

Indiana - November 2009 (ver. 1.0)

## Upland Wildlife Habitat

### PURPOSE

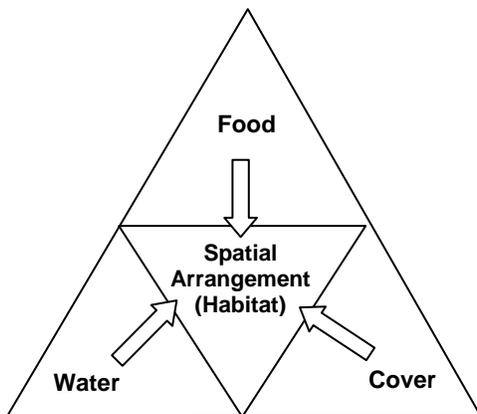
Upland Wildlife Habitat Management creates or enhances wildlife habitat by providing food, water and/or cover. Habitat management can also reduce soil erosion and improve water quality.

### WHERE PRACTICE APPLIES

This practice can be applied on land where the decision maker's objective is to conserve wildlife in general, to target a particular wildlife species, or to create/restore a specific wildlife habitat. The land must be capable of supporting the desired wildlife or habitat.



### PLANNING CONSIDERATIONS



- Consider the landowner's long-term objectives and goals. For further guidance see [Assessing Your Land's Potential for Wildlife](#).
  - Identify the primary species of concern (i.e. the target wildlife) or habitat.
  - Consider the biological requirements for the target wildlife. Include the optimum spatial arrangement of food, water and cover.
  - Determine which of the biological requirements (food, water, cover and/or arrangement) is limiting for the targeted wildlife species.
  - Select appropriate plant species to address the identified limiting factors. Also utilize the appropriate tables below for forbs, trees and shrubs that are beneficial to specific wildlife and pollinators.
  - Wildlife areas should not be used for field roads or other uses that will damage or destroy the cover.
- Confirm that the selected plant species are adapted to the soils and moisture conditions on the site where the habitat is to be established. Because they have evolved with local wildlife, use native plant species whenever possible.
  - Evaluate whether a supplemental management plan is needed to control invasive plant species that may threaten plant establishment, and long term viability of the project.
  - Encourage habitat for pollinators by using nectar-producing plants in non-cropped areas such as field borders, vegetative barriers, contour buffer strips, waterways, shelterbelts, windbreaks, riparian forest and herbaceous buffers.
  - Consider developing wildlife management plans with assistance from an Indiana Department of Natural Resources (IDNR) District Wildlife Biologist, or US Fish & Wildlife Service (FWS) Biologist when a plan is large (5 acres or larger) or complex. Planners should seek assistance for plans addressing the needs of multiple wildlife species.

## WILDLIFE HABITAT PLAN REQUIREMENTS

The following items should be included in the Wildlife Habitat Development Plan:

- The primary species of concern (as determined by land user), or specific wildlife habitat to be created/restored.
- The habitat limitations for the target species and how those limitations will be addressed (see triangle diagram above).
- A plan view of the project site indicating all habitat types.
- The selected grasses, forbs, legumes, trees and shrubs will be planted in blocks or strips best suited for the target wildlife species, or for the specific wildlife habitat to be created/restored.
- A list of the plant species and seeding/planting rates for all habitat elements to be established. Utilize the Indiana Natural Resources Conservation Service (NRCS) [Seeding Calculator](#) to determine appropriate species and seeding rates.
- Follow the [Indiana Seeding Tool](#) for guidance on the establishment of herbaceous vegetation.
- If water is a limiting factor, documentation of the water requirements of the target species and proposed solution.
- If food plots are needed, consider using [Upland Wildlife Habitat Management Job Sheet \(645\): Wildlife Food Plot](#).
- If early successional forest or shrub habitat is desired, consider using [Conservation Practice Job Sheet \(647\): Feathering Wooded Edges](#).
- Other information pertinent to establishment of habitat, and to management of the target species.

It is important to schedule disturbance activities on **grassland areas** to ensure plant diversity, wildlife habitat, and protection of soil and water resources. Management activities that will ensure these benefits include prescribed burning (according to an approved burn plan), strip disking, strip spraying, and inter-seeding of legumes. All management activities should be performed according to NRCS Standards and Specifications as found in the Indiana (IN) Field Office Technical Guide (FOTG) (647) [Early Successional Habitat Development](#). Disturbance management (a.k.a. Mid-contract Management) job sheets can be found at <http://www.in.nrcs.usda.gov/programs/CRP/crphomepage.html>.

**Tree and shrub** selection and planting density will be based on the requirements of the target wildlife species. Where no target species is identified, select the appropriate habitat type from Table 3 – *Tree Planting Densities* of the IN FOTG Standard (645) [Upland Wildlife Habitat Management](#) to determine the tree planting density. Appropriate tree and shrub species will be selected from the Appendix of this document or the Indiana NRCS [Seeding Calculator](#). Tree and/or shrub plantings will follow IN FOTG Standard (612) [Tree/Shrub Establishment](#) for site preparation, planting dates, planting and storage guidelines.

## REFERENCES

- Davies-Adams, Laurie and Stritch, Larry Ph.D., [Selecting Plants for Pollinators for Eastern Broadleaf Forest](#), The Pollinator Partnership™/North American Pollinator Protection Campaign, San Francisco, CA.
- Langell G., Montgomery B., Stonebraker R. August 1998. *Establishing Warm-Season Grasses in Indiana*, IDNR Division of Fish & Wildlife.
- Martin, A.C., H.S. Zim, and A.L. Nelson. 1951. *American Wildlife and Plants: A Guide to Wildlife Food Habits*, Dover, New York.

