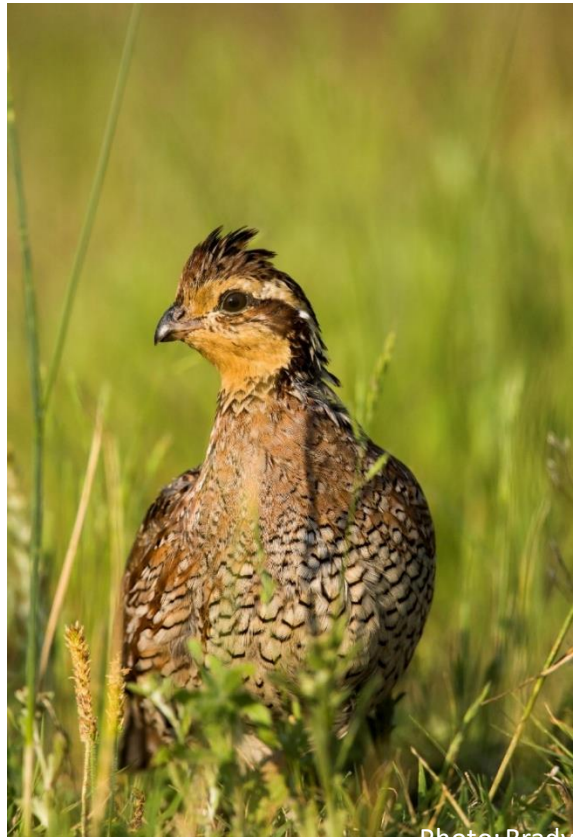
Opening up the canopy

- Growing season burning (or when wetland is dry) to reduce/eliminate the midstory and promote the groundcover

- May need to utilize chemical or mechanical methods to remove large brush and trees.

A Tale of Two Wetlands

Avian Diversity



- Longleaf forests provide habitat for resident and migratory birds
- 6 bird species have a close association with longleaf pine or open pine ecosystems

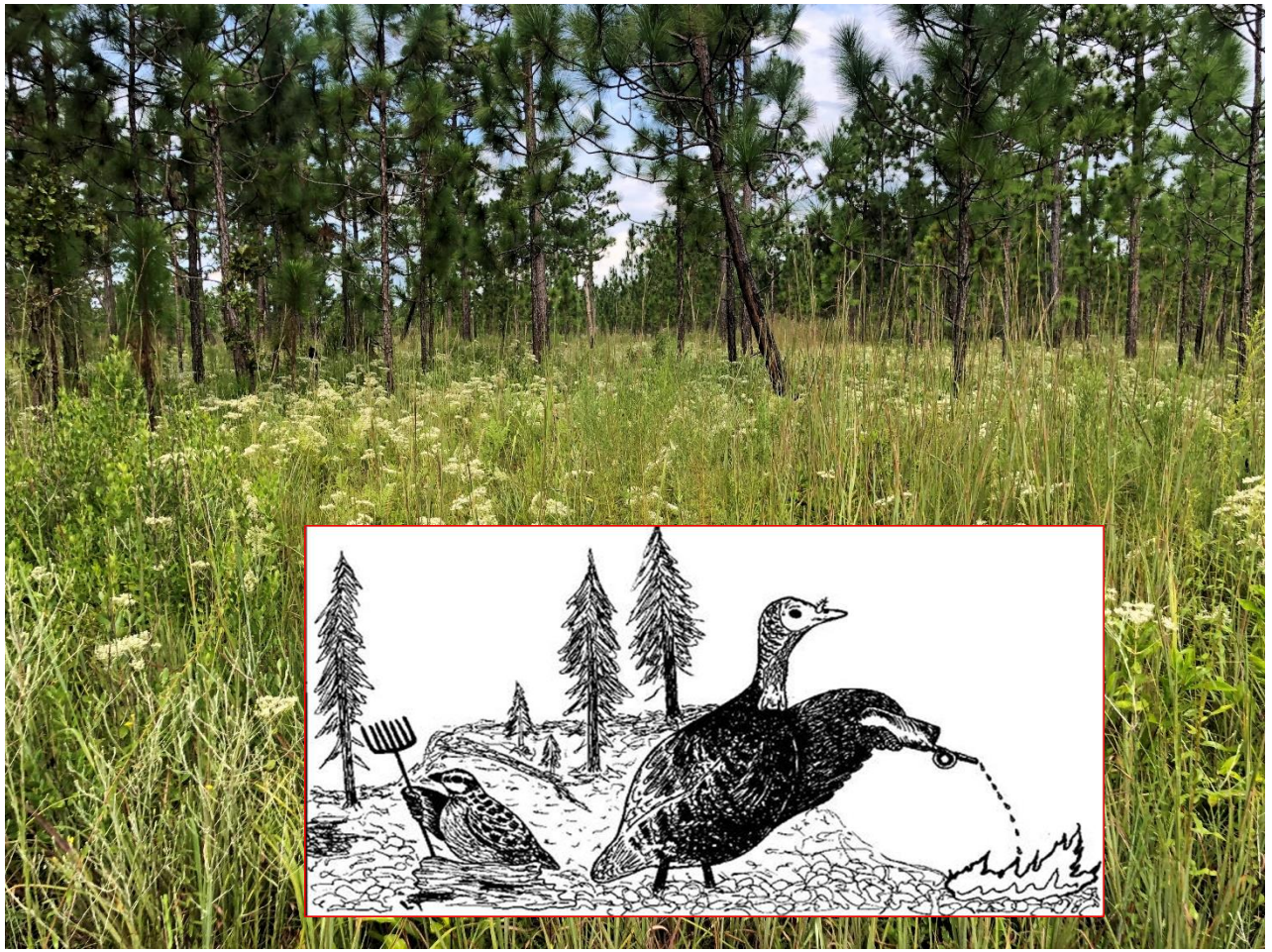
- American Kestrel
- Henslow's sparrow
- Bachman's sparrow
- Red-cockaded woodpecker
- Brown-headed nuthatch
- Bobwhite quail

