



FORESTRY DIVISION

Trees & Shrubs with Pollinator Benefits

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OVERVIEW

- Which pollinators do we have in Arkansas?
- Why plant a pollinator-friendly landscape?
- Selection of native shrubs and tree options



What pollinators are in Arkansas?

- Ancient plants use wind for pollination
 - Grasses, conifers, and many deciduous trees
- Flowering plants rely more on animals
 - Insects – majority of pollination
 - Bees, butterflies, moths, flies, wasps, beetles, and ants too!
 - Birds – limited species
 - Bats – limited species



What pollinators are in Arkansas?

- **Beetles:** ancient, somewhat destructive to blooms but don't travel much, prefer white or cream blooms
- **Bees:** purposely collect pollen, use nectar for energy. Prefer blue or purple, secondarily white or cream. Generalists OR specialists (30%).
 - Main families: bumble, carpenter, leafcutter, mason, mining, sweat bees
- **Flies:** 2nd most efficient. Prefer dark brown or purple blooms.
- **Wasps:** less efficient ancestors of bees. Nectar and pollen primarily for energy. Prefer white or yellow with shallow corolla blooms.
- **Butterflies:** seek nectar, little contact with flowers, minimal pollination. Prefer flat or composite flower. Require larval host plant.
- **Moths:** Abundant, many do not feed as adults (mate and die), prefer pale white or tubular blooms. Require larval host plant.



Why plant a pollinator-friendly landscape?

- Native plants provide important habitat.
- Native plants generally require less water than non-natives.
- Native plants generally require no artificial fertilization.



Why plant native shrubs and or trees?

- Long lived plants provide support over seasons or decades.
- 10x more butterfly and moth species feed on shrubs and trees in their larval form compared to grasses and forbs.
 - In the eastern US – according to Doug Tallamy’s research at the University of Delaware
- Many native shrubs and trees also provide nectar and pollen, some plants even provide nectar, pollen, and host larvae!
 - Buttonbush, chokecherry and wild lilac
- Other benefits provided are screening, shade, stormwater control, windbreaks, access control, food for birds and other animals, shelter for birds or pollinators, or to provide certain aesthetic benefits that grasses and forbs cannot.



What about non-native plants?

- Non-native plants can provide some benefits to pollinators.
 - Lavender, salvia, zinnia, butterfly bush, and or cosmos are commonly used.
 - Pollinators will visit to feed on nectar and pollen
 - Garden herbs can also provide benefits to pollinators
 - Nectar - chives, thyme, mint, and rosemary
 - Black swallowtail larval hosts – dill, fennel, and parsley
- Choose heirloom varieties over cultivars or hybrids.
- Avoid plants treated to kill insects.
- Avoid plants classified as noxious or invasive.






Pollinator Habitat


This area has been planted with pollinator-friendly flowers and is protected from pesticides to provide valuable habitat for bees and other pollinators.

To learn how you can help to bring back the pollinators, please visit www.xerces.org.



BRING BACK THE POLLINATORS

The Xerces Society for Invertebrate Conservation
1000 222nd Ave. www.xerces.org



CERTIFIED WILDLIFE HABITAT

FOOD • WATER • COVER • PLACES TO RAISE YOUNG

This property is recognized for its commitment to sustainably provide the essential elements of wildlife habitat. nwf.org/garden

MONARCH WAYSTATION



This site provides milkweeds, nectar sources, and shelter needed to sustain monarch butterflies as they migrate through North America.

Certified and registered by Monarch Watch as an official Monarch Waystation.

CREATE, CONSERVE, & PROTECT MONARCH HABITATS

WWW.MONARCHWATCH.ORG


Monarch Watch | Kansas Biological Survey | University of Kansas | 2021 Constance Ave | Lawrence, Kansas 66047

Certified Butterfly Garden

This garden provides resources that increase the world's population of butterflies.

Your Name Here

Certificate #XXXX
Valid April 2015 - March 2020



North American Butterfly Association
www.naba.org



or
oject

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decline.