### ***Helping People Help the Land***

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## Appendix

### Native Grasses

Species	Soil Moisture Tolerance
Bluestem, Big ( <i>Andropogon gerardii</i> )	PD – ED
Bluestem, Little ( <i>Schizachyrium scoparium</i> )	MWD – ED
Broomsedge, Bluestem <sup>1</sup> ( <i>Andropogon virginicus</i> )	MWD – ED
Broomsedge, Elliott's <sup>1</sup> ( <i>Andropogon elliotii</i> )	MWD – ED
Broomsedge, Splitbeard <sup>1</sup> ( <i>Andropogon ternarius</i> )	MWD – ED
Dropseed, Prairie <sup>2</sup> ( <i>Sporobolus heterolepis</i> )	PD – ED
Gamagrass, Eastern <sup>3</sup> ( <i>Tripsacum dactyloides</i> )	SPD – MWD
Grama, Sideoats ( <i>Bouteloua curtipendula</i> )	MWD – ED
Indiangrass ( <i>Sorghastrum nutans</i> )	SPD – ED
Switchgrass ( <i>Panicum virgatum</i> )	PD – ED

One of the following native grasses can also be added to, but not substituted for, the species selected above:

Wildrye, Canada ( <i>Elymus canadensis</i> )	MWD – ED
Wildrye, Riverbank ( <i>Elymus riparius</i> )	PD – WD
Wildrye, Virginia ( <i>Elymus virginicus</i> )	PD – WD

<sup>1</sup> Prefers acid soils in southern Indiana; should be dormant seeded. <sup>2</sup> Should be dormant seeded the same year it is harvested by supplier. <sup>3</sup> Seed must first be stratified before planting.

### Native Legumes

Species	Soil Moisture Tolerance
Bundleflower, Illinois ( <i>Desmanthus illinoensis</i> )	MWD - ED
Lead Plant ( <i>Amorpha canescens</i> )	WD – ED
Lespedeza, Roundheaded ( <i>Lespedeza capitata</i> )	MWD – ED
Lespedeza, Slender ( <i>Lespedeza virginica</i> )	MWD – ED
Partridge Pea ( <i>Cassia fasciculata</i> )	MWD – ED
Prairie Clover, Purple ( <i>Petalostemum purpureum</i> )	MWD - ED
Prairie Clover, White ( <i>Petalostemum candidum</i> )	MWD - ED
Senna, Wild ( <i>Cassia hebecarpa</i> )	VPD – WD
Tick Trefoil, Hoary ( <i>Desmodium canescens</i> )	MWD – ED
Tick Trefoil, Illinois ( <i>Desmodium illinoense</i> )	MWD – ED
Tick Trefoil, Showy (a.k.a. Canada) ( <i>Desmodium canadense</i> )	SPD – WD
Wild Indigo, Blue ( <i>Baptisia australis</i> )	SPD – WD
Wild Indigo, White ( <i>Baptisia leucantha</i> )	SPD – ED

### Introduced Grasses

Species	Soil Moisture Tolerance
Bluegrass, Kentucky ( <i>Poa pratensis</i> )	PD – WD
Orchard Grass ( <i>Dactylis glomerata</i> )	MWD – ED
Redtop ( <i>Agrostis gigantea</i> )	PD – WD
Timothy ( <i>Phleum pratense</i> )	PD – WD

One of the following native grasses can also be added to, but not substituted for, the species selected above:

Wildrye, Canada ( <i>Elymus canadensis</i> )	MWD – ED
Wildrye, Riverbank ( <i>Elymus riparius</i> )	PD – WD
Wildrye, Virginia ( <i>Elymus virginicus</i> )	PD – WD

### Introduced Legumes

Species	Soil Moisture Tolerance
Alfalfa ( <i>Medicago sativa</i> )	MWD – ED
Clover, Alsike ( <i>Trifolium hybridum</i> )	PD – WD
Clover, Ladino ( <i>Trifolium repens</i> )	PD – WD
Clover, Red ( <i>Trifolium pratense</i> )	MWD – ED
Clover, White ( <i>Trifolium repens</i> )	PD – WD
Lespedeza, Common, Kobe, or Marion <sup>4</sup> ( <i>Kummerowia striata</i> )	WD – ED
Trefoil, Birdsfoot ( <i>Lotus corniculatus</i> )	MWD – WD

<sup>4</sup> Substitutes for *Lespedeza* must be used on sites north of Interstate 70

