

A natural community is a group of native plants and animals that interact with each other and their environment in ways not greatly altered by modern human activity. On the presettlement landscape, they were distributed according to climate, soil, and landform patterns. Natural disturbances such as fires, drought, windstorms, and floods helped to shape them.

Pine/Hardwood Woodland

What is the difference between *loblolly* pine and *shortleaf* pine?

As seen in the pictures to the right, the cones and needles of loblolly pine are almost twice as large as those of shortleaf pine. Loblolly pine needles average 5 inches or more.

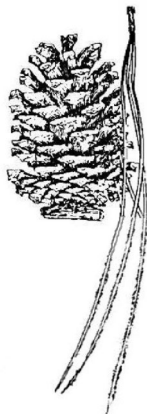
The trees are adapted to different habitats and are usually found in different areas of the forest or even in different parts of the state.

Loblolly pines are adapted to wet soils and are found in low-lying or flat areas. Shortleaf pines prefer dryer sites and are more likely to be found on slopes and hillsides.

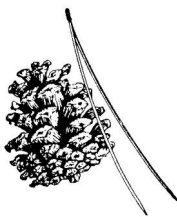
Pines grow in well-drained, sandy soils. Most of Arkansas's West Gulf Coastal Plain, except the bottomlands along large rivers, was once dominated by huge pine forests. These forests were open, with large pine trees spaced much farther apart than the forests we see today. They had a diverse herbaceous layer adapted to the acid soils produced by the pine needles.

The pine forests in southern Arkansas are much more dense today because most of them have no natural fire regime. Pine forests depend on fire to prevent the encroachment of other trees, such as hardwoods. The forest materials burned by the fires release nutrients in soil and help new pine seedlings sprout.

Loblolly pine
Pinus taeda



Shortleaf pine
Pinus echinata



Loblolly pine is the primary species used by pulpwood and paper industries. Much of the history and cultural heritage of south Arkansas is tied to the timber industry, and timber is still our state's number one cash crop.



Species Key - *binomial nomenclature*

The standard convention used for naming species is called *binomial nomenclature*. As the word "binomial" suggests, the scientific name of each species is the combination of two names: the genus name and the species name. The names are usually derived from Latin, although some are from ancient Greek, local languages, and often from the name of the person who first described (discovers) a species.

The value of the binomial system includes:

- The same name is used in all languages.
- Every species can be clearly identified with just two words.
- The system has been adopted internationally in botany (since 1753; zoology (since 1758), and bacteriology (since 1980).

More Information



- Vocabulary words
- Resources
- Framework correlations

Vocabulary Words

The southern flying squirrel (# 7) does not really fly — it has no means of forward propulsion in the air. Instead it glides, using folds of skin between its legs called “patagium.”

There are 36 different species of flying squirrel around the world, including one in Asia almost 4 feet long.

Canopy—the uppermost, spreading, branchy layer of a forest.

Deterrent—something which inhibits or prevents actions from happening.

Forage—the act of searching for food, or the food acquired by searching or browsing.

Groundcover—small plants (not trees) in an area.

Herbaceous—having little or no woody tissue.

Regime—a state of affairs where a particular physical phenomenon or condition is significant.

Resin—hydrocarbon secretions formed in special “resin” canals of many plants. In pines, it exudes (oozes) out in soft droplets which harden in the air. It benefits the tree by sealing wounds and killing insects and fungi.

Understory—an underlying layer of low vegetation in a forest.

Additional Information and Activities

Continue exploring **scientific names and binomial nomenclature**. One interesting rule to note: animal names allow genus and species to repeat the same word; plant names do not. Species names can also be further subdivided into subspecies (3 names are called *trinomial nomenclature*). Animals can only be divided into subspecies, with 3 names; but plants can be divided into subspecies, variety, and subvariety. Look at some of the names in the Species Key on the poster and discuss the relationships between the scientific names and common names

Examples:

Pine warbler is *Dendroica pinus*, while both pine trees are

Pinus taeda and *Pinus echinata*

Purple coneflower is

Echinacea purpurea

Species names are important in the science of *taxonomy* (classifying organisms). The Linnean system we use today was developed more than 200 years ago by the Swedish botanist Carolus Linnaeus. Explore his

work with students and look at its overall organization, using examples from the poster:

Gray fox—*Urocyon cinereoargenteus*

- **Kingdom** - *Animalia*—animals
- **Phylum** - *Chordata*—vertebrate
- **Class** - *Mammalia*—mammal
- **Order** - *Carnivora*—primary diet is meat; prominent dentition includes canines
- **Family** - *Canidae*—wolves, dogs, jackals, foxes, coyotes
- **Genus** - *Urocyon*—one of only two members of fox family able to climb trees
- **Species** - *cinereoargenteus*

Explore additional aspects of taxonomy and observation skills by challenging students to find representatives from the four classes of vertebrates in the poster (reptile, bird, mammal, amphibian), or to identify vertebrate and invertebrates.