Things To Consider

- Provide for full life cycle if possible
- Provide sheltering areas
- Leave the leaves
- Avoid indiscriminate insecticide use
- Provide a clean water source



THESE ANIMALS
ARE MADE POSSIBLE
BY FALLEN LEAVES



Ring Neck Snake



American Bumble Bee



Luna Moth



Wood Frogs and
American Toads



Spotted salamander



Fritillary and
Checkerspot Butterflies
...and many more

LEAVE LEAVES ALONE

Don't blow! Leave the leaves in your planting beds and mow-mulch your leaves into the lawn. Use an electric blower if you must. www.healthyards.org



Pollinator-friendly Shrubs



What is a shrub?

A shrub (often called a bush) is a small-to-medium-sized perennial woody plant. Unlike herbaceous plants, shrubs have persistent woody stems above the ground. Shrubs can be either deciduous or evergreen. They are distinguished from trees by their multiple stems and shorter height, less than 20–33 ft tall.



Pollinator-friendly Shrubs

- Anacardiaceae – Cashew family
 - *Cotinus* sp. – Smoke Tree
 - *Rhus* sp. – Sumac
- Aquifoliaceae – Holly family
 - *Ilex* sp. – Holly
- Araliaceae – Ginseng family
 - *Aralia* sp. – Devil’s Walkingstick
- Asteraceae – Sunflower family
 - *Baccharis* sp. - Baccharis
- Betulaceae – Birch family
 - *Alnus* sp. – Alder
 - *Corylus* sp. - Hazelnut
- Caprifoliaceae – Honeysuckle family
 - *Sambucus* sp. – Elderberry
 - *Viburnum* sp. – Viburnum
- Cornaceae – Dogwood family
 - *Cornus* sp. - Dogwood
- Ebanaceae – Ebony family
 - *Vaccinium* sp. - Blueberry
- Fabaceae – Pea family
 - *Cercis* sp. - Redbud
- Hamamelidaceae – Witch Hazel family
 - *Hamamelis* sp. – Witch Hazel
- Hippocastanaceae – Buckeye
 - *Aesculus* sp. - Buckeye
- Lauraceae – Laurel family
 - *Lindera* sp. - Spicebush
- Oleaceae – Olive family
 - *Chionanthus* sp. – Fringe Tree
 - *Forestiera* sp. – Swamp Privet
- Rhamnaceae – Buckthorn family
 - *Rhamnus* sp. - Buckthorn
- Rosaceae – Rose family
 - *Amelanchier* sp. – Serviceberry
 - *Aronia* sp. – Chokeberry
 - *Crataegus* sp. – Hawthorn
 - *Prunus* sp. – Plum
- Rubiaceae – Madder family
 - *Cephalanthus* sp. – Buttonbush
- Salicaceae – Willow family
 - *Salix* sp. – Willow
- Sapotaceae – Sapodilla family
 - *Bumelia* sp. – Bumelia
- Styraceae – Storax family
 - *Halesia* sp. – Silverbell
 - *Styrax* sp. - Snowbell



Pollinator-friendly Shrubs

Anacardiaceae – Cashew family

- *Cotinus obovatus* – American smoketree
- *Rhus copallinum* – winged sumac
- *Rhus glabra* – smooth sumac

Smoke tree sap toxic to mild skin irritant to some





Pollinator-friendly Shrubs

Aquifoliaceae – Holly family

- *Ilex ambigua* – sand holly
- *Ilex decidua* – deciduous holly
- *Ilex opaca* – American holly
- *Ilex verticillata* – winterberry holly
- *Ilex vomitoria* – yaupon holly