## Native Forbs<sup>5</sup>

Species	Soil Moisture Tolerance
Aster, Flat Topped ( <i>Aster umbellatus</i> )	VPD – SPD
Aster, New England ( <i>Aster novaeangliae</i> )	VPD – WD
Aster, Sky Blue ( <i>Aster azureus</i> )	MWD – ED
Aster, Swamp ( <i>Aster puniceus</i> )	VPD – SPD
Beardtongue, Foxglove ( <i>Penstemon digitalis</i> )	VPD – MWD
Bergamot, Wild (a.k.a. Bee Balm) ( <i>Monarda fistulosa</i> )	SPD – WD
Black-eyed Susan ( <i>Rudbeckia hirta</i> )	MWD – ED
Black-eyed Susan, Sweet ( <i>Rudbeckia subtomentosa</i> )	VPD – MWD
Blazing Star, Button ( <i>Liatris aspera</i> )	MWD – ED
Blazing Star, Marsh (a.k.a. Gayfeather) ( <i>Liatris spicata</i> )	VPD – WD
Blazing Star, Prairie ( <i>Liatris pycnostachya</i> )	PD – MWD
Blue Flag, Virginia ( <i>Iris virginica</i> var. <i>shrevei</i> )	VPD – SPD
Bur Marigold, Nodding ( <i>Bidens cernua</i> )	VPD – SPD
Cardinal Flower ( <i>Lobelia cardinalis</i> )	VPD – SPD
Coneflower, Gray-Headed ( <i>Ratibida pinnata</i> )	MWD – ED
Coneflower, Pale Purple ( <i>Echinacea pallida</i> )	MWD – ED
Coneflower, Purple ( <i>Echinacea purpurea</i> )	MWD – ED
Coneflower, Yellow ( <i>Ratibida pinnata</i> )	MWD – ED
Coreopsis, Sand ( <i>Coreopsis lanceolata</i> )	WD – ED
Coreopsis, Tall ( <i>Coreopsis tripteris</i> )	SPD – ED
Cup Plant ( <i>Silphium perfoliatum</i> )	VPD – MWD
Dock, Prairie ( <i>Silphium terebinthinaceum</i> )	SPD – ED
Golden Alexanders ( <i>Zizia aurea</i> )	VPD – WD
Goldenrod, Riddell's ( <i>Solidago riddelli</i> )	VPD – ED
Goldenrod, Rigid ( <i>Solidago rigida</i> )	SPD – ED
Ironweed ( <i>Vernonia fasciculata</i> )	PD – MWD
Joe Pye Weed, Spotted ( <i>Eupatorium maculatum</i> )	VPD – SPD
Milkweed, Butterfly (a.k.a. Butterfly Weed) ( <i>Asclepias tuberosa</i> )	MWD – ED
Milkweed, Swamp ( <i>Asclepias incarnata</i> )	VPD – SPD
Milkvetch, Canada ( <i>Astragalus canadensis</i> )	SPD – WD
Mint, Virginia Mountain ( <i>Pycnanthemum virginicum</i> )	VPD – WD
New Jersey Tea ( <i>Ceanothus americanus</i> )	MWD – ED
Obedient Plant ( <i>Physostegia virginiana</i> )	PD – SPD
Quinine, Wild ( <i>Parthenium integrifolium</i> )	MWD – ED
Rattlesnake Master ( <i>Eryngium yuccifolium</i> )	MWD – ED
Rosinweed, Entire-Leaf ( <i>Silphium integrifolium</i> )	SPD – ED
Sneezeweed ( <i>Helenium autumnale</i> )	VPD – SPD
Spiderwort, Ohio ( <i>Tradescantia ohioensis</i> )	SPD – WD
Sunflower, False ( <i>Heliopsis helianthoides</i> )	SPD – ED
Sunflower, Sawtooth ( <i>Helianthus grosseserratus</i> )	VPD – WD
Vervain, Blue ( <i>Verbena hastata</i> )	VPD – SPD
Vervain, Hoary ( <i>Verbena stricta</i> )	WD – ED

<sup>5</sup>Additional species can be found using the [Indiana NRCS Seeding Calculator](#).

## Forbs Beneficial to Wildlife

Forbs	Wildlife Information	Comments
<i>Asclepias</i> spp. (incl. Milkweeds and Butterfly Weed)	Nectar for butterflies, insects for game birds <sup>6</sup> and songbirds.	Milkweed is THE larval food for monarch butterflies
Asters and Fleabanes	Insects for game birds and songbirds, and food for rabbits.	Small blue or white flowers
<i>Baptisia</i> spp. (Wild Indigos)	Nectar for butterflies and hummingbirds, and insects for songbirds. Fall and winter seed source for songbirds and game birds.	Sap used to be used to dye clothing purple.
<i>Rudbeckia</i> spp. (Black-eyed Susans)	Insects for game birds and songbirds.	Easy to establish
Blazing Stars	Nectar for butterflies, insects for game birds and songbirds.	Purple flowers
Bundleflower, Illinois	Insects for game birds and songbirds. Fall and winter seed source for songbirds and game birds.	Legume
<i>Cassia</i> spp. (incl. Partridge Pea and Wild Senna)	Insects for game birds and songbirds, and food for rabbits. Fall and winter seed source for songbirds and game birds.	Legume, yellow flowers, annuals
Coneflowers	Nectar for butterflies, insects for game birds and songbirds.	
Leadplant	Nectar for butterflies, insects for game birds and songbirds, and food for rabbits.	Legume - unique smoke-colored plant
Lespedeza, Round-headed	Nectar for butterflies, insects for game birds and songbirds, and food for rabbits. Fall and winter seed source for songbirds and game birds.	Legume
<i>Lobelia</i> spp. (incl. Cardinal Flower)	Nectar for butterflies, insects for game birds and songbirds.	Deep red or blue flowers
Master, Rattlesnake	Insects for game birds and perches for songbirds.	Distinctive, waxy-green foliage
<i>Monarda</i> spp. (incl. Bee Balm)	Nectar for butterflies, insects for game birds and songbirds.	Pinkish flowers
<i>Penstemon</i> spp. (Beardtongues)	Primarily insects for game birds, but also songbirds and food for mammals.	Light blue irregular flowers
<i>Petalostemum</i> spp. (Prairie Clovers)	Nectar for butterflies, insects for game birds and songbirds, food for small mammals and rabbits. Fall and winter seed source for songbirds and game birds.	Purple or white flowers
<i>Silphium</i> spp. (incl. Cup Plant and Prairie Dock)	Nectar for butterflies and hummingbirds, and insects for songbirds.	Stately, large plants with yellow flowers
<i>Solidago</i> spp. (Goldenrods)	Primarily insects for game birds, but also songbirds and food for small mammals.	Forms colonies

<sup>6</sup> Includes quail, turkey, pheasant, mourning dove and ruffed grouse.