Bachman's sparrow (*Aimophila aestivalis*) "Pine Woods Sparrow"

- Open pine forests
- Eat seeds and insects
- Prefers to run rather than fly
- Benefits for frequent fires
  - After four years of no burn, population starts to decline
  - Birds are gone after seven years without burning

Practices that benefit quail and other game species

- Forest Stand Improvements and thinning
- Planting buffer strips and field borders
- Early successional habitat
- Prescribed burning (and patch burning where possible)



Bobwhite quail
The “firebird”

- Bunchgrasses for nesting cover
- Forbs for brood rearing habitat
- Woodies for escape cover
- Bare ground to allow for movement, foraging

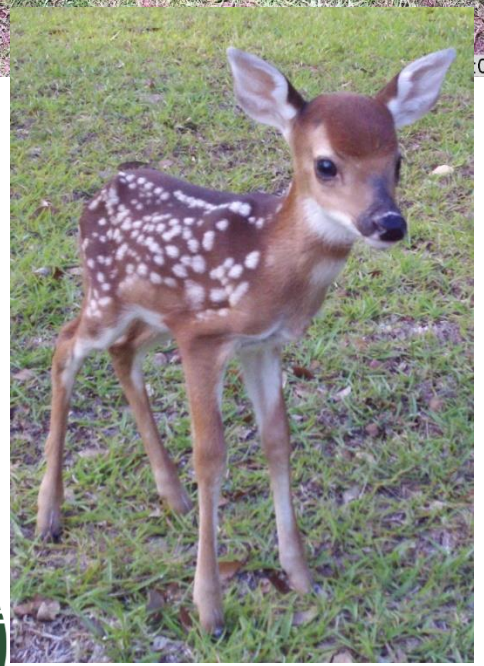
Examples of Food Plants

- Beautyberry (*Callicarpa americana*)
- Milk pea (Galactia sp.)
- Blueberries and blackberries
- Lespedeza
- Panic grass (Panicum sp.)
- Pokeweed (Phytolacca americana)
- Witchgrass (Dicanthelium sp.)
- Plums (Prunus sp.)
- Partridge pea

Eastern Wild Turkey *(Meleagris gallopavo)*

- Wild turkeys are highly mobile and use a variety of habitats throughout the year.
- Prefer stands with open midstories, moderate midstory and mature canopy trees.
- Burn 2-5 year rotation to maintain early successional habitat for nesting.