Berries can be toxic to humans and dogs



Pollinator-friendly Shrubs

Araliaceae – Ginseng family

- *Aralia spinosa* sp. – Devil's Walkingstick

Leaves toxic to cattle, sap irritating to some humans



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Pollinator-friendly Shrubs

Asteraceae – Sunflower family

- *Baccharis halimifolia* sp. – eastern baccharis

Leaves are toxic to livestock



Pollinator-friendly Shrubs

Betulaceae – Birch family

- *Alnus serrulata* – hazel alder
- *Corylus americana* – American hazelnut



Pollinator-friendly Shrubs

Caprifoliaceae – Honeysuckle family

- *Sambucus nigra* - elderberry
- *Viburnum dentatum* – southern arrowwood
- *Viburnum prunifolium* – blackhaw

Berries can be irritating to toxic



Pollinator-friendly Shrubs

Caprifoliaceae – Honeysuckle family

- *Viburnum rufidulum* – rusty blackhaw
- *Viburnum rafinsqueanum* – downy arrowwood
- *Viburnum recognitum* – smooth arrowwood

Berries have mild toxicity



Pollinator-friendly Shrubs

Cornaceae – Dogwood family

- *Cornus florida* – flowering dogwood
- *Cornus foemina* – stiff dogwood
- *Cornus drummondii* – roughleaf dogwood
- *Cornus alternifolia* – alternate-leaf dogwood
- *Cornus amomum* – silky dogwood
- *Cornus racemosa* – gray dogwood



Pollinator-friendly Shrubs

Ebanaceae – Ebony family

- *Vaccinium corymbosum* – highbush blueberry
- *Vaccinium stamineum* – deerberry
- *Vaccinium arboreum* – sparkleberry
- *Vaccinium elliotii* – Elliott's blueberry
- *Vaccinium pallidum* – hillside blueberry



Pollinator-friendly Shrubs

Fabaceae – Pea family

- *Cercis canadensis* – eastern redbud



Pollinator-friendly Shrubs

Hamamelidaceae – Witch Hazel family

- *Hamamelis virginiana* – American witchhazel
- *Hamamelis vernalis* – Ozark witchhazel

Both can be toxic if consumed in excess by human or animals



Pollinator-friendly Shrubs

Hippocastanaceae – Buckeye

- *Aesculus pavia* – red buckeye
- *Aesculus glabra* – Ohio buckeye

Seeds and leaves are toxic to humans and livestock



Pollinator-friendly Shrubs

Lauraceae – Laurel family

- *Lindera benzoin* - Spicebush



Pollinator-friendly Shrubs

Oleaceae – Olive family

- *Chionanthus virginicus* – white fringetree
- *Forestiera acuminata* – swamp privet

Privet berries can be toxic to humans and animals



Pollinator-friendly Shrubs

Rhamnaceae – Buckthorn family

- *Rhamnus caroliniana* – Carolina buckthorn
- *Rhamnus lanceolata* – lanceleaf buckthorn

Berries are mildly toxic



Pollinator-friendly Shrubs

Rosaceae – Rose family

- *Amelanchier arborea* – downy serviceberry
- *Amelanchier canadensis* – Canadian serviceberry
- *Aronia arbutifolia* – red chokeberry
- *Crataegus* sp. – Hawthorn (16 species)
- *Prunus* sp. – Plum (9 species)



Pollinator-friendly Shrubs

Rubiaceae – Madder family

- *Cephalanthus occidentalis* – buttonbush

Toxic to horses & other livestock



Pollinator-friendly Shrubs

Salicaceae – Willow family

- *Salix caroliniana* – coastal plain willow
- *Salix humilis* – prairie willow
- *Salix interior* – sandbar willow
- *Salix exigua* – narrowleaf willow

Narrowleaf willow can be toxic to livestock



Pollinator-friendly Shrubs

Sapotaceae – Sapodilla family

- *Sideroxylon lanuginosum* – gum bumelia



Pollinator-friendly Shrubs

Styraceae – Storax family

- *Halesia carolina* – silverbell
- *Styrax americanus* – American snowbell



Pollinator-friendly Trees



What is a tree?