Table references:

- American Wildlife & Plants: A Guide to Wildlife Food Habits; Martin, Zim, and Nelson; Dover Publications, Inc., 1961
- IDNR Division of Fish & Wildlife
- North American Range Plants; J. Stubbendieck, et. al.; University of Nebraska Press
- Pasture and Range Plants, Fort Hays State University, Hays, KS, 1963

**Forbs Beneficial to Pollinators**

Common Name	Scientific Name	April	May	June	July	August	September	October
<b>Wild Columbine</b>	<i>Aquilegia canadensis</i>	Red with Yellow	Red with Yellow	Red with Yellow				
<b>Bloodroot</b>	<i>Sanguinaria canadensis</i>	White	White	White				
<b>Violets</b>	<i>Viola spp.</i>	White, blue, Yellow	White, blue, Yellow	White, blue, Yellow	white, blue, yellow			
<b>Daisy Fleabanes</b>	<i>Erigeron spp.</i>		White, Yellow	White, Yellow	White, Yellow	White, Yellow	White, Yellow	
<b>Trout Lily</b>	<i>Erythronium americanum</i>	Yellow	Yellow	Yellow				
<b>Joe-pye-weed</b>	<i>Eupatorium spp.</i>					Pink-Lavender	Pink-Lavender	Pink-Lavender
<b>Gentians</b>	<i>Gentiana spp.</i>					Blue, Violet	Blue, Violet	Blue, Violet
<b>Sunflowers</b>	<i>Helianthus spp.</i>				Yellow	Yellow	Yellow	Yellow
<b>Iris</b>	<i>Iris spp.</i>		White, blue	White, blue	White, blue			
<b>Beebalm</b>	<i>Monarda spp.</i>		Red, Lavender, Blue	Red, Lavender, Blue	Red, Lavender, Blue			
<b>Beardtongue</b>	<i>Penstemon spp.</i>		White, Light-violet	White, Light-violet	White, Light-violet			
<b>Phlox</b>	<i>Phlox spp.</i>	White, Lt-blue, Pink	White, Light-blue, Pink	White, Light-blue, Pink	White, Light-blue, Pink			
<b>Black-eyed Susans</b>	<i>Rudbeckia spp.</i>			Yellow, Brown	Yellow, Brown	Yellow, Brown	Yellow, Brown	
<b>Goldenrods</b>	<i>Solidago spp.</i>			Yellow	Yellow	Yellow	Yellow	Yellow
<b>Ragworts</b>	<i>Packera spp.</i>		Yellow	Yellow	Yellow			
<b>Trillium</b>	<i>Trillium spp.</i>		Purple, White, Dark-red	Purple, White, Dark-red	Purple, White, Dark-red			
<b>Spiderworts</b>	<i>Tradescantia virginiana</i>		Violet, Purple	Violet, Purple	Violet, Purple			
<b>Aster</b>	<i>Symphyotrichum spp.</i>		Purple	Purple	Purple	Purple		
<b>Lobelia</b>	<i>Lobelia spp.</i>					Wht., Bl., Red	Wht., Bl., Red	Wht., Bl., Red
<b>Tickseed</b>	<i>Coreopsis spp.</i>					Red, Blue	Red, Blue	Red, Blue

**Trees and Shrubs Beneficial to Pollinators**

Common Name	Scientific Name	March	April	May	June	July	August	September
<b>Maples</b>	<i>Acer spp.</i>	Red, Greenish-yellow	Red, Greenish-yellow					
<b>Service Berry</b>	<i>Amelanchier spp.</i>	White	White					
<b>Willows</b>	<i>Salix spp.</i>	Yellow-green	Yellow-green	Yellow-green	Yellow-green			
<b>Sassafras</b>	<i>Sassafras albidum</i>	Yellow-green	Yellow-green	Yellow-green	Yellow-green			
<b>Eastern Redbud</b>	<i>Cercis canadensis</i>		Pink to Lavender	Pink to Lavender				
<b>Viburnum</b>	<i>Viburnum spp.</i>		White	White	White	White		
<b>Basswood</b>	<i>Tilia americana</i>		yellow white	yellow white	yellow white			
<b>Northern Catalpa</b>	<i>Catalpa speciosa</i>			White	White	White		
<b>Blueberry</b>	<i>Vaccinium spp.</i>		white to pink	white to pink	white to pink	white to pink		
<b>Elderberry</b>	<i>Sambucus spp.</i>			White	White	White		
<b>Spicebush</b>	<i>Lindera benzoin</i>	yellow green	Yellow-green	Yellow-green				
<b>Black Cherry</b>	<i>Prunus pensylvanica</i>			White	White			
<b>Sumacs</b>	<i>Rhus spp.</i>			Yellow-green	Yellow-green	Yellow-green	Yellow-green	Yellow-green
<b>Black Chokeberry</b>	<i>Aronia melanocarpa</i>			White	White			
<b>Dogwood</b>	<i>Cornus spp.</i>			White	White	White		
<b>Eastern Ninebark</b>	<i>Physocarpus opulifolius</i>			White	White	White		