White-tailed Deer *(Odocoileus virginianus)*



- Utilize multiple habitats. Longleaf understory provides forage and cover.
- 3-4 year burn rotation
- Beggar's lice, pokeweed, ragweed, blackberry, and beautyberry are preferred foods
- Periodic prescribed fire will maintain browse species such as greenbrier, black gum, and winged elm, at a height available to deer

Pollinators and Fire

- Higher abundances and diversity of bees in burned areas
- Like birds, pollinators also have preferences for canopy arrangement
- Frequently burned longleaf understory has high diversity -- provides food for adults and larvae and nesting areas

Pollinators

- Native pollinators evolved with and are adapted to native plants.
- Insect diversity increases with plant diversity.
- Important to have pollen and nectar available throughout the year

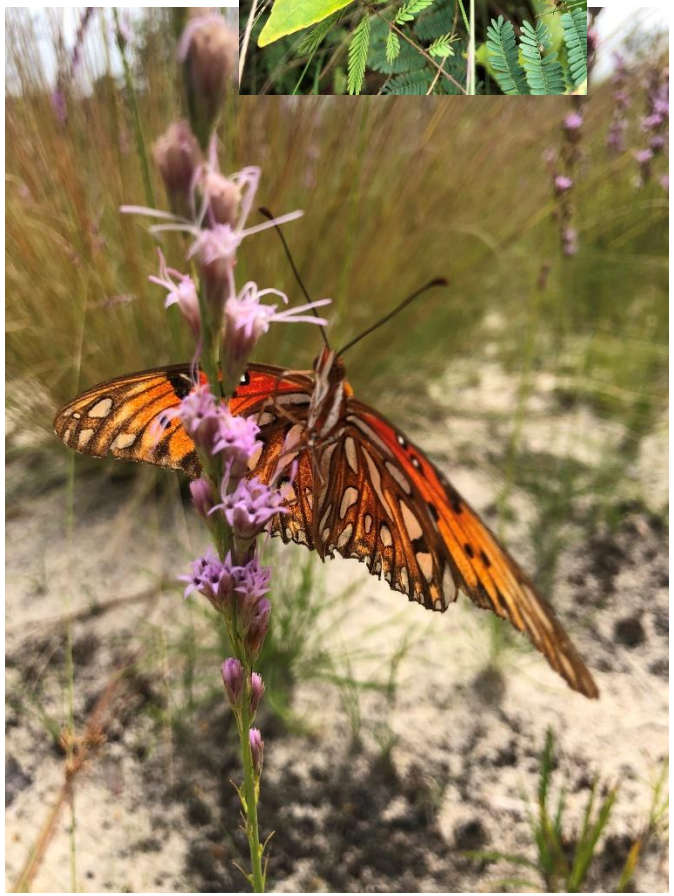


Photo: Sudie Thomas

Grasses for Insects

Grasses are vital fine fuel for carrying fire but also provide:

- Shelter ground-nesting birds, bumblebees, and other wildlife.
- Shelter for overwintering butterfly larvae or pupae

- Host plants for larvae of grass skippers and some other butterflies

Woody shrubs and small trees - nectar and host plants sources

Maple (Acer spp.)
Blueberry, sparkleberry (Vaccinium spp.)
Serviceberry (Amelanchier spp.)
Redbud (Cersis canadensis)
Huckleberry (Gaylussacia spp.)
Holly (Ilex spp.)
Rhododendron spp.
Willow (Salix spp.)

Burning for Pollinator Habitat

- Rotational burning is best, leaving refugia for insect larvae, pupae, and adults.
- Leave small unburned patches within the burned areas.
- Rotate burns so that you aren't burning all of the foraging habitat.

Keep the Snags

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