Common names—don't forget the fun of also exploring the origins of common names for plants and animals. For example, the term “hoary” in the hoary azalea means “covered with fine white hairs.”

The parsley hawthorn got its name because its leaves are shaped like the herb parsley.

The term “cockaded” in the red-cockaded woodpecker's name refers to the small streak of red each male bird has on each side of the black cap on its head. A cockade is an ornament or ribbon usually worn on a hat as a badge.



Students can research the origins of other names. A good web source is “Animal Diversity Web” <http://animaldiversity.ummz.umich.edu/site/index.html>

Sometimes the most fun is creating new names based on information about the plant or animal.

Additional Information and Activities



That Other Rare Woodpecker

People all over the world learned about woodpeckers in Arkansas after the exciting re-discovery of the Ivory-billed woodpecker in 2004. But fewer people are aware that Arkansas is home to another endangered woodpecker — the Red-cockaded Woodpecker. While other woodpeckers bore out cavities in dead trees where the wood is rotten and soft, the Red-cockaded Woodpecker is the only one which excavates cavities exclusively in living pine trees. Cavity trees that are being actively used have numerous small resin wells which exude sap. The birds keep the sap flowing as a sticky barrier outside their hole. The Red-cockaded Woodpecker is listed as an

endangered species by the U.S. Fish and Wildlife Service which estimates that less than 20,000 birds exist today. The birds have declines due to loss of suitable habitat which include large, mature (older than 40 years) open pine forests.

The Arkansas Natural Heritage Commission (ANHC) protects habitat for the woodpecker and has active breeding pairs on one of its natural areas.

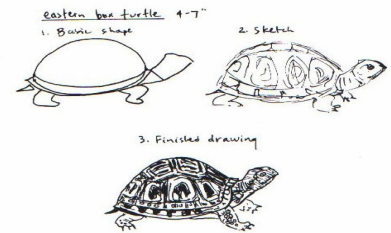
A complete list of Arkansas's rare species can be found on the ANHC website at

www.naturalheritage.com

Students can use these plant and animals lists as well as the Rare Element Search Engine (also found on :<http://naturalheritage.com/program/element-search/>)

Art and Nature

The illustrations on the posters were done by Missouri artist Linda Ellis, who has also illustrated technical publications for the Missouri Botanical Gardens. The natural world is a wonderful art subject for students, whether it's sketching in a journal, as illustrated below, or more formal drawing, painting, or sculpture. Students can also explore other cultural representations of nature through history and early nature artists such as John James Audubon.



Why is that big black snake on the tree?

Black rat snakes are excellent climbers and may spend much of their time in trees, actually moving from one tree to another.

Correlations to Arkansas Science Frameworks

The posters and notes can be used to supplement Strand 2 -

Life Science Systems
L.S.2.4; L.S.2.5;
L.S.2.8; L.S.2.9;
L.S.2.11; L.S.2.12

Strand 3 - Connections & Applications in Life Sciences

L.S.3.2; L.S. 3.3

Resources

Books

Arkansas and the Land by Thomas Foti & Gerald Hanson

I Wonder Why Pine Trees have Needles and Other Questions About Forests by Jackie Gaff

Tell Me, Tree : All About Trees for Kids by Gail Gibbons

Pine Trees (Rookie Read-About Science) by Allan Fowler

In the Piney Woods by Roni Schotter

Websites

<http://www.naturalheritage.org>

Arkansas Natural Heritage Commission—lesson plans, books, rare species info, maps

http://www.agfc.state.ar.us/critters/endangered_species.html

Arkansas Game & Fish Commission—endangered animals in Arkansas

<http://educators.fws.gov/>

U.S. Fish & Wildlife Service—federal lists of endangered species, information for educators

<http://www.arkforests.org/index.html>

Arkansas Forestry Association – Project Learning Tree

<http://www.forestry.state.ar.us/index.html>

Arkansas Forestry Commission, posters, workshops, champion trees