**Native Shrubs**

<b>Common Name Scientific Name</b>	<b>Soil Moisture Tolerance</b>	<b>Ave. Mature Height (ft.)</b>	<b>Wildlife Information</b>	<b>General Comments</b>
Alder, Hazel <i>Alnus serrulata</i>	VPD – WD	18	Deer browse on the twigs.	Prefers wet to moist soils. Long lenticels on the stem. Rarely damaged by deer.
Arrowwood <i>Viburnum dentatum</i>	MWD - WD	9	Fruit eaten by songbirds.	Fruit ¼ inch long, bluish-black. Rarely damaged by deer.
Ash, Prickly <i>Xanthoxylum americanum</i>	SPD – WD	9	Used by Giant Swallowtail butterfly larvae.	A thicket forming shrub with prickly leafstalks. Fruit are a small reddish-brown pod.
Bayberry, Northern <i>Myrica pensylvanica</i>	SPD – WD	8	Fruit and seeds eaten by songbirds. Low, brushy stature provides concealment for ground-dwelling wildlife.	Small, grayish-silver, persistent, berries attached to main stems of plant. Not native to Indiana.
Blackberry, Wild <i>Rubus allegheniensis</i>	MWD – ED	5	Provides cover and food for birds and mammals. Recommended for quail and turkey.	Upright arching shrub with stout prickles.
Blackhaw <i>Viburnum prunifolium</i>	MWD - WD	20	Fruit eaten by songbirds, quail, fox and turkey.	Fruit ½ inch long.
Bladdernut <i>Staphylea trifolia</i>	SPD – WD	10		3-lobed balloon like capsule.
Blueberry, Dryland <i>Vaccinium pallidum</i>	WD – ED	1 – 3	Important to grouse, scarlet tanager, bluebirds, thrushes and other songbirds. Used by small mammals including chipmunks and white-footed mice.	Prefers dry, acid sandy soil.
Blueberry, Lowbush <i>Vaccinium angustifolium</i>	WD – ED	1		
Chokecherry <i>Prunus virginiana</i>	SPD – WD	18	Fruit eaten by songbirds.	Fruit ⅓” long, dark-purple.
Chokeberry, Black <i>Aronia melanocarpa</i>	SPD – WD	10	Fruit eaten by songbirds. Recommended for turkey.	Fruit ⅓” long, dark-purple. Seldom severely damaged by deer.
Coralberry <i>Symphoricarpos orbiculatus</i>	MWD - WD	5	Fruit eaten by songbirds, quail, and ruffed grouse.	Fruit coral to purple.
Crab, Prairie <i>Malus ioensis</i>	PD – WD	30	Fruit eaten by opossum, squirrel, raccoon and fox. Recommended for turkey.	Small fruit, showy flowers.
Crabapple, Wild Sweet <i>Malus coronaria</i>	SPD – ED	30	Recommended for quail and turkey.	Yellow-green edible fruit with highly fragrant flowers.
Cranberry, Highbush <i>Viburnum trilobum</i>	VPD – WD	9	Fruit eaten by grouse, pheasant and songbirds. Recommended for turkey.	Tart red fruit. Showy.
Devils Walking Stick <i>Aralia spinosa</i>	SPD - MWD	20	Fruit eaten by birds (favorite of thrushes).	Showy white flowers, black fruit.
Dogwood, Alternate Leaf <i>Cornus alternifolia</i>	SPD – WD	18	Fruit eaten by birds. Twigs browsed by deer and rabbits.	Blue-black fruit with red stems. Leaves not opposite.
Dogwood, Flowering <i>Cornus florida</i>	MWD - WD	30	Recommended for quail and turkey.	Showy flowers, glossy red fruit.

**Native Shrubs (continued)**

<b>Common Name Scientific Name</b>	<b>Soil Moisture Tolerance</b>	<b>Ave. Mature Height (ft.)</b>	<b>Wildlife Information</b>	<b>General Comments</b>
Dogwood, Gray <i>Cornus racemosa</i>	SPD – WD	8	Fruit eaten by pheasant turkey and grouse.	Red pedicles in winter, white fruit.
Dogwood, Red Osier <i>Cornus stolonifera</i>	VPD – WD	10	Fruit eaten by songbirds, grouse, quail and turkey. Twigs browsed by deer and rabbits.	Reddish stem, white fruit, good winter color. Seldom severely damaged by deer.
Dogwood, Rough Leaved <i>Cornus drummondii</i>	PD – WD	18	Fruit eaten by songbirds, grouse, quail, turkey and pheasant. Twigs browsed by rabbits and deer.	White fruit.
Dogwood, Silky <i>Cornus amomum</i>	VPD – WD	10	Sometimes browsed by rabbits and deer.	Bluish fruit, likes moist soils and partial shade.
Elderberry <i>Sambucus canadensis</i>	VPD – WD	9	Fruit eaten by many birds including pheasant and dove. Recommended for quail and turkey.	Purple-black fruit used for jams, jellies, pies, and wine. Seldom severely damaged by deer.
Hazelnut <i>Corylus americana</i>	MWD - WD	15	Small nut eaten by squirrel, deer, jays, grouse, and pheasant. Recommended for quail and turkey.	Often forms large colonies.
Huckleberry <i>Gaylussacia baccata</i>	PD - WD	1 - 3	Utilized by upland game birds, including grouse, quail and turkey, and most song birds.	Prefers acid soils. ID by yellow resin dots on back of leaves
Indigobush <i>Amorpha fruticosa</i>	VPD – WD	6		Small pods, flowers purplish spikes.
Leadplant <i>Amorpha canescens</i>	WD – ED	3		Small erect prairie shrub with purple flowers.
Nannyberry <i>Viburnum lentago</i>	SPD – WD	18	Fruit eaten by songbirds. Recommended for turkey.	Blue-black fruit similar to raisins.
New Jersey Tea <i>Ceanothus americanus</i>	WD - ED	3	Used by quail, wild turkey, and rabbits. Used by butterflies.	Prairie plant with white flower in dense heads.
Ninebark <i>Physocarpus opulifolius</i>	VPD – WD	10	Fruit are small dry bladders. Recommended for turkey.	White to pinkish flowers.
Pawpaw <i>Asimina triloba</i>	SPD – WD	20	Fruit eaten by opossum, squirrels, raccoon, and fox.	Large leaves, likes deep moist soils. Rarely damaged by deer.
Plum, American <i>Prunus americana</i>	MWD – ED	30	Fruit eaten by songbirds, many mammals including small rodents. Recommended for quail and turkey.	Reddish fruit.
Raspberry, Wild <i>Rubus occidentalis</i>	MWD – WD	5	Provides cover and food for birds and mammals. Recommended for quail and turkey.	Arching shrub with strong hooked prickles.
Redbud <i>Cercis canadensis</i>	MWD – WD	30	Seeds eaten by a few songbirds.	A legume, 2-3” pod, reddish-purple flowers, heart shaped leaves.
St. Johnswort, Shrubby <i>Hypericum prolificum</i>	SPD – WD	6		Bright yellow flowers, 3-valved capsule.
Spicebush <i>Lindera benzoin</i>	VPD – WD	9	Twigs and fruit eaten by songbirds, grouse, rabbit, opossum, quail and deer. Recommended for turkey.	Small red fruit. Rarely damaged by deer.
Spirea <i>Spiraea alba</i> <i>Spiraea tomentosa</i>	VPD – WD	4	Buds eaten by ruffed grouse. Twigs browsed by deer and rabbits.	Pink flowers. Also called Meadowsweet or Hardack.