- In botany, a tree is a perennial plant with an elongated stem or trunk, usually supporting branches and leaves.
- In some usages, the definition of a tree may be narrower, including only woody plants with secondary growth, plants that are usable as lumber or plants above a specified height.
- In wider definitions, the taller palms, tree ferns, bananas, and bamboos are also referred to as trees.
- Trees are not a taxonomic group but include a variety of plant species that have independently evolved a trunk and branches as a way to tower above other plants to compete for sunlight.
- The majority of tree species are angiosperms or hardwoods; the rest, many are gymnosperms or softwoods. Trees tend to be long-lived, some reaching several thousands of years old. Trees have been in existence for 370 million years. It is estimated that there are three trillion mature trees in the world.



Pollinator-friendly Trees

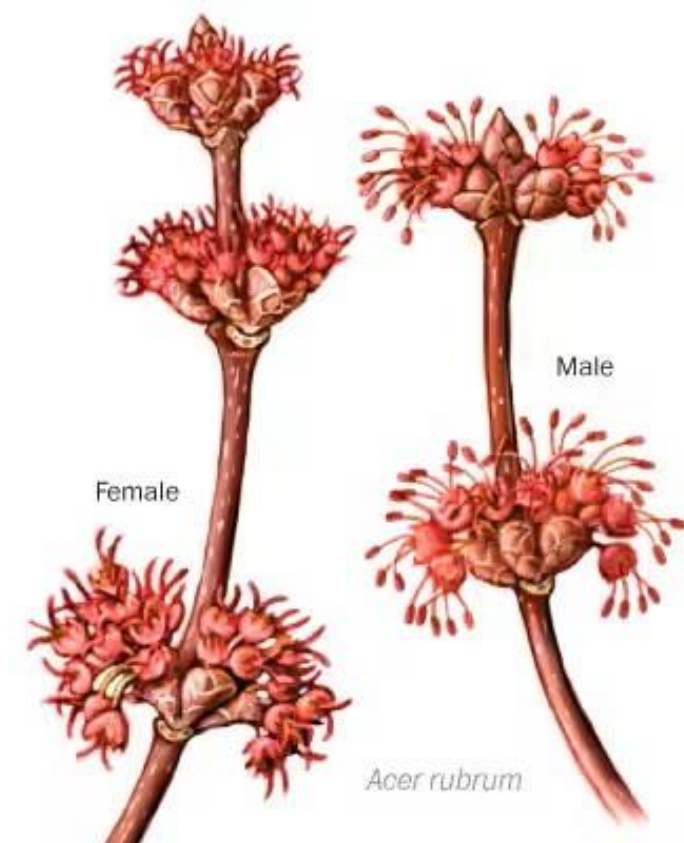
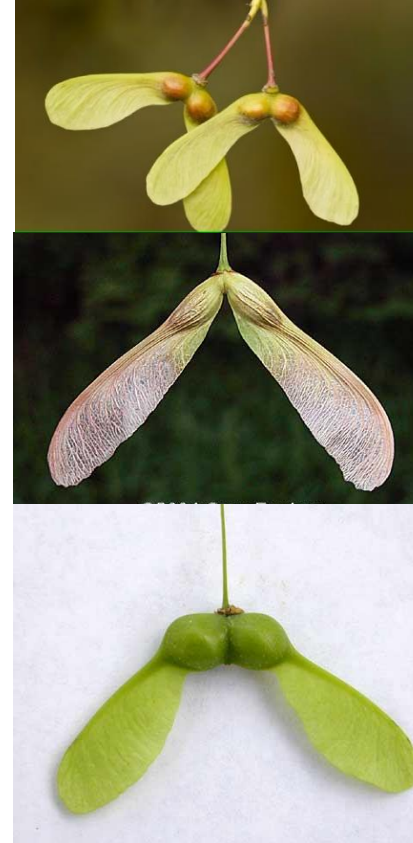
- Aceraceae – Maple family
 - Acer sp. – Maples
- Annonaceae – Custard Apple Family
 - Asimina sp. - pawpaw
- Betulaceae – Birch family
 - Betula sp. – birch
 - Carpinus sp. – hornbeam
 - Ostrya sp. - hophornbeam
- Bignoniaceae – Trumpet Creeper family
 - Catalpa sp. - catalpa
- Cannabaceae – Hemp family
 - Celtis sp. – hackberry sugarberry
- Ebanaceae – Ebony family
 - Diospyros sp. - persimmon
- Fabaceae – Pea family
 - Cladrastis sp. – yellowwood
 - Gleditsia sp. – locust
 - Gymnocladus sp. – coffee tree
- Fagaceae – Oak family
 - Castanea sp. – chestnut
 - Quercus sp. - oak
- Lauraceae – Laurel family
 - Sassafras sp. - sassafras
- Magnoliaceae – Magnolia family
 - Liriodendron sp. – yellow poplar
 - Magnolia sp. – magnolia
- Moraceae – Mulberry family
 - Morus sp. – mulberry
- Nyssaceae – Sourgum family
 - Nyssa sp. - tupelo
- Quercus – Oak family
- Robinia – Locust family
- Salicaceae – Willow family
 - Salix sp. - willow
- Tiliaceae – Basswood family
 - Tilia sp. - basswood
- Ulmaceae – Elm family
 - Ulmus sp. elm