**Native Shrubs (continued)**

<b>Common Name Scientific Name</b>	<b>Soil Moisture Tolerance</b>	<b>Ave. Mature Height (ft.)</b>	<b>Wildlife Information</b>	<b>General Comments</b>
Sumac, Shining (a.k.a. Dwarf) <i>Rhus copallina</i>	MWD – ED	8	Fruit eaten by songbirds, quail, dove, pheasant. Recommended for turkey. Used by native pollinators.	Reddish fruit. Tolerates dry, infertile soils.
Sumac, Smooth <i>Rhus glabra</i>	MWD – ED	12	Twigs and fruit eaten by songbirds, pheasant, and dove. Recommended for quail and turkey.	Often forms large colonies. Reddish fruit.
Sumac, Staghorn <i>Rhus typhina</i>	MWD – ED	15	Fruit eaten by songbirds, quail, dove, pheasant. Twigs browsed by rabbits and deer. Recommended for turkey.	Tolerates dry, infertile soils. Reddish fruit.
Wahoo, Eastern <i>Euonymus atropurpureus</i>	SPD – WD	12	Fruit eaten by birds.	4-lobed red capsule, sometimes winged stem.
Willow, Prairie <i>Salix humilis</i>	PD – SPD	13	Use where prairie requires woody vegetation for the targeted species, such as perches for Dickcissels.	Recommended for prairie restorations. Flowers from late April through mid May.
Winterberry <i>Ilex verticillata</i>	VPD – WD	15	Buds and twigs browsed by deer and rabbits.	Provides a bright red ¼” fruit in fall that persists after leaf drop. Prefers moist acid soil conditions. Male and female plants are needed for fruit production.
Witch-hazel <i>Hamamelis virginiana</i>	SPD – WD	18	Seeds, buds and twigs eaten by deer, rabbit, quail and pheasant.	Pale yellow flowers that produce seedpods.

**Conifers**

<b>Common Name Scientific Name</b>	<b>Soil Moisture Tolerance</b>	<b>Ave. Mature Height (ft.)</b>	<b>Wildlife Information</b>	<b>General Comments</b>
Baldcypress <i>Taxodium distichum</i>	VPD – WD	80	Waterfowl occasionally consume seeds. Trees also serve as perching areas for song and wading birds.	Baldcypress is 1 of 2 deciduous conifer trees native to Indiana. Very flood tolerant.
Cedar, Eastern Red <i>Juniperus virginiana</i>	SPD – ED	45	Berries consumed by songbirds. Recommended for turkey.	Small coniferous tree tolerant of dry, sterile soils.
Cedar, Northern White <i>Thuja occidentalis</i>	PD – WD	40	Foliage often browsed by deer in late winter as an emergency food source. Recommended for turkey.	A medium sized evergreen once common in northern Indiana bogs. Attains best form on calcareous soils. Common ornamental.
Hemlock, Eastern <i>Tsuga canadensis</i>	SPD - WD	70	The dense low foliage of young plants makes good winter cover for grouse, turkey, deer, and other wildlife. Excellent nesting habitat. Small winged seeds fed on by chickadees, pine siskins, crossbills, and red squirrels; twigs browsed by deer, and rabbits.	Hemlocks prefer a moist, well-drained, slightly acid soil with protection from heat, drought and wind.
Pine, Eastern White <i>Pinus strobus</i>	MWD – WD	90	Pines make excellent roosting trees for many species of birds. Seeds are eaten by a wide variety of birds, squirrels and mice. Recommended for turkey.	Large tree capable of attaining heights over 200 feet under ideal conditions. Bluish-green needles grow in groups of 5. Native only in a few spots in the west-central portion of the state.

**Conifers (continued)**

<b>Common Name Scientific Name</b>	<b>Soil Moisture Tolerance</b>	<b>Ave. Mature Height (ft.)</b>	<b>Wildlife Information</b>	<b>General Comments</b>
Pine, Jack <i>Pinus banksiana</i>	WD - ED	40	Pines make excellent roosting trees for many species of birds. Seeds are eaten by a wide variety of birds, squirrels and mice. Recommended for turkey.	Plant in northern Indiana only. Has serotinous cones that open to release seeds from forest fires. Tolerates dry acid soil conditions.
Pine, Red <i>Pinus resinosa Ait.</i>	MWD - ED	40		Plant in central and northern Indiana only. Seldom severely damaged by deer.
Pine, Virginia <i>Pinus virginiana</i>	MWD - ED	40		Small sized tree with needle in-groups of two. Cones bear sharp prickles.
Norway Spruce	SPD - WD	60	A non-native to Indiana, but may be used in cases where severe deer problems exist.	A dense conifer with spiral-arranged linear, green, flattened leaves.

**Non-mast Producing Trees**

<b>Common Name Scientific Name</b>	<b>Soil Moisture Tolerance</b>	<b>Ave. Mature Height (ft.)</b>	<b>Wildlife Information</b>	<b>General Comments</b>
Aspen, Bigtooth <i>Populus grandidentata</i>	MWD - WD	70	Twigs and bark consumed by deer and beavers. Buds and catkins eaten by ruffed grouse.	Medium sized tree with olive-gray bark which becomes furrowed on older trees. Rarely damaged by deer.
Cottonwood, Eastern <i>Populus deltoides</i>	PD - ED	90	Recommended for turkey.	Large tree typical of riverbanks. The triangle shaped (deltoid) leaves give this tree its name.
Sycamore, American <i>Platanus occidentalis</i>	PD - WD	90	While sycamore has low food value to most wildlife, this species forms an important structural component of bottomlands and floodplains.	The sycamore has multicolored bark and is one of our largest trees. It is capable of attaining heights of over 100 feet.

**Soft Mast Producing Trees**

<b>Common Name Scientific Name</b>	<b>Soil Moisture Tolerance</b>	<b>Ave. Mature Height (ft.)</b>	<b>Wildlife Information</b>	<b>General Comments</b>
Birch, River <i>Betula nigra</i>	VPD - WD	50	Stands of birch serve as important cover for riparian dwelling animals.	Small to medium sized tree of floodplains. Has Cinnamon colored, exfoliating bark.
Cherry, Black <i>Prunus serotina</i>	MWD - WD	70	Familiar fruit eaten by many species of songbirds, ruffed grouse and pheasant. Recommended for turkey.	Tall tree of well drained soils. Valuable timber species that produces white blossoms and edible fruit.
Gum, Black <i>Nyssa sylvatica</i>	PD - WD	60	Fruit consumed by songbirds, and Pileated woodpeckers. Recommended for turkey.	Medium sized tree, which thrives in both upland and wetland conditions. Foliage turns a red color in fall.
Hackberry <i>Celtis occidentalis</i>	SPD - WD	50	Fruit sparingly eaten by songbirds, including cedar waxwings, and robins during winter. Recommended for turkey.	Small to medium sized tree of calcareous soils and floodplains. Taste of the fruit similar to dates, but contain a large seed.

**Soft Mast Producing Trees (continued)**

Common Name Scientific Name	Soil Moisture Tolerance	Ave. Mature Height (ft.)	Wildlife Information	General Comments
Hawthorn, Cockspur <i>Crataegus crus-galli</i>	SPD - ED	30	Fruit are important winter food source for many songbirds including ruffed grouse. Fruit eaten by deer, fox, rabbit, pheasant and turkey. Excellent nesting habitat for songbirds.	Large shrubs or small trees that usually bear stout spines. White flowers yield small, apple like fruit. Common in disturbed woodlands that had previously been pasture. Rarely damaged by deer.
Hawthorn, Green <i>Crataegus viridis</i>	SPD - ED	30		
Hawthorn, Washington <i>Crataegus phaenopyrum</i>	SPD - ED	30		
Kentucky Coffeetree <i>Gymnocladus dioicus</i>	SPD – WD	50	Fruit relished by squirrels, opossum, raccoon and songbirds.	Uncommon, medium sized tree with gray, scaly bark. Fruit a thick, brown pod.
Maple, Black <i>Acer nigrum</i>	MWD – WD	70	Samaras are widely consumed by birds and squirrels. Browsed by deer. Recommended for turkey.	Similar to sugar maple, but with leaves 3-lobed and darker green on top.
Maple, Red <i>Acer rubrum</i>	VPD – WD	70		Medium sized tree of swampy areas, but also found in upland conditions. Leaves scarlet red in fall.
Maple, Silver <i>Acer saccharinum</i>	VPD – WD	80		Very fast growing medium sized tree of floodplains and poorly drained soils. Small yellow (female) and reddish (male) flowers appear very early in the spring.
Maple, Sugar <i>Acer saccharum</i>	MWD – WD	70		One of the most common medium sized trees of well-drained woodlands. Five-lobed leaves turn a brilliant yellow-orange in fall.
Persimmon <i>Diospyros virginiana</i>	MWD – WD	50		Raccoons as well as some songbirds readily consume large berries.
Sassafras <i>Sassafras albidum</i>	SPD - ED	40	Browsed by deer, rabbits, beaver, fox squirrel and woodchuck. Fruit eaten by raccoons, squirrels, woodchucks and songbirds. Recommended for quail.	Fruit an oblong, bluish black fruit about 1/4" long. Good fence row cover. Re-sprouts if cut. Roots can be brewed to make tea. Seldom severely damaged by deer.
Serviceberry <i>Amelanchier arborea</i>	MWD – WD	30	Purplish fruit rapidly consumed by birds. Recommended for turkey.	Small, uncommon tree of well drained woodlands. Flowers are white and appear in April. This tree is also known as Juneberry because the fruit usually ripens in early summer. Seldom severely damaged by deer.
Sweetgum <i>Liquidambar styraciflua</i>	PD – WD	85	Seeds consumed by finches in winter.	Large tree common in bottomlands of southern Indiana. Fruit is a prickly ball with multiple capsules.
Tuliptree <i>Liriodendron tulipifera</i>	MWD – WD	90	Seeds eaten by songbirds, squirrels, quail and turkey.	Common, large sized tree is a member of the magnolia family. Fruit are upright, which remain on the twigs through winter.