Pollinator-friendly Trees

Aceraceae – Maple family

- *Acer rubrum* – red maple
- *Acer saccharinum* – silver maple
- *Acer saccharum* – sugar maple



Pollinator-friendly Trees

Annonaceae – Custard Apple family

- *Asimina triloba* – pawpaw
- *Asimina parviflora* – dwarf pawpaw



Pollinator-friendly Trees

Betulaceae – Birch family

- *Betula nigra* – river birch
- *Carpinus caroliniana* – American hornbeam
- *Ostrya virginiana* – American hophornbeam

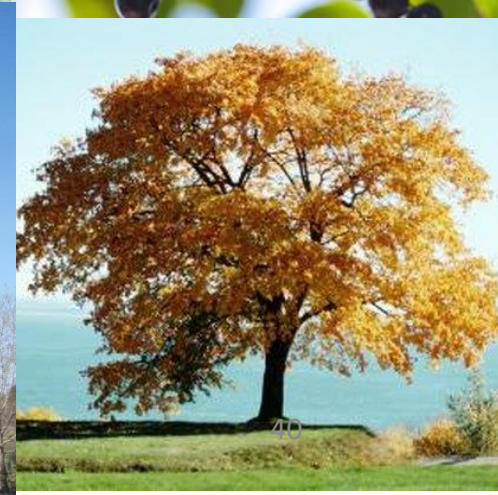
Irritating to some humans, livestock, and pets



Pollinator-friendly Trees

Cannabaceae – Hemp family

- *Celtis* sp. – hackberry / sugarberry



Pollinator-friendly Trees

Ebanaceae – Ebony family

- *Diospyros virginiana* – American persimmon

Toxic to horses & other livestock



Pollinator-friendly Trees

Fabaceae – Pea family

- *Cladrastis kentukea* – yellowwood
- *Gymnocladus dioica* – Kentucky coffeetree

Toxic to livestock, pets, and humans



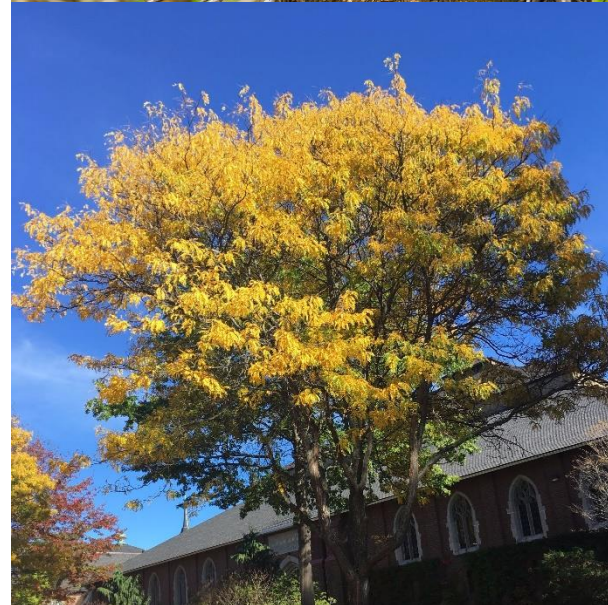
Pollinator-friendly Trees

Fabaceae - Pea family - locust

- *Robinia pseudoacacia* – black locust
- *Gleditsia triacanthos* – honey locust

- Significant **damaging thorns**
- Significant **root suckering**
- Dense growth - good for hedges

Black locust has toxic leaves, bark, wood for livestock



Pollinator-friendly Trees

Fagaceae – Beech family

- *Castanea* sp. – chestnuts
- *Quercus* sp. – oaks

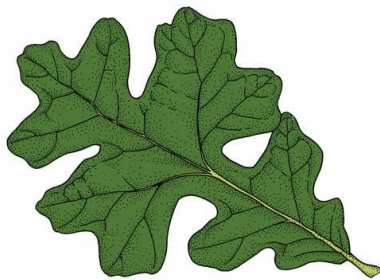


Pollinator-friendly Trees



Quercus – Oak Family – white oaks

- *Quercus alba* – white oak
- *Quercus bicolor*- swamp white oak
- *Quercus lyrata* – overcup oak
- *Quercus macrocarpa* – bur oak
- *Quercus michauxii* – swamp chestnut oak
- *Quercus stellata* – post oak

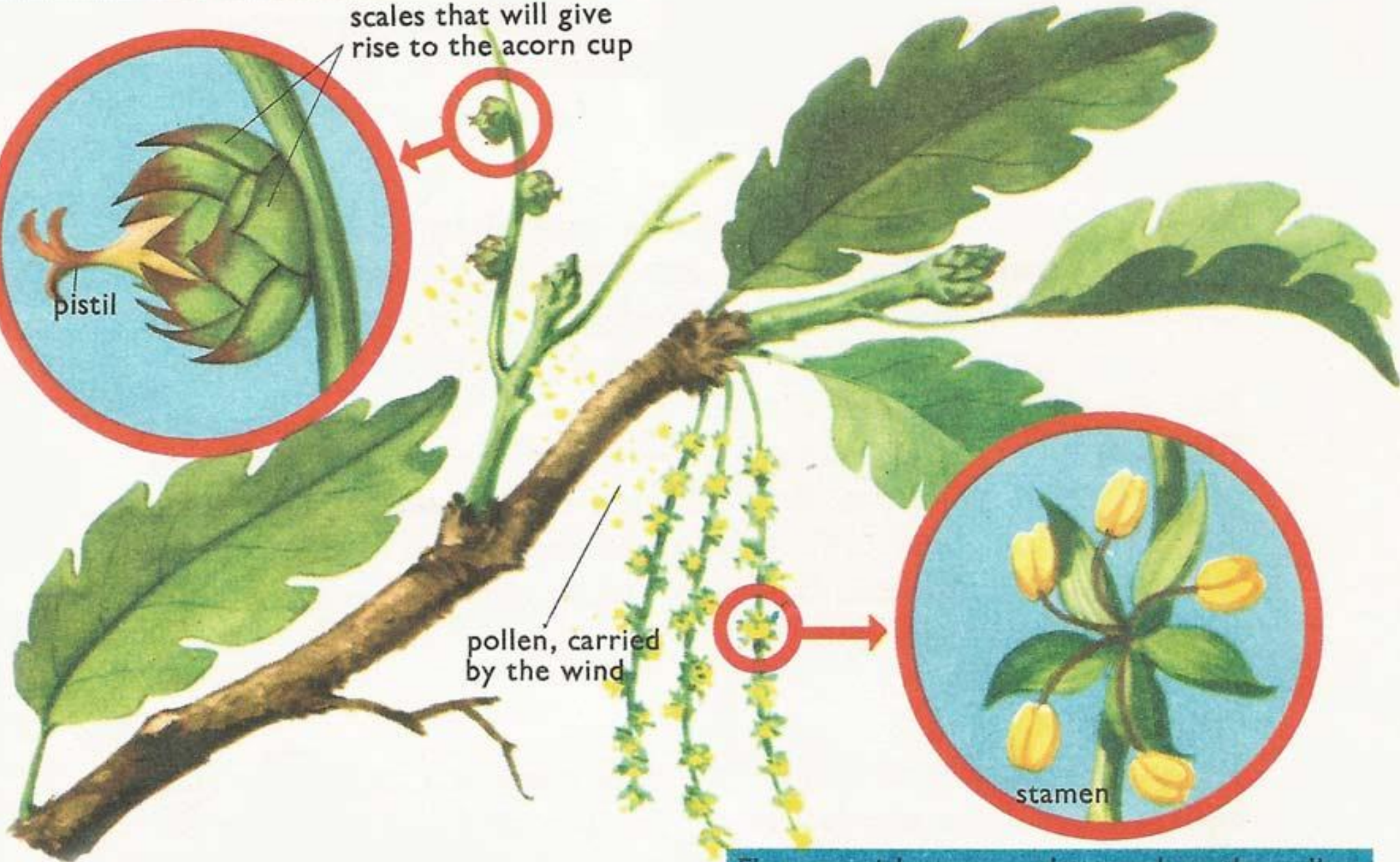


Quercus – Oak Family – red oaks

- *Quercus coccinea* – scarlet oak
- *Quercus falcata* – southern red oak
- *Quercus muehlenbergii* – chinkapin oak
- *Quercus nigra* – water oak
- *Quercus nuttalli* – Nuttall oak
- *Quercus pagoda*- cherrybark oak
- *Quercus palustris* – pin oak
- *Quercus phellos* – willow oak
- *Quercus prinus* – chestnut oak
- *Quercus rubra* – northern red oak
- *Quercus shumardii* – Shumard oak
- *Quercus velutina* – black oak

flower with the pistils that receive the pollen

scales that will give rise to the acorn cup



pollen, carried by the wind



Flowers with stamens that produce the pollen



Oak Tree Leaf Identification Chart and Characteristics



Chestnut
Oak Tree



Willow Oak Tree



Bur Oak Tree



Cherry Bark
Oak Tree



Chinkapin Oak
Tree



Common Oak