### Hard Mast Producing Trees

Common Name Scientific Name	Soil Moisture Tolerance	Ave. Mature Height (ft.)	Wildlife Information	General Comments
Beech, American <i>Fagus grandifolia</i>	MWD – WD	75	Nuts consumed by deer, and squirrels. Recommended for turkey.	Extremely shade tolerant species with decorative smooth gray bark. Rarely damaged by deer.
Buckeye, Ohio <i>Aesculus glabra</i>	SPD – WD	60	Nuts sparingly consumed by eastern fox squirrels.	Fast growing species. Twigs poisonous to livestock.
Butternut <i>Juglans cinerea</i>	MWD – WD	50	Elliptical nuts consumed by squirrels.	Small to medium sized tree with gray furrowed bark. Uncommon.
Hickory, Bitternut <i>Carya cordiformis</i>	SPD – WD	50	The nuts of these species constitute an important food source for squirrels and Wood ducks. Recommended for turkey.	Medium sized tree of moist woodlands. Winter buds are sulfur-yellow. The common name is derived from the bitter taste of the nut.
Hickory, Mockernut <i>Carya tomentosa</i>	MWD - ED	50	The nuts of these species constitute an important food source for squirrels and Wood ducks Recommended for turkey.	Small to medium sized hickory whose name is derived from the small size of the sweet kernel, relative to the overall size of the nut.
Hickory, Pignut <i>Carya glabra</i>	WD – ED	50		Medium sized tree.
Hickory, Shagbark <i>Carya ovata</i>	MWD – WD	70	The loose shaggy bark makes excellent bat roosting sites. Recommended for turkey.	Medium sized tree typical of well-drained soils throughout Indiana.
Oak, Black <i>Quercus velutina</i>	MWD – ED	60	Acorns from oaks are perhaps the most important food source for a variety of wildlife including woodpeckers, squirrels, and deer. Recommended for turkey.	Medium sized tree of well drained to dry soils. Bark is black and blocky.
Oak, Bur <i>Quercus macrocarpa</i>	PD – ED	80		Medium to large sized tree. Grows most typically in mesic woodlands and along floodplains, but is also very drought and fire tolerant. Large acorns with fringed caps.
Oak, Cherrybark <i>Quercus pagoda</i>	SPD – WD	75		Large tree of bottomlands and well-drained soils. Found only in the extreme southwestern part of Indiana.
Oak, Chinquapin <i>Quercus muhlenbergii</i>	MWD – ED	60		Small to medium sized tree of calcareous soils and well-drained bottomlands. Bark is scaly with a yellowish cast.
Oak, Pin <i>Quercus palustris</i>	VPD – WD	75		The smaller pin oak acorns are particularly favored by wood ducks.
Oak, Red <i>Quercus rubra</i>	MWD – WD	80		Common medium to large sized tree of mesic woodlands. Bark is blocky at the base of old trees while the upper portion of the trunk resembles “ski tracks”.

**Hard Mast Producing Trees (continued)**

<b>Common Name Scientific Name</b>	<b>Soil Moisture Tolerance</b>	<b>Ave. Mature Height (ft.)</b>	<b>Wildlife Information</b>	<b>General Comments</b>
Oak, Scarlet <i>Quercus coccinea</i>	MWD – ED	70	Acorns from oaks are perhaps the most important food source for a variety of wildlife including woodpeckers, squirrels, and deer. Recommended for turkey.	Medium sized tree of dry ridges. Leaves turn a brilliant scarlet in autumn.
Oak, Shingle <i>Quercus imbricaria</i>	SPD – WD	50		Small to medium sized tree of mesic woodlands. Leaves remain through winter. Uncharacteristically, leaves of this species are not lobed.
Oak, Shumard <i>Quercus shumardii</i>	SPD – WD	75		Large tree of well-drained soils and bottomlands. Closely resembles red oak, but usually occurs lower on the landscape.
Oak, Swamp Chestnut <i>Quercus michauxii</i>	SPD – WD	70		Medium to large tree of poorly drained soils. Bark may be confused with that of white oak, but has coarsely serrate margined leaves.
Oak, Swamp White <i>Quercus bicolor</i>	VPD – WD	70		Medium sized tree of poorly drained soils. The specific name, bicolor, refers to the two toned leaves which are dark and shiny above, and dull and white below.
Oak, White <i>Quercus alba</i>	MWD - WD	90		Tree with scaly, silvery bark.
Pecan <i>Carya illinoensis</i>	SPD - WD	120	Ellipsoid nuts readily consumed by a variety of wildlife.	Large tree with sweet edible nuts.
Walnut, Black <i>Juglans nigra</i>	MWD – WD	80	Nuts consumed by squirrels.	Medium sized tree typical of central hardwood forests. Valuable timber species. Bark chocolate colored and blocky with age.