Tree



Northern Red
Oak Tree



Post
Oak Tree



Overcup
Oak Tree



Scarlet
Oak Tree

Pollinator-friendly Trees

Lauraceae – Laurel family

- *Sassafras albidum* - sassafras



Pollinator-friendly Trees

Magnoliaceae – Magnolia family

- *Liriodendron tulipifera* – yellow poplar
- *Magnolia* sp. – Magnolia's
 - *bigleaf magnolia*
 - *sweetbay magnolia*
 - *southern magnolia*
- Large blooms on large trees
- Tulip tree golden in fall
- Magnolia has evergreen leaves



Pollinator-friendly Trees

Moraceae – Mulberry family

- *Morus rubra* – red mulberry
 - Small blooms
 - Medium size tree
 - Very fast growing
 - Aggressive roots



Pollinator-friendly Trees

Nyssaceae – Sourgum family

- *Nyssa aquatica*- water tupelo
- *Nyssa sylvatica* – blackgum
- Strong branch angles
- Good tree form
- Nice fall color
- Water tupelo - flood tolerant
- Black tupelo – brief flooding
- Black tupelo – **unripe berries toxic**



Pollinator-friendly Trees

Salicaceae – Willow family

- *Salix nigra* – black willow



Pollinator-friendly Trees

Tiliaceae – Basswood family

- *Tilia americana* - basswood



Pollinator-friendly Trees

Ulmaceae – Elm family

- *Ulmus alata* – winged elm
- *Ulmus americana* – American elm



Questions?



FORESTRY DIVISION

QUESTIONS? We're here to help!
(501) 225-1598 | agriculture.arkansas.gov